

National Park Service
U.S. Department of the Interior

Vicksburg National Cemetery
Mississippi



Preservation and Reconstruction of the National Cemetery Walls Environmental Assessment

November 2003



Preservation and Reconstruction of the National Cemetery Walls

VICKSBURG NATIONAL CEMETERY, MISSISSIPPI

Vicksburg National Cemetery, Mississippi, was established in 1866 and is one of the country's oldest national cemeteries. Approximately 18,300 United States servicemen and women and their dependents are interred in the cemetery.

A masonry wall was established around the burial grounds in 1874. The wall is on the List of Classified Structures and the cemetery is on the National Register of Historic Places. Over time, the wall has suffered damage from natural and human causes. Large areas of the north and south walls have collapsed over time due to erosion of unstable soils and some segments have been replaced with chain-link fencing. The east and west walls have suffered damage from fallen limbs, the effects of weathering, and overgrowth of vegetation. The west wall also has been damaged by motor vehicle accidents. The deterioration of the walls continues as the mortar fails and loose bricks fall from the wall. The presence of debris from the wall on the cemetery grounds poses a health and safety risk to grounds maintenance personnel and visitors. Brick and mortar that have fallen from the wall damage grounds maintenance equipment, and flying debris from maintenance activities such as mowing poses a danger to visitors and staff. In addition, the lack of a wall along the north and south boundary of the cemetery exposes visitors and employees to dangerous slopes that could result in serious injury.

The National Park Service proposes to repair, restore, and/or reconstruct the walls of the national cemetery to comply with Congressional legislation, restore the historic cultural landscape, and enhance visitor and employee safety. The project would include the preservation of the existing east and west walls by cleaning, repairing, and restoring the existing brick and mortar walls. On the north and south boundaries of the cemetery, masonry walls would be reconstructed to fully enclose the cemetery, restore the character-defining elements of the cultural landscape, and improve the safety of visitors and staff.

Three alternatives were evaluated in this environmental assessment. The No Action Alternative (Alternative A) would continue the preservation efforts undertaken currently by park staff, which includes replacement of bricks and mortar on the existing walls; cleaning of the walls and gates; and removal of vegetation. In addition to the activities described under Alternative A, the two action alternatives (Alternatives B and C) would reconstruct the north and south boundary walls on the original alignment where feasible, considering slope and erosion concerns, or on a new, more stable alignment inside the former alignment. Alternative B would reconstruct the north and south walls in the 1939 masonry wall design which would be comparable to the existing east and west walls, resulting in a uniform enclosure. Alternative C, the preferred alternative, would reconstruct the north and south walls in the original, more weather-resistant, 1874 wall design. The east wall would be restored to its original 1874 appearance in Alternative C and the west wall would maintain its 1939 masonry design.

The alternatives analyzed in this environmental assessment would not result in major environmental impacts or impairment to park resources or values. The proposed action is consistent with National Park Service management policies, Vicksburg National Military Park's general and resource management plans, and the National Historic Preservation Act of 1966 (as amended).

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. This environmental assessment will be on public review for 30 days. Please note that names and addresses of people who comment become part of the public record. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations, from businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

COMMENTS MUST BE RECEIVED BY December 31, 2003. Please address written comments to:
Superintendent, Vicksburg National Military Park
3201 Clay Street
Vicksburg, MS 39183

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PURPOSE AND NEED

The National Park Service (NPS) proposes to preserve, rehabilitate, restore, and/or reconstruct the walls surrounding a 40-acre parcel of the Vicksburg National Cemetery. Vicksburg National Cemetery was established in 1866 and opened for burials a year later. It is one of the oldest national cemeteries in the United States.

The brick enclosure that surrounds the 40 acres of the cemetery was built in 1874 in response to Congressional legislation that requires every national cemetery to be “enclosed with a good and substantial stone or iron fence.” The cemetery wall was intended to be an integral part of the original cultural landscape that would enhance the solemnity of the cemetery and help protect the sanctity of the burial ground.

Parts of the cemetery enclosure are now in very poor condition. Deterioration has resulted from the combined effects of weathering, erosion, soil slumping, vegetation, biological growth of moss and lichen, and motor vehicle accidents. Over the years, parts of the original brick walls have been reconstructed, moved, or replaced with modern fencing materials, diminishing character-defining elements of the cultural landscape.

Although the existing walls and gates receive regular maintenance, repairs have not been able to keep pace with deterioration. The ever-increasing wall and fence repairs absorb staff time and funding to the detriment of other park and cemetery resources. In addition, fallen brick and mortar pose safety hazards for visitors and staff.

Protection and preservation of the wall is required by the enabling legislation that established the national cemetery. Restoration of the missing portions of the cemetery enclosure and preservation of the existing walls also are called for in the park’s general management plan and resource management plan, and are necessary to meet Government Performance Results Act (GPRA) goals. Reconstructing and repairing the walls around Vicksburg National Cemetery would:

- Result in compliance with Congressional mandates requiring an enclosure around national cemeteries,

- Help to restore the historic cultural landscape,

- Help to protect cemetery grounds against undesirable trespass, and

- Enhance both visitor and employee safety.

This environmental assessment analyzes the no action alternative and two action alternatives for preserving and reconstructing cemetery walls to determine their impacts on the environment. It was prepared in accordance with the

- National Environmental Policy Act (NEPA) of 1969;

- Council on Environmental Quality regulations for implementing the National Environmental Policy Act (40 *Code of Federal Regulations* Parts 1500-1508);

- National Park Service’s *Director’s Order (DO) #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001); and

National Historic Preservation Act of 1966 and its implementing regulations at 36 *Code of Federal Regulations* 800, and *Director's Order 28, Cultural Resource Management* (NPS 1998).

The proposed treatments to the existing wall and reconstruction of missing portions of the wall would be designed to ensure compliance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1995b).

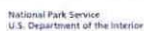
PURPOSE AND SIGNIFICANCE

Vicksburg National Cemetery was established by an act of Congress in 1866 and opened for burials in 1867. It serves as a final resting place for United States soldiers and sailors who served the country in times of national and international conflict. Vicksburg National Cemetery has the largest number of Civil War interments of any national cemetery in the United States.

Of the approximate 17,000 Union veterans buried in Vicksburg National Cemetery, the identities of only 5,000 are known. Most of the soldiers buried here had originally been interred in scattered locations in Arkansas, Louisiana, and Mississippi during the campaign for control of the Mississippi River. Others who died during the Federal occupation of Vicksburg were buried at sites throughout the vicinity. Record-keeping was haphazard under wartime conditions and the identities of graves often were lost. After the end of the Civil War, the U.S. Army located and exhumed the remains of Union veterans and reinterred them in the national cemetery. Therefore, at Vicksburg National Cemetery about 75 percent of the Civil War dead are listed as unidentified.

Approximately 1,300 veterans of conflicts subsequent to the Civil War are interred in Vicksburg National Cemetery. There also are a few burials of wives and children of veterans and government workers. The Vicksburg National Cemetery has been closed for burials since 1961, except for a few individuals whose applications for interment had been validated prior to that time.

On February 21, 1899 President William McKinley signed the act to establish a national military park to commemorate the campaign, siege, and defense of Vicksburg. The park was established to "...preserve the history of the battles and operations of the siege and defense on the ground where they were fought and were carried on." The duty of the Secretary of War as stated in the same act was to "...restore the forts and lines of fortifications, the parallels, the approaches of the two armies or so much thereof as may be necessary for said purposes." In 1933, the administration of Vicksburg National Cemetery and Vicksburg National Military Park were transferred from the War Department to the National Park Service. The location of the National Cemetery in relation to Vicksburg National Military Park is provided in Figure 1.

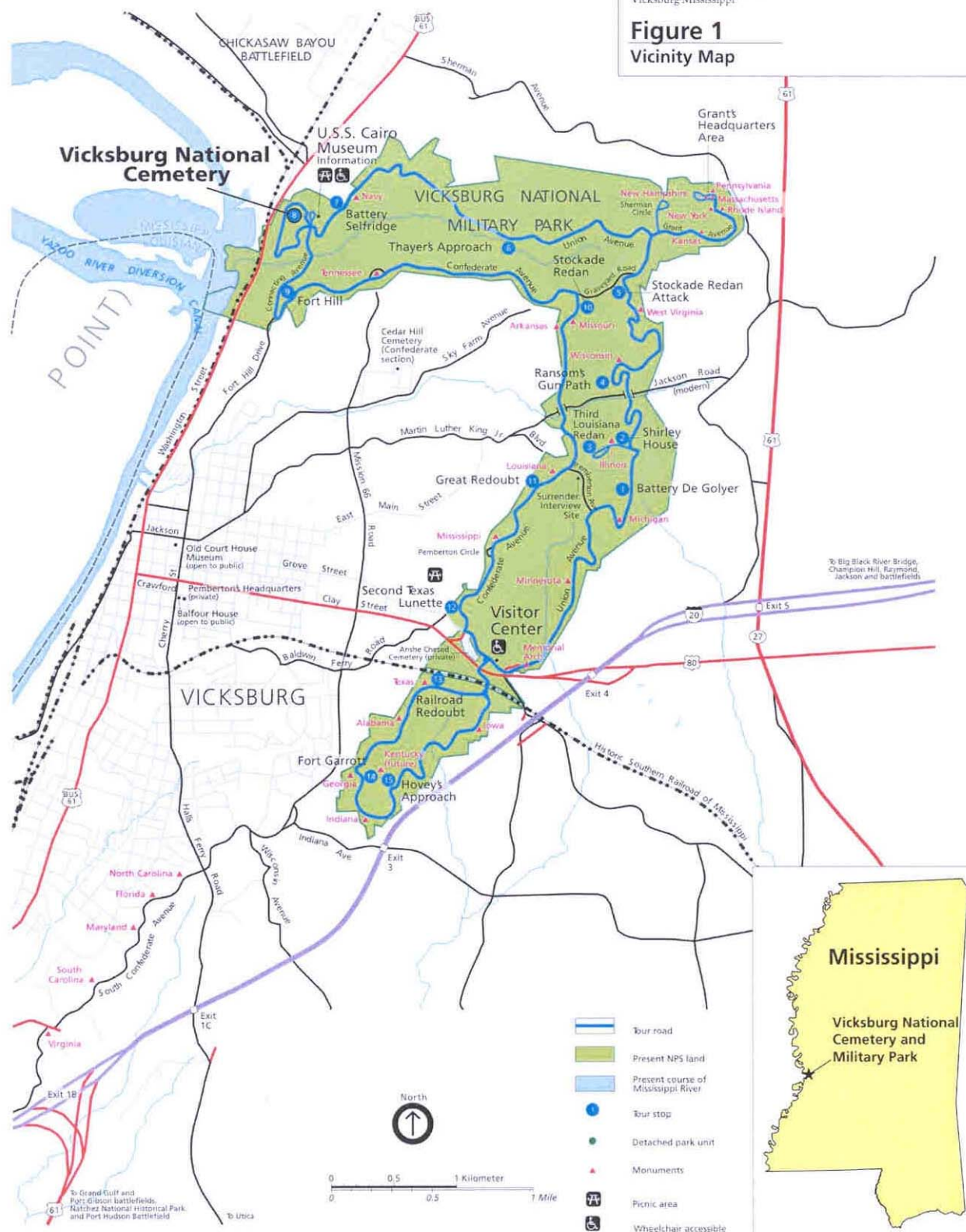


Vicksburg National Cemetery

Vicksburg National Military Park
Vicksburg, Mississippi

Figure 1

Vicinity Map



As stated in the park's general management plan (1980), the purpose of Vicksburg National Military Park is the

“preservation and protection of existing earthworks, fortifications, structures, monuments, memorials, and other outstanding natural and historical features within its jurisdiction in such as way to provide the visitor with a pleasing and rewarding experience. It is also to further the visitor's understanding and appreciation of the ordeal experienced by all persons of both North and South at Vicksburg during the months of May, June, and July 1863.”

Vicksburg National Military Park and National Cemetery are significant because:

The national cemetery and the park combined encompass approximately 1,800 acres and form one of the more densely monumented battlefields in the world as 1,329 monuments, markers, tablets, and plaques dot the historic landscape;

Vicksburg National Cemetery has over 18,300 interments, the largest number of Civil War soldiers of any national cemetery in the United States. The cemetery is on ground partly occupied by troops during the siege of Vicksburg. This strategic location immediately adjacent to the park allows visitors to better understand the tragedy of war and its impact on the lives of ordinary people and their leaders;

The park preserves nine historic fortifications, over 20 miles of reconstructed trenches, approaches and parallels, 15 historic bridges, five historic buildings (one ante-bellum home), 141 historic cannon and carriages, a Visitor Center, the U.S.S. Cairo gunboat and museum, 17 miles of hard-surfaced roads; and

The cemetery and park combined preserve and maintain the largest collection of outdoor sculpture in the southeastern United States.

PROJECT BACKGROUND, OTHER PROJECTS AND PLANS, OBJECTIVES, SCOPING, AND VALUE ANALYSIS

Project Background

The 1874 brick boundary walls were built in response to post-Civil War legislation that mandated fencing of national cemeteries (“An Act to Establish and to Protect National Cemeteries, approved February 22, 1867”). The walls were 4-feet-high and 2-feet-thick. Wall foundations varied in depth based on soils and terrain, and were more than 4.5-feet-deep in some areas. A schematic of the 1874 walls is provided in Figure 2.

The original design of the masonry wall featured coping, which was the top course of bricks along the wall, and pyramid style caps on the pilasters (columns). While these features appear ornamental, they help prevent the infiltration of water and extend the life of the wall.



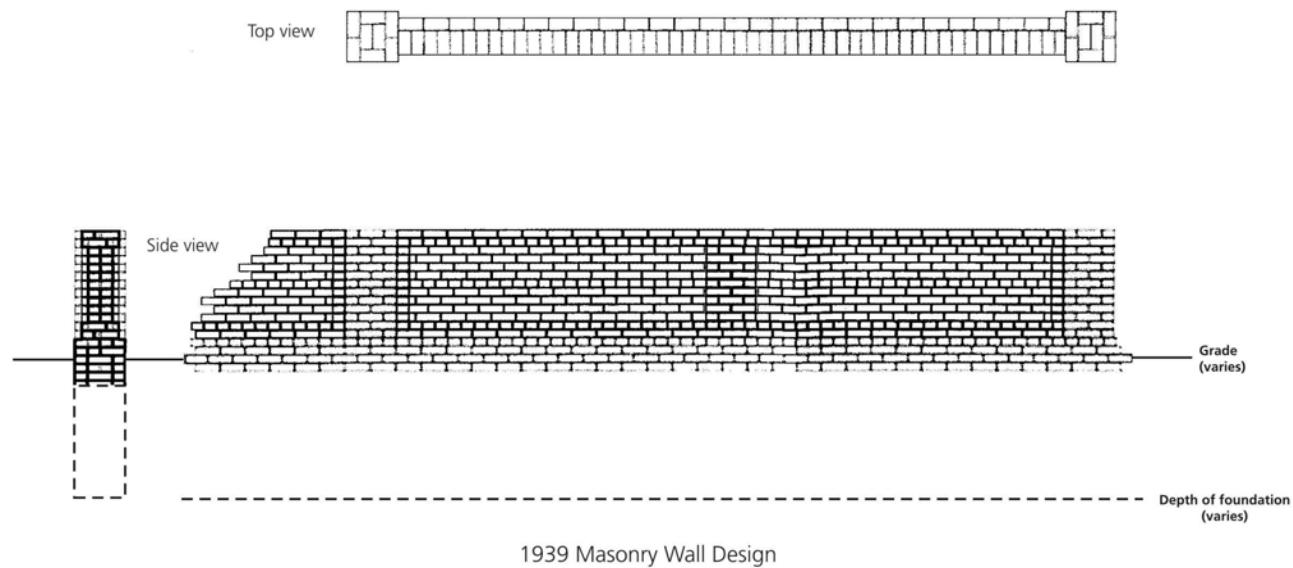
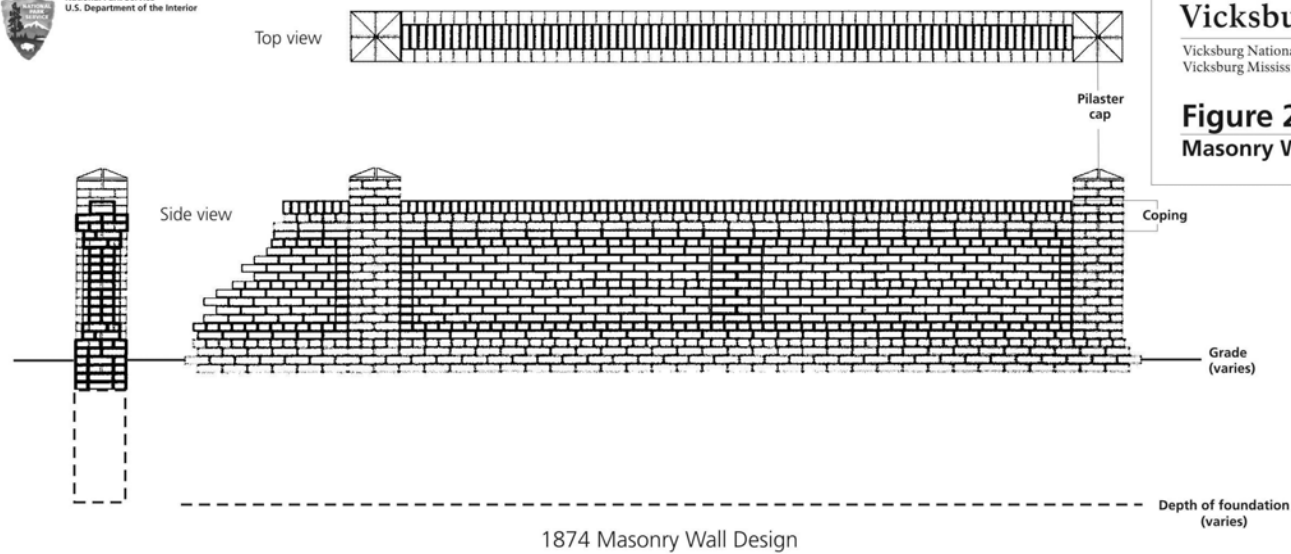
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Vicksburg National Cemetery

Vicksburg National Military Park
Vicksburg Mississippi

Figure 2
Masonry Wall Designs



When the site originally was developed, the area was graded and culverts and drainage outlets were installed. Carriage roads were developed to facilitate the movement of visitors within the cemetery, and iron gates were established at the carriage road entrances.

Sections of the perimeter wall began to collapse almost immediately after construction. Within a decade, sections of the south wall above Mint Spring Bayou collapsed. Although this area was repaired, problems with wall collapse continued. The following were identified as contributing factors.

Soils. The fill on which the walls were constructed proved to be unstable due to poor drainage and the inherent characteristics of the local soils. Despite a substantial foundation, settlement occurred in some areas, leading to cracks and collapse.

Slopes. Along the southern and northern boundary of the cemetery, steep slopes exist which are susceptible to sloughing. For example, along a portion of the southern boundary, the slope drops dramatically 40 to 50 feet to Mint Spring Bayou. Because of the unstable nature of the local soils and weathering, the slopes in these areas have experienced substantial sloughing which has resulted in the collapse and eventual loss of large segments of the north and south walls.

Mortar. Over time, the application of various mortars of varying degrees of hardness has affected the condition of the wall in very limited areas. Use of incompatible mortar in the past has resulted in stress fracturing and spalling on a small portion of the wall.

Vegetation. Lush vegetation, including both native species and invasive non-native species, has grown up along and over many parts of the cemetery wall. Figure 3 illustrates the vegetation growth that is occurring along the north wall. Routine maintenance performed several times a year involves cutting trees and vines that can damage the wall. However, this maintenance cannot keep pace with vegetation growth.

Most of the damage from vegetation occurs when tree limbs and roots grow beneath, through, and over the wall, which heaves sections upward and to the side and displaces bricks and mortar. Cracks and displacement of mortar and brick also occur from falling trees and limbs. Vines invade cracks in the wall, widening the crevices and opening them to deleterious effects of water and wind. Other biological growth such as moss and lichens also contribute to wall deterioration.

Runoff and Erosion. Runoff of rainwater has resulted in erosion or settlement of soils at the base of the wall, which threatens its stability and integrity. Water that flows rapidly down the hill in association with rainfall events erodes soils in some areas next to the wall, and deposits sediment in other areas. Water may also find passages through the wall at its weakest points, leading to further deterioration and instability (Lord, Aeck & Sargent Architects, 2002a).

Damage by Motor Vehicles. U.S. Highway 61 (business) runs parallel to the west wall of the cemetery. Periodically, motor vehicles leave the roadway and impact the wall, causing the displacement of bricks and mortar. Large vehicles or those traveling at high speeds can cause severe damage or complete collapse of the wall.

Since its original construction in 1874, many segments of the cemetery wall have been repaired or replaced. While some sections of the wall have been reconstructed consistent with the original design and in the original alignment, other parts are outside of the original line or are visually inconsistent.

In addition to activities that can prevent damage to the wall, such as vegetation cutting, the National Park Service monitors the wall for areas that are becoming unstable. Before collapse occurs, these areas are disassembled and reconstructed in place, using the original materials to the maximum extent possible. As

appropriate, protective measures such as improved drainage are installed in conjunction with reconstructing the wall.

The ever-increasing maintenance needs of the wall have required the staff to drastically reduce maintenance activities for other components of the cemetery such as repairs to structures, pruning of trees and shrubs, and realignment and cleaning of headstones. Even so, cyclical maintenance cannot keep pace with deterioration of the wall.

The east wall is in its original alignment and largely consists of original construction, although the capping and coping have been removed. As shown in Figure 4, most of the east wall is in relatively good condition. However, it has experienced damage from weathering and vegetation.

The southern portion of the east wall is being affected by water drainage. Storm water runoff in this area flows rapidly down the slope adjacent to the wall, eroding soil in some areas and depositing sediment in others. This has resulted in substantial stress cracking.



