
Treatment Plan

Introduction

The treatment recommendations and guidelines that comprise this chapter were prepared to provide Stones River National Battlefield with an overall vision for the park's cultural landscape that will sustain long-term management and interpretation. They arise from a synthesis of work undertaken by the project team to prepare this Cultural Landscape Report (CLR), and consideration of the park's General Management Plan (GMP). The treatment recommendations also address the needs and recommendations identified in various park planning documents, including the *Development Concept Plan and Environmental Assessment for Improvements to the Self-guiding Tour Routes* (2005), *Fire Management Plan* (2003), and the management issues outlined for the CLR team by park personnel during the April 2006 meeting.

This treatment chapter is organized into the following six sections:

1. **Management Issues, Goals, and Objectives** provides an outline of the management issues collected by the CLR team from various sources, including the GMP, various environmental assessments and planning documents, and park personnel.
2. **Recommended Landscape Treatment Approach** outlines the four alternatives recognized by the Secretary of the Interior for treating historic landscapes and identifies the most appropriate approach for the park, as well as communicates an overarching philosophy that guides the recommendations and guidelines that comprise the treatment plan for the Stones River National Battlefield landscape. It also provides the rationale for the selection and describes why the other alternatives were not selected.
3. **Treatment Concept** outlines the overarching philosophy or approach that drives the treatment recommendations,

guidelines, and their implementation. The treatment concept is illustrated on the Treatment Concept Plan. Refer to Fig. 181.

4. **Treatment Considerations by Landscape Characteristic** describes the management issues associated with each landscape characteristic and presents an overarching recommended approach to their consideration.
5. **General Treatment Guidelines** identifies the guidelines that apply to the park as a whole, regardless of any alternatives-based choices that are made by the park.
6. **Treatment Recommendations by Character Area** identifies the treatment recommendations that apply to each character area of the park.

Management Issues, Goals, and Objectives

The park's purpose, as stated in the GMP, is "to preserve and interpret the battlefield of Stones River, to mark the significant sites, and to promote understanding and appreciation of the battle and related events."¹¹⁵ The park's vision for its future is a non-distracting environment where visitors can:

- contemplate the sacredness of the battlefield;
- understand and appreciate the Battle of Stones River and its significance; and
- experience a personal connection with this past human conflict.¹¹⁶

Taking these broad purpose and vision statements into consideration, of particular importance for developing a treatment plan for Stones River National Battlefield are the management objectives identified by the park in

115. National Park Service, *Stones River National Battlefield Tennessee: Final General Management Plan/ Development Concept Plan / Environmental Impact Statement* (Washington, D.C.: U.S. Government Printing Office, November 1998), 11.

116. Ibid.

developing the GMP. These include the following:

Interpretation

- Interpret the Battle of Stones River within the context of the Western Theater and the Civil War.
- Provide visitors the opportunity to understand the objectives, strategies, and tactics of the battle.
- Provide an atmosphere at a series of vignettes/sites that allows the visitor to visualize the rural setting at the time of the battle, understand the battle events, and contemplate the sacredness of the ground.

Cultural Landscape

- Preserve a core segment of the Stones River battlefield, representative of major battle action, in a way that allows visitors to visualize and imagine the influence of landscape features on the strategy and outcome of the battle.
- Preserve, to the greatest extent practicable, and restore to a general 1860s appearance the land within the authorized boundary of the national battlefield.
- Maintain the open space and mark the sites of Rosecrans's and Bragg's headquarters.
- Preserve the 1892 design of the national cemetery's landscape and the 1860s design of the Hazen Brigade Monument, and maintain a quiet, reflective, and reverent atmosphere.
- Preserve and stabilize remnants of Redoubt Brannan, Lunettes Palmer and Thomas, and Curtain Wall No. 2.
- Provide controlled access to earthworks to interpret the fort (Fortress Rosecrans) and allow visitors to understand the extent of the fortifications and their significance.

Adjacent Lands

- Develop preservation/mitigation strategies with landowners and local governments to

achieve the general appearance of an agricultural landscape as viewed from interpretive areas within the national battlefield.

- Encourage creation of a park-like experience in corridors linking noncontiguous units.
- Encourage interpretation of the greater battlefield through cooperation with landowners and local government agencies.¹¹⁷

The planning issues and concerns associated with long-term management of the park's lands and its resources are documented in the GMP as follows:

- Plans for resource protection/management, visitor use, interpretation, and facility development for much of the land within recently authorized and expanded park boundaries do not exist.
- Visitors leave the park and its environs with a poor understanding of the battle for a number of reasons:
 - The tour route overlooks important resources, bears little relationship to the battle sequence, and lacks a coherent interpretive purpose or theme.
 - Informational and interpretive signs in the park are inadequate, and wayside exhibits are obsolete, inaccurate, ineffective, and incomplete.
 - The audiovisual program is outdated.
- Although the authorized boundary encompasses 712 acres, only about 520 acres are federally owned and publicly accessible, thus limiting opportunities for NPS on-site interpretation. Of that figure, only 489 acres, or twelve percent of the original battlefield, are federally owned.
- Park lands are not contiguous. From one unit to the next, major discontinuities in land use affect the visitor experience.

117. *Ibid.*, 12.

- Much of the landscape outside the park has changed significantly since the battle, even in agricultural areas. Patterns of field/forest have changed. Land use is changing from rural to urban and commercial. This diminishes the battlefield's integrity and makes it difficult for visitors to understand the battle.
- The need for more community "green space" leads to increased demand for the national battlefield to accommodate activities such as jogging, picnicking, camping, sunbathing, group bike touring, weddings, and kite flying. The sum of these activities is incompatible with the park purposes of interpretation and resource protection.
- Non-native species such as bush honeysuckle, Chinese privet, and kudzu are detracting from the ability to interpret and preserve battlefield resources, including earthworks, inducing change in the cultural landscape, and may be adversely affecting cedar glade habitat and threatened or endangered species such as the Tennessee coneflower.
- River flooding results in resource alteration and damage to facilities, such as the stone wall at the Artillery Monument. The stone wall and spring box are modern intrusions constructed during the 1970s, and are inappropriate components of the cultural landscape. These modern elements make it difficult to interpret the battle story at this location.
- The protection, display, storage, preservation, and documentation of park collections are inadequate.
- Access to parking areas at noncontiguous sites such as the Rosecrans Headquarters site, the national cemetery, and the Hazen Brigade Monument is unsafe due to the volume of feeder road traffic. Heavy traffic also makes pedestrian crossings on Old Nashville Highway increasingly unsafe.
- Thompson Lane provides greater access to battlefield lands for development and will increase the level of traffic along feeder roads, particularly Wilkinson Pike and Old Nashville Highway. State Highway 840 will promote commercial and industrial development along U.S. Highway 41/70S. In addition, increasing urban development south and west of the park and Interstate Highway 24 is expected to significantly increase traffic along Wilkinson Pike. This potential increase in development and traffic could have an adverse effect on resources, air quality, the visitor experience, and safety as historic corridors continue to lose their integrity.
- While some land uses surrounding the park are incompatible with park objectives for preserving the historic scene and providing a quality visitor experience, there are lands in the original battlefield that retain integrity, and if protected, could enhance interpretation and the visitor experience. In addition, new highway construction and other factors are increasing the pressure for development of those lands within the original battlefield that retain integrity. With respect to land use and development design guidelines, the park, county, and city do not have a comprehensive approach to conserving the battlefield and related resources in the face of rapid land use change.
- Increased commercial and residential use on lands adjacent to the park boundary would result in noise levels that could adversely affect the visitor experience within the park. The solitude that is desirable for visitors at the Hazen Brigade Monument and the national cemetery is continuously interrupted by the sights and sounds of adjacent land use.
- A telecommunications tower was recently constructed along Wilkinson Pike and is visible from Redoubt Brannan and the southeast corner of the main section of the park. Another tower, which might also be in the park's viewshed, has been proposed along Old Nashville Highway. There is a potential for more such structures to be constructed near the park, resulting in adverse impacts on park values as additional modern intrusions on the historic scene.¹¹⁸

118. *Ibid.*, 15–16.

The proposed action alternative of the GMP focused on preserving a “larger area of the original battlefield and creating a sense of place where visitors can better understand and appreciate the battle and its role in the Civil War.”¹¹⁹ By emphasizing the available long vistas across which the battle occurred, the proposed action would “allow visitors to appreciate the immense scale of the Battle of Stones River and to understand the battle in a more holistic way than is possible at present. This proposed action would be accomplished through boundary expansion and land acquisition, restoration to a general 1860s era landscape, new exhibits, and a new tour route.”¹²⁰ The land acquisition strategy identified five parcels that were of interest to the park and eight areas that were studied for appropriate protection strategies. It should be noted that by 2005 the acquisition of lands south of Wilkinson Pike was deemed no longer viable because the city constructed a four-lane divided road, Medical Center Parkway, through this area. Because of this and other new development in this area, some of the lands proposed for acquisition are now unattainable. As such, the GMP’s preferred alternative for the self-guided tour route was not considered a viable option for the 2005 DCP/EA, which analyzed alternatives for improvements to the tour route. While there are a few parcels within the current authorized park boundary that NPS could acquire, an expansion of the authorized boundary as proposed by the GMP would require an act of Congress.

The GMP also discusses the park’s approach to cultural resource management. It notes:

On lands outside park boundaries, park management would encourage neighbors to maintain a general appearance of an agricultural landscape, or at a minimum, open space. Within the park boundaries, cultural landscape reports would be produced that would prescribe how the landscape should be modified to approximate an 1860s era appearance . . . As part of this landscape modification, post-war structures would be removed and safety hazards would be eliminated . . . In the case of degraded lands, cultural landscape reports would prescribe the level of treatment in

119. *Ibid.*, 19.

120. *Ibid.*

terms of landforms, vegetation, and facilities necessary to have the property approximate its appearance at the time of the battle.¹²¹

As identified in the CLR project scope of work,

During the last thirty years threats to the historic integrity of the [park’s cultural landscapes] have increased. Some battlefield landscapes no longer reflect the 1862 appearance. Previously clear areas are now overgrown with woods; previously forested areas have thinned or receded. Additionally, residential and commercial development has occurred on the battlefield as Murfreesboro has expanded. An increase in traffic along the park’s boundary prompted the construction of the intrusive Thompson Lane Connector by the Tennessee Department of Transportation across a section of the original battlefield adjacent to the park. Development has also introduced light and noise pollution to the park, including the floodlights of nearby automobile dealerships and traffic noise from as far away as Interstate 24 to the southwest. Other threats include in-house transportation and infrastructure projects and associated development, such as current planning for the alteration of the existing tour road.

Completion of a cultural landscape report (CLR) is needed to support informed planning for future development and identify possible mitigation strategies to ensure protection of the significant resources at Stones River. Treatment guidelines provided in the CLR would also allow the park to plan projects that would improve the condition of the landscapes to meet their strategic plan goals.¹²²

The management objectives of the CLR treatment plan were derived from discussions with park personnel at the project start-up meeting in October 2005, in subsequent discussions about the project in April 2006, and as a result of the research and analysis conducted on behalf of this study. The most important

121. *Ibid.*, 25.

122. National Park Service, “Project Agreement / Scope of Work; Cultural Landscape Report, Stones River National Battlefield: Core Battlefield, Artillery Monument, General Bragg’s Headquarters, and General Rosecrans’s Headquarters” (Atlanta, Georgia: Southeast Regional Office, June 2005), 2.

objectives of the CLR are to provide treatment recommendations and guidelines concerning:

- Vegetation management
 - Changes in land cover to more closely approximate field and forest patterns at the time of the battle
 - Protection of the cedar glades from visitor access
 - Monitoring and control of invasive alien species
 - Views within the park
 - Protection of the park visitor experience and viewsheds from adjacent development
 - Development of preservation/mitigation strategies with landowners and local governments to achieve the general appearance of an agricultural landscape as viewed from interpretive areas within the national battlefield
 - Enhancement of the interpretive experience
 - Encouragement of a park-like experience in corridors linking noncontiguous units of the park
 - Encouragement of interpretation of the greater battlefield through cooperation with landowners and local government agencies
 - Enhancement of opportunities for contemplation and reflection within the battlefield
 - Recommendations for interpreting features missing from the Civil War era landscape
 - Improvement of the effectiveness of the self-guiding interpretive program
 - Enhancement of ADA/ADAAG accessibility of interpretive resources and programs
 - Protection strategies for earthworks
 - Review of the proposed new tour road alignment and trails for their potential impact on the cultural landscape; provision
- of recommendations to mitigate any anticipated impacts
 - Review of the proposed concept plan for the McFadden Farm site
 - Use of the newly acquired parcel near the McFadden Farm site as a natural resource interpretive trail/bird watching area
 - Consideration of vegetative cover type(s) for interpreted open fields
 - Recommendations for improving interpretation of the Pioneer Brigade earthworks
 - Recommendations for improving the consistency and compatibility of site furnishings and objects within the park, including signage
 - Recommendations for improving the historical accuracy of interpreted fences

Recommended Landscape Treatment Approach

The Secretary of the Interior currently recognizes four primary treatment alternatives for historic properties: preservation, rehabilitation, restoration, and reconstruction. These are defined and discussed in the NPS guidance document, Director's Order No. 28: *Cultural Resource Management Guideline*, as well as *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, as follows:

Preservation is the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Rehabilitation is the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

Restoration is the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by removing features from other periods in its history and reconstructing missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Reconstruction is the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a

specific period of time and in its historic location.

Based upon the park's need to meet current and projected future interpretive, functional, and management goals, **rehabilitation** is recommended as the appropriate treatment alternative for the Stones River National Battlefield landscape. Because rehabilitation is defined as "the act or process of making possible a compatible use for a property," this approach will allow for protection of the site's historic character and resources while carefully addressing the needs for enhancement of interpretive opportunities and circulation routes, ecological maintenance and restoration, and the improvement of visitor amenities as outlined in the GMP.

Under the rehabilitation treatment alternative, stabilization, protection, and preservation of historic and natural resources are actions that must occur in order to allow for the limited accommodation of new uses. As part of the treatment recommendations, those resources and systems at Stones River National Battlefield that are to be the focus of stabilization, protection, and preservation are noted, as are the aspects or areas of the battlefield landscape that are particularly sensitive to change and disturbance. Sensitive habitats and biotic resources, as well as sites of known and potential archeological resources, for example, should be treated with great care. In general, the CLR recommends preservation of archeological resources unless a compelling research question or informational need justifies disturbance or excavation or unless mitigation to accommodate unavoidable change is necessary.

In considering the other treatment alternatives recognized by the Secretary of the Interior for the Stones River National Battlefield landscape, the CLR found them inappropriate for the following reasons. **Preservation** is overly restrictive because it does not allow for the enhanced interpretation and site access recommended in the GMP. **Restoration** and **reconstruction** are inappropriate for the Stones River National Battlefield landscape because they assume, as a prerequisite, that sufficient documentation exists to accurately portray a lost historic condition. At this time, it does not

appear that documentary sources detailed enough to support restoration or reconstruction of the Stones River National Battlefield cultural landscape exist.

Secretary of the Interior's Standards for Rehabilitation

The following section summarizes the standards for rehabilitation espoused by the Secretary of the Interior for historic properties. The ten basic principles that comprise the standards are intended to help preserve the distinctive character of a site, while also allowing for reasonable change to meet new needs. The standards (36 CFR Part 67) apply to historic properties of all periods, locations, sizes, conditions, and uses. These standards create a baseline of guidance to which intended changes to the historic landscape must be compared. These standards are neither technical nor prescriptive, but promote responsible preservation practices as follows:

1. A property will be used as it was historically, or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Treatment Concept

The treatment plan for Stones River National Battlefield provides a vision for the site as a whole, as well as site-specific guidance for individual resources. This section is intended to convey the overarching vision or concept for treatment, within which the more specific recommendations that follow can be understood. Refer to Fig. 18I, Treatment Concept Plan.

The park is already successfully managing the cultural landscape of the battlefield and balancing cultural and natural resource values. The park has recognized the need to protect and enhance the rare cedar glade habitats, to more closely approximate historic field and forest patterns, and to provide better interpretation through signage, waysides, selective screening and clearing for views, and better connections between battlefield resources, some of which occur on noncontiguous parcels. To assist the park in these goals, the CLR treatment plan concept is as follows.

The overarching concept for cultural landscape treatment at Stones River is to balance the protection and enhancement of the battlefield's historic integrity with contemporary park visitor access and interpretation requirements and sustainable land management practices. Many of the specific landscape treatment actions are intended to help convey the story of the battle by reinstating historic conditions or establishing aids to interpret missing battlefield features. The concept also takes into consideration contemporary land ownership issues, which include a park composed of numerous noncontiguous parcels linked by public road corridors and edged by developments that are often inconsistent with the character of the landscape at the time of the battle. Finally, the concept also recognizes the value of post-battle commemoration and seeks to reconcile commemorative features with features that relate directly to the battle.

Vegetation and natural resource management, interpretation, and consideration of the overall visitor experience are the main focus of the treatment plan, as they are the highest-priority needs identified by the park in its GMP. The

recommended approach to vegetation management will also support a crucial interpretive goal at the park: enhancement of visual accessibility. Removal of the existing non-contributing woodland areas, control of invasive alien plants, and restoration of the historic character of woodlands important to the events of the battle will serve to better interpret the events of the battle in many key locations.

Rehabilitation of existing vegetation communities focuses on the interpretation of historic land cover for open fields, including a combination of native warm-season grass fields with enhancements to increase biodiversity, further conversion of fescue fields wherever possible to support sustainability goals, and establishment or maintenance of limited crop field areas for interpretation. The treatment recommendations and implementation projects included herein provide the means for enhancing the viability and health of the cedar glade communities, and suggest relocating most interpretive programs and other incompatible visitor and park uses away from these sensitive areas as a protective measure. Rehabilitation of cedar glades includes removal of encroaching stands of invasive plants such as Chinese privet, bush honeysuckle, and Eastern red cedar to prevent the shading out of glade endemics and limiting visitor access to these areas. Where visitors come into contact with glade communities, the treatment plan recommends the park provide educational materials that convey the sensitivity and fragility of these communities, including signs that engender stewardship. Rehabilitation of woodland vegetation includes clearing, thinning, and/or rehabilitating existing woods to more closely approximate historic conditions. In all cases, control of invasive alien species will be a high priority for park management. The treatment plan also addresses ecologically sensitive rehabilitation of the Stones River banks and the newly acquired property located near the McFadden Farm.

In addition to vegetation and natural resource management, the treatment recommendations also address trail and exhibit development. Using the preferred alternative adopted in the DCP/EA for *Improvements to the Self-guiding Tour Routes* (2005) as a point of departure, the CLR recommends further enhancements to this tour

route and wayside plan that will reinforce the interpretation of the historic landscape and its conditions at the time of the battle. Included in this recommendation is the enhancement of the connections between the Nashville Pike unit and Bragg's Headquarters, Rosecrans's Headquarters, Redoubt Brannan, and the McFadden Farm unit in order to reinforce the visitor's understanding of these areas of the park as part of the larger battlefield.

The CLR also recommends weaving interpretation of all significant layers of history that have occurred on the site—including residential use and post-battle commemoration—into these experiences. Also proposed is the enhancement of the program of contemplative nodes located along the trail system at the sites of important locations associated with the battle. These features are intended as quiet refuges, with comfortable seating areas provided for visitors. The treatment recommendations also suggest general guidelines for establishing, altering, and adjusting the existing circulation systems at the park.

While the opportunities to interpret sites of missing structures and farmsteads is limited (many farmsteads present during the battle lie outside of park property), seven buildings and structures that have been identified by Bearss (1962) lie within the bounds of the park. Because the battle was fought within an agricultural landscape inhabited by families whose lives were forever altered by the event, the treatment plan provides recommendations for interpretation of these sites, as well as alternatives for enhancing the existing interpretation of the toll house site.

Treatment Considerations by Landscape Characteristic

This section summarizes the treatment issues that pertain to different landscape characteristics and management concerns within the park. The opportunities and constraints associated with each of the landscape characteristics addressed as a part of this study are described, as well as the issues that have influenced the development of the more specific management guidelines and treatments included later in this chapter.

Spatial Organization

Rehabilitating the spatial organization of the park to its appearance during the Battle of Stones River is a key component of the park's interpretive vision. Rehabilitation of 1860s field and fence patterns, woodlands, crop fields and other agricultural fields, circulation corridors, and the identification of missing farmstead clusters will engender for visitors a greater understanding of the battle and the key connections between military tactics and the nineteenth century cultural landscape.

Natural Systems and Features

Stones River National Battlefield contains important natural systems and features including limestone outcroppings, caves, sinkholes, springs, access to Stones River, and most importantly the cedar glades. Some of these features, such as the glades and the Stones River watershed, have recently begun to suffer from degradation due to visitor access and the degree of development occurring outside the boundaries of the park. In some cases, the park's natural systems and features need to be stabilized. In others, adaptive management principles need to be applied so that the natural systems can undergo a process of recovery. Adaptive management recognizes that natural systems are constantly changing and that to achieve the highest level of health and stability, land managers must adapt their practices to these changes.

The park's ultimate goal of scene rehabilitation must be achieved through the continued application of Best Management Practices (BMPs) for natural resources. For example,

water resources need to be managed to prevent erosion and sedimentation. Fallow fields, scrubby woodlands, and colonies of invasive alien species need to be rehabilitated to support healthy communities of native plants. The sensitive habitats of endangered plant species, such as the glade endemics, need to be protected and enhanced. Also critical is the protection of the park's contributing topographic features—including the knolls associated with the Artillery Monument and the Hazen Brigade Monument, the rock outcrop areas, and the level open fields of the Nashville Pike and McFadden Farm units—which played key roles in the Battle of Stones River. In addition to protection of these key land forms, providing visual accessibility for visitors is a primary objective of treatment.

Vegetation

Sensitive rehabilitation of vegetation communities in the park is a necessary component of historic scene enhancement. The GMP and CLR both suggest that vegetative composition and density are not entirely consistent with the 1860s period of significance. The implementation guidelines included herein provide suggestions for enhancing the historical accuracy of the character of cedar brake communities within view of interpreted areas by removing non-native plants and planting cedars to make the stands denser. They also guide clearing and thinning operations to return mixed woodlands to a more open character and to convert fescue fields to native warm-season fields; provide specific recommendations for crop field exhibits; and outline the potential enhancement of prescribed fire activities. Several glade areas exist that are irreplaceable and there are specific treatment recommendations that support their protection.

Circulation

Circulation features located within the park include Van Cleve Lane—a battle-era route—and park roads and trails established and developed during the twentieth century. A portion of the tour road alignment survives from the early park development period and is therefore a contributing landscape resource. Adjacent circulation routes also survive from the period of significance: the Old Nashville Highway, Asbury Lane, Wilkinson Pike, and the

Nashville & Chattanooga Railroad line. Treatment recommendations focus on the retention, restoration, and maintenance of contributing historic routes and carefully considered changes to the existing non-contributing park tour and trail system that address a better understanding of the battle.

Buildings and Structures

Very few buildings and structures survive within the park from either the battle or early park development periods. Contributing structures include the Pioneer Brigade earthwork, surviving Fortress Rosecrans earthworks, Artillery Monument, Hazen Brigade Monument and associated stone wall, and the pair of stone entrance gates along the Old Nashville Highway. Buildings and structures that existed at the time of the battle, as well as during the years between the battle and development of the park, are not currently interpreted to the public except in a very basic manner. Buildings and structures associated with the African American community between the late nineteenth century and 1928 played an important part in the evolution of the landscape, even though they were not associated with the battle. Although restoration or reconstruction of the community is not appropriate, the park interpretive plan could consider other means of conveying this aspect of the history of the landscape to the visitor. The treatment plan discusses methods for interpreting sites of missing features, how to weave these into the visitor tour route, and their value to the park's interpretive program. Interpretation of missing buildings and structures needs to be undertaken appropriately and without the use of conjecture. Interpretive exhibits should be established based on evidence identified through documentary and archeological research.