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Vicksburg National Cemetery

Vicksburg National Military Park
Vicksburg Mississippi

Figure 3
Northwest Wall with Excessive
Vegetation Growth



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Vicksburg National Cemetery

Vicksburg National Military Park
Vicksburg Mississippi

Figure 4
East Wall of Cemetery Constructed
in 1939 Design

The walls at the cemetery's west and northwest sections, near U.S. Highway 61 (business), were realigned and rebuilt between 1939 and 1942 in association with highway construction. The original north wall may have been dismantled during this same period. At approximately the same time, the cemetery was expanded by an administrative transfer of property from the military park. This new area was subsequently enclosed with a brick wall. Drainage systems were installed by the Civilian Conservation Corps (CCC) during this time period.

When the walls were rebuilt, a less elaborate design, shown in Figure 2, was used due to a lack of compatible brick. The 1939 design had the same overall dimensions (4-feet-high and 2-feet-wide), but lacked the coping and the extended sections over the pilasters and their pyramid caps that were used in the 1874 wall. As other portions of the wall subsequently were rebuilt following their collapse, or were disassembled and reconstructed in place, the 1939 design was used.

The west wall, which is about 60 years old, is in relatively good condition. Damage in this area largely has been caused by weathering, fallen limbs, and motor vehicle impacts.

Over time, 1,761 linear feet of the north and south cemetery walls have collapsed. The southwest wall near the original entrance gate is largely intact, although much of it has been reconstructed following vehicle collisions. However, a large part of the south wall has been lost as the steep slopes above Mint Spring Bayou have eroded away. In some places, chain-link fencing has been installed to replace lost portions of the masonry wall below the crest of the hill. However, some areas have eroded so severely that even the chain-link fencing is not in place.

Portions of the north wall have collapsed and have been removed, but the foundation for the wall still remains in the original 1874 alignment. Currently, this portion of the boundary is enclosed with chain-link fencing that follows the original wall alignment.

The only remaining section of wall that is representative of the original 1874 design, built on the original alignment, is a small section along the southern boundary. Construction dates for most other masonry wall sections range from the late 1930s to the 1950s. The mixture of wall types, including brick walls from two time periods, iron gates, and chain-link fencing, is visually intrusive rather than complementary to the cultural landscape.

Deterioration of the existing walls has led to concern for the health and safety of visitors and park staff. Loose brick and pieces of mortar that have fallen from the wall pose safety hazards to grounds maintenance personnel, visitors, and (on the west) motorists on the adjacent highway. Fallen brick and mortar also pose a tripping hazard for visitors and staff, slow down mowing and trimming, and cause damage to mowing equipment. Flying debris from grounds maintenance equipment is a hazard to visitors and park staff, and can damage headstones or buildings. In addition, visitors (particularly children) walking along the top of the wall risk falling and injuring themselves because of the loose and unstable bricks.

Other Projects and Plans

The cemetery improvement project would be consistent with the Vicksburg National Military Park general management plan (NPS 1980). This document is the primary planning guide for Vicksburg National Military Park and for the Cemetery. All other planning documents must conform with and tier from the general management plan. Restoration and reconstruction of the cemetery wall under the proposed action supports the purpose of the park as defined in the general management plan, "...to

maintain and, where necessary, restore the historical integrity of the sites, structures, and objects significant to the commemoration and interpretation of the Civil War history of Vicksburg.”

Several projects and plans that the National Park Service has in place, in progress, or planned for the near future may affect decisions regarding this project to preserve and reconstruct the cemetery walls. As part of the analysis and consideration of potential direct, indirect, and cumulative impacts, the project team identified the following potential projects that may occur in or near the project area.

Mint Spring Bluff and Bayou Project – The “soil nail wall project” would stabilize the southern bluff below the cemetery road and Indian mound. The project would construct two levels of concrete retaining walls that would extend down the slope from the upper roadway to an intermediate bench and farther down the slope toward Mint Spring Bayou (Lord, Aeck, & Sargent Architects 2002a). An environmental assessment and finding of no significant impact has been completed by the U.S. Army Corps of Engineers. This project would be complete before the start of the cemetery walls preservation and reconstruction project.

Shirley House Repair and Restoration – The Shirley House is the only surviving wartime structure in the park and served as headquarters for the 45th Illinois Infantry (NPS 1980). The proposed action for this historic building is to stabilize the structure, restore the first floor to its 1860s appearance, and rehabilitate it for adaptive use. This project may be occurring at the time of the cemetery improvement. Value analysis and environmental compliance still need to be performed.

Land Acquisition – Vicksburg National Military Park has acquired eight tracts of land that comprise a small triangle adjoining the northeast portion of Vicksburg National Cemetery. The tracts lie north of the cemetery and are bordered on the west by U.S. Highway 61 and on the east by Givens Road.

Connecting Avenue Road Improvement – Plans are underway to stabilize and pave the road from the Cairo Museum to Fort Hill. This project is scheduled for implementation in 2006 and would be conducted by the Federal Highway Administration. No road closures are anticipated.

Additional Road Work – Road improvements may occur in the future for several routes within the park, including the South Loop Tour Road, Confederate Avenue, and Lovers Lane Access to the Fried and Edward Abraham property. Work on these roadways would involve reconstructing to some degree any missing or deteriorated pieces of roadway, improving parking areas and bridge surfaces, repairing or replacing curbs, and installing drains. In addition, work on the Park Tour Road would result in the replacement of two historic bridges. The bridges do not conform to American Association of State Highway and Transportation Officials (AASHTO) specifications and are of insufficient strength to support the weight of heavy tour buses and the amount of visitation that exists in the park today.

Fire Management Plan – The park has drafted a fire management plan and environmental assessment. Prescribed fire is a valuable tool which is used to maintain the historic landscape of the park. Regular use of fire helps control the spread of exotic plants, which present notable management challenges at the park and the cemetery.

Integrated Pest Management Plan and Vegetation Management Plan – Invasive species are a significant threat to the historic landscape at Vicksburg National Cemetery. Non-native vegetation can expand and replace native grasses, trees, and shrubs. The cemetery is threatened by kudzu (*Pueraria montana*), a flowering Asian vine, and park staff have undertaken steps to control this invasive species. Completion and implementation of the park’s integrated plan would establish measures to be taken to protect the cemetery.

Objectives

The preservation of vital cultural and natural resources, as well as the protection of public health and safety, are mandated by National Park Service policy. The primary objectives for improvements to the national cemetery were determined by park and regional staff, and were integral in the development of the plan to preserve and reconstruct the national cemetery wall. The objectives of this action are to:

Comply with Congressional legislation that requires every national cemetery to be enclosed with a stone or iron fence;

Protect cultural resources by preventing loss of these resources and by maintaining and improving the condition of the resources;

Protect public health, safety, and welfare; and

Improve the efficiency of park operations.

Scoping

National Park Service internal discussions led to identification of the main issues and impact topics to be addressed in this environmental assessment. Preservation and protection of the national cemetery wall and protection of public health and safety are the primary goals of the cemetery improvement project. The U.S. Fish and Wildlife Service was contacted regarding endangered and threatened species compliance for this project. The U.S. Fish and Wildlife Service responded that no endangered or threatened species occur within the project area. A copy of the NPS letter that was sent to the U.S. Fish and Wildlife Service on which the agency responded is provided in Appendix A.

The Mississippi State Historic Preservation Officer has been involved in this project from its inception. A Section 106 consultation letter describing the project and inviting continuing agency participation was sent to the State Historic Preservation Officer and to the Advisory Council on Historic Preservation on July 2, 2003. Copies of the letters sent to the agencies are provided in Appendix A. As part of the ongoing compliance, the park also will draft a separate assessment of effect form to seek formal State Historic Preservation Officer review and concurrence with the National Park Service determination of project effect. This environmental assessment also will be sent to these agencies for their review and comment, and agency comments on the project will be addressed in the final compliance documents.

A summary of the consultation and coordination efforts for this project may be found in the "Consultation and Coordination" section of this environmental assessment.

Value Analysis

A value analysis was finalized by the National Park Service in June 2002 (Lord, Aeck, and Sargent Architects 2002b). During the value analysis process, an interdisciplinary planning team refined and evaluated design options that have the ability to meet project and National Park Service objectives. Potential impacts to the natural environment were also assessed. Through this process, suitable alternatives were identified for full analysis. Other options, which are described briefly in the section "Alternatives Considered but Dismissed," were eliminated from further consideration.

Seven alternatives for enclosing the cemetery were evaluated. Each would allow the National Park Service to comply with governing legislation, preserve the gates and existing cemetery wall, and reconstruct missing cemetery walls.

All of the alternatives included the same baseline tasks for repair of the existing walls. Baseline tasks would include repairing and cleaning of existing walls and gates, re-pointing of existing walls, cutting back plant growth at the perimeter wall, constructing a drainage swale at the east wall to funnel storm run-off away from the wall to prevent wall erosion, and installing a fence south of the Indian Mound and above the soil nail wall to keep people away from the steep bluff to ensure their safety. The design and reconstruction of the missing sections of the perimeter wall was the focus of the value analysis.

Value Analysis Alternate I: 1874 Masonry Wall on Original Alignment. This option proposed the construction of a new masonry wall using the 1874 design in all locations where there is no existing standing masonry wall, which primarily includes the north and south boundaries. The new masonry construction would be placed along the original wall alignment. This alternative would require substantial slope reconstruction in a number of locations along the southern and northern boundaries. The east wall would be restored to the 1874 design with the addition of new coping and pilaster caps. The west wall, which is built using the 1939 design, would remain unaltered.

Value Analysis Alternate II: 1874 Masonry Wall with Masonry/Picket at South Wall. Where there is no existing standing masonry wall (primarily along the north and south boundaries), reconstruction of the walls according to the 1874 configuration would occur on the original alignment only in those areas where extensive slope stabilization measures would not be required. Restoration of the original wall would occur in locations where the original foundation was present and stable, and where sufficient soil bench remained to support construction. In unstable areas, particularly along the south and southwest boundaries, the walls would be realigned and constructed of masonry in the 1874 design and iron fencing. The east wall would be restored to its 1874 appearance and the west wall would remain in the 1939 design.

Value Analysis Alternate IIIA: New Masonry/Iron Picket. Where there is no existing standing masonry wall (primarily along the north and south boundaries), reconstruction of walls in the original 1874 design with masonry and iron fencing would occur on the original alignment where feasible without conducting extensive slope stabilization measures. Existing foundations would be used where feasible. In unstable areas along the south and southwest boundaries, the walls would be realigned and constructed of masonry similar to the 1874 design and iron fencing. The west wall would remain in the 1939 design and the east wall would be restored to the 1874 design with the addition of new coping and pilaster caps.

Value Analysis Alternative IIIB: New Iron Picket. This alternative would construct a new compatible iron fence (no masonry) along the north and south boundaries on the original alignment where currently feasible without conducting extensive slope stabilization. Existing foundations would be used when feasible. In those areas along the south and southwest boundaries where slope erosion prevents reconstruction along the original alignment, the same style of iron fence would be installed on stable areas inside of the original alignment. The east wall would receive new coping and pilaster caps to match the 1874 wall design. The west wall would maintain the 1939 design.

Value Analysis Alternate IV: North, East, and West Walls in 1874 Design with South Wall of Masonry and Picket. A new masonry wall of the 1874 design would be constructed along the original alignment on the north and south boundaries where currently feasible without conducting extensive slope stabilization measures. This alternative would restore the original wall only in those locations where the original foundation is present and stable, and sufficient bench exists to support construction. In unstable areas along the south and southwest boundaries, the walls would be realigned and masonry and iron

fencing of the original masonry wall design would be installed. The east and west walls would receive new coping and pilaster caps to match the 1874 masonry wall.

Value Analysis Alternate V: 1874 Design on the Original Alignment with 1939 Design on the South Wall on New Alignment. This alternative would construct a new masonry wall of the 1874 design along the original alignment on the north and south boundaries where currently feasible without conducting extensive slope stabilization measures. Along the south and southwest boundaries where slope erosion prevents reconstruction along the original wall alignment, a new masonry wall that avoids these unstable areas would be installed. The design of this wall would be similar to the 1939 configuration. The east wall would receive new coping and pilaster caps to match the 1874 masonry wall. The west wall would maintain the 1939 wall design.

Value Analysis Option VI: Existing 1939 Wall at East and West Walls with Similar Masonry Wall at North and South Walls. This alternative would include a new masonry wall in the 1939 design along the north and south boundaries where there is no existing standing masonry wall and along the original alignment where currently feasible without conducting extensive slope stabilization measures. In areas where erosion prevents reconstruction along the original wall alignment (south and southwest boundaries), the 1939 masonry wall design would be installed, avoiding unstable areas. The east and west walls would remain in the 1939 design.

Value Analysis Preferred Option. The 2002 value analysis recommended a uniform appearance of the cemetery wall using the 1939 design (Alternate VI). The selection of this alternative during the value analysis process was based on the following factors.

It would result in substantial cost savings in both initial and life-cycle costs.

It would reduce environmental impacts to the site compared to some of the other alternatives.

It would not require further intensive geotechnical investigations and design/re-design.

It is the treatment path recommended by the Secretary of Interior Standards.

This alternative is evaluated further in this environmental assessment as Alternative B.

After additional internal scoping of the project, the National Park Service developed an additional alternative, designated as Alternative C, which is a combination of two wall types. In all locations where there is no existing standing masonry wall on the north and south boundaries, new walls would be constructed in the 1874 design along the original alignment where currently feasible. In areas where erosion prevents reconstruction along the original wall alignment, the same masonry wall design would be installed that avoids the unstable areas. The east wall would be restored to the 1874 design with the addition of new coping and pilaster caps. The west wall would remain in the 1939 design.

ISSUES, CONCERNS, AND DERIVATION OF IMPACT TOPICS

Issues

Issues and concerns affecting this proposal were identified from past National Park Service planning efforts, and input from state and federal agencies. The major issues include the following.

Parts of the cemetery fencing are in very poor condition, and cyclical maintenance activities cannot keep up with badly needed repairs.

Erosion, deterioration, stress cracking, vehicle damage, spalling, biological growth (moss and lichens), use of inappropriate mortar types, and overgrowth of vegetation threaten the integrity of historic masonry wall segments.

Visually, the fencing presents a confusing mixture of historic and non-historic fencing types. These include brick walls from two time periods, iron gates, and chain-link fencing. Overall, the boundary fence does not complement the cemetery cultural landscape.

Fallen brick and mortar can damage adjacent structures during mowing and pose a safety hazard for visitors, staff, and motorists.

Impact Topics

Impact topics were used to focus the evaluation of the potential environmental consequences of the alternatives. Candidate impact topics were identified based on legislative requirements, executive orders, topics specified in *Director's Order #12 and Handbook* (NPS 2001), *Management Policies 2001* (NPS 2000b), guidance from the National Park Service, input from other agencies, public concerns, and resource information specific to Vicksburg National Military Park and Vicksburg National Cemetery. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

Impact Topics Retained

The impact topics considered for the project to preserve and reconstruct the cemetery walls at Vicksburg National Cemetery are presented in Table 1. The table includes key regulations or policies for each impact topic. Impact topics that were retained for consideration in this environmental assessment include cultural resources, visitor use and experience, public health and safety, park operations, vegetation, soils, water quality, wildlife, and sustainability and long-term management.

TABLE 1: IMPACT TOPICS FOR THE PROJECT TO PRESERVE AND RECONSTRUCT THE CEMETERY WALLS AT VICKSBURG NATIONAL CEMETERY

Impact Topic	Relevant Regulations or Policies
Retained	
Historic resources	Section 106, National Historic Preservation Act and implementing regulations at 36 <i>Code of Federal Regulations</i> 800; National Environmental Policy Act; Executive Order 13007; <i>Director's Order 28</i> ; <i>Management Policies 2001</i>
Cultural landscapes	Section 106, National Historic Preservation Act and implementing regulations at 36 <i>Code of Federal Regulations</i> 800; National Environmental Policy Act; Executive Order 13007; <i>Director's Order 28</i> ; <i>Management Policies 2001</i>
Archeological resources	Sections 106, 107 and 110 of the National Historic Preservation Act and implementing regulations at 36 <i>Code of Federal Regulations</i> 800; <i>Director's Order 28</i> ; <i>Management Policies 2001</i>
Visitor use and experience	Organic Act; <i>Management Policies 2001</i>
Public health and safety	<i>Management Policies 2001</i>
Park operations	<i>Management Policies 2001</i>
Vegetation	<i>Management Policies 2001</i>
Soils	<i>Management Policies 2001</i>
Water quality	Clean Water Act, Executive Order 12088, Executive Order 11990, <i>Management Policies 2001</i>
Wildlife	<i>Management Policies 2001</i>

**TABLE 1: IMPACT TOPICS FOR THE PROJECT TO PRESERVE AND RECONSTRUCT THE CEMETERY WALLS
AT VICKSBURG NATIONAL CEMETERY**

Impact Topic	Relevant Regulations or Policies
Sustainability and long-term management	National Environmental Policy Act, Council on Environmental Quality (1978) guidelines for the implementation, <i>Management Policies</i> , 2001.
Dismissed	
Air quality	Federal Clean Air Act; Clean Air Act Amendments of 1990; <i>Management Policies 2001</i>
Ecologically critical areas or other unique natural resources	Wild and Scenic Rivers Act, 36 <i>Code of Federal Regulations</i> 62 criteria for national natural landmarks, <i>Management Policies 2001</i>
Endangered, threatened, or protected species and critical habitats	Endangered Species Act; <i>Management Policies 2001</i>
Floodplains and wetlands	Executive Order 11990, Clean Water Act Section 404, <i>Director's Order #77-1</i> , Executive Order 11988
Prime and unique agricultural lands	Council on Environmental Quality 1980 memorandum on prime and unique farmlands
Natural soundscape	<i>Management Policies 2001</i> , <i>Director's Order #47</i>
Wilderness	1964 Wilderness Act, <i>Director's Order #41</i> , <i>Management Policies 2001</i>
Prehistoric archeological resources	Sections 106, 107 and 110 of the National Historic Preservation Act; 36 CFR 800; Executive Order 11593; American Antiquities Act; Archaeological and Historic Preservation Act; Archaeological Resources Protection Act; Native American Graves Protection and Repatriation Act; <i>Director's Order 28</i> ; <i>Management Policies 2001</i> ; and Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.
Ethnographic resources	Sections 106, 107 and 110 of the National Historic Preservation Act; Native American Graves Protection and Repatriation Act; Executive Order 13007; <i>Director's Order 28</i> ; <i>Management Policies 2001</i> ; Presidential Memorandum (1994) on Government-to-Government Relations.
Collections	Section 106 of National Historic Preservation Act; 36 CFR 800; <i>Director's Order 24-NPS Museum Collections Management</i> ; Museum Handbook; Antiquities Act; Historic Sites Act; Archaeological Resources Protection Act; Native American Graves Protection and Repatriation Act; Departmental Manual 411DM; <i>Director's Order 28</i> ; and <i>Management Policies 2001</i> .
Paleontological resources	<i>Management Policies 2001</i>
Indian trust resources	Department of the Interior Secretarial Order No. 3206, Secretarial Order No. 3175
Conflicts with land use plans, policies, or controls	<i>Management Policies 2001</i>
Economics	40 CFR 1500 Regulations for Implementing NEPA
Energy requirements and conservation potential	<i>Management Policies 2001</i>
Environmental justice	Executive Order 12898
Natural or depletable resource requirements and conservation potential	<i>Management Policies 2001</i>

Impact Topics Dismissed from Further Analysis with Rationale for Dismissal

The resource topics described in this section will not be included or evaluated in this environmental assessment. These impact topics were not identified during scoping as being of concern. Additional reasons for their dismissal are provided below.

Air quality: During reconstruction of the missing portions of the cemetery wall, there would be highly localized, short-term, negligible impacts on air quality due to the small scale of the project. Effects would be negligible because best management practices would be used to minimize fugitive dust and emissions from construction equipment.

Ecologically critical areas or other unique natural resources: Vicksburg National Cemetery does not contain any designated ecologically critical areas, wild and scenic rivers, or other unique natural resources, as referenced in 40 *Code of Federal Regulations* 1508.27.

Endangered, threatened, or protected species and critical habitats: Coordination with the U.S. Fish and Wildlife Service and the Mississippi Department of Natural Resources revealed that no federally or state-listed threatened or endangered species are known to exist at Vicksburg National Cemetery, nor does any known critical habitat exist at the park or cemetery. No further consultation pursuant to Section 7 of the Endangered Species Act is required.

Floodplains and wetlands: Executive Orders 11988 and 11990, “Floodplain Management” and “Wetlands,” respectively, require analysis of impacts on floodplains and regulated wetlands. None of the alternatives would occur within or affect a floodplain. There are no wetlands regulated under the provisions of Section 404 of the Clean Water Act, or areas designated as wetlands using the classification system of Cowardin *et al.* (1979), within the areas of potential effect.

Prime and unique agricultural lands: Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique agricultural land is land other than prime farmland that is used for production of specific high-value food and fiber crops. Both categories require that the land is available for farming uses. Lands within Vicksburg National Cemetery are not available for farming and therefore do not meet the definitions.

Natural soundscapes: Because of its proximity to U.S. Highway 61 and the Vicksburg metropolitan area, there is little expectation by visitors of experiencing a natural soundscape in areas around the national cemetery. Short-term noise generated by small-scale construction equipment associated with reconstruction of missing portions of the walls would not noticeably change the ambient levels of human-caused noise that are typical in the cemetery’s urban environment. The project would not have any long-term effects on noise levels in the area.

Wilderness: There are no wilderness areas within Vicksburg National Cemetery.

Prehistoric archeological resources: The likelihood of encountering buried, *in situ* prehistoric resources is quite low because past construction of fences, roadways, and cemetery terraces involved a great deal of cut and fill. The natural terrain in the area is characterized by deeply dissected ridges, and the extensive, previous ground disturbance that is evidenced by historic maps and photographs that show uniformly graded slopes and terraces would have disturbed most prehistoric resources on the site. Burial of soldiers and placement of monuments also have heavily disturbed the area surrounding the mound.