Views

Views are another key interpretive element of Stones River National Battlefield, as viewpoints associated with knolls and elevated landforms were a critical component of the tactics used by Civil War-era military commanders. Views to and from the McFadden Farm site are crucial to interpreting the battle events and should be rehabilitated, while sightlines through the farm fields located in the northern, southern, and

eastern portion of the park should be protected and maintained. Viewshed rehabilitation should be an integral part of the park's scene rehabilitation efforts.

Screening of Incompatible Views

While the focus of treatment regarding views is scene rehabilitation to approximate the landscape's 1862–1863 appearance, mitigation of intrusive views is also important. Views from the park to adjacent properties are potentially not compatible with the park's goals of reflection, contemplation, interpretation, and commemoration of the Battle of Stones River, and intrusive views should be mitigated using tools such as vegetative screen plantings.

Small-scale Features

There are no small-scale features known to survive from the Civil War period of significance except for the headstones associated with the McFadden family cemetery and other headstones located in the northwestern corner of the Nashville Pike unit near the railroad tracks that are associated with the Hazen Brigade Monument. The headstones associated with the monument are known to post-date the battle. The only small-scale features surviving from the early park development period include the Rosecrans and Bragg Headquarters monuments, and possibly some of the stone culvert headwalls along the tour road. For contributing or potentially contributing small-scale features, a conservative approach to their treatment is recommended, including retaining and maintaining these resources to protect their cultural resource values.

The park currently interprets missing small-scale features, namely field and farm precinct fencing through reconstruction of historic fencelines using somewhat historically accurate styles. More definitive information about the character and composition of mid-nineteenth century fences is needed for the park. Reestablishment of historic fence patterns would enhance interpretation of the battlefield landscape; currently, however, it would be difficult to reconstruct additional missing small-scale features without introducing conjecture. Reestablishment of historic fencelines should be depicted differently from contemporary fencing

to reflect park boundaries and other areas requiring fencing. Marking of missing features, boundaries, visitor tour routes, and controlled access points should be effected through a compatible non-historic vocabulary that marks locations for interpretation or wayfinding but does not introduce features that might be misinterpreted as being historic.

Archeological Resources

The entire park should be considered an archeological resource, and any proposed or potential ground disturbance should be examined by archeologists on a case-by-case basis. Appropriate compliance should be conducted prior to implementation of any landscape treatment recommendations that require ground disturbance, including trail establishment or realignment, vegetation changes, or interpretive exhibit development. Subsurface archeological investigations should only be undertaken to address a specific goal or question about the historic landscape.

Earthworks

The earthen fortifications surviving at Fortress Rosecrans and within the Nashville Pike unit are, or will become, an important focus of interpretation at the park. It is important that interpretive trails provide opportunities for understanding the mechanics and engineering of these fortifications without encouraging or allowing visitors to access the fragile soil resources. The slopes of earthen fortifications should be maintained either in tall grass cover that enhances visual accessibility, dissuades physical accessibility, yet limits the potential for soil erosion; or under forest cover that generates leaf litter that protects the earthen resources from soil erosion. Under forest cover, special attention is needed to protect the earthworks from visitor access. Trees and invasive species should always be carefully removed from the ditch, parapet, and other sloped features of the earthworks to limit the hazard of windthrows, and animal burrows need to be repaired and future burrow use discouraged.

Partnering

It will be critical to address the need for partnering and cooperative efforts with local agencies, organizations, and property owners in achieving the park's vision and goals. The CLR recommends fostering relationships with adjacent landowners, local city and county governments, and state and federal Departments of Transportation. Partnering with these entities will be beneficial in terms of coordinating easements, fitting park development goals with municipal comprehensive plans, and influencing the location and design of future roads. Working with adjacent landowners to help secure and stabilize the watershed is one example of an important partnering effort that should be explored. Working with the Tennessee Department of Transportation, City of Murfreesboro, and Rutherford County to consider the establishment of roadside elements that help to connect the noncontiguous units of the park for visitors is another potential partnering effort to consider.

New Design and Construction

The CLR includes treatment guidelines and recommendations that address appropriate implementation of the proposed new tour road and trail projects so that they are compatible with the historic character of the landscape and easily distinguishable as contemporary additions; how and where to locate new development; how to guide development on adjacent lands; and to what level new additions can be made without adversely affecting the resources and scene restoration. Sustainability and means for promoting infiltration of precipitation and overland flow of stormwater should be considered an integral component of all new construction efforts.

General Treatment Guidelines

The general management guidelines and recommendations that follow pertain to Stones River National Battlefield as a whole and should be used when planning for any future landscape change. They are intended to support all landscape treatments proposed herein and should be considered in conjunction with any project or treatment alternative that is undertaken at the park. These guidelines relate to a philosophy of cultural landscape treatment based on NPS Director's Order No. 28: *Cultural Resource Management Guideline*, and the Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*.

Spatial Organization

- Restore field and forest to the patterns of the battle period of significance using ecologically sound techniques and BMPs.
- Avoid conjecture when rehabilitating historic spatial organization patterns. Rely on documentary evidence and archeological survey data rather than circumstantial evidence.

Natural Systems and Features

- Develop BMPs and approaches to Stones River watershed remediation on lands that fall within the park, and recommend remediation strategies for receptive neighbors within the watershed.
- Work with neighboring landowners and local agencies to diminish the amount of run-off entering the river.
- Rehabilitate native landscapes within the park to reduce run-off and enhance infiltration of precipitation into the park's groundwater resources.
- Continue, develop, and broaden the current native warm-season grass field conversion program.

- Establish filter strips, vegetated swales, and other BMPs for land maintained under crop cover to protect against soil erosion.
- Establish or continue an existing program for the control of the specific invasive species that threaten the rehabilitation process.
- Establish performance criteria for each rehabilitation and restoration effort and develop a monitoring protocol that measures the extent to which these criteria are being achieved.
- Monitor the progress of restoration and rehabilitation activities using the monitoring protocol established for the park. Adapt the techniques and approaches to restoration and management based upon evaluation of the monitoring efforts.
- Continue to practice integrated pest management (IPM) in accordance with NPS policies. Avoid the use of pesticides and herbicides unless absolutely necessary. If chemical controls are used, apply the minimum necessary to achieve the proposed effect. Allow only qualified applicators to apply chemicals.
- Avoid altering topography in the park. Minimal grading for new trails is acceptable while alterations to the knolls, gently rolling open fields, and rock outcrops are not appropriate.
- Protect slopes from erosion by maintaining a healthy vegetative cover on all slopes.

Vegetation

- Rehabilitate the cedar glade communities by removing Chinese privet. Remove Eastern red cedar to prevent shading when it encroaches on the glade habitat by colonizing soil pockets.
- Employ BMPs for thinning and clearing mixed woodlands. Undertake clearing and thinning operations with the goals of reducing fuel loads, opening viewsheds, and returning the woodland to its approximate composition during the 1860s. Additional investigation into the composition of local

woodland areas during the 1860s will be required to achieve this goal. Consider using nearby good quality woodlands, such as Flatrock Cedar Glades and Barrens State Natural Area as references in developing a restoration plan in support of this recommendation.

- Mark all vegetation to be thinned or cleared prior to beginning work. Employ an arborist, natural resource manager, and/or landscape architect familiar with the park to mark the vegetation to be removed or thinned.
- Restore cedar brake communities by removing invasive alien species and consider alternatives for reestablishing the density characteristic of these stands during the battle period.
- Continue to identify, control, and remove invasive plants.
- Continue monitoring and recording populations of invasive plants within the park and utilize data collected to inform ongoing maintenance procedures.
- Continue to maintain and enhance the health and diversity of vegetation in sensitive or remnant communities, particularly the cedar glades.
- Continue to periodically document the condition of the landscape through photopoint photography.

Circulation

- Ensure that no new trails or roads are planned or built within or through any of the ecologically sensitive communities, particularly the cedar glades. Consider removing existing trails and roads from these sensitive communities, or reduce their impact by lowering the surface to match the height of the surrounding landscape.
- Avoid altering existing circulation routes or establishing new circulation routes until after compliance has been completed.
- Minimize the visual impacts of vehicles and vehicular access systems. Consider the potential impact on views when planning to add or change circulation systems.
- Make vehicular access as unobtrusive as possible. Consider noise and other impacts when siting roads, trails, and parking.
- Consider the possibility of providing a shuttle/bus tour system on peak weekends if traffic and parking become concerns in the future. Direct visitors to park at the main parking area and ride a small, environmentally friendly bus or van along the tour loop on guided or unguided tours, thereby reducing the amount of traffic on the tour road and throughout the park.
- Encourage pedestrian or bicycle circulation as an alternative to vehicular access.
- Minimize the visual impacts of pedestrian access systems.
- Take advantage of existing road traces and trail systems whenever possible to avoid disturbance of the historic landscape.
- Design interpretive trail systems to follow the routes of historic road traces and alignments whenever practicable. Consider, however, the potential impacts of new trails following these routes. Assess the following: the visual impact of a trail on important viewsheds; potential impact on sensitive natural and archeological resources; accessibility issues such as slope; potential for erosion; and overall interpretive value. If issues of concern cannot be mitigated, consider using a different alignment for the trail that fulfills related goals.
- Avoid regrading that will damage historic road traces when establishing new trails along historic routes. Whenever regrading is necessary, use fill that is distinguishable from the existing grade rather than cut, which will destroy the resource.
- Consider alternative interpretive trail alignments if documentary and archeological evidence is insufficient to determine the precise routes of historic roads.

- Ensure that the removal of non-historic park trails is undertaken with minimal impact on adjacent features; that visitor maps, signage, and other indications of trail layout are updated to reflect the removal; and that former trail surfaces are seeded or otherwise appropriately revegetated.
- Route visitor circulation away from sensitive archeological resources, cultural sites, and endangered species habitat areas.
- Follow the regulations stipulated in the Uniform Federal Accessibility Standard (UFAS) and Americans with Disabilities Act Accessibility Guidelines (ADAAG) for trails and paths when establishing universally accessible circulation that may be designated as “improved.” Avoid steep slopes, ensure that trail widths meet regulations, and take other precautions to make these trails accessible to all visitors.
- Provide universally accessible routes to primary interpretive elements. Strive to accommodate universal accessibility to all interpreted features. Provide alternative interpretive experiences where accessibility is not possible or reasonable.

Buildings and Structures

- Consider the interpretive value of non-intrusive, non-contributing buildings and structures.
- Consider the removal of non-contributing structures that are intrusive to the historic landscape.
- Remove buildings and structures that post-date the period of significance only if they have a negative impact on the historic character and integrity of the park landscape. Document thoroughly all buildings and structures before removal.
- Avoid conjectural reconstruction of missing historic buildings and structures.

Views

- Consider scenic easements on tracts of land adjoining park boundaries as a method of viewshed and resource protection and an alternative to fee-simple land acquisition.
- Minimize the visual impact of pedestrian and vehicular access systems. Consider using techniques such as establishing vegetative screens, evaluating the potential for new trails to be invisible from key viewpoints, and minimizing the amount of signage, seating, and other small-scale features associated with these access systems in their design.
- Communicate with utility providers regarding future plans to upgrade telephone and utility lines within the park. Suggest that future lines be placed underground and contained within existing easements and right-of-ways.

Small-scale Features

- Provide minimal site furnishings to accommodate visitors, such as benches. Use site furnishings that are compatible with the character of the park in connection to the park’s theme and concept and materials. Ensure that the style of site furnishings is uniform throughout the park.
- Keep the number of contemporary small-scale features to the minimum required for visitor and staff comfort and safety.
- Avoid establishing any new small-scale features that may be mistaken for historic resources.
- Convey interpretive information to visitors primarily through the use of graphically rich waysides that are durable, contemporary in form and character, muted in color, and composed of simple materials.