Ethnographic resources: No ethnographic resources or traditional cultural properties have been identified within the project area of potential effect.

Collections: None of the park’s collections would be affected by this project.

Paleontological resources: Although a mastodon bone was exposed in a nearby mass-wasting event, no paleontological resources would be disturbed by the project. Excavations for the foundations would be expected to extend to a depth of no more than 3 feet. Soil borings indicate fill materials overlay

Pleistocene-age loess; in some areas the fill reaches a depth of 21 feet, and any disturbance from reconstructing the fence would be far above potential paleontological-bearing strata.

Indian trust resources: Indian trust assets are owned by American Indians but are held in trust by the United States. Requirements are included in the Secretary of the Interior’s Secretarial Order No. 3206, “American Indian Tribal Rites, Federal – Tribal Trust Responsibilities, and the Endangered Species Act,” and Secretarial Order No. 3175, “Departmental Responsibilities for Indian Trust Resources.” According to Vicksburg National Military Park staff, Indian trust assets do not occur within the cemetery. Therefore, there would be no effects on Indian trust resources from the proposed alternative.

Conflicts with land use plans, policies, or controls: Whenever actions taken by the National Park Service have the potential to affect the planning, land use, or development patterns on adjacent or nearby lands, the effects of these actions must be considered. None of the alternatives addressed in this assessment would have the potential to affect other land use plans, policies, or controls.

Economics: None of the alternatives described in this environmental assessment would have notable effects on local or regional economic activities. Tourism and visitor contributions to the local economy would not be affected by continuation of current management or by reconstruction of the cemetery wall. Construction activities associated with the action alternatives would not contribute measurably to the local or regional economy.

Energy requirements and conservation potential: The National Park Service reduces energy costs, eliminates waste, and conserves energy resources by using energy-efficient and cost-effective technology. Energy efficiency is incorporated into the decision-making process during the design and acquisition of buildings, facilities, and transportation systems that emphasize the use of renewable energy sources. The action alternatives would not appreciably change the park’s short- or long-term energy use or conservation practices. The energy (primary gasoline and diesel fuel) required to preserve and reconstruct the wall would not be detectable on a daily or annual basis compared to energy use in the Vicksburg area.

Environmental justice: Executive Order 12898, “General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires that all Federal agencies address the effects of policies on minorities and low-income populations and communities. None of the alternatives analyzed in this assessment would have disproportionate effects on populations as defined by the U.S. Environmental Agency’s 1996 guidance on environmental justice.

Natural or depletable resource requirements and conservation potential: The use of fuel was addressed under the category “Energy requirements and conservation potential.” To the maximum extent possible, the cemetery walls would be reconstructed using the original foundation material. Except along the south wall, much of the material remains in place or is available nearby. The use of new construction materials that would be incorporated into the wall would not be detectable compared to the volumes of these materials used for other construction in the Vicksburg area.

ALTERNATIVES

The alternatives include two action alternatives and an alternative of no action/continue current management. Table 2 provides a summary of the elements or actions associated with each of the alternatives evaluated in this environmental assessment. The major issues related to rehabilitation, restoration, and reconstruction of the cemetery wall that the action alternatives were designed to address were described in the “Purpose and Need” section.

As part of the design analysis and project planning, a range of alternatives was considered. Those actions or alternatives that were not realistically feasible or did not adequately meet the project purpose and need were dismissed. A discussion of the actions or alternatives that were eliminated from further consideration follows the description of the No Action Alternative and the two action alternatives.

TABLE 2: COMPARISON OF THE ELEMENTS OF EACH ALTERNATIVE

Element/Action	Alternative A: No action/Continue Current Management	Alternative B: Preservation and Repair	Alternative C: Restoration and Reconstruction
East wall	East wall would maintain 1939 appearance and be cleaned and repaired as necessary.	East wall would maintain 1939 appearance and be cleaned and repaired as necessary.	East wall would be restored to the 1874 appearance with the addition of coping and pilaster caps. Wall would be cleaned and repaired as necessary.
West wall	West wall would maintain 1939 appearance and be cleaned and repaired as necessary.	West wall would maintain 1939 appearance and be cleaned and repaired as necessary.	West wall would maintain 1939 appearance and be cleaned and repaired as necessary.
North wall	North wall would not be reconstructed. Modern fencing would be repaired as needed.	North wall would be reconstructed in the 1939 design on the original alignment where feasible and on a new alignment where erosion or stability prohibits placement on the original alignment.	North wall would be reconstructed in the 1874 design on the original alignment where feasible and on a new alignment where erosion or stability prohibits placement on the original alignment.
South wall	Missing portions of the south wall would not be reconstructed. Modern fencing would be repaired as needed.	South wall would be reconstructed in the 1939 design on the original alignment where feasible and on a new alignment where erosion or stability prohibits placement on the original alignment.	South wall would be reconstructed in the 1874 design on the original alignment where feasible and on a new alignment where erosion or stability prohibits placement on the original alignment.
Stone archways	Cleaned and repaired as needed.	Cleaned and repaired as needed.	Cleaned and repaired as needed.
Vegetation control	Vegetation would be manually removed from walls and modern fencing.	Vegetation would be manually removed from wall.	Vegetation would be manually removed from wall.

TABLE 2: COMPARISON OF THE ELEMENTS OF EACH ALTERNATIVE

Element/Action	Alternative A: No action/Continue Current Management	Alternative B: Preservation and Repair	Alternative C: Restoration and Reconstruction
Biological growth control	Bleach solution would be used to clean walls of moss and lichen.	Bleach solution would be used to clean walls of moss and lichen.	Bleach solution would be used to clean walls of moss and lichen.
Drain maintenance	Drain clearing would occur on a weekly basis.	Drain clearing would occur on a weekly basis.	Drain clearing would occur on a weekly basis.
Drainage swale	No drainage swale would be constructed.	Drainage swale would be constructed along inside of east wall to prevent deterioration.	Drainage swale would be constructed along inside of east wall to prevent deterioration.
Barrier fence	Compatible iron and masonry fence would be constructed above the soil nail wall.	Compatible iron and masonry fence would be constructed above the soil nail wall.	Compatible iron and masonry fence would be constructed above the soil nail wall.

ALTERNATIVE A – NO ACTION / CONTINUE CURRENT MANAGEMENT

The No Action Alternative is defined as continuation of current management of the cemetery walls and gates. The No Action Alternative provides a basis for comparing the management direction and environmental consequences of the action alternatives. Should the No Action Alternative be selected, the National Park Service would respond to future needs and conditions associated with the cemetery's walls and gates without major actions or changes from the present course. Key components of this alternative are illustrated in Figure 5.

Currently, routine cyclical maintenance activities include maintaining the historic brickwork and gate elements, vegetation removal, and erosion correction measures.

Maintenance of the brickwork would continue to be conducted two or three times a year.

The walls and stone archways are cleaned at approximately 5-year intervals with bleach to remove moss and lichen. This action requires approximately 160 labor hours. A low concentration of bleach in water is applied to clean the structures using a hand pump-up sprayer and a pressure washer.

The walls and gates would continue to be inspected periodically to monitor for deterioration and assess possible safety hazards.

Missing elements and mortar treatments would be replaced and/or repointed manually using hand tools on an as-needed basis.

Vegetation removal would be done manually. Approximately 7 workers are required for 1 week to remove vegetation from the walls. This activity typically is performed 2 or 3 times annually.

To control erosion from rainfall run-off, drains would continue to be cleared on a weekly basis, especially before a rain event. Drain clearing is needed more frequently in the spring and fall, and requires about 8 labor hours a week.

Equipment and supplies used to maintain the cemetery structures are transported on pickup trucks when the site is easily accessed from existing roads. In those areas that are less accessible, a small utility vehicle is used to transport supplies and equipment.

The southwest section of the cemetery, located above Mint Spring Bayou and near the Indian mound, needs to be stabilized. This area has steep slopes with severe erosion and progressive slide problems. The U.S. Army Corps of Engineers will be implementing a project to stabilize the eroding bluff using a soil nail wall. As part of this alternative, a new fence would be erected in this area to ensure the safety of the visiting public. This fence would be constructed of compatible iron and masonry and would be visually compatible with the historic fence around other parts of the cemetery. The fence would be directly below and south of the Indian mound. This fence would serve as a visual barricade and safety feature that would deter visitors from approaching the abrupt incline of the soil nail wall. Approximately 150 linear feet of fence would be provided as a continuous barricade between the edge of the paved road and the top of the soil nail wall.

ALTERNATIVE B – PRESERVATION AND REPAIR

Alternative B would preserve and/or repair approximately 3,500 linear feet of cemetery wall along the east and west boundaries to maintain their existing integrity and character, and to retard deterioration. These walls would be preserved and repaired in their current configuration. That is, work on the east wall would be consistent with its existing appearance and location, and the west wall would be preserved in place with all repairs designed to match its 1939 design and appearance. Preservation and repair would include cutting back plant growth at the perimeter wall, providing soil stabilization and grass replanting along the wall, re-pointing the existing wall, re-attaching loose and missing brick, and cleaning the brickwork using low-pressure bleach spray.

An estimated 1,761 linear feet of new wall would be built along the north and south boundaries to replace areas of fallen masonry wall and the chain-link fencing. The new walls would be constructed in the 1939 design compatible with the east and west wall design. The new walls would follow the original alignment where currently feasible without conducting extensive soil stabilization measures. Portions of the newly constructed south wall would be placed on a new alignment that would be located so as to avoid potential wall instability and potential collapse. The existing segment of the original south masonry wall also would be preserved and rehabilitated for interpretive purposes. The design and materials (brick and mortar) used in the new walls would be chosen to be compatible with the rest of the cemetery walls and the surrounding landscape, but would not attempt to precisely replicate the original wall appearance.

A new barricade fence would be erected at the top of the soil nail wall that is being developed by the U.S. Army Corps of Engineers as described above for the No Action Alternative. The barricade fence at the Indian mound also would be similar to the facility that would be installed at this site under the No Action Alternative.

A drainage swale approximately 4 feet wide and 1 foot deep would be built near the east wall to effectively channel water and keep it from eroding the wall. Deposited soils would be removed from this small area and the area would be revegetated with grass. Grass would be replanted on both sides of the walls to help prevent erosion and to limit the growth of plants that would threaten the integrity of the wall.

The existing stone and iron cemetery gates at the northeast and southwest corners of the cemetery would be cleaned and repaired. Repair and reconstruction of the cemetery walls and gates under this alternative would involve similar equipment as is described above for Alternative A.

A mortar mixer would be used during the daytime to supply the amount of mortar necessary to reconstruct the north and south walls of the cemetery. A previously disturbed area adjacent to the service road (Givens Road) on the northern boundary of the cemetery would serve as a staging area for construction equipment and supplies during project implementation.

The project would be phased over a 3- to 5-year period. Key components of this alternative are illustrated in Figure 6.

ALTERNATIVE C – RESTORATION AND RECONSTRUCTION, THE PREFERRED ALTERNATIVE

As described for Alternative B, the west wall would be preserved and repaired in its current location, consistent with the 1939 design. The east wall, which is in its original alignment, would be restored to its 1874 appearance by the addition of missing coping and pilaster caps.

The north and south masonry walls would be reconstructed using the historic 1874 design that includes coping and pilaster caps. Wherever possible, the reconstructed north and south walls would reuse existing and recaptured sections of the original alignment and existing foundations. In most places, the north wall could be reconstructed on the original base in the original alignment. The south wall would require occasional deviations from the original alignment to avoid unstable soils that would again lead to wall collapse. In these areas, the wall would be situated on the most feasible alignment, considering slope and erosion issues, but would be parallel to the original base. The extant segment of the south wall would be preserved intact, but outside the new wall.

Documentary evidence from period plans, maps, and drawings and from the presence of existing wall segments would allow for accurate reconstruction and restoration of the cemetery walls. The design, texture, color, materials, and scale of the original wall would be ascertained using this existing historic information. Wherever feasible, historic elements such as bricks and foundations would be retained and reused. New materials (bricks and mortar) of the appropriate color, shape, size, texture, and appearance would be selected to accurately replicate the form and character of the original wall. Prior to initiation of reconstruction activities, the existing wall segments and their locations would be carefully documented as described in the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (NPS 1995a).

As part of the reconstruction project, existing woody vegetation, including kudzu and other vines, would be removed. Treatment of soils and vegetation adjacent to the wall segments would be designed to minimize re-growth of trees, shrubs and vines while providing ground cover to prevent erosion.

A drainage swale, the same as described for Alternative A, would be built near the east wall to effectively channel water and keep it from eroding the wall. As described for alternatives A and B, the cemetery

gates would be repaired and cleaned and a barricade fence would be installed at the top of the Corps of Engineers' soil nail wall project.

Repair and reconstruction of the cemetery walls under this alternative would involve the same equipment as described above for Alternative B. A previously disturbed area across the service road would serve as a staging area for construction equipment and supplies during project implementation. This project would be phased over a 3- to 5-year period. Key components of this alternative are illustrated in Figure 7.



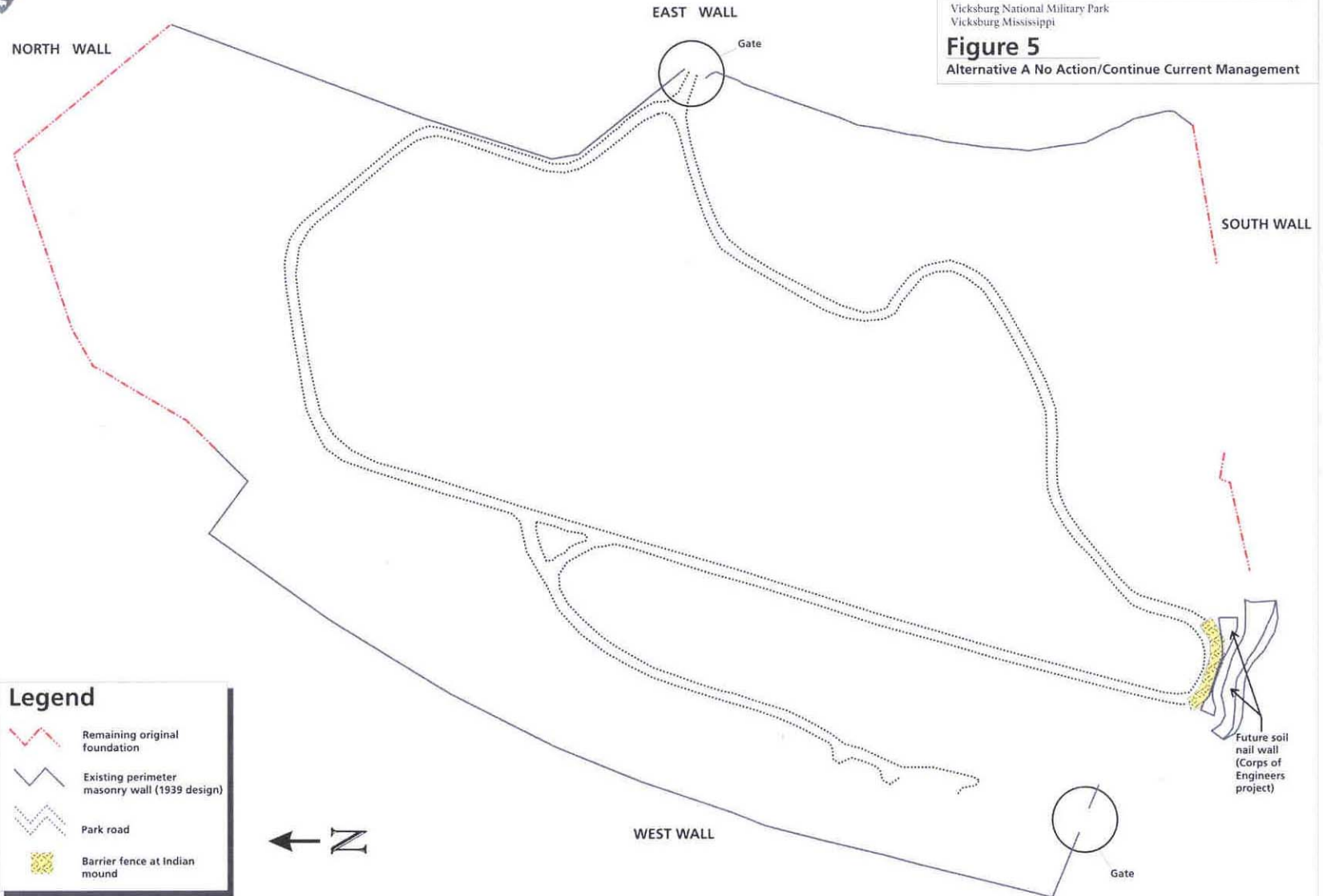
National Park Service
U.S. Department of the Interior

National Park Service
Vicksburg National Cemetery

Vicksburg National Military Park
Vicksburg, Mississippi

Figure 5

Alternative A No Action/Continue Current Management





National Park Service
U.S. Department of the Interior

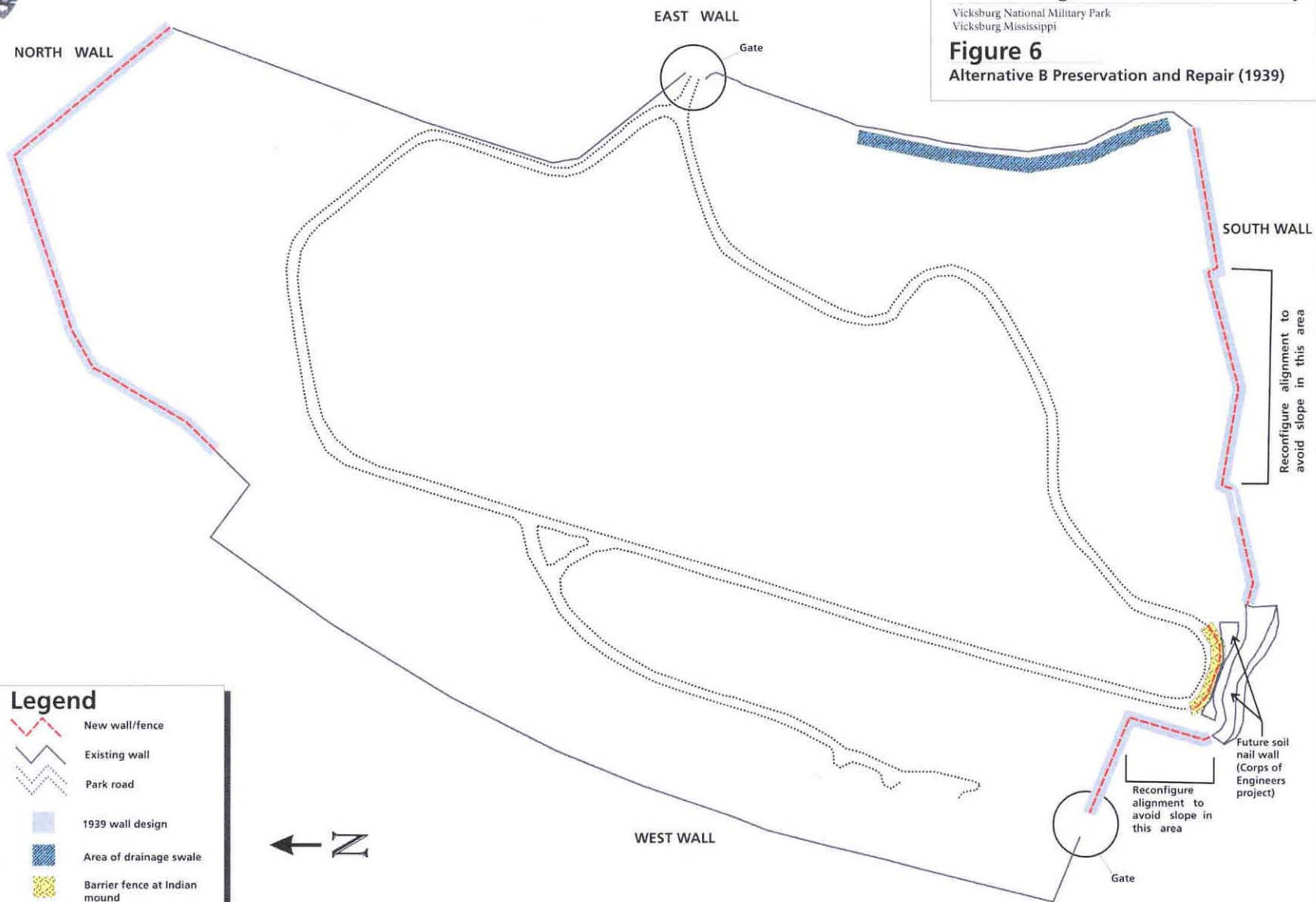
National Park Service

Vicksburg National Cemetery

Vicksburg National Military Park
Vicksburg, Mississippi

Figure 6

Alternative B Preservation and Repair (1939)



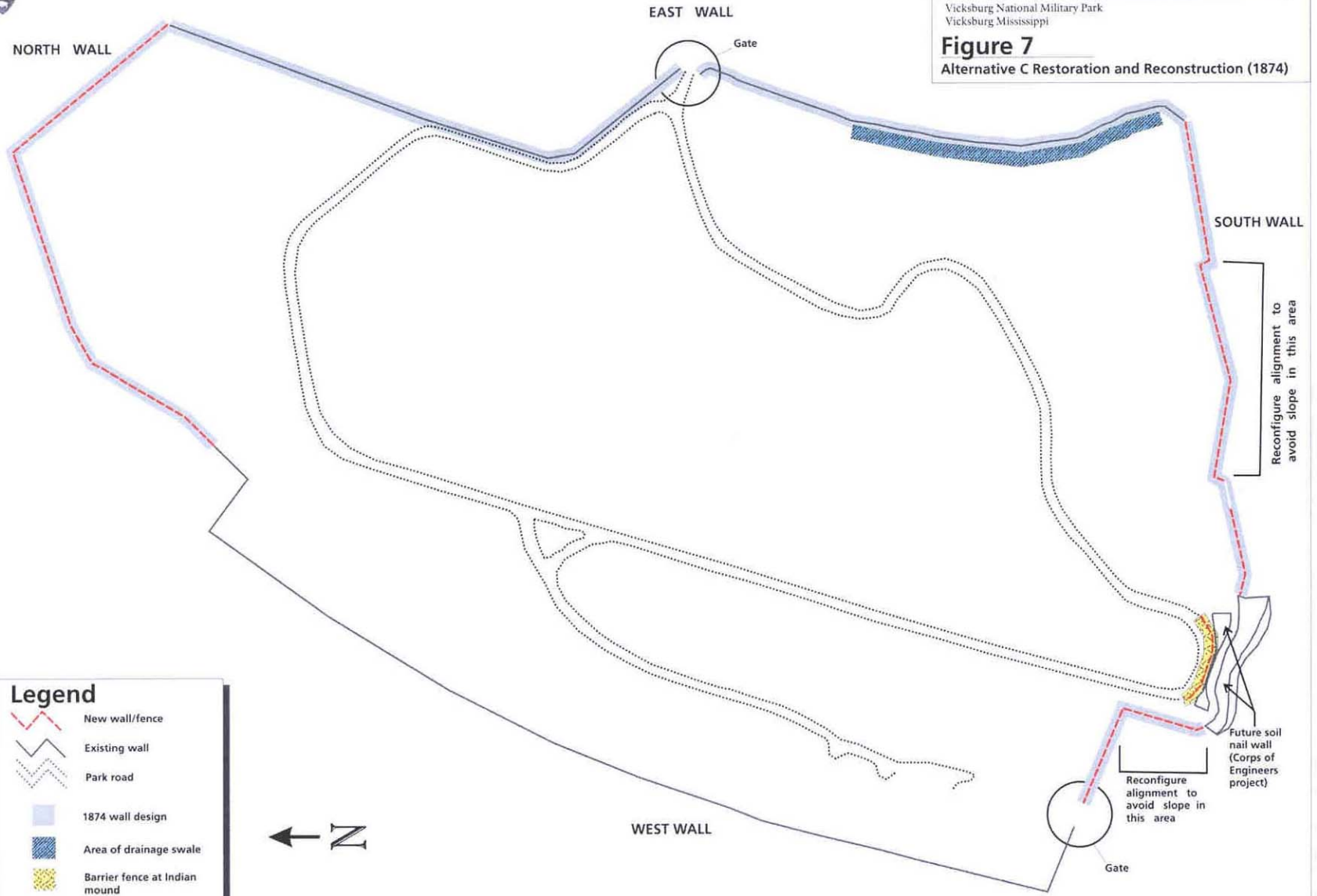


National Park Service
U.S. Department of the Interior

National Park Service Vicksburg National Cemetery

Vicksburg National Military Park
Vicksburg, Mississippi

Figure 7
Alternative C Restoration and Reconstruction (1874)



MITIGATION MEASURES

For both action alternatives, best management practices and mitigation measures would be used to prevent or minimize potential adverse effects associated with the project. These practices and measures would be incorporated into the project construction documents and plans.