Partnering

- Consider working with adjacent willing landowners to place conservation easements on tracts of land adjoining park boundaries to protect natural and cultural resources, and

as an alternative to fee-simple land acquisition.

- Partner with landowners and local, state, and federal agencies to secure and stabilize the watershed associated with Stones River. Promote the implementation of BMPs on private parcels associated with the Stones River watershed and the establishment of vegetation communities and other features that encourage infiltration of precipitation and overland flow of stormwater.
- Partner with the Tennessee Department of Transportation, City of Murfreesboro, and Rutherford County to enhance the physical connections between noncontiguous park units through the establishment of new features along the roadside.
- Coordinate with local city and county governments to ensure that comprehensive and municipal development plans take into account park policies and goals. In addition, work with the appropriate city and county agencies to develop a plan for private lands adjacent to the park that supports the protection of conservation easements and management of open space and agricultural land uses.
- Coordinate with local, state, and federal departments of transportation to ensure that new roads, or alterations to existing roads, will not adversely impact Stones River National Battlefield.
- Consider using transfers of development rights as a conservation tool.
- Employ strategies for land conservation and partnerships found in *Saving America's Countryside*, a handbook for land development.¹²³
- Apprise neighboring property owners of prescribed fire schedules.

123. Samuel N. Stokes, et al., *Saving America's Countryside: A Guide to Rural Conservation*, 2nd ed. (Baltimore, Maryland: Johns Hopkins University Press, 1997).

Land Uses

- Consider both natural and cultural features in treatment and land-use decisions.
- Avoid land-use activities, permanent or temporary, which threaten or impair known or potential archeological resources.
- Monitor and regulate use of the landscape to minimize immediate and long-term damage to cultural resources.
- Consider carefully the appropriateness of any proposed or existing recreational uses. For existing uses, determine what impact the recreational uses are having on natural and cultural resources. A finding of negative impacts should suggest the need for further study and the development of mitigation measures. For any proposed new use, consider the impact on natural and cultural resources, as well as traffic and parking. Avoid introducing recreational uses that require extensive grading, the introduction of non-native grasses, intensive maintenance, an increase in parking, or the addition of vertical features or lighting.
- Avoid permitting recreational uses that may endanger visitors, cultural resources, or sensitive ecosystem areas; that require extensive facility development; or that conflict with resource protection goals. Examples of incompatible activities include organized field sports, horseback riding or mountain biking, ATV use, and sport hunting.
- Limit, monitor, and control access to areas that are vulnerable to damage from human access or use.

New Design and Construction

- Design new construction taking into consideration the BMPs established for the park. In particular, design new construction using green building techniques, and incorporate technologies such as those described by LEED (Leadership in Energy and Environmental Design), a voluntary, consensus-based national standard for developing sustainable building.

- Undertake sufficient study and recordation of landscape features that require modification, repair, or replacement before work is performed to protect research and interpretive values.
- Locate any necessary new features supporting visitor services and administrative, operations, and maintenance functions in the existing Visitor Center and maintenance areas whenever possible. If these facilities are found to be insufficient for projected needs, consider a location for housing new facilities that is outside of the battlefield landscape.
- Design and situate additions or alterations to the landscape in such a way that they do nothing to destroy historic materials, features, and spatial relationships that characterize the cultural landscape.
- Introduce new buildings and structures to facilitate access and interpretation while minimizing adverse impacts on the historic character and features of the landscape.
- Ensure that new construction is compatible with existing historic resources in materials, size, scale and proportion, and massing. Differentiate new work from existing resources.
- Design and situate new additions and alterations to the landscape in such a way that, if removed in the future, the essential form and integrity of the landscape would be unimpaired.
- Design new construction to have muted, neutral, earth-tone colors and materials that serve to make new facilities compatible with the historic and natural context.
- Ensure that the location, design, and construction of new facilities and systems are subordinate to the surviving cultural and natural landscape. New design and construction should be as visually unobtrusive as possible without sacrificing functionality.
- Avoid siting new buildings and structures in floodplains or in any of the primary viewshed areas.

Interpretation

- Consider means for interpreting significant historic features not associated with the Civil War Battle of Stones River that do not alter the character of the landscape within the park interpretive plan. To interpret features such as the African American community that once existed to the west of Van Cleve Lane, consider methods such as written interpretive information, site bulletins, web site interpretation, personal service interpretation, and audio tour information rather than physical changes to the landscape.
- Provide an alternative means for interpretation, such as additional waysides or a Visitor Center exhibit, for those features located in areas that cannot be made universally accessible.
- Consider carefully any proposals to restore or reconstruct missing Civil War-era features. Prior to undertaking restoration or reconstruction efforts, carefully weigh the financial costs of both the initial effort and the subsequent maintenance costs; the ultimate benefit to be gained for interpretation; and the accuracy with which the feature could be reestablished.
- Consider providing sensitively placed benches to allow for quiet sitting and reflection of the battlefield landscape at important interpretive nodes.

Prescribed Fire

Stones River National Battlefield currently uses prescribed fire as a landcover management tool. To guide these efforts, a fire management plan was developed for the park in 2003. The preferred alternative (Alternative 3) recommends management activities that will “restore and maintain native plant communities in the park, mimic the natural ecological processes, and help protect park resources and adjacent lands from the threat of wildfires.”¹²⁴ This document prescribes measures to prevent and/or mitigate

124. National Park Service. *Stones River National Battlefield Fire Management Plan, Environmental Assessment* (Atlanta, Georgia: National Park Service, Southeast Regional Office, 2003).

adverse environmental impacts that may occur from fire management activities. Under the preferred alternative, the *Fire Management Plan* calls for the suppression of all wildland fires, provides for prescribed fires, and allows for manual/mechanical treatments. Stones River National Battlefield contains two fire management units (FMU). All of the open areas and fields in the park are contained in FMU No. 1, which totals approximately 305 acres. The national cemetery and primary park development/infrastructure are also located within FMU No. 1. The remaining 407 acres in the park, consisting of mixed hardwood, Eastern red cedar stands, and cedar glades, are contained in FMU No. 2. Each unit of the park includes both FMUs according to existing vegetative cover. Under this plan, all wildland fires in the park, human-caused fires and naturally-ignited fires (e.g., lightning), are to be declared wildfires and suppressed in a manner that minimizes negative environmental impacts of suppression activities.

All wildfire suppression activities are to adhere to Minimum Impact Suppression Tactics (MIST) guidelines, as outlined in the *Fire Management Plan*.¹²⁵ These guidelines should be followed when undertaking any prescribed fire activities. Manual and mechanical thinning (e.g., chainsaws, bush hogs) in the prescribed fire units are to involve limited, selective thinning of hardwoods and cedars encroaching upon xeric limestone prairies, meadows, open fields, and earthworks, as well as any hazard trees. While a few large-diameter trees may be cut, thinning efforts are to focus primarily on small diameter woody shrubs and trees. Mechanical thinning efforts are also to include cutting hay and mowing. Thinning treatments may occur any time of the year. Initial fire return intervals would be between two and five years. Those prescribed fire units on a two-year cycle would need more frequent prescribed fires to combat exotics and reduce competition. Once the park reaches fire management goals and objectives for a particular prescribed fire unit, it is to implement a maintenance program for the unit that involves a prescribed fire return interval of three to five years.

125. Ibid., 2–8.

Treatment Recommendations by Character Area

Within the overall framework of rehabilitation, a resource-driven approach to landscape management is provided for each unit or character area of the park below; specific treatment recommendations are then provided to support site specific or resource specific management. In many cases alternatives for treatment are provided that offer a range of options for the park and can be considered in conjunction with available levels of funding and maintenance capabilities.

Some of the recommendations conveyed below make reference to the Implementation Guidelines chapter. The implementation projects provide specific guidance regarding the actions required to implement the treatment plan.

Nashville Pike Unit

The goal of treatment in this area is to replicate as closely as possible the spatial organization and character of the battlefield as it appeared in 1862, primarily through the rehabilitation of vegetation, interpretation of missing features, and enhancement of the legibility of resources surviving from the Civil War era. Within this character area, visitors will have an opportunity to become oriented to the park and its interpretive program, determine a course for experiencing the unit's resources, follow that course, and be provided with information sufficient to make an informed decision about how to approach the park's other units and resources and to place these within an overall interpretive and spatial context. This character area will provide opportunities for all visitors to gain a comprehensive understanding of the battle and its role within the events of the Western Theater and will offer opportunities for resource-based interpretation at various tour stops. The unit will also provide opportunities for contemplation, commemoration, and access to educational and interpretive features, with the Battle of Stones River as a primary focus.

Specific treatment recommendations are as follows:

Spatial Organization

- Remove existing non-contributing forest stands south of the existing tour road and west of the Visitor Center as possible, taking into consideration natural resource values such as the high quality of the stand located southwest of the Michigan marker fields and tour loop. One of the non-contributing stands west of the Visitor Center may harbor a rare woodland vine. If this vine is determined to be present, mitigation could include planting in other locations.
- Reestablish areas of missing forest cover along the western boundary of the unit. This will enhance the interpretation of the Pioneer Brigade earthwork by recreating its historic viewshed, and also help screen incompatible views of adjacent development.
- Further reestablish historic fence lines to delineate historic patterns of spatial organization, particularly along the southern ends of Van Cleve Lane and the nearby farm fields recommended for reestablishment.
- Consider creative ways of depicting the spatial qualities of missing farmsteads and commercial buildings. For example, mark missing house or outbuilding locations on the ground, create three-dimensional frame (ghost) structures, or mow former farmyard areas in a distinctive fashion. Farmsteads and commercial buildings to be depicted in this manner might include the cabins in the southern portion of the unit, the toll house/gate, the Hunt House, and the log house located along the Old Nashville Highway. The sites of the Cowan and Blanton Houses lie outside of the current park boundaries but could be interpreted from within the park. An improved interpretive wayside is already planned for the toll house site, and the park has developed an initial wayside exhibit proposal that considers the most significant battlefield features for interpretation. Before undertaking any new

interpretive measures that depict missing spatial qualities, ensure that sufficient documentation is available to accurately depict their character and location. Conduct archeological surveys before undertaking ground-disturbing activities for installation of interpretive features depicting historic patterns of spatial organization of elements such as foundation remains, road traces, and fence lines.

Natural Systems and Features

- Consider immediate stabilization actions for the cedar glades to prevent further decline. Immediate stabilization would entail removal of all Chinese privet and any other identified invasives and thinning of Eastern red cedar populations where they have encroached upon the glades.
- Develop a long-term treatment plan for the park's cedar glades. Of critical concern is removing non-native species and encroaching trees and shrubs to enhance the ecological health of cedar glade communities. Consider carefully the potential for using fire as a vegetation management tool in the surrounding communities, including cedar woodlands, mixed hardwood forest, and xeric limestone prairie.
- Protect the native plant populations of the glades, which are susceptible to damage from foot and/or equipment traffic.
- Educate visitors and hikers about the sensitive nature of the glade communities and the damage that foot traffic can cause.
- Limit pedestrian access to the glades. Consider re-routing the Boundary Trail around the glades but allow visitors to view into at least one glade from the edge to afford interpretive opportunities.
- Avoid using mowers, tractors, and other heavy equipment in and around glades.
- Develop and implement a protocol for periodic monitoring of the condition of the glades. Include the existing protocol for biological and photographic monitoring.