Resource protection measures undertaken during project implementation would include, but would not be limited to, those listed in below in Table 3. The impact analyses in the “Affected Environment and Environmental Consequences” section were performed assuming that these best management practices and mitigation measures were implemented as a part of both Alternative B and Alternative C.

TABLE 3: MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

Potential Adverse Effect	Mitigation Measure or Best Management Practice
Effects on cultural resources	To limit impacts on the cemetery grounds, activity to reconstruct the wall would occur on the outside perimeter of the cemetery wall wherever possible. Mortar would be mixed at the staging areas and transported to the wall under construction. The area disturbed by reconstruction would be re-vegetated with grass. Woody vegetation adjacent to the walls would be cut by hand at ground level. Silt fencing would be used during construction activity to prevent erosion, and erosion mats would be used to trap soils. Interpretive signage and programs would describe the work and importance of the activity so visitors would understand the construction process and the differing wall types. If not already accomplished, extant historic portions of the cemetery wall that require reconstruction or restoration would be documented as called for in the <i>Secretary of the Interior’s Standards for the Treatment of Historic Properties</i> (NPS 1995b) prior to any disassembly. Historical and archeological records would be reviewed to determine the levels of previous disturbance in the area of potential effect and to determine if human burials or buried historic resources might be impacted by project construction. Should such areas be identified, archeological survey and testing would be conducted and appropriate mitigating measures would be developed prior to ground-disturbing activities. During ground-disturbing activities, an archeologist meeting the Secretary of the Interior’s Standards (NPS 1995b) would be on site to monitor work. If any resources are encountered during construction, adequate mitigation of project impacts (in consultation with appropriate agencies) and adjustment of the project design would take place to avoid or limit the adverse effects on archeological resources. Personnel would be educated about the nature of the cultural resources at the project site and the need for protection. Stop-work provisions would be included in construction documents in the event that archeological or paleontological resources were uncovered.

TABLE 3: MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

Potential Adverse Effect	Mitigation Measure or Best Management Practice
Discovery of unknown archeological resources or human remains	If previously unknown archeological resources were discovered, work would be stopped in the area of any discovery, protective measures would be implemented, and procedures outlined in 36 <i>Code of Federal Regulations</i> 800 would be followed. Because of health and safety concerns, workers would be instructed to avoid contact with human remains in the event any are uncovered. Work would be stopped and the park historian would be notified. Work would resume once approved by the Superintendent.
Construction-related effects on soils and water quality	Standard best management practices to limit erosion and control sediment release would be employed. Such measures include use of silt fencing, limiting the area of vegetative disturbance, and covering banked soils to protect them until they are reused.
Increased public health and safety risks	Areas not safe for public entry would be marked and signed for avoidance.
Direct effects from construction activities on the visitor experience	Educational materials and interpretive information regarding the need for and nature of the wall stabilization project would be prepared and distributed to park and cemetery visitors by park staff.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that will best promote national environmental policy expressed in the National Environmental Policy Act. The environmentally preferred alternative would cause the least damage to the biological and physical environment, and would best protect, preserve, and enhance historical, cultural, and natural resources.

Section 101(b) of the National Environmental Policy Act identifies six criteria to help determine the environmentally preferred alternative. The act directs that Federal plans should:

Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.

Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences.

Preserve important historical, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice.

Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.

Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Continuing the current conditions under Alternative A would be least effective in meeting these criteria. Without prompt repair and restoration of the cemetery wall, the National Park Service would be unable to

preserve, to the greatest possible, an important historic and cultural resource that is part of the cultural landscape of Vicksburg National Cemetery. In addition, the potential for loss of the existing walls presents a hazard to employees and to the public, who could be exposed to steep, hazardous slopes.

Alternatives B and C would both be preferred over the No Action Alternative. With implementation of either alternative, the National Park Service would better be able to:

Protect and restore an important cultural resource of the cemetery. The cemetery is eligible for listing on the National Register of Historic Places, and the Vicksburg National Military Park is listed on the register. Either action alternative would improve the NPS' ability to "Preserve important historical, cultural, and natural aspects of our national heritage."

Restore the walls on the southern and northern boundaries that would prevent the public from being exposed to steep, unstable slopes. This action would help provide visitors with "safe, healthful . . . surroundings."

Alternative C would offer the greatest potential for the long-term protection of the wall. The absence of coping and pilaster caps under Alternative B would be less protective because it would allow water to infiltrate the wall and cause quicker deterioration than would occur using the 1874 design in Alternative C. In addition, it is thought that the 1874 design would be more esthetically pleasing to most cemetery visitors and Civil War enthusiasts. Therefore, Alternative C, which is the NPS' preferred alternative, also is the environmentally preferred alternative.

HOW THE ALTERNATIVES MEET THE OBJECTIVES OF THE PROPOSED ACTION

Table 4 provides a comparative summary of alternatives and whether each alternative would meet the project objectives. As shown on the table, both of the action alternatives would successfully meet all of the objectives of this project. The alternative of no action/continue current management would not meet any of the project objectives.

TABLE 4: ABILITY OF THE ALTERNATIVES TO MEET THE PROJECT OBJECTIVES

Objective	Alternative A (no action)	Alternative B	Alternative C
Comply with Congressional legislation that requires every national cemetery to be enclosed with a stone or iron fence.	No	Yes	Yes
Protect cultural resources by preventing loss of these resources and by maintaining and improving the condition of the resources.	No	Yes	Yes
Protect public, health, safety, and welfare.	No	Yes	Yes
Improve the efficiency of park operations.	No	Yes	Yes

ALTERNATIVES CONSIDERED BUT DISMISSED

Masonry Walls of 1874 Design on Original Wall Alignment

This alternative would reconstruct the missing portions of the masonry wall on the north and south boundaries to match the original 1874 wall along the original 1874 alignment. The east wall would be restored to the 1874 appearance and the west wall would maintain its 1939 appearance. To establish the wall on its original alignment would require the reconstruction of the slope at the southern boundary.

This alternative was dismissed because it would be prohibitively costly and would cause substantial adverse effects on natural resources. To replace the southern wall on its original alignment would require clearing and reconstruction of large portions of the slope on the southern bluff. This alternative would create large areas of soil disturbance, increase sedimentation, and have the greatest potential to adversely affect riparian vegetation and water quality of Mint Spring Creek.

1874 New Masonry Wall and Iron Picket Wall at South Wall on New Alignment

Under this alternative, missing portions of the wall on the north and south boundaries would be replaced with masonry wall of the 1874 design on a new alignment where currently feasible. On the south and southwest boundaries where slopes are unstable, reconstruction of a masonry wall or iron fence would occur on a new alignment. The east wall would be restored to its 1874 appearance and the west wall would be maintained as it currently exists.

This alternative was dismissed because the resulting three different wall types (1874 and 1939 masonry design and iron fencing) would detract from the esthetics, uniformity, and interpretation of the site, and from the overall visitor experience. In addition, an iron picket fence would require more long-term maintenance than a masonry fence.

New Masonry Wall of 1874 Design and Iron Picket Wall on New Alignment

This alternative would result in the reconstruction of new walls similar to the original 1874 masonry design and iron fence design on the original alignment, where feasible, on the north and south boundaries. The west wall would remain in the 1939 design and the east wall would be restored to the 1874 design with the addition of new coping and pilaster caps.

This alternative was dismissed because the 1874 design at the east elevation only and the reconstruction of walls on the north and south with masonry and iron picket fencing on a new alignment would reduce the cultural integrity of the site. The resulting three different wall types (1874 and 1939 masonry design and iron fencing) would also detract from the esthetics, uniformity, and interpretation of the site, and from the overall visitor experience. In addition, an iron picket fence would require more long-term maintenance than a masonry fence.

New Iron Picket Wall on New Alignment

This alternative would result in the construction of a new compatible iron-only fence design where there is no existing standing masonry wall and along the original alignment, where currently feasible, on the north and south boundaries. The east wall would be restored to the 1874 wall design and the west wall would maintain its 1939 design.

This alternative was dismissed because it would minimize the cultural integrity of the site. The resulting three different wall types (1874 and 1939 masonry design and iron fencing) would also detract from the esthetics, uniformity, and interpretation of the site, and from the overall visitor experience. In addition, the installation of an iron picket fence would require more long-term maintenance than a masonry fence.

North, East, and West Walls of 1874 Masonry Design and South Wall of 1874 Masonry Design or Iron Picket Wall on New Alignment

This alternative would reconstruct the missing portions of the north and south walls in the 1874 masonry design. Where erosion prevented reconstruction on the original alignment on the south and southwest boundaries, a masonry wall of the original design or iron picket wall would be established. The east and west walls would be restored to match the 1874 masonry wall.

Although this alternative would enhance the continuity of the landscape by reconstructing the majority of the wall in the 1874 design on most of the original alignment, it would only partially meet the Secretary of the Interior's Standards. The west wall, built in the 1939 design on a different alignment from the original, is now more than 50 years old, and was constructed by the Civilian Conservation Corps as part of the Depression Era efforts to improve America's national parks while providing work for the unemployed. Reconstruction of the west wall in the 1874 design would destroy the representative 1939 design of this structure. Additionally, under this alternative the entire wall would be affected by construction which would increase the level of impact on the site and the natural resources present. Therefore it was dismissed from further evaluation.

1874 Masonry Wall on Original Alignment with South Wall of 1939 Design on a New Alignment

This alternative would reconstruct a new masonry wall of the 1874 design along the original alignment on the north and south boundaries where currently feasible. Where slope erosion prevented reconstruction of the walls along the original wall alignment (south and southwest boundaries), new walls would be constructed similar to the 1939 configuration on a new alignment. The east wall would be restored to the 1874 appearance and the west wall would maintain its 1939 wall design.

This alternative was dismissed because reconstruction of the south and southwest walls in two different wall styles, based solely on location, would be visually distracting and would not contribute favorably to the overall cultural landscape. The inconsistency of the wall design along this wall would potentially confuse the visitor and could project an inaccurate picture of the original wall design and configuration.

SUMMARY OF IMPACTS

Table 5 briefly summarizes the effects of each of the alternatives on the impact topics that were retained for analysis. More detailed information on the effects of the alternatives is provided in the "Affected Environment and Environmental Consequences" section.

TABLE 5: SUMMARY OF IMPACTS

Impact Topic	Alternative A: No Action / Continue Current Management	Alternative B: Preservation and Repair	Alternative C: Restoration and Reconstruction
Cultural resources	Continuation of current management would have negligible, direct effects on historic archeological resources, but continuing erosion could uncover buried resources, which would be a long-term, negligible, adverse, indirect effect. Wall damage that outpaces cyclic maintenance efforts would result in long-term, direct and indirect, moderate, adverse impacts on the cultural landscape and structures.	Alternative B would have long-term, direct and indirect, negligible to minor, adverse effects on historic archeological resources. Preservation and repair of the walls would have a long-term, direct and indirect, moderate, beneficial effect on the walls and the cultural landscape.	Restoration, rehabilitation, and reconstruction of the cemetery walls would have long-term, direct and indirect, negligible to minor, adverse effects on historic archeological resources. Preservation and repair of the walls would have a long-term, direct and indirect, moderate beneficial effect on the walls and the cultural landscape.
Visitor use and experience	Ongoing deterioration of the cemetery wall would result in long-term, indirect, and negligible to minor adverse effects on the visitor experience. These effects would occur as historic fabric is lost and delineation of the gravesites becomes less prominent.	The perimeter wall improvements proposed by Alternative B would produce long-term, direct, moderate, beneficial effects on visitor use and experience from restoration of the historic character and enhanced solemnity of the cemetery. Construction activity would result in short-term, direct, negligible, adverse effects on the visitor experience.	Same as Alternative B.
Public health and safety	The No Action Alternative would continue to expose staff and visitors to hazardous conditions resulting from fallen brick and mortar, and from exposure to steep slopes at the northern and southern cemetery boundaries. This would result in long-term, direct and indirect, minor, adverse effects on public health and safety. Installation of the barrier fence in the area of the soil nail wall would have a minor, long-term, direct, beneficial effect on public safety on the southern boundary of the cemetery.	Alternative B would reduce the hazards from loose and fallen mortar and brick, and help restrict visitor access to dangerously steep slopes north and south of the cemetery. This would result in long-term, direct and indirect, beneficial effects on public health and safety of minor intensity.	Same as Alternative B.
Park operations	Ongoing repair and maintenance of the walls would create long-term, direct, adverse effects of minor intensity as the escalating deterioration diverted staff from other necessary park functions.	Park operations would experience long-term, direct, minor benefits as the need for wall maintenance and the repair burden was reduced. Emergency repair activities would be replaced by lower-intensity regular maintenance, and staff could focus their attention on other resource and park management matters.	Same as Alternative B.
Vegetation	Continuing current management would result in the loss of some individual plants but would not have any effect on plant populations or communities. The long-term, direct, adverse effects on vegetation would be negligible.	Repair activities would produce localized, short-term, direct, and negligible to minor adverse effects on vegetation. Over the long term, negligible to minor, indirect, localized benefits to vegetation would be realized as the grass buffer adjacent to the wall enhanced stabilization and helped control woody vegetation encroachment onto the wall.	Same as Alternative B.

TABLE 5: SUMMARY OF IMPACTS

Impact Topic	Alternative A: No Action / Continue Current Management	Alternative B: Preservation and Repair	Alternative C: Restoration and Reconstruction
Soils	The soil disturbance created by the relatively small-scale actions of ongoing wall maintenance and repair would result in long-term, direct, negligible, adverse effects on soils within the project area.	The construction activities necessary to implement this alternative would generate localized, minor, short-term adverse effects on soils. Creation of a continuous grass border adjacent to the wall would reduce erosion and contribute to the overall stabilization effort that would result in a highly localized, long-term, indirect, negligible to minor benefit on soils.	Same as Alternative B.
Water quality	Because there is no excavation or sediment generation associated with the No Action Alternative, continued current management would have a negligible indirect effect on local water quality.	In the event of heavy precipitation during construction activities, there could be short-term, localized, indirect, and negligible to minor adverse effects on water quality in Mint Spring Bayou. Revegetation of the area after construction would offset these effects.	Same as Alternative B.
Wildlife and wildlife habitats	Routine repair and maintenance of the perimeter walls would have long-term, indirect, negligible effects on wildlife and wildlife habitats.	Alternative B would produce short-term, minor, indirect, adverse effects on wildlife and wildlife habitat.	Same as Alternative B.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section describes the environmental consequences associated with the alternatives. It is organized by impact topics, which allow a standardized comparison between alternatives based on issues. Consistent with the National Environmental Policy Act, the analysis also considers the context, intensity, and duration of impacts, indirect impacts, cumulative impacts, and measures to mitigate impacts. National Park Service policy also requires that “impairment” of resources be evaluated in all environmental documents.

PARK AND CEMETERY DESCRIPTION

The national park system consists of more than 380 units representing our country’s finest natural and cultural assets. Vicksburg National Cemetery was established shortly after the Civil War on a portion of the battlefield at Vicksburg, Mississippi, and on February 21, 1899 Vicksburg National Military Park was established by Congress (30 Stat. 841) to commemorate the campaign, siege, and defense of the city of Vicksburg, Mississippi.

The Vicksburg campaign was waged from March 29 to July 4, 1863. It included battles in west-central Mississippi at Port Gibson, Raymond, Jackson, Champion Hill, and Big Black River, as well as 47 days of Union siege operations against Confederate forces defending the city of Vicksburg. Vicksburg, which was heavily fortified and located on a high bluff overlooking a bend in the Mississippi River, was aptly dubbed the “Gibraltar of the Confederacy.” Its surrender on July 4, 1863, coupled with the July 3rd defeat of Confederate General Robert E. Lee at the battle of Gettysburg, marked the turning point of the Civil War, and foreshadowed the eventual downfall of the Confederacy.

Vicksburg National Cemetery serves as a lasting memorial to the soldiers, sailors, and civilians who suffered through the turmoil and tragedy of the American Civil War. Originally administered by the War Department, the park and cemetery were transferred to National Park Service administration in 1933.

PROJECT SITE DESCRIPTION

Vicksburg National Military Park and Vicksburg National Cemetery are located in the northeastern portion of Vicksburg, Mississippi, in Warren County. The cemetery and the park are situated in an area known as the Blufflands, which is an area of hills that borders the eastern escarpment of the Mississippi alluvial valley (Walker 2001). The Blufflands area coincides with the thickest deposits of loess (wind-deposited) soils in the Tennessee-Mississippi-Louisiana area (Braun 1964). The area terrain, which consists of a series of narrow ridges cut by deep, steep ravines, can be attributed to this type of soil and the long-term effects of erosion upon this soil. This fine soil is highly susceptible to erosion, most markedly when it lacks adequate vegetation cover. When exposed to rain and moving water, it can suffer extreme soil loss (NPS 2002b).

The southern edge of the cemetery marks the start of Mint Spring Bluff, which drops approximately 100 feet to Mint Spring Bayou. The bayou flows into the Yazoo River Diversion Canal just north of Vicksburg and west of the cemetery.

Approximately 1,420 acres of the park and surrounding areas consist of hardwood forest (primarily oak-hickory, with oak species including southern and northern red, and white). About 291 acres of the park are maintained in an open, park-like condition via regular mowing. Vegetation on the remaining acreage consists of scattered

pockets of kudzu, hardwood slash and/or hardwood reproduction, and perennial grasses between 1 and 3 feet in height (NPS 2002b).

The national cemetery is located adjacent to the northwest portion of the park (see Figure 1). The 110-acre cemetery, which includes 40 acres of burials, is the final resting place for 18,300 United States servicemen and women and their dependents. Upright headstones mark the graves of known soldiers and small blocks with a grave number designate the unknown veterans. The cemetery was permanently enclosed with a masonry wall in 1874.

The cemetery is maintained by park staff as a terraced landscape of grass and flowering plants and trees, surrounded by a lush forest of upland hardwood trees and vascular plants. However, the vegetative cover of the park and the cemetery has changed from the 1863 appearance of the battlefield, as many areas have become overgrown and do not reflect the historic scene accurately.

METHODOLOGY

General Evaluation Methodology

For each impact topic, the analysis includes a brief description of the affected environment and an evaluation of the effects of implementing each alternative. The impact analyses were based on information provided by park staff, relevant references and technical literature citations, and subject matter experts. The impact analyses involved the following steps.

Define issues of concern, based on internal and external scoping.

Identify the geographic area that could be affected.

Define the resources within that area that could be affected.

Impose the action on the resources within the area of potential effect.

Identify the effects caused by the alternative, in comparison to the baseline represented by the No Action Alternative, to determine the relative change in resource conditions. Characterize the effects based on the following factors:

Whether the effect would be beneficial or adverse.