Vegetation

- Remove invasive plant species from cedar brakes and rehabilitate the margins of these communities along interpretive routes to approximate the landscape conditions during the battle. Refer to the Implementation Guidelines chapter for further guidance. In particular, increase the density of Eastern red cedars within the core of the unit in areas where they will be most highly viewed by visitors (along the tour road and particularly near the proposed Tour Stop No. 3). Where this objective conflicts with glade restoration, focus cedar infill only along forest edges where interpretive tour stops occur.
- Control growth of invasive species such as Chinese privet. (Refer to the Implementation Guidelines chapter for further guidance.)
- Continue the native warm-season grass conversion process already begun, and ensure that newly reestablished fields are also planted with native warm-season grasses. This program could include the activities and techniques described below:
 - Refer to the latest literature for guidance regarding appropriate methods for enhancing diversity in native plantings.
 - Continue prescribed fire activities and attempt to burn annually or as frequently as fuel loads and/or park resources permit, following the park's *Fire Management Plan*.
 - Remove, mechanically or by hand, shrubs that cannot be controlled by fire. Shrubs will become less of an issue with more frequent prescribed fire use. Coordinate herbicide applications as necessary to augment mechanical removal.
 - Continue efforts to control the growth of invasive species, particularly Johnson grass (*Sorghum halpense*) and sericea lespedeza (*Lespedeza cuneata*).
- Consider establishing new crop exhibit areas in association with the interpretation of the

missing cabins and fencing in the southern portion of the unit.

Circulation

- Rehabilitate the eastern portion of the existing tour road that will be integrated into the new tour route by reestablishing natural hydrological processes that are currently impeded by the road corridor. Utilize pervious or porous pavement wherever possible, design the road grades to conform to the site's inherent hydrology, and establish filter strips and vegetated swales to promote infiltration of stormwater at the margins of the road corridor.
- Consider alternatives for the surfacing of Van Cleve Lane to accommodate the new tour road route that are as visually and environmentally sensitive as possible. Consider a range of paving materials that are more compatible with the historic scene than traditional asphalt. Avoid paving Van Cleve Lane in a manner that is consistent with the character of the surrounding public road corridors, particularly blue-hued asphalt. Consider selecting paving materials or finishes that are warm-hued and muted in color. Alternatives include stabilized soil, which entails adding a binding agent to soil; porous pavements, such as crushed stone, which minimize run-off by allowing water to percolate into the ground; unit pavers, which can serve as a pervious pavement when set in sand; resin-based pavement that utilizes non-petroleum-based resin to bind any color of aggregate into a hard-surface pavement; or exposed-aggregate finished concrete. Establish the narrowest width necessary for the road corridor to accommodate visitor access and safety needs to limit its visual intrusion on the historic scene. Avoid curb and gutter and ditching to manage stormwater associated with the road corridor. Wherever possible, direct stormwater to flow across broad, shallowly-sloped field and meadow areas to encourage infiltration into the ground.
- Consider removing the existing surface material from the unused portions of Van Cleve Lane and restoring the historic roadbed. Continue to maintain the margins of the trace for three feet to either side by cutting vegetation to the height of a brushhog blade. Avoid managing the trace with a manicured appearance. Repair drainage and erosion problems and uneven surfacing to ensure their suitability for pedestrian use.
- Consider restoring the segment of Van Cleve Lane located to the north of the Old Nashville Highway and within the park boundaries. Conduct archeological investigations to determine the historic alignment of the road corridor. Evaluate the stone-lined ditches to either side of the road to determine their date of origin. Follow the recommendations included herein for restoring the historic roadbed of Van Cleve Lane to the south in order to similarly restore this portion of the road corridor. Retain and maintain the ditches as part of the restoration of the road if they are found to contribute to its historic significance.
- Consider removing unnecessary asphalt from the edges of the existing tour road when the new route is established, and convert the western segment into an eight-foot wide paved pedestrian trail. Reduce the height of the current roadbed that is to be converted to a trail to that of the surrounding landscape. Refer to the "Tour Road Plan" for more specific guidance on this issue.
- Consider various options for accessing the Pioneer Brigade Earthworks, including converting Nickens Lane or one of the other existing access drives in the area to a pedestrian trail as part of a loop trail that connects to a trail leading to the Visitor Center. Refer to the Implementation Guidelines chapter for further guidance. Refer to the "Tour Road Plan" for more specific guidance on this issue.
- Ensure that any new trail segments recommended in the 2005 DCP/EA have as minimal an impact on the landscape as possible. The trails should be accessible only to pedestrians and persons with disabilities. The trail system should include a series of universally accessible interpreted segments

tied to parking areas and to the less formal back-country trail beyond.

- Engage an archeologist to conduct on-site investigations to determine any potential impact on cultural resources prior to construction of new trails.
- Consider minor adjustments to the DCP/EA preferred alternative tour route (Alternative C) to better utilize the features and characteristics of the cultural landscape for interpretation. Recommendations are as follows:
 - After reestablishing the density of the cedar forest and reestablishing the historic field patterns on the south end of the unit, utilize Tour Stop No. 3 to interpret the dense cedar brake vegetation encountered by the troops in this location, the cabins and corn fields that comprised the agricultural landscape that became the battlefield, and the limestone outcropping and terrain influences.
 - Consider adding another wayside along Van Cleve Lane to interpret the African American community established here after the Civil War.

Buildings and Structures

- Consider as part of the park interpretive plan various means for interpreting the buildings and structures that were present at the time of the battle but are no longer extant: the toll house/gate, cabins in southern portion of the park's Nashville Pike unit, log house along the pike, Hunt House, Blockhouse, Cowan House, Blanton House, and the peach orchard through various means, including foundation outlines, wayside exhibits, ghost structures, holograms, historic photographs, or illustrations depicting an artist's rendering of the character of these former structures. Some of these buildings and structures were located outside of the current park boundaries; interpretation could occur from adjacent locations on park property. Avoid reconstructing these features unless specific information about their appearance at the

time of the battle is acquired through documentary or archeological research.

Views

- Install 50- to 100-foot-wide vegetative buffers comprised of a layered, informal but relatively dense, planting of native evergreen and deciduous trees and shrubs to screen incompatible views of modern development from the Tour Route and tour stops. In particular, screen specific incompatible views along the south park boundary at Wilkinson Pike, along either side of the Old Nashville Highway west of Thompson Lane, and along the northwest property line. Maintain open site lines where interpretation is desirable and views are compatible with the historic scene, such as the view south to the Wilkinson Pike. Refer to the Implementation Guidelines chapter for further guidance.
- Reestablish the important viewshed looking north/northwest from the future Tour Stop No. 2 (Slaughter Pen/Sill's Death—Confederate Views) to provide interpretation of sight lines integral to the battle events of December 1862–January 1863.
- Protect open views available from within the Nashville Pike unit towards and along the Old Nashville Highway. Undertake periodic maintenance to prevent vegetation from obscuring views.

Small-scale Features

- Reestablish, once historic field patterns are reintroduced, worm rail fences that were present in 1863 along both sides of Van Cleve Lane and within the south end of the unit just to the west of Van Cleve Lane. Ensure, before establishing these fences, that sufficient documentation is available to replicate their appearance and locations in 1863 and sufficient funding is available for their upkeep and maintenance. Where insufficient documentation exists to accurately depict the missing fence lines, consider the following alternatives: mark fencelines with simple bollards or posts; mark fencelines with a planting that establishes a contrasting texture or color to

surrounding vegetation; or mark fencelines with a linear system of simple, low, masonry features or stone.

- Replace worm rail fencing currently being used to delineate park boundaries and/or as traffic control devices where historic fencing is known not to exist as these features are misleading to the visitor. Refer to the Implementation Guidelines chapter for further guidance.
- Establish new waysides in the least intrusive manner possible to fulfill proposed new interpretive goals.
- Consider placing additional cannon, or metal silhouettes similar to those used at Cowpens National Battlefield, at sites where artillery is known to have been utilized during the battle and primary trails or roads provide access to the location.
- Develop a consistent design palate for site furnishings within the park to unify the character of the park landscape. Refer to the Implementation Guidelines chapter for more information.
- Protect and interpret the Pioneer Brigade earthworks by removing large trees (twelve inches or more in diameter measured at breast height) from the parapets and ditches of earthworks. Retain large trees located around its immediate perimeter to provide ample leaf litter for protection from soil erosion. Refer to the Earthworks Management Guidelines for the Fortress Rosecrans unit at the end of this chapter and the Implementation Guidelines chapter for further guidance.

Interpretation

- Consider interpreting missing land uses, such as agriculture, throughout the park, as delineated in the park's interpretive plan.
- Interpret a new exhibit of the cabin site and the fencing that encompassed the dwelling precinct, as delineated in the park's interpretive plan.

- Create an interpretive exhibit that conveys the history of the former toll house, as delineated in the park's interpretive plan.
- Interpret the African American community that was established after the Civil War and which was subsequently removed as part of the establishment of the park.

Visitor Center and Environs

This part of the park is the primary interface between the NPS and the visitor. In addition to visitor services, this character area houses park administration and maintenance functions. A host of activities and functions occur within this part of the park that require a unique graphic identity to help direct visitors, accommodate their needs, and facilitate park administration and maintenance. The recommended treatment for this area is to ensure that it remains a well-designed facility that accommodates all current and anticipated needs, using a palette of materials that is simple, contemporary, a product of its own time, and reflective of local and regional character. Development within this area should conform to NPS standards, yet convey a unique graphic identity that can be utilized in the design of all contemporary additions to the park.

Developed during the Mission 66 era, when locating the primary visitor contact facility to include a view of the most important park resources was a highly desirable condition, the visitor center has the potential to interfere with the legibility and interpretation of the battlefield. Diminishing its visual impact on the tour road and key interpretive tour stops is a desired condition. Another goal for this area is to limit the environmental impact of this developed area on nearby natural resources. To this end, the consideration of sustainability and the promotion of green principles in the design and maintenance of the complex are recommended.

Spatial Organization

- Allow for views of the surrounding battlefield but diminish the impact of the Visitor Center on views from the Old Nashville Highway and tour road through screening and other means.

Natural Systems and Features

- Control stormwater run-off from existing and future parking areas. Consider utilizing vegetated swales, planted filter strips, rain gardens, and other environmentally friendly means for reducing run-off and pollution and promoting stormwater infiltration on site rather than using a closed system of pipes that direct water to drainage corridors.
- Explore the option of using permeable materials for paving parking areas and all pedestrian circulation routes to minimize run-off and enhance infiltration of stormwater.
- Minimize soil disturbance and grading when introducing new site developments such as parking, paths, and trails.
- Mitigate the impact of grading for new facilities by conducting archeological investigations prior to construction.

Vegetation

- Replace existing plantings associated with the Visitor Center that depend on irrigation, fertilizer, or pesticides.
- Diminish the area around the Visitor Center maintained in cool season turf grass. Replace with warm season grass fields.
- Maintain lawn areas with less frequent, higher mowings to allow for better infiltration.
- Plant only native species in this zone. Avoid fescue turf and replace if possible. Consider suitable non-invasive species as alternatives to fescue to minimize the introduction of invasive plants and reduce mowing costs.
- Assess the condition of trees within this zone in consultation with a certified arborist. Determine whether they pose any threat or hazard to individuals or the buildings. Remove hazardous plants and those that may threaten the stability of buildings.

Circulation

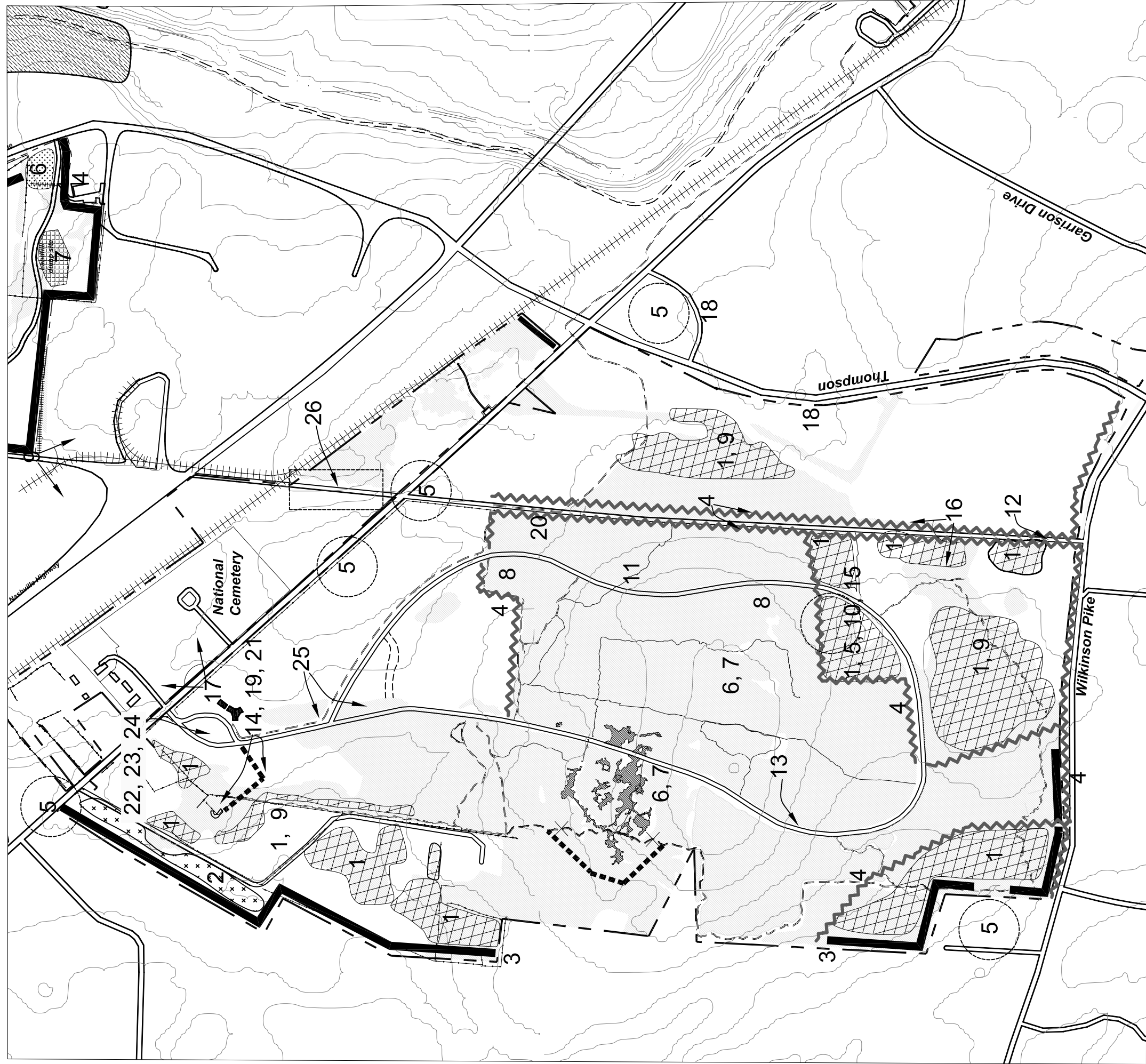
- Retain the park's primary visitor parking area in association with the Visitor Center.
- Minimize the impermeable paved surface area of any parking and access routes. Whenever possible, utilize materials such as gravel, stabilized stone dust, stabilized turf, and permeable paving that reduce stormwater by allowing modest infiltration.
- Investigate the use of stabilized gravel for vehicular access surfaces.
- Mitigate the potential increase in stormwater run-off associated with parking area expansion using filter strips, grass swales, or other means that limit the use of closed systems that concentrate flow and increase direct flow into stream corridors. Encourage infiltration of stormwater wherever possible.

Views

- Add new features in such a way as to be as unobtrusive as possible. Consider views from the battlefield core area in their design and siting.
- Consider carefully the extent of the screen planting between the Visitor Center/parking area and the beginning of the tour road to determine how well it is screening views. Reduce the area of this screen planting if it is found to be unnecessarily large.

Small-scale Features

- Use site furnishings that are compatible with the character of the park in design and materials. Ensure that the style of site furnishing is uniform throughout the park to avoid a disjointed appearance. Refer to the Implementation Guidelines chapter for further guidance.
- Keep signage minimal and unified in style. Most of the signage in this zone will relate to the park's identity or be directional and regulatory in nature. Any interpretive waysides should follow the same guidelines as set forth in the Nashville Pike unit section.



- 1 Remove non-contributing woodland stands.
- 2 Reestablish areas of missing forest cover along the western boundary of the unit.
- 3 Establish screen plantings along boundaries with views of incompatible development.
- 4 Reestablish missing historic fence lines.
- 5 Interpret missing farmsteads and other features of the battlefield landscape.
- 6 Continue to carefully manage cedar glade habitat. Remove invasive and encroaching woody vegetation.
- 7 Limit pedestrian access to the glades. Consider re-routing the Boundary Trail around the glades but allow visitors to view into at least one glade from its margin to afford interpretive opportunities.
- 8 Remove invasive plant species from cedar brakes and rehabilitate the margins of these communities along interpretive routes to approximate their 1862-63 landscape conditions.
- 9 Convert areas where woodland is removed to native warm-season grass fields.
- 10 Consider establishing new crop exhibit areas in association with the interpretation of the missing cabins.
- 11 Rehabilitate the eastern portion of the existing tour road by reestablishing natural hydrological processes that are currently impeded by the road corridor.
- 12 Consider removing the existing surface material from the southern portion of Van Cleave Lane and restoring the historic roadbed.
- 13 Remove unnecessary asphalt from the edges of the abandoned section of the tour road when the new route is established; convert the western segment into a paved pedestrian trail.
- 14 Provide pedestrian access to the Pioneer Brigade earthworks.
- 15 Utilize Tour Stop #3 to interpret the dense cedar brake vegetation, and former cabins and corn fields, as well as the limestone outcroppings and terrain that influenced the events of the battle.
- 16 Reestablish the important viewshed looking north/northwest from the future Tour Stop #2 to provide interpretation of sight lines.
- 17 Protect open views available from within the Nashville Pike unit towards and along the Old Nashville Highway. Undertake periodic maintenance to prevent vegetation from obscuring views.
- 18 Replace worm rail fencing currently being used to delineate park boundaries and as traffic control devices with contemporary fences or gates.
- 19 Protect and interpret the earthworks associated with the Pioneer Brigade. Retain woodland cover.
- 20 Provide interpretive materials about the African-American community that was established after the Civil War and which was subsequently removed as part of the establishment of the park.
- 21 Allow for views of the surrounding battlefield, but diminish the impact of the Visitor Center on views from the Old Nashville Highway and tour road through screening and other means.
- 22 Control stormwater run-off from existing and future parking areas.
- 23 Replace existing plantings associated with the Visitor Center that depend on irrigation, fertilizer, or pesticides with more sustainable species.
- 24 Diminish the area around the Visitor Center maintained in cool-season turf grass. Replace with native warm-season grass fields.
- 25 Reduce the area of the existing evergreen screen planting if it is found to be unnecessarily large.
- 26 Rehabilitate Van Cleave Road trace segment north of Old Nashville Highway as part of a pedestrian trail system. Link to Hazen Brigade Monument trails.

Source: GIS data provided by Stones River National Battlefield and converted into AutoCAD.

- Park Boundary
- Roads
- Tree Cover
- Trails
- Cedar Glades
- Unofficial Trails
- Buildings/Structures
- Railroad
- River
- Fences
- Topography

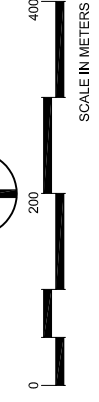
- Remove non-contributing woodland
- Reestablish areas of missing historic forest
- Reestablish missing historic fencelines

- Establish screen plantings
- Provide pedestrian access

Stones River National Battlefield

Murfreesboro, Tennessee

Nashville Pike Unit Treatment Recommendations
Figure 182



McFadden Farm Unit Character Area

The goal of treatment in this area is to replicate as closely as possible the spatial organization and character of the battlefield as it appeared in 1862, while at the same time balancing the needs for natural resource protection. Because much of this unit lies within the Stones River floodplain, it is neither feasible nor recommended that historic land cover conditions be completely reestablished in this unit, even though this area was entirely maintained as cleared agricultural land during the battle. Clearing the existing tree cover would remove important riparian vegetation that protects the soils from erosion, acts as a buffer to protect water quality, and provides important wildlife habitat. As two small depressional wetlands also exist within this area, the opportunity exists to further enhance their ecological value by improving the quality of vegetation around them and reinforcing their connection to the larger hydrologic system.

In areas where non-contributing vegetation serves less of an ecological function, it is recommended that it be removed, and open field conditions be reestablished to more accurately reflect conditions at the time of the battle. This includes wooded areas located around the dump sites on lands recently acquired by the park, as well as the remnant hedgerows at the southern end of this unit.

The treatment concept for this unit also seeks to better interpret missing features from the battle period. These include the McFadden farmstead, as well as the historic road corridor, now a paved trail, leading north from Van Cleve Lane to an unnamed ford across Stones River. The specific treatment recommendations outlined below build upon the preferred alternative outlined in the DCP/EA, as well as subsequent updates to the concept plans for parking and circulation.

Spatial Organization

- Remove the existing (non-contributing) hedgerows south and east of Van Cleve Lane, as well as stands of non-contributing vegetation surrounding the dump site, once this feature has been remediated. Reestablish these areas in native grasses and forbs to interpret historic agricultural fields at the

time of the battle. Refer to the Implementation Guidelines chapter for further guidance.

Natural Features and Systems

- Retain a 100-foot minimum buffer of the existing forest cover edging the river as a riparian buffer. Remove invasive species. Where view corridors are desirable for interpretation, limb up existing trees, and/or remove smaller trees and shrubs to establish limited, specific viewing opportunities.
- Maintain a 50-foot minimum buffer along the perimeter of the depressional wetlands and ensure connectivity of these areas with the riparian buffer and riverine wetlands along the river. Rehabilitate the vegetation within this zone by removing and managing invasive exotic species and planting native wetland plants. This recommendation has already been approved for PMIS funding in 2008.

Vegetation

- Continue to work to control invasive plant species within the unit. Refer to the Implementation Guidelines chapter for further guidance.
- Remove non-contributing woodland that does not serve as riparian buffer or another role in the protection of natural resources.
- Maintain a riparian buffer that includes trees and shrubs in association with the pond located within the McFadden Farm unit.
- Continue the native warm-season grass conversion process already begun, and ensure that newly reestablished fields are also planted with native warm-season grasses. This program could include the activities and techniques described below:
 - Seed regularly with wildflowers and other forbs. It is recommended that the program include regular enhancement seedings (even if relatively small in quantity) rather than an occasional mass enhancement seeding.

- Continue prescribed fire activities and attempt to burn annually or as frequently as fuel loads and/or park resources permit, following the park's *Fire Management Plan*.
- Remove, mechanically or by hand, shrubs that cannot be controlled by fire. Shrubs will become less of an issue with more frequent prescribed fire use. Coordinate herbicide applications as necessary to augment mechanical removal.
- Continue efforts to control the growth of invasive species, particularly Johnson grass (*Sorghum halpense*) and sericea lespedeza (*Lespedeza cuneata*).
- Consider establishing new crop exhibit areas in association with the interpretation of the missing McFadden Farmstead and fencing within the unit.
- Diminish the area maintained in cool season turf grass. Replace with native species as possible.
- Maintain turf areas with less frequent, higher mowings to allow for better infiltration.
- Plant only native species in this zone. Avoid fescue turf and replace if possible. Consider suitable non-invasive species as alternatives to fescue to minimize the introduction of invasive plants and reduce mowing costs.
- Assess the condition of trees within this visitor use area in consultation with a certified arborist. Determine whether they pose any threat or hazard to individuals or the monument. Remove trees determined to pose a hazard or threat.

Circulation

- After the new tour road is constructed, remove the asphalt surface from Van Cleve Lane within the park boundary and rehabilitate the corridor to reflect the character found along the historic road trace leading to the river.
- Remediate the existing dump site. Conduct archeological investigations to determine the

location of and reestablish the historic unimproved road trace north of the bend in Van Cleve Lane. Reestablish the route as a pedestrian trail connection to the greenway. Consider interpreting the ford historically located in this vicinity.