The intensity of the effect, either negligible, minor, moderate, or major. Impact-topic-specific thresholds for each of these classifications are provided in Table 6. Threshold values were developed based on federal and state standards, consultation with regulators from applicable agencies, and discussions with subject matter experts.

Duration of the effect, either short-term or long-term. Impact-topic-specific definition of these terms is provided in Table 6.

The area affected by the alternative.

Whether the effect would be a direct result of the action or would occur indirectly because of a change to another resource or impact topic. An example of an indirect impact would be increased mortality of an aquatic species that would occur because an alternative would increase soil erosion, which would reduce water quality.

Determine whether impairment would occur to resources and values that are considered necessary and appropriate to fulfill the purposes of Vicksburg National Cemetery and Vicksburg National Military Park.

Determine cumulative effects by evaluating the effect in conjunction with the past, current, or reasonably foreseeable future actions for Vicksburg National Cemetery, Vicksburg National Military Park and the region.

TABLE 6: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Cultural resources	The effect is at the lowest levels of detection – barely perceptible and not measurable.	Archeological resources—the impact affects an archeological site(s) with modest data potential and no significant ties to a living community’s cultural identity. National Register properties—the impact does not affect the character-defining features of a National Register of Historic Places-eligible or -listed structure, site, district, or cultural landscape.	Archeological resources—the impact affects an archeological site(s) with high data potential and no significant ties to a living community’s cultural identity. National Register properties—the impact changes a character-defining feature(s) of the eligible or listed structures, sites, districts, or cultural landscapes, but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.	Archeological resources—the impact affects an archeological site(s) with exceptional data potential or that has significant ties to a living community’s cultural identity. National Register properties—the impact changes a character-defining feature(s) of a National Register-eligible or -listed structure, site, district, or cultural landscape, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register.	Short-term - Effects on the natural elements of a cultural landscape may be comparatively short-term (less than a year) until new vegetation grows or historic plantings are restored. Long-term - Because most cultural resources are non-renewable, any effects on archeological, historic, or ethnographic resources would be long-term. Effects on the cultural landscape would persist for more than a year.
Visitor use and experience	Visitors would not be affected, or changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.	Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.	Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.	Changes in visitor use and/or experience would be readily apparent and have important consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.	Short-term – Effects occur only during project implementation activities. Long-term – Effects extend beyond project implementation activities.
Public health and safety	Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on the public health or safety.	The effect would be detectable, but would not have an appreciable effect on public health and safety. If mitigation were needed, it would be relatively simple and likely successful.	The effect would be readily apparent, and would result in substantial, noticeable effects on public health and safety on a local scale. Changes in rates or severity of injury could be measured. Mitigation measures would probably be necessary and would likely be successful.	The effects would be readily apparent, and would result in substantial, noticeable effects on public health and safety on a regional scale. Changes could lead to changes in mortality. Extensive mitigation measures would be needed, and their success would not be assured.	Short-term – Occurs only during the duration of the project. Long-term – Persists beyond the duration of the project.

TABLE 6: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Park operations	Park operations would not be affected or the effect would be at or below levels of detection, and would not have an appreciable effect on park operations.	The effect would be detectable but would not be of a magnitude that it would appreciably change park operations. If mitigation were needed to offset adverse effects, it would be relatively simple and likely successful.	The effects would be readily apparent and would result in a substantial change in park operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.	The effects would be readily apparent and would result in a substantial change in park operations in a manner noticeable to staff and the public and be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed, and their success would not be assured.	Short-term – Occurs only during the duration of the project. Long-term – Persists beyond the duration of the project.
Vegetation	Individual native plants may be affected, but measurable or perceptible changes in plant community size, integrity, or continuity would not occur.	Effects on native plants would be measurable or perceptible, but would be localized within a small area. The viability of the plant community would not be affected and the community, if left alone, would recover.	A change would occur to the native plant community over a relatively large area that would be readily measurable in terms of abundance, distribution, quantity, or quality. Mitigation measures to offset or minimize adverse effects would be necessary and would likely be successful.	Effects on native plant communities would be readily apparent, and would substantially change vegetative community types over a large area. Extensive mitigation would be necessary to offset adverse effects and their success would not be assured.	Short-term - Following completion of the project, recovery would take less than a year. Long-term - Following completion of the project, recovery would take more than a year.
Soils	Soils would not be affected or the effects on soils would be below or at levels of detection. Any effects on soil productivity or fertility would be slight and would return to normal shortly after completion of project activities.	The effects on soils would be detectable, but effects on soil productivity or fertility would be small. If mitigation was needed to offset adverse effects, it would be relatively simple to implement and would likely be successful.	The effect on soil productivity or fertility would be readily apparent and would result in a change to the soil character over a relatively wide area.	The effect on soil productivity or fertility would be readily apparent and would substantially change the character of the soils over a large area in and out of the park. Mitigation measures to offset adverse effects would be needed, and their success would not be assured.	Short-term - Following completion of the project, recovery would take less than a year. Long-term - Following completion of the project, recovery would take more than a year.

TABLE 6: IMPACT TOPIC THRESHOLD DEFINITIONS

Impact Topic	Negligible	Minor	Moderate	Major	Duration
Water quality	Impacts would not be detectable. Water quality parameters would be well below all water quality standards for the designated use of the water. Water quality would be within historical conditions.	Impacts would be measurable, but water quality parameters would be well within all water quality standards for the designated use. Water quality would be within the range of historical conditions.	Changes in water quality would be readily apparent, but water quality parameters would be within all water quality standards for the designated use. Water quality would be outside historic baseline on a limited basis. Mitigation would be necessary to offset adverse effects, and would likely be successful.	Changes in water quality would be readily measurable, and some quality parameters would periodically be equaled or exceeded. Extensive mitigation measures would be necessary and their success would not be assured.	Short-term - Following completion of the project, recovery would take less than a year. Long-term - Following completion of the project, recovery would take more than a year.
Wildlife	Wildlife and their habitats would not be affected or the effects would be at or below the level of detection and would not be measurable or of perceptible consequence to wildlife populations.	Effects on wildlife or habitats would be measurable or perceptible, but localized within a small area. While the mortality of individual animals might occur, the viability of wildlife populations would not be affected and the community, if left alone, would recover.	A change in wildlife populations or habitats would occur over a relatively large area. The change would be readily measurable in terms of abundance, distribution, quantity, or quality of population. Mitigation measures would be necessary to offset adverse effects, and would likely be successful.	Effects on wildlife populations or habitats would be readily apparent, and would substantially change wildlife populations over a large area in and out of the national cemetery and park. Extensive mitigation would be needed to offset adverse effects, and the success of mitigation measures could not be assured.	Habitats and populations: Short-term - Recovers in less than a year after project completion. Long-term - Takes more than a year to recover after project is complete.

Cultural Resource Analysis Method

Cultural resources typically are understood to include archeological sites, buildings, structures, districts, landscapes, and objects, along with ethnographic sites and landscapes, as defined in the National Historic Preservation Act. The National Historic Preservation Act and its implementing regulations provide guidance for deciding whether cultural resources are of sufficient importance to be determined eligible for listing on the National Register of Historic Places. Historic properties (i.e., archeological, landscape, collections, and ethnographic resources) determined to be eligible for listing in the National Register of Historic Places must be associated with an important historic context, i.e. possess significance – the meaning or value ascribed to the item, and have integrity of those features necessary to convey its significance, i.e., location, design, setting, workmanship, materials, feeling and association.

Impacts on cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (1978) that implement the National Environmental Policy Act. The impact analyses also are used to comply with the requirements of Section 106 of the National Historic Preservation Act.

In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (36 *Code of Federal Regulations* Part 800, Protection of Historic Properties), impacts to cultural resources were identified and evaluated by

- Determining the area of potential effects;

- Identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places;

- Applying the criteria of adverse effect to affected cultural resources either listed in or eligible for inclusion in the National Register; and

- Considering ways to avoid, minimize, or mitigate adverse effects.

The Advisory Council's regulations for Section 106 compliance require a determination of either *adverse effect* or *no adverse effect* for cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register. For example, this could include diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternative that would occur later in time, be farther removed in distance, or be cumulative (36 *Code of Federal Regulations* Part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register. Beyond the requirements of Section 106 of the National Historic Preservation Act, the park will consider all sites to be eligible for the National Register of Historic Places until an evaluation is done to determine a property's true eligibility.

The Council on Environmental Quality (1978) regulations and *Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the intensity of an impact from major to moderate or minor. Any resulting reduction in intensity of impact because of mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act

only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis for cultural resources. The summary is intended to meet the requirements of Section 106 and is an assessment of the effect of implementing the alternative on cultural resources, based on the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

For purposes of this environmental assessment, the discussion of historic resources (structures) was combined with cultural landscapes, which were discussed along with historic archeological resources. Impact topics related to prehistoric archeological resources, collections, and ethnographic resources were dismissed (see "Impact Topics Dismissed from Further Analysis with Rationale for Dismissal").

Cumulative Effects Analysis Method

The Council on Environmental Quality (1978) regulations for implementing the National Environmental Policy Act requires an assessment of cumulative effects in the decision-making process for Federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 *Code of Federal Regulations* 1508.7). Cumulative effects are considered for both the no action and action alternatives. The cumulative impacts analysis is presented at the end of each impact topic analysis.

Cumulative effects were determined by combining the effects of the alternative with other past, present, and reasonably foreseeable future actions in the vicinity. Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable future actions at and around Vicksburg National Cemetery. Past and ongoing actions include, but are not limited to:

Ongoing operation of the cemetery;

The original construction (1874) and ongoing maintenance and repair of the cemetery wall;

Construction from 1939 to 1942 of U.S. Highway 61 (business) with west cemetery wall reconstruction, and the continued maintenance of the highway, its right-of-way, and the wall in this area; and

The soil nail wall currently being built by the U.S. Army Corps of Engineers to stabilize the bluff south of the cemetery.

Reasonably foreseeable projects and plans in the immediate vicinity of the cemetery were identified previously under "Other Projects and Plans" in the "Purpose and Need" section. Other reasonably foreseeable projects and plans include the continuing development of the Vicksburg, Mississippi metropolitan area and the region.

Impairment Analysis Method

Management Policies 2001 (NPS 2000b) requires analysis of potential effects to determine whether actions would impair park resources or values. The impairment that is prohibited by the Organic Act is an impact that "would harm the integrity of park resources or values, including opportunities that otherwise would be present for the enjoyment of those resources or values." The determination as to whether an impact meets this definition of impairment depends on the resources affected; the severity, duration, and

timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in concert with other impacts.

An impact to any park resource may constitute an impairment. An impact would be more likely to result in impairment if it affects a resource or value whose conservation is:

Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the cemetery and the park;

Key to the natural or cultural integrity of the cemetery and park, or to opportunities for enjoyment of the cemetery and the park; or

Identified as a goal in the park's general management plan or other relevant NPS planning documents.

A determination on impairment is included in the impact analysis section for all impact topics relating to park and cemetery resources and values.

CULTURAL RESOURCES

Affected Environment

Historical Overview

People have occupied the region along the Mississippi River for thousands of years. In 1682, René-Robert Cavelier, Sieur de LaSalle, claimed the entire Mississippi River drainage for France. By the early 1700s, the French had made substantial attempts to colonize the lower Mississippi River valley, but following the French and Indian War in 1763, the British gained control of much of the area.

Fort Nogales was erected in 1791 as an outlet for the Spanish Trading Company. Referred to as the "Gibraltar of Louisiana," the fort was situated on the south bank of Mint Spring Bayou at its confluence with the Mississippi River. A number of outer works were scattered on top of nearby points, including Fort Sugar Loaf that was situated on what was referred to by the Spanish as an "Indian mound" in what is today Vicksburg National Cemetery.

With the Louisiana Purchase in 1803, the area was formally opened to American occupation. Between 1816 and 1840, the American Indian tribes occupying land along the Mississippi River were relocated in forced moves west.

Cotton had been introduced into the South in 1786, and by the early 1800s it had become a major export. Production of cotton stimulated the rise of cotton mills, provided a new economic base, and perpetuated and promoted the growth of slavery. This economic base allowed large plantations and antebellum homes to be established along the banks of the Mississippi River during the first half of the 19th century.

By 1860, tension between the Northern and Southern states over economic factors, states' rights, slavery, and other issues had reached a fever pitch, and the South considered secession. All over the South, states' rights advocates conflicted with Federal authorities over ownership of Federal property. Late in 1860, South Carolina voted to remove itself from the Union, and Union troops moved to Fort Sumter where the first shots of the Civil War were fired on April 12, 1861. Over the next 4 years, Union and Confederate armies fought battles in many states, resulting in thousands of deaths and injuries, and devastation of the landscape.

Union tactics included blockades of the southern coastline and use of naval action on major rivers such as the Mississippi. On May 18, 1863, the Union army under the command of General Ulysses S. Grant laid siege to the city of Vicksburg, a “fortress city” said by President Lincoln to be the key to winning the war. The North needed to control the lower Mississippi River to open it as an avenue of commerce as well as to split the Confederacy in two.

At first, the Federal troops were repulsed, but Grant’s army cut off Vicksburg’s supply and communications lines and built approaches to the Confederate defenses. The Confederates under General John Clifford Pemberton dug in and held out for a month and a half, but surrendered on July 4, 1863. The surrender at Port Hudson, Louisiana on July 9th completed the Union hold on the Mississippi River and marked the turning point of the Civil War.

As early as 1862, Congress recognized the need to establish national cemeteries for soldiers who died in the service of the country. These burial grounds generally were located where concentrations of casualties had occurred.

Vicksburg National Cemetery was established in 1866 on the battleground for Vicksburg, and burials began shortly thereafter. Vicksburg National Cemetery is the largest Civil War burial ground in the nation, encompassing an area of 110 acres of which 40 acres are within existing walls.

Legislation passed in 1867 mandated that every national cemetery should be enclosed with a good and substantial stone or iron fence. Most of the initial efforts at Vicksburg focused on terracing, grading, sodding and dressing the graves (Lord, Aeck & Sargent. 2002a). Often, sections had to be reworked because the unstable loess soils continued to erode, sometimes exposing burials. Help was sought from landscape architect Frederick Law Olmstead who recommended James Gall. Gall, an engineer, managed physical improvements to the cemetery over the next 10 years (Lord, Aeck & Sargent Architects 2002a).

Early in 1873, a decision was made to erect a permanent and stable wall around Vicksburg cemetery to replace the old post and rail wood fence that surrounded three sides of the “fearfully rough” site. Bids were let for the new fence, but the routine contracting procedure became mired in “intrigue, collusion, and calumny” and it was nearly a year before contractors Wiesing and Fletcher finally began work on the enclosure wall (NPS 1968).

Brick walls were chosen for fencing, based primarily on cost, and a competent bricklayer was hired to superintend the work. Before construction of the wall could begin, the rugged and uneven terrain had to be graded, ravines filled, hills leveled, and foundations laid to ensure the stability of the wall (NPS 1968). Project engineer Gall urged that the wall be extended along the river front to prevent fishermen, boaters, pedestrians, and others from taking a short cut across the cemetery to reach the Yazoo Valley Road (NPS 1968). At its completion in 1874, Gall noted that the cemetery wall contained “the proper basins, grading, culverts, drainage outlets, and necessary extra foundation at its weak points” (NPS 1968). Iron gates were established at the carriage road entrances. The brick wall was built with “pyramid capped pilasters spaced at 21-foot intervals and in-filled with two recessed panels separated by a smaller intermediate pilaster,” a design typical of 19th century masonry fence walls (Lord, Aeck & Sargent Architects 2002a).

Inspections in 1886 revealed that about 80 feet of wall on the southern boundary above Mint Spring Bayou had collapsed in a slide. This part of the wall evidently was repaired prior to documentation in a 1917 survey (Lord, Aeck & Sargent Architects 2002a).

On February 21, 1899, Vicksburg National Military Park was established to commemorate the campaign and siege and defense of Vicksburg, and in recognition of the historical importance of this battleground along the north, east, and south edges of the city of Vicksburg. Originally, the park encompassed about

1,200 acres and included the land areas of the Union siege lines, some of the original earthworks, and the Confederate defense lines used during the 1863 military action. The establishing act mandated that the park maintain the “present outlines of field and forest,” that is, preserve the historic scene. States were given the authority to establish and place markers and memorials honoring units involved in the siege. The legislation also required that the earthworks used during the Siege of Vicksburg in 1863 be restored.

Both the park and the cemetery originally were under the jurisdiction of the War Department. Most of the Union memorials and markers were placed prior to 1917, and Confederate markers were established after 1917. In 1933, an executive order transferred Vicksburg National Cemetery from the War Department to the National Park Service. At this time administration of the cemetery was combined with Vicksburg National Military Park, the Department of the Interior was given jurisdiction of the units, and both the cemetery and the park were added to the national park system.

The alignment and configuration of the cemetery walls showed little change over the first 50 years, as evidenced by a 1917 survey of the cemetery. In 1924, the segment of the wall along the northwestern boundary collapsed. Some portions of the wall in this area were repaired. A collapse of the wall below the Indian mound along the southern boundary near Mint Spring Bluff occurred in 1933.

As part of combined State of Mississippi and Public Works Administration activities during the 1930s, plans were made to improve State (now U.S.) Highway 61. The realignment of the highway required an easement over some portions of the cemetery property that were being considered for expansion. Agreements required that the removal and reconstruction of the cemetery wall was to be executed by the Mississippi State Highway Department. In addition, trees were to be protected by rock fill, road cuts and fill slopes would meet contemporary National Park Service specifications, and a gravel driveway was to be built from the relocated highway to the existing cemetery arch at the main entrance.

The state highway department worked on the highway until 1939 when Baker Brothers Construction received a subcontract to repair the road. Work was begun late in 1939 on reconstruction of the cemetery wall, but was discontinued when the mortar set proved inadequate.

The Civilian Conservation Corps (CCC), one of the most popular emergency relief work programs of the 1930s, maintained four camps within the park during the 1930s. Camp workers helped reconstruct earthworks, reforested lands, and implement erosion control at Vicksburg during 1934 and 1935 with the construction of drainage structures and storm sewers. CCC projects may have changed the configuration of the Indian mound by adding fill and modifying the surrounding terrain.

By February 1941, the highway improvements were completed and work was begun on relocation of the gravel driveway. An area annexed from the military park for expansion of the cemetery was enclosed with a brick wall at about the same time (much of the old cemetery wall had collapsed). Original plans for the highway improvement called for the removal and salvage of 924-feet of brick wall and the reconstruction of 882-feet of brick wall from just east of the stone arch to a point on the west wall where the wall turned to the east along the original boundary. The wall was straightened and extended farther north around a newly acquired parcel of land.

In 1941, CCC workers resumed work on reconstruction of the wall in a new configuration. In the 1939 design, shown in Figure 2, the top three courses of brick coping were omitted as well as the extended sections over the pilasters and their pyramid caps. This design may have been adopted because of the lack of suitable brick. The CCC was unable to complete reconstruction of the wall because of the outbreak of World War II.

In 1958, about 400 feet of wall along the northwestern side of the cemetery were rebuilt using the 1939 design. About the same time, sections of the north wall were removed and a woven wire fence was substituted. Subsequently, as other segments of the wall collapsed, were damaged by vehicles, or deteriorated, those wall parts were disassembled and reconstructed in place using the 1939 design.

The only remaining section of wall that is representative of the 1874 design and that remains on the original alignment is a small section located along the southern boundary (Lord, Aeck & Sargent Architects 2002a). However, the foundation remains intact along much of the original alignment (north, northwest, and southern sides). Construction dates for the east, east-north, and west sections of the wall span from about the 1930s to the 1950s (Lord, Aeck & Sargent Architects 2002a). With a few minor exceptions, the east and east-north walls remain true to the original alignment, but the western wall was realigned to accommodate expansion of the cemetery and construction of U.S. Highway 61.

Vicksburg National Military Park is one of the parks identified as part of the NPS' American Battlefield Protection Program, established in 1990 to help preserve the nation's historic battlefield sites associated with wars fought on American soil. The entire park is a cultural resource encompassing the Union siege lines, the Confederate defenses, and the fields of fire between the tactical lines. It contains the only surviving antebellum structure within the battlefield, several historic structures, more than 1,300 monuments and markers, the U.S.S. Cairo, and an extensive archival and museum collection. Vicksburg National Military Park and Vicksburg National Cemetery are a poignant reminder of the terrible cost in human life exacted by the Civil War.

Affected Resources

Archeological Resources. Work on the cemetery wall would not impact any portion of Fort Nogales or the locations of its outer works. The potential for *in situ* archeological resources is quite low because of the extensive ground modification and slumping, especially erosion along the southern boundary where sections of wall have slid downward into Mint Spring Bayou. Wall foundations extend more than 4.5 feet deep in some areas, suggesting a fairly extensive area of original disturbance.

Historic Structures. Because the site's historic structures are a component of the overall cemetery cultural landscape, they were combined with cultural landscapes, described below, for description and impact assessment.

Cultural Landscape. The National Park Service recognizes four categories of cultural landscapes, including:

- Historic designated landscapes,

- Historic vernacular landscapes,

- Ethnographic landscapes, and

- Historic sites.

The Vicksburg National Cemetery is a historic site that is significant for its associations with the Civil War and with the people buried in the cemetery. Character-defining features of the cemetery include its general organization and layout, plant materials, roads and pathways, fences, and the placement of statuary and grave markers.

Brick walls were constructed around the area containing burials in 1874, with major reconstruction during the late 1930s and early 1940s and some additional work in the 1950s. Walls added or reconstructed between 1939 and 1941 have attained significance in their own right and are included as a contributing part of the landscape.

The cultural landscape at Vicksburg National Cemetery has not been inventoried and there is no cultural landscape report available for this area. However, the historic cultural landscape is self-evident. Both the cemetery arch and the perimeter masonry wall form important elements of this National Register-eligible property.