- Minimize the impact on the landscape of any new trail segments recommended in the 2005 DCP/EA. The trails should be accessible only to pedestrians and persons with disabilities. Refer to the Implementation Guidelines chapter for further guidance.
- Establish native grasses and forbs on the site of the existing parking area north of the Artillery Monument after the proposed new parking area is established. Refer to the Implementation Guidelines chapter for further guidance.

Buildings and Structures

- Preserve, protect, and maintain the Artillery Monument, which survives from the commemorative period of significance.
- Implement a treatment plan to address the deteriorated coating and concrete on the monument. Short term repairs may include cleaning and localized repair and recoating of the monument shaft, and removal and replacement of severely cracked concrete at the monument base. Long term repairs, to be determined by a close-up inspection, may include removal of the existing coating from the monument shaft; repair of cracks; repair of spalls using formed patches; and installation of a new coating system.
- Interpret the missing buildings, structures, and the agricultural/domestic landscape associated with the McFadden farmstead through enhanced wayside exhibits or waysides depicting an artist's rendering of the character of these former structures. As this site has been heavily modified by the construction of the Artillery Monument, no three-dimensional representation or reconstruction of these missing features is recommended.



- 1 Encourage adjacent landowners to establish and maintain riparian buffers along Stones River.
- 2 Maintain existing woodland within 100 feet of Stones River. Remove invasive species. Enhance the woodland as necessary to serve as a riparian buffer. Establish a view to the eastern bank of the river and Confederate artillery positions.
- 3 Remove non-contributing woodland as shown. Replace with native warm-season grass fields.
- 4 Establish a 50- to 100-foot-wide vegetative screen along property boundaries that abut incompatible uses and views.

- 5 Consider the need for a vegetative screen along Thompson Lane.
- 6 Reestablish historic woodland areas.
- 7 Remediate dump sites, landfills, borrow pits, and excavated areas. Subsequently remove non-contributing woodland and replace with native warm-season grass fields.
- 8 Remove the asphalt surface from park-owned sections of Van Cleve Lane and rehabilitate the historic corridor to better reflect its historic appearance. Maintain the worm fencing that edges the road corridor.
- 9 Maintain a view along the segment of historic Van Cleve lane that is located outside of park boundaries.
- 10 Interpret the missing features of the McFadden Farmstead.

- 11 Continue to maintain the features of the McFadden Cemetery as a courtesy even though it is not owned by the park.
- 12 Remove non-contributing fencing.
- 13 Preserve and maintain the Artillery Monument.
- 14 Replace fescue with a native turf grass as possible.

Source: GIS data provided by Stones River National Battlefield and converted into AutoCAD.

- Park Boundary
- ▭ Tree Cover
- Buildings/ Structures
- Fences
- == Roads
- ≡ Trails
- ++++ Railroad
- ~ River
- Topography

- ▨ Remediate dump sites
- ▨ Encourage the establishment of riparian buffers
- ▨ Remove non-contributing woodland
- ▨ Reestablish areas of missing historic forest
- ▨ Remove non-contributing fencelines
- ▨ Establish screen plantings
- ▨ Provide pedestrian access

Stones River National Battlefield

Murfreesboro, Tennessee

McFadden Farm Unit Treatment Recommendations

Figure 183



SCALE IN METERS

Views

- Continue to remove invasive species to afford more opportunities for visitors to view the river. Maintain the integrity of the existing woody riparian buffer. As noted above, consider establishing specific view areas by thinning understory vegetation, limbing up trees, and, as a last resort, selectively removing trees to open up views of the river. Refer to the Implementation Guidelines chapter for further guidance.
- Screen the proposed parking area, to be established south of Van Cleve Lane, from important views available from north. Refer to the Implementation Guidelines chapter for further guidance.
- Screen the existing industrial buildings located to the south of the unit boundary as this will become the primary entrance zone. Refer to the Implementation Guidelines chapter for further guidance.
- Engage an archeologist to conduct on-site investigations to determine any potential impact on cultural resources prior to construction of new trails.

Small-scale Features

- Continue to preserve and maintain, as a courtesy and as possible, the features associated with the McFadden family cemetery, including the headstones and the tree, which are not owned by the park. Repair any condition-related problems associated with the headstones.
- Develop a consistent design palate for site furnishings within the park to unify the character of the park landscape. Refer to the implementation recommendations for more information.
- Place additional cannon, or metal silhouettes, within this character area to represent important artillery positions during the Battle of Stones River.

Archeological Features

- Continue to preserve and protect, as a courtesy and as possible, the archeological resources associated with the McFadden family cemetery, which is not owned by the park.

General Rosecrans's Headquarters Site

The goal of treatment in this small parcel is to retain and maintain features established to mark and commemorate the location of Union General Rosecrans's Headquarters during the Battle of Stones River. Another goal of treatment is to diminish the visual impact of the various non-contributing features and land uses on adjacent parcels and to provide opportunities for contemplation, commemoration, and access to educational and interpretive features, with the Battle of Stones River as a primary focus. Treatment recommendations suggest that the park consider enhancing interpretation within this area.

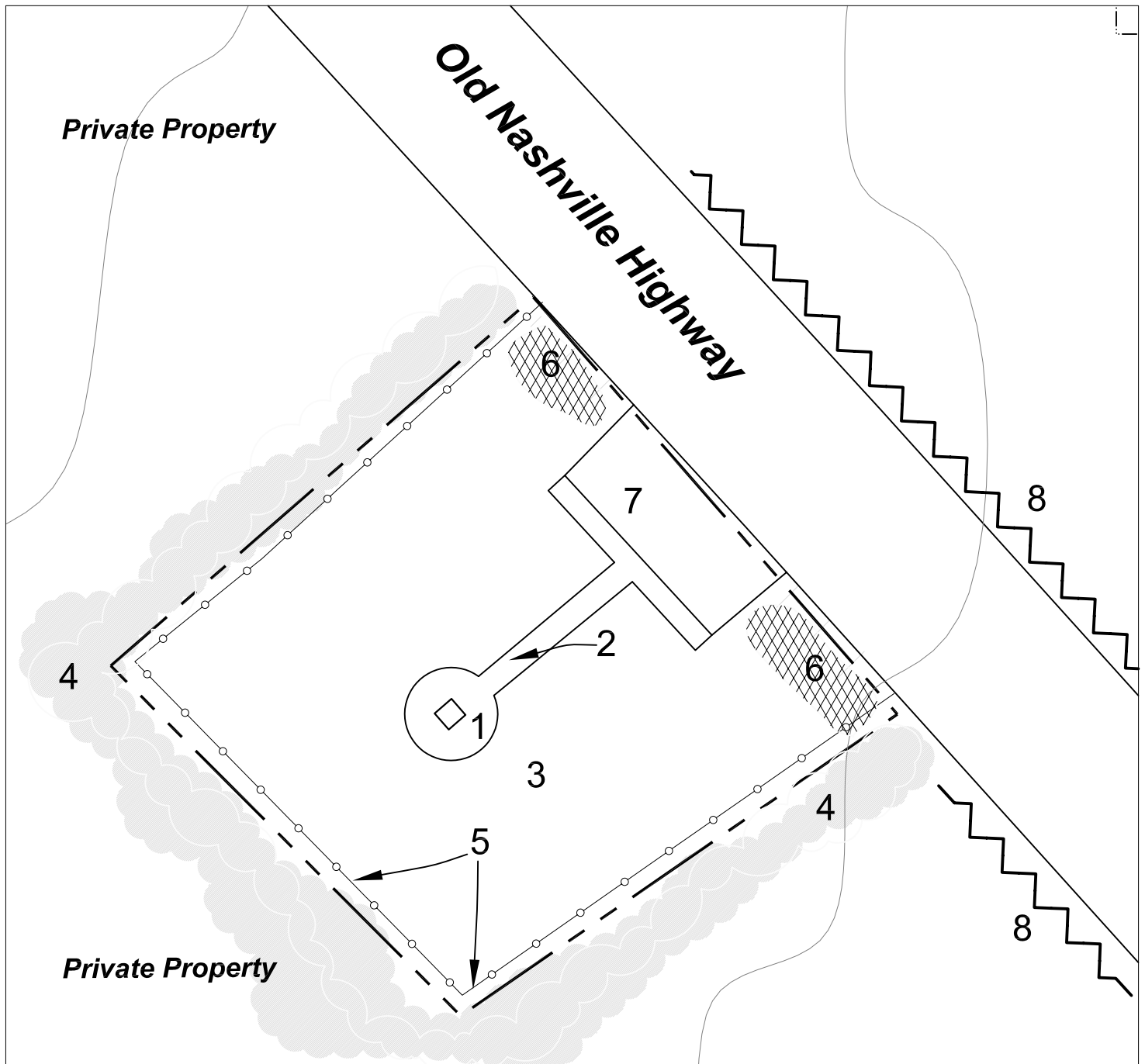
- Preserve and maintain the pyramidal cannonball monument that marks the site of Union General Rosecrans's Headquarters during the Battle of Stones River.
- Preserve and maintain the concrete walk to and around the monument.
- Preserve and maintain the open character of the parcel established through mown grass ground cover.
- Consider replacing existing fescue turf grass with buffalo grass and/or blue grama or other non-invasive turf grass. Avoid frequent mowing and an overly manicured appearance.
- Consider working with the adjacent land owner to remove existing weedy vegetative growth along the chain-link fence that marks the property boundary and replace it with an evergreen screen planting to hide the quarry tailings beyond.
- Consider replacing existing chain link fencing with a simple board privacy fence, approximately four feet in height, that is edged on the adjacent property with a planting of Eastern red cedars or other native tree species that will support screening of the quarry.
- Consider removing the hedge planting along the parking area associated with the monument.

- Consider integrating the parcel into the park tour route and enhancing interpretation as part of the interpretive plan.
- Consider alternatives for marking the road corridor connecting the Nashville Pike unit and the Rosecrans Headquarters parcel. See section on "Connections between Noncontiguous Park Units and Parcels" in this chapter for more information.





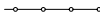



General Bragg's Headquarters Site

The goal of treatment in this area is to retain and maintain features established within this small parcel to mark and commemorate the location of Confederate General Bragg's Headquarters during the Battle of Stones River. Another goal of treatment is to diminish the visual impact of the various non-contributing features and land uses on adjacent parcels and to provide opportunities for contemplation, commemoration, and access to educational and interpretive features, with the Battle of Stones River as a primary focus. Treatment recommendations suggest that the park consider enhancing interpretation within this area.

- Preserve and maintain the pyramidal cannonball monument that marks the site of Confederate General Bragg's Headquarters during the Battle of Stones River.
- Preserve and maintain the open character of the parcel established through mown grass ground cover.
- Consider replacing existing fescue turf grass with buffalo grass and/or blue grama, or other non-invasive turf grass. Avoid frequent mowing and an overly manicured appearance.
- Consider working with the adjacent land owners to maintain the surrounding open character of nearby parcels that approximate the open agricultural character of the landscape during the Battle of Stones River.
- Maintain, for screening purposes, the rows of trees that edge the parcel. Replace trees that have died or are in decline with a mix of native species including Eastern red cedar.



Source: GIS data provided by Stones River National Battlefield and converted into AutoCAD.