During the Civil War, the area occupied by the cemetery consisted of deeply dissected, narrow ridges and steep ravines cut into the easily eroded soils that cover the bluffs overlooking the Mississippi River. These high bluffs and steep ravines were used by both the Union and Confederate forces. Following the war, the ground surface was heavily recontoured to create the open, gently rolling grassy terrain characteristic of the present-day cemetery.

The cemetery has numerous trees, shrubs and other landscape elements scattered among the approximately 5,000 evenly spaced, upright headstones with rounded tops that mark the graves of known soldiers. Small, square blocks that are incised with a grave number designate unknown veterans. Several private monuments and memorials also dot the cemetery landscape.

The perimeter fencing around the cemetery varies in both materials and design. It includes iron fencing, chain-link fence, and historic masonry walls dating to several episodes of construction (1874, 1939-1941, and subsequent reconstructions). The historic masonry walls are a character-defining element of the landscape that demark the cemetery perimeter and create much of the ambiance associated with this historic scene.

The circular roadway within the cemetery is generally based on carriage roads that were part of the original cemetery design. Iron gates mark the original carriage road entrances. The cemetery's historic walls and structures, plantings, roadways, and the numerous monuments and memorials help to define the character of this historic scene, and are an integral part of the overall landscape that conveys a special sense of place and history to the visitor.

Previous Investigations

In 1999, the U.S. Army Corps of Engineers undertook a literature and records search, and conducted a survey of the Mint Spring Bluff and Bayou area abutting the south end of the cemetery (U.S. Army Corps of Engineers, Vicksburg District 1999). No prehistoric or historic archeological resources were found in their 6-acre project area. The Indian mound at the far south end of the cemetery was once occupied by Fort Sugar Loaf but no features associated with this early installation are evident, probably because of area modifications by the Civilian Conservation Corps in the 1930s. The cemetery wall, drainage structures, roadways, and gates were documented in the condition assessment study conducted by Lord, Aeck & Sargent Architects (2002a).

Cultural Resources Listed in the National Register of Historic Places

The analysis of project impacts on cultural resources focuses on historic properties, which include that subset of cultural resources that are listed in, or eligible for listing in, the National Register of Historic Places. Within the area evaluated in this document, historic properties are the Vicksburg National Military Park, listed in the National Register of Historic Places in 1966, and the Cemetery, which is eligible for

listing in the National Register. Within the cemetery and its landscape are masonry walls, iron gates, monuments and memorials, roadways, structures, and plantings.

Impacts of Alternative A: No Action / Continue Current Management

Historic archeological resources. Historic archeological remains under and immediately adjacent to the cemetery walls or former wall locations may include scattered foundations or isolated historic artifacts. Continuation of current management would have negligible direct effects on these resources. However, soil erosion would continue in some steeper areas of the cemetery, which could reveal presently unidentified buried resources. This would be a long-term, indirect, negligible, adverse effect in the area of the erosion.

Cultural landscape and structures. The cemetery walls are a vital, integral, contributing part of the Vicksburg National Cemetery cultural landscape. They visually define the perimeter of the burial ground and form an esthetic backdrop for the graves and monuments. To those who come to the cemetery, the historic walls are a subtle but important part of the historic scene that helps to recall the solemnity of the horrific events that occurred here and inspire remembrances of past generations who gave their lives during the Civil War.

Erosion, vegetation growth, weathering, and vehicle accidents have all led to collapse of segments of the cemetery wall. Under the No Action Alternative, these conditions would continue to diminish the historic scene. Without intervention, roots from large trees and vegetation encroachment would continue to damage the wall structures, and the remnant of the 1874 wall on the south side of the cemetery could be lost to erosion.

Many segments of the wall have been lost, rebuilt, or replaced by other types of fencing. This mixture of wall and fence types diminishes the cemetery's cultural landscape and is not consistent with legislative requirements for a national cemetery enclosure. These factors result in long-term, direct and indirect, moderate, adverse impacts on the cultural landscape.

Cumulative effects. Regular maintenance operations would continue to respond to deterioration of the cemetery walls. The National Park Service also would continue to pursue other actions to preserve the integrity of cultural resources at Vicksburg National Cemetery, including the projects described under "Other Projects and Plans." For example:

The U.S. Army Corps of Engineers' soil nail wall project at Mint Spring Bluff will help to stabilize the southern bluff below the cemetery road and the Indian mound, reducing the potential loss of graves and landscape elements.

The fire management and vegetation management plans will help maintain the historic landscape and reduce the incursion of exotic species, especially along the walls.

Acquisition of property along the north side of the cemetery would provide an opportunity to remove unsightly intrusions and enhance the appearance of the cultural landscape.

Continuing and future actions would combine to have beneficial cumulative effects on Vicksburg National Cemetery historic landscapes and structures. However, the National Park Service has documented that repairs to the walls that are conducted during cyclical maintenance cannot keep pace with deterioration of the walls. Therefore, the beneficial effects of cumulative actions would be overshadowed by the wall's continuing deterioration. As a result, the No Action Alternative would result

in long-term, moderate, adverse cumulative impacts on a character-defining element of the cultural landscape that is part of a National Register of Historic Places property.

Conclusion. Continuation of current management would have negligible, direct adverse effects on historic archeological resources, but continuing erosion could uncover buried resources, which would be a long-term, negligible, adverse, indirect effect. Wall damage that outpaces cyclic maintenance efforts would result in long-term, direct and indirect, moderate, adverse impacts on the cultural landscape and structures.

Impairment. Alternative A would not have major adverse impacts on cultural, archeological, ethnographic resources and ethnographic landscapes, or historic resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park; 2) key to the natural or cultural integrity of the cemetery and the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the cemetery or the park's cultural resources or values.

Impacts of Alternative B: Preservation and Repair

Historic archeological resources. Compared to the No Action Alternative, preservation and repair of the cemetery walls would have direct, negligible to minor adverse effects on historic archeological resources in the vicinity of the walls.

Correction of erosion problems would have both beneficial and adverse impacts on buried resources. Development of the small drainage swale along the inside of the east wall would stabilize the soils so fewer artifacts would be exposed by erosion in the future. This would be a long-term, indirect, negligible, beneficial effect in the area of the erosion. Conversely, drainage modifications could uncover previously unknown archeological resources. These impacts would be long-term, direct, adverse effects of negligible intensity.

Reconstructing the wall along the north and south cemetery boundaries would have a higher potential to disturb buried resources. However, wherever possible, existing foundations would be reused, reducing the amount of soil disturbance. With documentation, archeological monitoring, and other mitigation described in Table 2, long-term adverse impacts of new wall construction on historic archeological resources would be minor and both direct and indirect.

Cultural landscape and structures. The cemetery walls are an integral part of the Vicksburg National Cemetery cultural landscape. By using compatible design and materials for construction of replacement masonry wall segments along the collapsed and missing south and north walls, the new work would blend unobtrusively with the existing wall segments of the 1939 design. The new walls would enhance the cultural landscape by filling visual gaps left by loss of older walls, and by replacing unsightly chain-link fencing that intrudes on the landscape and that does not comply with legislative mandates. Compared to Alternative A, preservation and repair would have a long-term, direct and indirect, moderate, beneficial effect on the walls and the cultural landscape

Numerous changes in the alignment of the cemetery walls have occurred ever since the cemetery was established. Thus, any long-term, adverse effect from the construction of portions of the wall on the south side along a new alignment that is set back from the eroding bluff would be of negligible to minor intensity. This adverse effect would be offset by the moderate beneficial effect of the restored walls on the cemetery's overall cultural landscape.

Cumulative effects. Alternative B would experience cumulative effects from the same factors described for Alternative A. Cumulatively, the effects of these past, continuing, and future actions combined with Alternative B would have moderate, beneficial, cumulative effects on the Vicksburg National Cemetery cultural landscape and its structures.

Conclusion. Alternative B would have long-term, direct and indirect, negligible to minor, adverse effects on historic archeological resources. Reconstruction of the south wall along a new alignment would be a negligible to minor adverse effect, but this adverse effect would be offset by preservation and repair of the rest of the walls, which would have a long-term, direct and indirect, moderate, beneficial effect on the walls and on the cultural landscape.

Impairment. Alternative B would not have major adverse impacts to cultural, archeological, ethnographic resources and ethnographic landscapes, or historic resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park; 2) key to the natural or cultural integrity of the cemetery and the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the cemetery or the park's cultural resources or values.

Impacts of Alternative C: Restoration and Reconstruction

Historic archeological resources. The effects of Alternative C on historic archeological resources would be similar to those described for Alternative B. The net effects on historic archeological resources would be long-term, direct and indirect, negligible to minor, and adverse.

Cultural landscape and structures. Rehabilitation of the west wall would have a long-term, moderate, beneficial effect on the wall and the cultural landscape and help to preserve this example of the 1939 design. Restoration of the east wall and reconstruction of the north and south walls in the 1874 design would have beneficial effects on the cultural landscape by filling gaps left by the loss of older walls and by their past replacement with unsightly, intrusive chain-link fencing that does not comply with legislative mandates. The new and restored walls would enhance the historic feeling of the cemetery and would provide visitors with an example of the original historic design. The reconstructed and restored walls would be more able to withstand effects of weathering and intrusive vegetation, reducing the frequency of future maintenance needs.

Numerous changes in the alignment of the cemetery walls have occurred ever since the cemetery was established. Therefore, as with Alternative B, the long-term, adverse effect from the construction of the wall on the south side along a new alignment that is set back from the eroding bluff would be of negligible to minor intensity.

Cumulative effects. Cumulative effects would be similar to those described for Alternative B.

Conclusion. Restoration, rehabilitation, and reconstruction of the cemetery walls would have long-term, direct and indirect, negligible to minor, adverse effects on historic archeological resources. Construction of walls on a new alignment would be an adverse effect of negligible to minor intensity. This impact would be offset by preservation and repair of the cemetery walls would have a long-term, direct and indirect, moderate, beneficial effect on both the walls and the cultural landscape.

Impairment. Alternative C would not have major adverse impacts to cultural, archeological, ethnographic resources and ethnographic landscapes, or historic resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Vicksburg

National Cemetery and Vicksburg National Military Park; 2) key to the natural or cultural integrity of the cemetery and the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the cemetery or the park's cultural resources or values.

Section 106 Summary

This environmental assessment provides detailed descriptions of three alternatives (including a no action alternative), analyzes the potential impacts associated with possible implementation of each alternative, and describes the rationale for choosing the preferred alternative. Also contained in the environmental assessment are mitigation measures that would help avoid adverse effects on cultural resources.

For more than a century, the walls surrounding Vicksburg National Cemetery have been impacted by erosion, weathering, intrusive plant growth, and human activities. For example, segments of wall have collapsed due to severe erosion such as the soil slump that occurred at Mint Spring Bluff. The growth of woody vegetation has displaced some wall sections and continues to contribute to the deterioration of the walls. Vehicle collisions have damaged sections of the west wall and gates. During the 1930s, the west wall was realigned to accommodate expansion of the cemetery and construction of Highway 61.

Many of the collapsed wall sections were reconstructed, and most reconstruction occurred from the late 1930s to the 1950s (Lord, Aeck & Sargent Architects 2002a). Missing segments of the north and south walls have been replaced with chain-link fencing that is visually intrusive and inappropriate for a military cemetery.

The only remaining section of cemetery wall that is representative of the 1874 design and that remains on the original alignment is a small section located along the southern boundary (Lord, Aeck & Sargent Architects 2002a). Foundations remain intact along much of the original alignment on the north, northwest, and south sides of the cemetery.

The preferred alternative proposes rehabilitation of the west wall in its current location, consistent with the 1939 design. The east wall would be restored to its 1874 appearance, including restoration of coping and pilaster caps. The north and south masonry walls would be reconstructed using the historic 1874 design, with the walls situated on the most feasible alignment, considering slope and erosion issues. In most areas, these reconstructed walls would be able to reuse existing and recaptured sections of the original alignment and existing foundations. However, occasional deviations in alignment would be necessary to avoid unstable soils and subsequent wall collapse. Wherever feasible, historic elements such as bricks and foundations would be retained and reused. New materials (bricks and mortar) of the appropriate color, shape, size, texture, and appearance would be carefully selected to accurately replicate the form and character of the original wall.

Documentary evidence from period plans, maps, and drawings and from the presence of existing wall segments is readily available to allow accurate reconstruction and restoration of the cemetery walls. The design, texture, color, materials, and scale of the original wall can be ascertained using this existing historic information. Prior to initiation of any reconstruction activities, the existing wall segments and their locations would be carefully documented as described in the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1995b). The existing 1874 segment of wall along the southern boundary of the cemetery would be protected and left in place outside the new alignment.

Woody vegetation, including kudzu and other vines, would be removed. Treatment of soils and vegetation adjacent to the wall segments would be designed to minimize regrowth of trees, shrubs and vines while providing ground cover to retard erosion. The cemetery gates would be repaired and cleaned. A

previously disturbed area across Givens Road, which runs along a portion of the north wall, would serve as a staging area for construction equipment and supplies during project implementation.

The environmental assessment includes mitigation measures that would help reduce potential adverse effects on cultural resources, and all work would be performed in compliance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (NPS 1995a). For example, construction activities would be carefully planned to avoid damage to sensitive areas of the cemetery. Work would be monitored by an archeologist meeting the Secretary of the Interior's standards.

To avoid any unauthorized collecting from areas where construction is proposed, work crews would be educated about cultural resources in general and the need to protect any cultural resources encountered. Work crews would be instructed regarding the illegality of collecting artifacts on Federal lands to avoid any potential violations. In the unlikely event that previously unknown cultural resources were discovered during construction, work would be halted in the vicinity of the resource, and procedures outlined in 36 *Code of Federal Regulations* 800 would be followed. Uncovered human burials pose a health and safety issue, so mitigation measures described in the "Alternatives" section would be implemented in the event human burials were discovered.

The Mississippi State Historic Preservation Office (SHPO) has been involved in this project from the beginning, including participation in the project value analysis. To complete the Section 106 process, the park will draft an assessment of effect form, which will be forwarded to the State Historic Preservation Office along with this environmental assessment.

Discussions of the project between the National Park Service and the Mississippi State Historic Preservation Office indicate a preliminary finding of no adverse effect as defined in Section 106 of the National Historic Preservation Act. However, State Historic Preservation Office comments on the project will be addressed in the final compliance documents. Should the need arise, additional mitigation measures also would be developed in consultation with the State Historic Preservation Office.

VISITOR USE AND EXPERIENCE

Affected Environment

Vicksburg National Military Park and Vicksburg National Cemetery are located on the north and east sides of Vicksburg, Mississippi, less than a quarter mile from Interstate 20. The park receives approximately 1 million visitors per year who stay an average of 2 hours each (NPS 2003d). Travel to the park is accomplished largely by private automobile or by charter bus. The nearest commercial airport is in Jackson, Mississippi, approximately 50 miles to the east (NPS 2003a).

The most popular activity at the park is touring the battlefield and cemetery by car, charter bus, or on foot. The park has a main Visitor Center with interpretive displays, a bookstore, and a theater that presents an 18-minute introductory film. The Visitor Center is the usual starting point for embarking on the 16-mile-long interpretive loop that passes through the Union and Confederate siege lines.

Vicksburg National Military Park has a high concentration of monuments and historic structures, with 1,329 monuments, markers, tablets and plaques, 70 bronze castings, 141 cannon and carriages, 15 bridges, 6 buildings, and an ironclad river gunboat (the U.S.S. Cairo). Vicksburg National Cemetery also contains approximately 18,000 headstones (NPS 2003a).

Midway through the interpretive loop, visitors encounter the Union gunboat, the U.S.S. Cairo. This ironclad, river class gunboat was sunk in December 1862, by underwater Confederate mines just north of Vicksburg in the Yazoo River. The Cairo was raised in 1964 and restored to give visitors the opportunity to experience this unique piece of military hardware. The nearby U.S.S. Cairo Museum houses a variety of artifacts recovered from the Cairo during salvage operations (NPS 2003a).

Adjacent to the U.S.S. Cairo is Vicksburg National Cemetery. Established in 1866, it contains 18,300 graves, the identities of more than 12,000 of which are unknown. Most of the dead were Union soldiers and sailors from the Civil War, but Service men and women from the Spanish-American War, World War I, World War II, and the Korean War also are interred here (NPS 2003a).

The cemetery's perimeter wall bounds the final resting place of these soldiers, and defines an area for conveying the solemnity of the site. Its presence is Congressionally mandated and its purpose is to protect the gravesites of deceased Service personnel and their families. The wall is a contributing factor to the significance of this national historic site (see "Cultural Resources" section).

Impacts of Alternative A: No Action / Continue Current Management

Under current management, the rate of deterioration of the perimeter wall would continue to outpace repairs. This gradual loss of historic fabric could contribute to an impression of neglect or disrepair within the park in general, and more specifically, within the cemetery. In addition, as the cemetery wall loses prominence, the solemn and contemplative setting of the cemetery is less likely to remain intact. This would result in long-term, indirect, negligible to minor, adverse effects on the visitor experience.

Cumulative effects. Ongoing repair and maintenance of the wall, in conjunction with other plans and projects to be undertaken by the park, would likely result in adverse, short-term effects on the visitor experience. Repairs to Connecting Avenue and other road projects could impede traffic and perhaps require temporary road closures. Traffic control and signage would help to limit effects. Repairs and restoration actions at Shirley House could cause short-term, adverse effect on visitors from construction activity and noise and the potential to restrict public access in areas near the site. In combination with the effects of Alternative A, the intensity of short-term, adverse effects on the visitor experience would be negligible to minor. The completion of all of these projects is expected to produce a long-term, moderate, beneficial effect on the experience of visitors to Vicksburg National Cemetery.

Conclusion. Under current management, ongoing deterioration of the cemetery wall would result in long-term, indirect, negligible to minor, adverse effects on visitor experience. These effects would occur as historic fabric was lost and delineation of the gravesites became less prominent.

Impacts of Alternative B and Alternative C

Under both action alternatives, the improvement in the historic character of the cemetery wall would be readily apparent to most visitors, and some would be likely to express a positive opinion about the change. Visitors may also perceive that the cemetery was better protected and that the separation of the solemn gravesites from the rest of the park was well-maintained. In addition, visitors' perception of park and cemetery preservation efforts may be enhanced. This would be a long-term, direct, beneficial effect on the visitor experience that, based on the criteria in Table 5, would be moderate in intensity.

The differing wall design characteristics of the two alternatives may produce subtle differences in visitor appreciation, but these would be difficult to quantify. For many park visitors, the use of the 1874 design or the 1939 design may not be detected. Some visitors may find either a uniform wall type or a varying design esthetically pleasing. Civil War enthusiasts and those familiar with period architecture and design may note the discrepancy in the wall design. However, the effect of the design on their overall experience likely would be negligible.

The repair and rehabilitation activities needed to preserve or repair the perimeter wall would likely produce some adverse effects on the visitor experience. The presence of construction materials, temporary restrictions on access to wall sections, and potential interruption of traffic flow would produce short-term, direct, adverse effects of negligible intensity.

Cumulative effects. When considered in concert with implementing other plans and projects in the park, construction effects from the action alternatives, which would occur over 3 to 5 years, would not be substantially more noticeable than the cumulative effects of Alternative A. With implementation of mitigation measures such as traffic control and signage, the short-term cumulative effects on the visitor experience of the cemetery wall project and other nearby projects would be adverse with a negligible to minor intensity.

Over the long-term, the improvements to infrastructure and historic structures would produce beneficial effects on the visitor experience. In concert, enhancing the appearance of park resources and improving preservation efforts would likely generate moderate, long-term benefits to visitor use and appreciation.

Conclusion. The perimeter wall improvements associated with either action alternative would produce long-term, direct, moderate, beneficial effects on visitor use and experience from restoration of the historic character and enhanced solemnity of the cemetery. Construction activity to reconstruct the walls would result in short-term, direct, negligible, adverse effects on the visitor experience.

PUBLIC HEALTH AND SAFETY

Affected Environment

Vicksburg National Military Park is responsible for maintaining safe conditions for the protection of the health and safety of both its employees and the public. This not only applies to providing safe facilities, utilities, and grounds within the park and within the cemetery, but also includes NPS program and project operations. Despite the park's proximity to an urban area, visitors are exposed to several hazards associated with the locality, including heat, mosquitoes, irritating plants, encounters with feral animals, and occasional snakebite (Parsons 2003).

Human burials may be exposed by erosion or soil slumping. Some of the personnel interred here died of cholera, tuberculosis, or other infectious diseases so exposed human remains may pose a serious health risk to cemetery visitors. To eliminate any threat to public health and safety, workers would be instructed not to touch or handle human remains in the event that any are uncovered. The park historian would be notified and the remains would be disposed of properly.

In 2002, the park hosted more than 1 million visitors. Large numbers of school children use the area around the cemetery as they picnic at the picnic area and visit the U.S.S. Cairo Museum. During these activities, many children like to climb over the low brick wall into the national cemetery or walk along the brick enclosure (NPS 2003b).

The loose and fallen brick and mortar are a tripping hazard for those walking either on or adjacent to the walls. Although no citations have been issued against the park, a review of the accident record for the past 10 years revealed that the loose brick has caused several falls, resulting in sprained ankles and wrists and a few broken bones. Bricks thrown or fallen into the cemetery pose a safety threat to employees operating grass cutting equipment such as mowers and weed trimmers (NPS 2003b). Loose bricks and mortar occasionally are ejected from mowing equipment, and the flying debris is a hazard to visitors and park staff.

The highly erodible nature of the slopes adjacent to the cemetery walls, and the resulting steep drop-offs also present safety concerns. As slopes slough off, visitors and staff can be exposed to dramatic drops on the perimeter of the visitation area. The sloughing is an ongoing, natural phenomenon. Stabilization of the south slope is being addressed by a separate action (soil nail wall project) by the U.S. Army Corps of Engineers. Although no visitors have fallen down the slopes, significant injuries could result if such an incident were to occur.

Impacts of Alternative A: No Action / Continue Current Management

Under the No Action Alternative, the ongoing deterioration of the walls and continued soil erosion along the cemetery boundaries would continue to pose a safety concern for both employees and visitors to Vicksburg National Cemetery. This would include tripping and falling hazards caused by loose wall materials, and hazards associated with, and resulting from, grounds maintenance. The adverse effects of these hazards on public health and safety would be direct and indirect, long-term, and minor in intensity.

Along the south boundary, near the tour route at the Indian mound, the No Action Alternative would include a barrier fence above the soil nail wall that would act as a visual barricade and safety feature that would deter visitors from approaching the abrupt incline. This fence would have a minor, long-term, beneficial effect on public safety. Further deterioration along the southern and northern cemetery boundaries and potential short-term loss of modern fencing from erosion may increase the safety hazard

by exposing visitors to steep slopes. In these areas, the No Action Alternative would have a minor, long-term, adverse effect on public safety.

Cumulative effects. The U.S. Army Corps of Engineer's soil nail wall project would have a long-term, beneficial effect on public health and safety within the park, because it would end sloughing of the slope at the south boundary of the cemetery and would remove the potential for collapse of the bluff in this area of pedestrian and vehicular use. This project could pose a short-term hazard to construction workers, but sound engineering and the use of standard safety practices for construction work should reduce the risk to negligible levels. The park's fire management plan, currently in draft form, will have a long-term, beneficial effect on public health and safety in the park and cemetery. Road improvements may cause short-term, traffic-related hazards, but in the long-term will improve the safety of park users. Cumulatively with the No Action Alternative for the cemetery wall, these actions would have a minor, beneficial effect on public health and safety.

Conclusion. Continuing current management would continue to expose staff and visitors to hazardous conditions resulting from fallen brick and mortar, and from exposure to steep slopes along the southern and northern cemetery boundaries. This would result in long-term, direct and indirect, minor, adverse effects on public health and safety. Installation of the barrier fence in the area of the soil nail wall would have a minor, long-term, direct, beneficial effect on public safety on the southern boundary of the cemetery.

Impacts of Alternative B and Alternative C

Both of the action alternatives would greatly reduce the potential for brick and mortar to loosen from the wall and produce hazards. They would eliminate the trip and fall incidents associated with fallen brick and mortar, although some falls would still be expected from children climbing or walking on the walls. During grounds-keeping activities, park staff would benefit from the reduced presence of debris. The presence of a stone enclosure would also act as a barrier to prevent feral animals from entering the cemetery area and harming visitors or staff. The beneficial effects on public health and safety would be direct and indirect, long-term, and minor in intensity.

During project implementation, areas unsafe for visitors or staff would be marked for avoidance. The relatively small scale of the repair operations, combined with proper mitigation, would result in negligible, short-term adverse effects on public health and safety.

The installation of a barrier fence at the top of the soil nail wall would be the same as those described for the No Action Alternative. Reconstruction of the north and south walls of the cemetery would reduce visitor access to areas of steep slopes, which would have a minor, long-term, beneficial effect on public safety.

Cumulative effects. Cumulative effects of the action alternatives would be similar to those described for the No Action Alternative.

Conclusion. The action alternatives would reduce the hazards from loose and fallen mortar and brick, and help restrict visitor access to dangerously steep slopes north and south of the cemetery. This would result in long-term, direct and indirect, beneficial effects on public health and safety of minor intensity, compared to the No Action Alternative.

PARK OPERATIONS

Affected Environment

The superintendent at Vicksburg National Military Park is responsible for managing the park and the cemetery, its staff, concessionaires, all of its programs, and its relations with persons, agencies, and organizations interested in the park. Park staff provide the full scope of functions and activities to accomplish the park's objectives, including interpretation and education, resource protection, law enforcement, emergency services, public health and safety, and fee collection.

Maintenance staff at the park include 14 winter employees and 22 summer employees (Parsons 2003). The park currently has one full-time and one part-time employee assigned to maintain the 40-acre national cemetery. These staff members are assisted by four seasonal employees during summer months (NPS 2003b).

The facilities and maintenance staff are responsible for maintaining the historic structures of the park, performing grounds-keeping and maintaining park facilities in working order. It has been mandated by legislation that an enclosure around the National Cemetery be constructed and maintained

The existing deteriorated condition of the cemetery's walls and gates requires ongoing attention. The list below highlights some of the recurrent activities performed to prevent loss of the remaining historic fabric.

Intact walls are cleaned and re-pointed; iron gates are repaired and refurbished; missing elements are researched and reconstructed; and stone arches are cleaned and repaired.

Vegetation is cut back from the wall and bleach is used to clean the wall and remove moss and lichen. Vegetation removal is done 2 to 3 times each year. All work is done manually. Seven people require one week to clear vegetation from the north and south walls and fencing. Plant removal is not currently being done as frequently as needed.

Drains are cleared weekly and before rain events. Drain clearing occurs more frequently in the spring and fall. This activity requires 8 labor-hours a week.

In addition to performance of these tasks, the accelerating deterioration affects other activities necessary to manage the cemetery. For example:

Grounds-keeping is complicated by the presence of fallen brick and mortar along the perimeter of the cemetery.

The rate of deterioration has necessitated a reactive repairs schedule rather than a proactive preventative maintenance approach.

Necessary maintenance to other cemetery features, such as pruning of trees and shrubs and the realignment and cleaning of headstones, become less frequent.

Additional burdens are placed on the staff when heavy rains increase deterioration by loosening mortar and bricks of the wall and increase erosion, which endangers the foundations of the walls.

Impacts of Alternative A: No Action / Continue Current Management

Under the No Action Alternative, the maintenance and repair workload continually would increase just to keep the walls in their current condition. This would result in long-term, minor, adverse effects on park operations where the escalating deterioration would divert staff from other necessary park functions but probably would not be noticeable by the public.

Cumulative effects. Many projects planned for the park would contribute to cumulative effects on park operations. These projects have the potential to increase or decrease demands made on park staff to ensure effective management of park resources and visitor experiences.

The planned land acquisition would produce short-term, minor, adverse effects on park operations as the site comes under park management and buildings are cleared for viewshed improvement. Long-term effects of managing this area would likely be adverse and negligible, contributing to the adverse effects of ongoing wall repair and vegetation management.

Successful completion of the U.S. Army Corps of Engineers' soil nail wall project would benefit park operations by reducing the need for temporary, and largely ineffective, efforts to stabilize the bluff at this location. This would provide a minor, long-term benefit to park operations. Beneficial effects would also be expected from restoration of the Shirley House and from park road improvements as the frequent need for repair or maintenance of these structures would be reduced. The No Action Alternative would detract slightly from the cumulative beneficial effects of these projects on park operations.

Conclusion. Ongoing repair and maintenance of the walls would create long-term, direct, adverse effects on park operations of minor intensity as the escalating deterioration diverted staff from other necessary park functions.

Impacts of Alternative B and Alternative C

Under either action alternative, rehabilitation, restoration, and reconstruction of the cemetery perimeter wall would produce long-term, minor benefits on park operations. These benefits would result from a reduction in park maintenance and repair needs based on the following.

Long-term maintenance needs would decrease, and longer intervals could be scheduled between cyclic operations. Reactive repair could be replaced with regularly scheduled maintenance activities.

Installation of a grass buffer would result in less vegetation removal on the wall and easier maintenance adjacent to the wall.

Staff requirements to monitor hazards and safety issues could be reduced.

Under Alternative C, placement of the coping and pilaster caps along sections of the 1874 reconstruction would enhance the long-term stability and endurance of the wall. The coping stone would provide added protection from infiltration by precipitation and vegetation. Regular vegetation removal and minor repair and upkeep of the walls would still be necessary, but could occur at a lower frequency and intensity. This level of routine care would increase the availability of staff for other park operation functions.

Short-term adverse effects of negligible to minor intensity would be generated by the need to manage the contractor and project, and some staff time would be required in implementation of the project. These increased burdens would end when project construction ended.

Cumulative effects. Cumulative effects from other projects would be similar to those described for Alternative A. Either of the action alternatives would slightly enhance the cumulative beneficial effects of other projects on park operations.

Conclusion. Under either action alternative, park operations would experience long-term, direct, minor benefits as the need for wall maintenance and the repair burden was reduced. Emergency repair activities would be replaced by lower-intensity regular maintenance, and staff could focus their attention on other resource and park management matters.

VEGETATION

Affected Environment

Vicksburg National Military Park and Vicksburg National Cemetery are situated in the Blufflands, a 10- to 25-mile-wide stretch of hills bordering the eastern terrace of the Mississippi River floodplain in Mississippi and Louisiana. The Blufflands support a mixed mesophytic (wet climate) forest, due to the high precipitation and productive soils (Walker 2001).

Walker reports that a total of 299 species of vascular plants occur at the park. Approximately 28 percent of these species are non-native. Currently, the dominant trees at the park are southern red oak (*Quercus falcata*) and white oak (*Quercus alba*). Other common large trees include southern sugar maple (*Acer barbatum*), basswood (*Tilia americana*), black oak (*Quercus velutina*), and northern red oak (*Quercus rubra*). The forest understory is composed of ironwood (*Carpinus caroliniana*), dogwood (*Cornus florida*), redbud (*Cercis canadensis*), pawpaw (*Asimia triloba*), sassafras (*Sassafras albidum*), American hydrangea (*Hydrangea americana*), and oak-leaved hydrangea (*Hydrangea quercifolia*). Non-woody species (herbaceous) plants found include Christmas fern (*Polystichum arcostichoides*), rattlesnake fern (*Botrychium virginianum*), and bedstraw (*Galium aparine*).

About 30 percent of the park is currently rolling, open grassy areas. Grasslands predominated throughout the area during the Battle of Vicksburg. Bermuda grass (*Cynodon dactylon*) has been planted because of its sod-forming nature and ability to stabilize the highly erodible loess soils (see “Soils” section). The grassy areas are maintained through regular mowing. In addition, the park uses prescribed fire on 18 acres of steep inaccessible slopes and is increasing efforts to control exotic species such as the invasive kudzu (Foote 2003).

Kudzu is a significant threat to the historic landscape of Vicksburg National Military Park and Vicksburg National Cemetery. This invasive vine thrives in the American South and is capable of engulfing trees, telephone poles, monuments, and historic sites. Other exotic plants include honeysuckle and Johnson grass. To date, the park’s exotic vegetation control efforts have yielded only temporary results. Planning efforts are now underway for long-term, aggressive, exotic species management.

Impacts of Alternative A: No Action / Continue Current Management

The No Action Alternative would continue the current practice of manually removing vegetative growth on the historic walls two to three times each year. This approach results in the loss of some individual plants but has little effect on the size, integrity, or continuity of plant communities in the park. Ongoing repair of bricks and mortar and maintenance efforts would cause little disturbance to vegetation near the walls. Continuation of current management would produce long-term, direct, negligible adverse effects on cemetery vegetation.

Cumulative effects. The soil nail wall project would have minor, short-term adverse effects on vegetation as approximately 1.6 acres of upland forest and bayou vegetation would be removed to allow for slope stabilization. Once the slope was stabilized, long-term minor benefits on vegetation would accrue from the reduction in large-scale soil erosion in the area.

The construction activities associated with improving Connecting Avenue and other roads would yield short-term, negligible to minor adverse effects as vegetation was removed or trampled in the immediate vicinity of the project. Regrading and replanting would restore vegetative communities to prior conditions.

Use of prescribed fire and control of invasive species may produce negligible, short-term, adverse effects because individuals of non-target plant species would be removed. However, in the long-term, vegetative communities would benefit by the release of nutrients from fire and by protection from invasion by exotic species.

Because the No Action Alternative would generate only negligible, highly localized vegetation disturbance, it would make no detectable contribution to the negligible to minor, adverse effects of construction activities or the beneficial effects resulting from prescribed fire and exotic vegetation management.

Conclusion. Continuing current management would result in the loss of some individual plants but would not have any effect on plant populations or communities. The long-term, direct, adverse effects on vegetation would be negligible.

Impairment. Alternative A would not produce major adverse impacts on vegetation whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park, (2) key to the natural or cultural integrity of the cemetery or park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of vegetation as a result of the implementation of Alternative A.

Impacts of Alternative B and Alternative C

Construction of the new wall sections and rehabilitation of the existing walls would result in disturbance and removal of vegetation for a distance of approximately 5 feet on each side of the wall alignment. The total area of soil disturbance and vegetation removal would be approximately one-half acre for the reconstruction of the north and south walls (1,761 linear feet) under both alternatives. In addition, a staging area would be established in a previously disturbed area. No large trees would be removed under either action alternative. Plants would be removed manually to limit the disturbance. Both Alternative B and Alternative C would produce localized, short-term, direct, negligible to minor, adverse effects on vegetation.

A border of grass would be established on both sides of the wall. This "buffer zone" of sod would restrict woody vegetation invading onto the wall. The sod boundary would also serve to stabilize soils adjacent to the wall. This would result in localized, long-term, indirect, negligible to minor benefits to vegetation in the area.

Installation of the small 4-foot-wide and 1-foot-deep drainage swale near the east wall would have negligible, highly localized, short-term, adverse effects on vegetation as existing plants were removed during construction. The area would be replanted and would likely support grass within a year, which

would reduce erosion in the area. This would result in a long-term, negligible benefit to vegetation in this small area.

Cumulative effects. Cumulative effects resulting from either action alternative in conjunction with other plans and projects in the project vicinity would be similar to those described for Alternative A. Because of the small area affected, , the revegetation of disturbed areas, and the ability for vegetation to quickly recovery in this environment, the action alternatives would make no detectable contribution to the negligible to minor, adverse effects of construction activities or the beneficial effects resulting from prescribed fire and exotic vegetation management.

Conclusion. Both Alternative B and Alternative C would produce localized, short-term, direct, negligible to minor, adverse effects on vegetation. These would result from vegetation disturbance and removal within the project area caused by repair activities. Over the long term, negligible to minor, indirect, localized benefits to vegetation would be realized as the grass buffer adjacent to the wall enhanced stabilization and helped control woody vegetation encroachment onto the wall.

Impairment. Neither Alternative B nor Alternative C would produce major adverse effects on vegetation whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park, (2) key to the natural or cultural integrity of the cemetery or the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of vegetation as a result of the implementation of Alternative B or Alternative C.

SOILS

Affected Environment

Located on the bluffs above the Mississippi River, the terrain surrounding Vicksburg National Military Park and Vicksburg National Cemetery is dominated by narrow ridges and steep ravines. This land formation is attributed to the presence of Pleistocene-age loess soils. This fine, wind-blown soil was deposited in the Ice Age, and reaches depths of 21 feet in some parts of the park. Loess is a productive soil, but is highly vulnerable to erosion. When barren areas are exposed to rain and moving water, severe soil loss can occur (NPS 2002b). Evidence of generalized erosion can be seen on the slopes and bluffs within and adjacent to the cemetery.

Records indicate that the cemetery was placed on constructed, uniformly graded terraces. This contrasts sharply with the rugged natural terrain of ridges and steep drainages and was created by extensive filling and grading when the cemetery was established. These filled areas experience ongoing erosion that ranges from shallow sloughing to deep-seated slope failure (Burns Cooley Dennis, Inc. 2002).

In preparation for stabilization of the walls, soil testing was conducted beneath the areas that would be affected by the proposed action. In addition, visual inspection of slopes was performed to identify active wasting processes. Soil borings were obtained to a maximum depth of 75 feet.

The composition of soils (from shallow to deep) includes fill material, Pleistocene-age loess, Oligocene-age soils of the Catahoula Formation, the Vicksburg Group, and the Forest Hill Formation. These soils have high to moderate strength, and are generally hard or inelastic, making them erodible and easily saturated (Burns Cooley Dennis, Inc. 2002). Soils identified in the project area are described in Table 7.

TABLE 7: SOILS OF THE PROJECT AREA

Series Name	Description
Pleistocene age loess	Fine-grained, wind-blown deposition
Catahoula Formation	Gray to white sandstone, loose quartz sands, tuffaceous sandstones, and brown silty clay (Heinrich 2001)
Vicksburg Group	Marine strata limestone and marls, brown to gray lignitic clay, and mica sand (Heinrich 2001, Burns Cooley Dennis, Inc. 2002)
Forest Hill Formation	Hard, silty clays rich in marine fossils (Conrad undated, Burns Cooley Dennis, Inc. 2002)

Erosion of the southern bluff, above Mint Spring Bayou, has resulted in loss of portions of the masonry wall. Modern fencing was installed to protect visitor safety, but continuing erosion now threatens the safety fence, as well as the southern access road and nearby burial plots (Parsons 2003). The U.S. Army Corps of Engineers' soil nail wall project to stabilize this embankment and prevent further loss of park resources was described previously under "Other Projects and Plans" in the "Purpose and Need" section.

Impacts of Alternative A: No Action / Continue Current Management

Under the No Action Alternative, soil disturbance along the walls would occur only as part of ongoing maintenance and repair activities. This would include placement of temporary fencing where conditions warranted and removal of vegetation that encroached on the wall. These actions would displace minimal amounts of soil. The grassy ground cover on both sides of the east and west walls would continue to provide protection from erosion at these locations. The relatively small-scale actions associated with current management would produce highly localized, long-term, direct, negligible, adverse effects on soils within the project area.

Cumulative effects. The soil nail wall project would halt the deep-seated sloughing that is occurring on the southern bluff below the cemetery road. This project would produce long-term, highly localized, moderate benefits to soils. However, during construction, minor, short-term, adverse effects on soils would result from compaction and soil loss in the 1.6-acre treatment area.

The construction activities associated with improvements to Connecting Avenue and other roads would likely yield short-term, negligible to minor effects on soils. Regrading and revegetation would stabilize soils and return soil productivity so that the long-term, adverse effect would be negligible.

Use of prescribed fire and control of invasive species may produce negligible to minor, short-term effects on soils. However, soils would benefit in the long-term as nutrients were recycled and native vegetation stabilized and protected the vulnerable loess from erosion.

Because the No Action Alternative would generate only negligible soil disturbance, it would make no contribution to the moderate benefits of the soil nail wall project, nor would it contribute to the negligible, long-term effects of construction and resource management actions outside the project area.

Conclusion. The soil disturbance created by the relatively small-scale actions of ongoing wall maintenance and repair would result in long-term, direct, negligible, adverse effects on soils within the project area.

Impairment: Alternative A would not produce major adverse effects on soils whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park, (2) key to the natural or cultural integrity of the cemetery or the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of soils as a result of the implementation of Alternative A.

Impacts of Alternative B and Alternative C

The repair and reconstruction efforts included in the action alternatives would require use of a staging area for construction equipment and material in a previously disturbed area, excavation to a depth of 3 feet along short portions of the alignment to place the foundation, and some compaction and disturbance within 5 feet of each side of the walls. The total area of disturbed soil during reconstruction of the north and south walls would be approximately one-half acre under both alternatives (1,762 linear feet). Best management practices would be used to limit erosion, and all disturbed sites would be regraded and revegetated. These actions would result in localized, direct, short-term, minor adverse effects on soils.

Along the east wall, a 4-foot-wide and 1-foot-deep drainage swale would be constructed. This would not create disturbance below the fill layers or in previously undisturbed soils. The site would be revegetated and would support grass within 1 year, resulting in a highly localized, direct, adverse, short-term, negligible effect on local soils.

The action alternatives would create grassy boundaries on both sides of the wall circumference. This would help reduce erosion immediately adjacent to the wall and enhance the overall stabilization effort. This would produce a highly localized, long-term, direct, negligible to minor benefit on soils.

Cumulative effects. Cumulative effects from Alternative B or Alternative C would be similar to those described above for Alternative A. Neither alternative would contribute noticeably to the moderate benefits of the soil nail wall project, nor would they contribute to the negligible, long-term effects of construction and resource management actions outside the project area.

Conclusion. The construction activities necessary to implement either action alternative would generate localized, minor, short-term adverse effects on soils. Disturbed areas would be revegetated with appropriate plantings. Creation of a continuous grass border adjacent to the wall would reduce erosion and contribute to the overall stabilization effort that would result in a highly localized, long-term, indirect, negligible to minor benefit on soils.

Impairment: Neither Alternative B nor Alternative C would produce major adverse effects on soils whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park, (2) key to the natural or cultural integrity of the cemetery or park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of soils as a result of the implementation of Alternative B or Alternative C.

WATER QUALITY

Affected Environment

Vicksburg National Military Park and Vicksburg National Cemetery are located above the eastern floodplain of the Mississippi River. This region is known as the Blufflands, and is characterized by ridges and steep ravines. The climate and soils support a dense native forest. The region's subtropical climate includes high humidity and precipitation with a mean temperature of 67 degrees Fahrenheit and 60 inches of rain. Tropical storms occur in the summer, along with frequent thunderstorms and heavy, prolonged rains (Walker 2001).

The south end of the cemetery sits atop Mint Spring Bluff. From here, the terrain drops approximately 40 to 50 feet to Mint Spring Bayou. The bayou begins within the park and flows west into the Yazoo River Diversion Canal, just north of Vicksburg and west of the National Cemetery. The Yazoo Canal feeds into the Mississippi River. Mint Spring Bayou mean stream width and depth were determined quarterly for the period of November 1997 through July 1998 (Harrel and Dibble 1998). During this time period, Mint Spring Bayou width varied seasonally from about 12 to 15 feet. Water depths in the bayou ranged from 0.7 feet in November to 1.1 feet in July. Flows are slowed by intermittent natural rock outcroppings. During periods of flooding, however water depths in the lower reaches of the bayou can exceed 25 feet (Winschel 2003). Upper reaches of the stream support a population of fathead minnows, with green sunfish also present in lower reaches (Harrel and Dibble 1998).

There are no designated or jurisdictional wetlands within the project area. Mint Spring Bayou is a Water of the United States.

Impacts of Alternative A: No Action / Continue Current Management

Ongoing maintenance and repair activities would cause little disturbance to soils and vegetation in the project area. Dense vegetation between the project area and the bayou would limit the likelihood that sediments produced in the project area would be transported to the bayou. As a result, continuing current management activities would have a negligible indirect effect on the water quality of Mint Spring Bayou.

Cumulative effects. The rehabilitation of Shirley House and planned road repairs would have little potential to affect water quality in Mint Spring Bayou. During all construction, best management practices would be used to control erosion and prevent sediment from reaching the waterway. Implementation of prescribed fire and invasive species control measures could result in some temporary sediment releases, if rains occurred immediately after management actions were taken. However, heavy vegetation along the bayou would serve as a buffer from sediment delivery. Adverse effects would be localized and likely negligible to minor.

The soil nail wall project being conducted by the U.S. Army Corps of Engineers on the southern bluff has the potential to generate localized, minor to moderate, short-term, adverse effects on water quality. This project will affect 1.5 acres of upland vegetation, and approximately 0.1 acres of aquatic habitat. The No Action Alternative would make no contribution to the cumulative water quality effects generated by this, or other, projects.

Conclusion. Because there is no excavation or sediment generation associated with the No Action Alternative, continuing current management would have a negligible indirect effect on local water quality.

Impairment. Alternative A would not produce major adverse impacts on water quality whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park, (2) key to the natural or cultural integrity of the cemetery or park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of water quality as a result of the implementation of Alternative A.

Impacts of Alternative B and Alternative C

Implementation of either of the proposed action alternatives would produce localized disturbance along the wall alignment and could release limited amounts of sediment that could be carried to nearby waterways. However, standard best management practices would be used to limit erosion, and heavy natural vegetation would serve as a buffer against sediment reaching Mint Spring Bayou. Although it is unlikely that repair and restoration of the walls would result in detectable changes in water quality, in the event of heavy rain during construction, a short-term, negligible to minor, indirect, adverse effect could occur. Revegetation of the area following construction would off-set these adverse effects.

Installation of a drainage swale to improve drainage near the east wall would better protect the wall from being undermined, but would be unlikely to have detectable effects on water quality in Mint Spring Bayou.

Cumulative effects. The effects of Alternative B or Alternative C in conjunction with other projects planned by the park and the U.S. Army Corps of Engineers' slope stabilization project would be similar to those described for Alternative A. In the long-term, neither of the action alternatives would contribute cumulatively to water quality effects in the area.

Conclusion. In the event of heavy precipitation during construction activities, implementation of either proposed action alternative could have short-term, localized, indirect, negligible to minor, adverse effects on water quality in Mint Spring Bayou. Revegetation of the area after construction would offset these effects.

Impairment: Neither Alternative B nor Alternative C would produce major adverse impacts on water quality whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park, (2) key to the natural or cultural integrity of the cemetery or park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of water quality as a result of the implementation of Alternative B or Alternative C.

WILDLIFE

Affected Environment

Vicksburg National Military Park and Vicksburg National Cemetery comprise over 1,800 acres of forest and open grass that make excellent habitat for many species. The park and cemetery are home to many mammals and birds, and wildlife species are often viewed by visitors and staff. Bird-watching is regularly pursued by a subset of park visitors.

The warm, humid climate and vegetative cover make this environment ideal for small rodents, which are common at the park. The small mammal population includes opossum, shrews, and moles; three rabbit species; a variety of squirrels; and mice and rats (both native and non-native). This plentiful prey base

brings raptors such as Cooper's hawks, red-tailed hawks, and great horned owls to forage in the park. Links to a complete listing of the wildlife found at the park are available at the park's website at <http://www.nps.gov/vick/interp/visprgs.htm>.

Other predators that frequent Vicksburg National Military Park and the cemetery include coyotes, red and gray fox, raccoons, mink, skunk, and occasionally bobcats. Turkey vultures and black vultures can be seen circling overhead (NPS 2003a).

The white-tailed deer is the only hoofed mammal found within the park. Some of the more unusual wildlife includes the nine-banded armadillo, bats, flying squirrels, and beaver (NPS 2003a).

A wide variety of birds are found in the park and the cemetery. Permanent bird residents include swallows, wrens, robins, bobwhite, killdeer, mourning doves, blue jays, cardinals, and crows. Seven species of woodpeckers are found in the park, including the pileated, red-headed, and downy. Seasonal bird visitors include egrets, herons, warblers, and hummingbirds (NPS 2003a).

The park receives approximately 1 million visitors each year, and wildlife have adapted to human presence. The roadways and interpretive loop are traveled at relatively slow speeds, and the park's animal residents are largely undisturbed by visitors and staff.

Within the proposed project area, it is likely that small mammals, toads, salamanders, and snakes could be present.

Impacts of Alternative A: No Action / Continue Current Management

The ongoing management associated with repairing and maintaining the existing cemetery wall would be unlikely to generate detectable effects on park wildlife. These routine activities generate a minimal amount of disturbance that is not likely to affect wildlife beyond a temporary displacement of individual animals during regular grounds-keeping activities or as a result of human presence in the area. Therefore, the No Action Alternative would have long-term, indirect, negligible effects on wildlife.

Cumulative effects. Because the No Action Alternative would not have a discernable effect on wildlife, it would make no cumulative contribution to the effects of other projects and plans on wildlife in or near the project area.

Conclusion. Routine repair and maintenance of the perimeter wall would cause minimal disturbance and would have a long-term, negligible, indirect effect on wildlife and wildlife habitats.

Impairment: Alternative A would not produce major adverse impacts on wildlife whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park, (2) key to the natural or cultural integrity of the cemetery or park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of wildlife resources as a result of the implementation of Alternative A.

Impacts of Alternative B and Alternative C

Implementation of either of the action alternatives would include use of small mechanized construction equipment, removal of a limited amount of vegetation, and use of a staging area for storage of materials and machinery. Most species would avoid the area during construction activities, which would occur only during daylight hours. Individual small rodents, reptiles, or amphibians could be displaced to similar

adjacent habitat by the wall reconstruction that would remove vegetation and disturb soils on a total of approximately 0.5 acres of wildlife habitat. However, construction would occur in different areas over a period of 3 to 5 years, and each area would be revegetated promptly after construction was completed. The noise and disturbance generated by the activities and human presence would result in short-term, minor, adverse effects on wildlife in or near the project area.

Cumulative effects. Several other plans and projects to be undertaken in the park and adjacent to the cemetery would likely result in short-term adverse effects on park wildlife. Repairs to Connecting Avenue and other road projects would likely generate minor adverse effects as wildlife would be displaced and would avoid the construction areas. The U.S. Army Corps of Engineers' soil nail wall project to stabilize the slope above Mint Spring Bayou would result in minor, short-term adverse effects due to disturbance and clearing of approximately 1.6 acres of vegetation. However, the cumulative adverse effects of all of these projects with either of the action alternatives for the cemetery wall would be short-term and would not exceed minor levels. Cumulatively, they would have a negligible long-term effect on wildlife in the area.

Conclusion. The action alternatives would produce short-term, minor, indirect, adverse effects on wildlife and wildlife habitat.

Impairment: Neither Alternative B nor Alternative C would produce major adverse impacts on wildlife whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Vicksburg National Cemetery and Vicksburg National Military Park, (2) key to the natural or cultural integrity of the cemetery or park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of wildlife resources as a result of the implementation of Alternative B or Alternative C.

SUSTAINABILITY AND LONG-TERM MANAGEMENT

Consideration of long-term impacts and the effects of foreclosing future options are addressed in this section. The intent of this analysis is to identify sustainable development that meets the needs of the present without compromising the ability of future generations to meet their needs.

Unavoidable Adverse Impacts

The intent of this determination is to identify whether the proposed action or alternatives would result in impacts that could not be fully mitigated or avoided.

Activities associated with Alternatives B and C would include short-term unavoidable adverse effects. Construction activities to reconstruct and repair the cemetery wall would produce short-term, negligible to minor adverse effects on soils, vegetation, and wildlife. A small area, less than one acre, along the perimeter of the cemetery would be disturbed to reconstruct the north and south cemetery walls. In this area vegetation would be removed and soils would be compacted or exposed to erosion by wind and rain. Revegetation of the disturbed sites after construction would off-set these adverse effects resulting in no long-term effects.

Long-term unavoidable adverse impacts to cultural resources would occur under all of the alternatives considered and evaluated. Alternative A (no action) does not provide maintenance and repair at a rate to match the rate of deterioration. This alternative would result in long-term moderate adverse impacts on the cultural landscape and structures. Alternative B and Alternative C would provide long-term benefits by preserving, reconstructing, and restoring the cemetery wall; however, during construction historic archeological resources may be exposed resulting in a long-term negligible to minor adverse effect. None

of the alternatives for preserving and reconstructing the cemetery walls at Vicksburg National Cemetery would result in impairment of resources that would affect the basic purpose of the cemetery.

Relationship of Short-Term Uses and Long-Term Productivity

The intent of this determination is to identify whether the proposed action or alternatives would result in trading the immediate use of the land for any long-term management possibilities or the productivity of park resources that would affect future generations. It is intended to determine whether the proposed action or alternatives would be sustainable actions that could continue over the long-term without environmental problems.

The long-term use of the land was committed to interment and memorialization of United States servicemen and women and their dependents when the cemetery was established in 1866. None of the alternatives for managing the cemetery walls would change its management possibilities or affect the area's use or the use of resources by future generations. It would improve sustainability by reducing the existing localized environmental problems associated with site drainage and soil erosion.

Irreversible or Irretrievable Commitments of Resources

The intent of this evaluation is to identify whether the proposed action or alternative would result in effects that could not be changed over the long term or would be permanent. An effect on a resource would be irreversible if the resource could not be reclaimed, restored, or otherwise returned to its condition before the disturbance. An irretrievable commitment of resources involves the effects on resources that, once gone, cannot be replaced or recovered.

None of the alternatives would involve the irreversible or irretrievable commitment of resources. The area was committed for use as a cemetery almost 140 years ago, and this use would not change with implementation of any of the alternatives. No cemetery or park resources would experience major adverse impacts or impairment as a result of any of the alternatives.

CONSULTATION AND COORDINATION

Scoping is the effort to involve agencies and the general public in determining the issues to be addressed in the environmental document. Among other tasks, scoping determines important issues and eliminates issues not important; allocates assignments among the interdisciplinary team members and other participating agencies; identifies related projects and associated documents; identifies other permits, surveys, or consultations required by other agencies; and creates a schedule which allows adequate time to prepare and distribute the environmental document for public review and comment before a final decision is made. Scoping includes early input from any interested agency or any agency with jurisdiction by law or expertise. At a minimum for NPS projects, agency scoping included input from the Advisory Council on Historic Preservation, the State Historic Preservation Officer, and the U.S. Fish and Wildlife Service.

The Mississippi State Historic Preservation Office has been involved in this project from its inception, and its staff participated in the project value analysis. On July 2, 2003, letters were sent to the State Historic Preservation Office and to the Advisory Council on Historic Preservation inviting their participation in this project (see Appendix A). As part of the Section 106 process, the park also will draft an assessment of effect form, which will be forwarded to the State Historic Preservation Office along with this environmental assessment. Comments received from the State Historic Preservation Office will be reflected in the final compliance documents.

The U.S. Fish and Wildlife Service was contacted by letter regarding this project on June 4, 2003. The U.S. Fish and Wildlife Service responded on the consultation letter that no Federally listed endangered, threatened, or candidate species are present in the project area. The original letter sent by the National Park Service on which the U.S. Fish and Wildlife Service responded can be found in Appendix A.

PLANNING TEAM PARTICIPANTS

William Nichols	Superintendent	Vicksburg National Military Park
Jerrel Cooper	Facility Manager	Vicksburg National Military Park
Kurt Foote	Natural Resource Program Manager	Vicksburg National Military Park
Terrence Winschel	Historian	Vicksburg National Military Park

PREPARERS

Bart Young	Project Manager	Parsons
Timberley Belish	Environmental Scientist	Parsons
Jacklyn Bryant	Environmental Scientist	Parsons
Diane Rhodes	Cultural Resource Specialist	Parsons
Janet Snyder	Environmental Scientist/Editor	Parsons

LIST OF RECIPIENTS

Federal Agencies

Advisory Council on Historic Preservation, Office of Federal Agency Programs – Director, Don Klima

U.S. Army Corps of Engineers, District Engineer – Col. Frederick Clapp, Jr.

U.S. Department of Agriculture

Forest Service – Jon Williams

Soil Conservation Service – Charles Curtis

U.S. Department of the Interior

Fish and Wildlife Service

Curtis James

Kathy Lunceford

National Park Service

Denver Service Center

Bill Witmer

Bob Felker

Natchez Historical Park, Superintendent – Keith Whisenant

Washington Office

Edwin Bearss

Dr. Dwight T. Pitcaithley

U. S. Department of Veterans Affairs

Natchez National Cemetery, Director, Peter Young

State of Mississippi

Mississippi Civil War Battlefield Commission – Chairman, Richard Lingle

Mississippi Department of Archives and History – State Historic Preservation Officer, Elbert Hilliard

Mississippi Department of Forestry – Kent Grizzard

Mississippi Natural Heritage Program – Cynthia Rickis

County and Local Government

City of Vicksburg

Mayor, Laurence E. Leyens

Wayne Mansfield

Warren County, Board of Supervisors – Richard George

Organizations

American Legion – Post Commander

Foundation for Historic Preservation – Executive Director, Nancy H. Bell

Old Courthouse Museum – Gordon Cotton

Veterans of Foreign Wars – Post Commander

Other

Varner Parker & Sessums – Mack J. Varner

Vicksburg Post – Charlie Mitchell

Dr. Robert Abraham

Mike Ballard

Warren Grabau

General Parker Hills

Paul Ingram

Wayne McMaster

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Parsons

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Appendix A: Consultation and Coordination Documentation

RECEIVED

JUN 06 2003

Vicksburg N.M.P

Vicksburg, MS

United States Department of the Interior



NATIONAL PARK SERVICE
Vicksburg National Military Park
3201 Clay Street
Vicksburg, Mississippi 39183-3495

D18 (VICK)

June 4, 2003

Mr. James Curtis
US Fish and Wildlife Service
6578 Dogwood View Pkwy., Suite A
Jackson, MS 39213

No federally listed endangered,
threatened or candidate species present.

Ante B. James
Miss. Environmental Coordinator
U. S. Fish and Wildlife Service
Log# Q3-612
6/5/03
Date

Dear Mr. Curtis:

Vicksburg National Military Park is preparing an Environmental Assessment (EA) to evaluate potential effects on the natural and human environment resulting from a proposed action that would preserve and restore the existing historic walls, reconstruct collapsed portions of the wall, and repair the gates at Vicksburg National Cemetery.

The project involves two components: first, the repair and preservation of the perimeter masonry wall and cemetery entrance gates and secondly, the design and reconstruction of missing sections of the perimeter wall. Cleaning, repairing, and preserving the existing historic brick work (approximately 3,000 linear feet) would involve cutting back plant growth at the perimeter wall; completing minimal soil stabilization; repointing the existing wall; constructing a barrier fence on a portion of the southern boundary; and cleaning the brick work. The second component of the project involves the construction of new compatible masonry walls along the northern and southern boundaries (approximately 1,761 linear feet). Existing foundations would be used where feasible. A drainage swale would be constructed at the east wall where erosion and sedimentation threaten the integrity of the wall. The project area, which is located within Warren County, Mississippi is shown on the attached map.

Although we are just beginning to gather information for the project, we want to be able to evaluate the potential effect that project implementation would have on threatened and endangered species. In order to meet our Section 7 consultation requirements for the EA, we respectfully request that you provide us with the current listing and locations of endangered, threatened, proposed, and candidate species and their associated critical habitats specific to the project area.

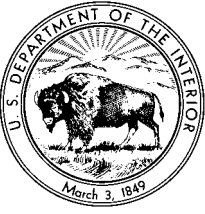
This letter is the first step of consultation for this project to ensure that the planning effort adequately addresses Section 7 requirements related to the EA. When the draft EA is completed, a copy will be sent to you with an official transmittal letter for your review and comment.

We look forward to working cooperatively with you on the planning and implementation of this project.

Sincerely,

A handwritten signature in black ink, appearing to read "William O. Nichols". The signature is fluid and cursive, with the first name "William" and last name "Nichols" clearly distinguishable.

William O. Nichols
Superintendent



United States Department of the Interior

NATIONAL PARK SERVICE

Vicksburg National Military Park

3201 Clay Street

Vicksburg, Mississippi 39183-3495

July 2, 2003

Mr. Elbert Hilliard

State Historic Preservation Officer
Department of Archives & History
P.O. Box 571
Jackson, MS 39205-0571

Dear Elbert:

This letter serves to notify you that the National Park Service is beginning the next stage of planning for improvements to the walls surrounding Vicksburg National Cemetery.

The existing perimeter fencing and walls exhibit a mixture of styles and conditions, and segments of historic masonry wall continue to deteriorate. The first of the historic brick walls was constructed in 1874, but the north and south walls have since collapsed as a result of unstable soils and slopes. The west wall was realigned and reconstructed between 1939 and 1942 to allow for construction of U.S. Highway 61; the east wall also was rebuilt during this time period. Both east and west walls are in relatively good condition, but the southern portion of the east wall is being affected by water drainage and soil deposition that threatens the stability of the wall.

Segments of wall in other areas have collapsed from erosion and soil slippage. Some segments of wall have been reconstructed on the original alignment while other parts were reconstructed in a different configuration and outside of the original alignment. Chain-link fencing has been used to replace the missing masonry walls on the north and south perimeter. The only remaining section of wall that is on the original alignment and is representative of the 1874 design (coping and extended sections over the

pilasters and their pyramid caps) is located along the southern boundary. Portions of the southwest wall near the original entrance gate have been reconstructed following vehicle collisions.

We have begun work on an environmental assessment that will study and assess the impacts to cultural resources from this project. Therefore, we invite your office to continue to participate in this planning effort in accordance with 36 CFR 800, and with the 1995 Servicewide Programmatic Agreement among the Advisory Council on Historic Preservation, the National Conference of State Historic Preservation Officers, and the National Park Service.

This letter also serves to notify your office that we plan to use the environmental assessment process to accomplish compliance for both Section 106, in accordance with the National Historic Preservation Act, as amended, and the National Environmental Policy Act (as described in 36 CFR 800.8 (a-c)) to analyze potential project effects. As required by the above regulations, a similar notification letter has been sent to the Advisory Council on Historic Preservation.

The draft environmental assessment will include any required mitigation, and as soon as the draft document is completed, we will send it to you for your review and comment as part of the Section 106 process. We appreciate your previous participation in the Value Analysis Workshop, and look forward to receiving your continuing input on the planning process.

We believe that your participation has thus far and will continue to result in better planning for cultural resources management, and will help ensure that cultural resources are adequately considered during preparation of the plan and the accompanying environmental assessment. If you have any questions, please contact Historian Terry Winschel, our Section 106 Compliance Coordinator at 619-2908.

Sincerely,

William O. Nichols

Superintendent

cc: NPS-SER

Parsons-Denver-T. Belish, D. Rhodes



United States Department of the Interior

NATIONAL PARK SERVICE

Vicksburg National Military Park

3201 Clay Street

Vicksburg, Mississippi 39183-3495

July 2, 2003

Mr. Don L. Klima

Director, Office of Federal Agency Programs

Advisory Council on Historic Preservation

1100 Pennsylvania Ave., NW, Suite 803

Washington, DC 20004

Dear Mr. Klima:

This letter serves to notify you that the National Park Service is beginning the next stage of planning for improvements to the walls surrounding Vicksburg National Cemetery.

The existing perimeter fencing and walls exhibit a mixture of styles and conditions, and segments of historic masonry wall continue to deteriorate. The first of the historic brick walls was constructed in 1874, but the north and south walls have since collapsed as a result of unstable soils and slopes. The west wall was realigned and reconstructed between 1939 and 1942 to allow for construction of U.S. Highway 61; the east wall also was rebuilt during this time period. Both east and west walls are in relatively good condition, but the southern portion of the east wall is being affected by water drainage and soil deposition that threatens the stability of the wall.

Segments of wall in other areas have collapsed from erosion and soil slippage. Some segments of wall have been reconstructed on the original alignment while other parts were reconstructed in a different configuration and outside of the original alignment. Chain-link fencing has been used to replace the

missing masonry walls on the north and south perimeter. The only remaining section of wall that is on the original alignment and is representative of the 1874 design (coping and extended sections over the pilasters and their pyramid caps) is located along the southern boundary. Portions of the southwest wall near the original entrance gate have been reconstructed following vehicle collisions.

We have begun work on an environmental assessment that will study and assess the impacts to cultural resources from this project. Therefore, we invite your office to continue to participate in this planning effort in accordance with 36 CFR 800, and with the 1995 Servicewide Programmatic Agreement among the Advisory Council on Historic Preservation, the National Conference of State Historic Preservation Officers, and the National Park Service. A similar notification letter has been sent to the Mississippi State Historic Preservation Officer.

This letter also serves to notify your office that we plan to use the environmental assessment process to accomplish compliance for both Section 106, in accordance with the National Historic Preservation Act, as amended, and the National Environmental Policy Act (as described in 36 *Code of Federal Regulations* 800.8 (a-c)) to analyze potential project effects. As required by the above regulations, a similar notification letter has been sent to the Advisory Council on Historic Preservation.

The draft environmental assessment will include any required mitigation, and as soon as the draft document is completed, we will send it to you for your review and comment as part of the Section 106 process. We look forward to receiving your continuing input on the planning process and welcome hearing any concerns you may have now regarding this project.

We believe that your participation will result in better planning for cultural resources management, and will help ensure that cultural resources are adequately considered during preparation of the plan and the accompanying environmental assessment. If you have any questions, please contact Historian Terry Winschel, our Section 106 Compliance Coordinator at 601-619-2908.

Sincerely,

William O. Nichols

Superintendent

cc: NPS-SER

Parsons-Denver-T. Belish, D. Rhodes



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical 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 by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS/ November 2003



National Park Service
U.S. Department of the Interior
National Park
Superintendent
Vicksburg National Military Park
3201 Clay Street
Vicksburg, MS 39183

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