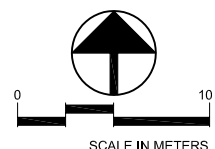
-  Remove woodland
-  Features connecting non-contiguous park parcels
-  Park Boundary
-  Tree Cover
-  Fences
-  Topography
-  Roads and parking
-  Sidewalk

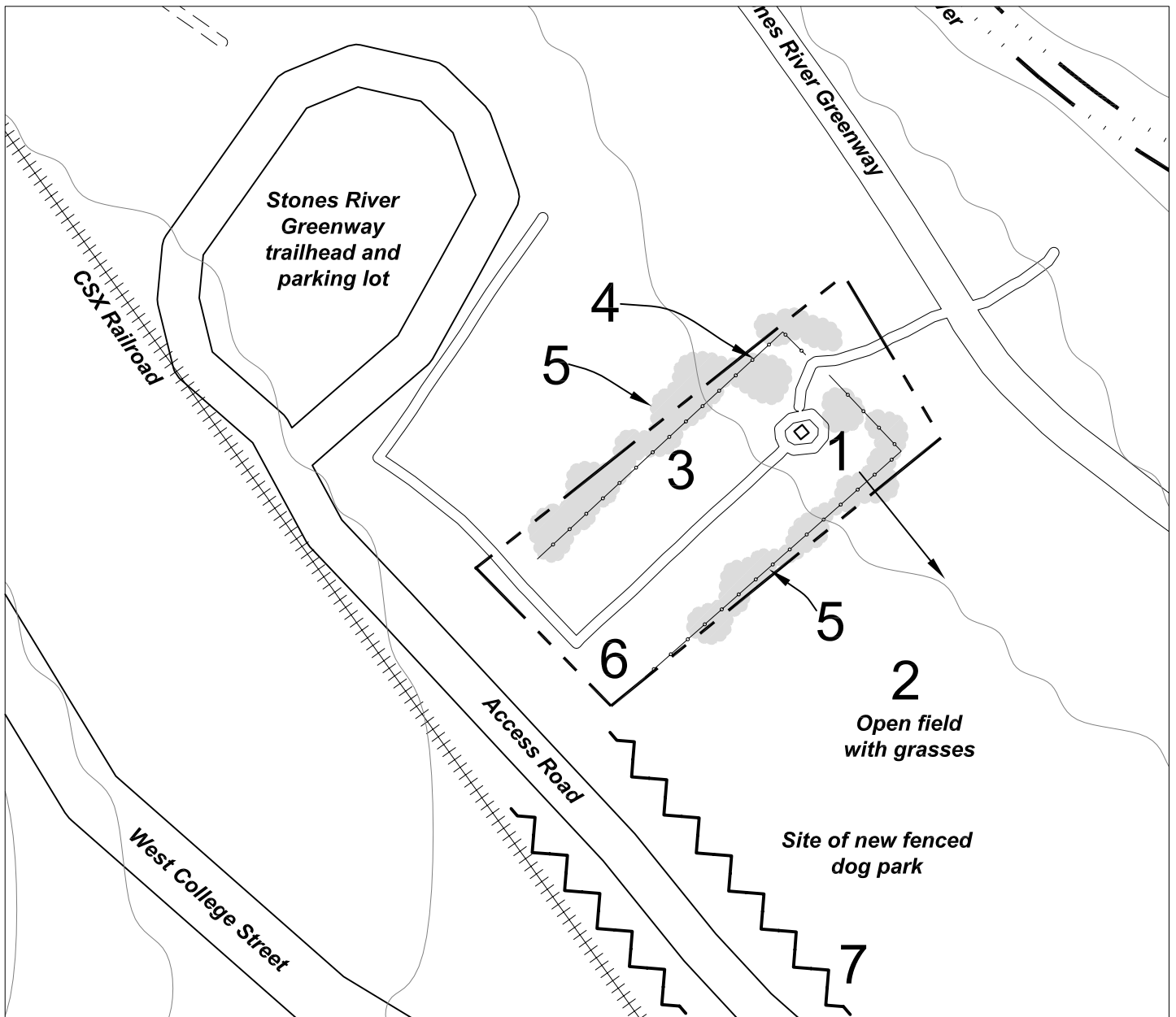
- 1 Preserve and maintain the pyramidal cannonball monument.
- 2 Preserve and maintain the concrete walk to and around the monument.
- 3 Preserve and maintain the open character of the parcel established through mown grass ground cover. Replace fescue with a non-invasive turf grass.
- 4 Work with adjacent land owner to remove existing weedy vegetative growth along the fence line and replace it with an evergreen screen planting to hide the quarry tailings beyond.
- 5 Replace existing chain link fencing with a simple board privacy fence, approximately four feet in height.
- 6 Remove the hedge planting along the parking area.
- 7 Integrate the parcel into the park tour route and enhance interpretation at the site.
- 8 Mark the road corridor connecting the Nashville Pike unit and the Rosecrans's Headquarters parcel.

Stones River National Battlefield




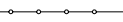




Murfreesboro, Tennessee

Rosecrans's Headquarters Site Treatment Recommendations Figure 184



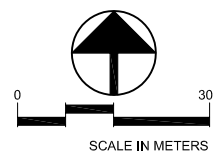


Source: GIS data provided by Stones River National Battlefield and converted into AutoCAD.

-  Features connecting non-contiguous park parcels
-  Park Boundary
-  Tree Cover
-  Fences
-  Topography
-  River
-  Roads and parking
-  Paths

- 1 Preserve and maintain the pyramidal cannonball monument.
- 2 Work with adjacent landowners to maintain the open character of parcels within view of the site.
- 3 Preserve and maintain the open character of the parcel established through mown grass ground cover. Replace fescue with a non-invasive turf grass.
- 4 Replace the wood fencing along the perimeter of the parcel with a non-historic contemporary fencing style.
- 5 Maintain the row of trees along the margin of the parcel. Plant additional trees as necessary to screen the new fenced dog park to the southeast of the parcel.
- 6 Integrate the parcel into the park tour route and enhance interpretation at the site.
- 7 Mark the road corridor connecting the Nashville Pike unit and the Braggs's Headquarters parcel.

Stones River National Battlefield
 Murfreesboro, Tennessee
Bragg's Headquarters Site Treatment Recommendations
Figure 185

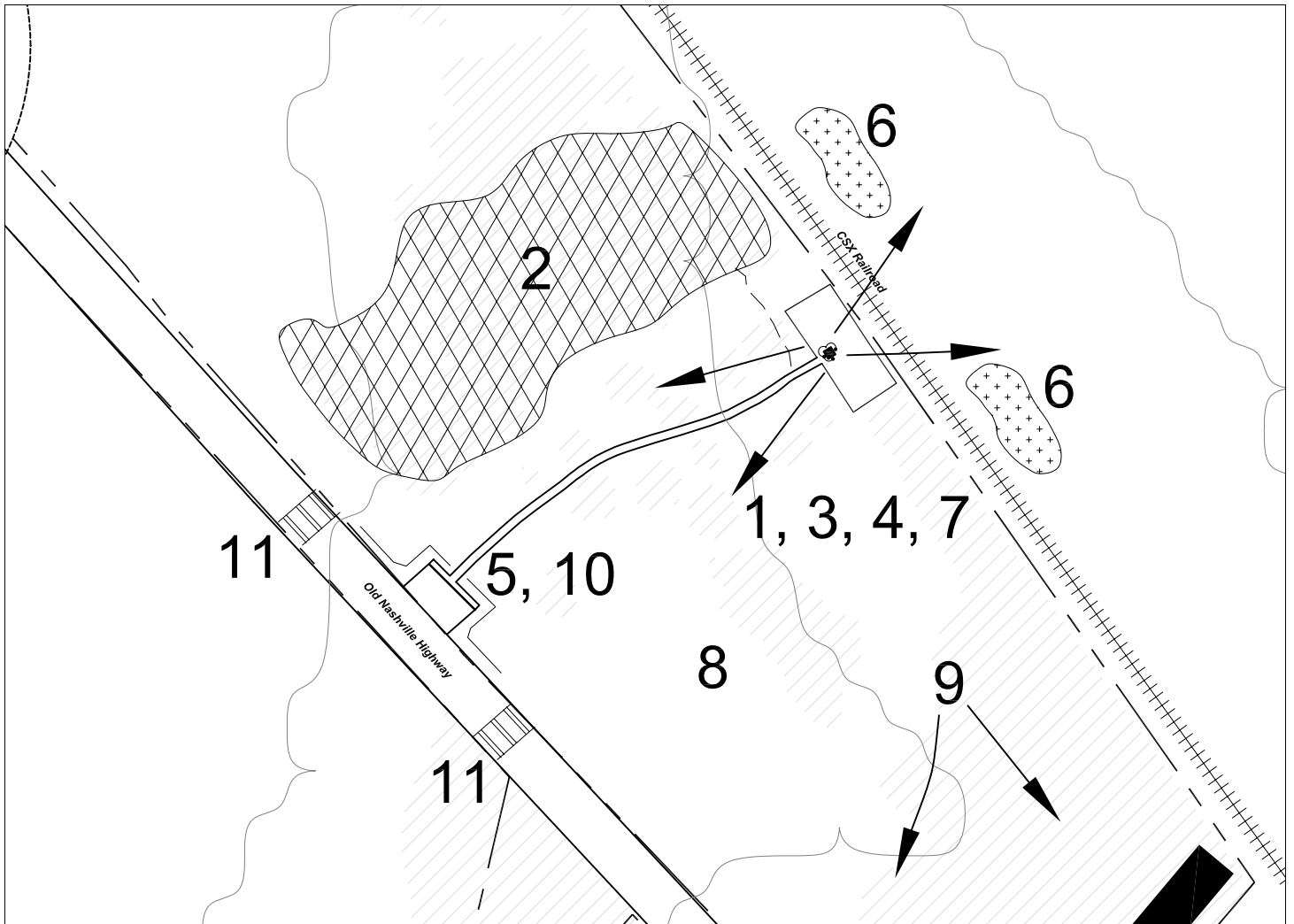


- Replace the wooden worm fencing that encloses the parcel with a contemporary fence type that will not be confused with historic fencing.
- Consider working with the City of Murfreesboro to enhance screening of the new dog park to maintain the quality and character of views within the General Bragg's Headquarters unit.
- Coordinate with the Friends of the Greenway in their efforts to restore native plant species in this area.
- Work with the City of Murfreesboro to ensure that proposed changes to the parking area and Stones River Greenway Trailhead are compatible with the historic character of the site and its resources.
- Consider integrating the parcel into the park tour route. Consider alternatives for marking the road corridor connecting the Nashville Pike unit, Hazen Brigade Monument, and the Bragg Headquarters parcel. See section on "Connections between Noncontiguous Park Units and Parcels" in this chapter for more information.

Hazen Brigade Monument

The goal of treatment in this area is to retain and maintain the commemorative features of the 1863 monument and the contemplative character of its setting. Enhancement of features associated with the battle, such as views of the rail line and the Round Forest, and mitigation of views of non-contributing features on adjacent properties are the focus of treatment in this area.

- Preserve and maintain the stone monument, surrounding stone wall, and gravestones that comprise the existing Hazen Brigade Monument.
- Enhance the woodland area adjacent to the monument to more closely approximate the configuration and composition of the Round Forest present at the time of the battle.
- Monitor the condition of the masonry on the Hazen Brigade Monument and the stone headstones. Perform materials studies (petrographic examination) to evaluate potential conservation treatments to address ongoing preferential weathering and associated spalling of the limestone monument and markers and erosion of the marble markers.
- Undertake preservation measures to ensure that the headstones located within this unit are protected from further deterioration.
- Continue to provide interpretive information at the monument for visitors.
- Retain at least a partial and directed view of the rail line from the monument, a view that was afforded during the battle period.
- Retain or establish at least a directed view from the monument toward the open fields of the Nashville Pike unit as an interpretive link to historic views of the battlefield landscape.
- Screen views of the adjacent factory from the monument. Utilize evergreen tree plantings to establish the screen. Consider planting the trees in such a way as to suggest the missing Round Forest that is known to have existed in this general location during the Battle of Stones River. Consider working with adjacent property owners to establish the screen planting, a portion of which may need to be located off park property to be effective.
- Retain and maintain the otherwise open character of the parcel established through mown grass ground cover, with limbed up ornamental and shade trees extending over a portion of the site.
- Screen views of the Thompson Lane overpass from the monument. Install an evergreen screen planting on the northern side of Old Nashville Highway along the eastern edge of the site. Consider working with adjacent property owners to establish the screen planting, a portion of which may need to be located off park property to be effective.

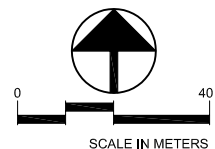


- 1 Preserve and maintain the stone monument, surrounding stone wall, and gravestones.
- 2 Enhance the woodland area to more closely approximate the configuration and composition of the Round Forest by removing non-contributing woodland.
- 3 Monitor the condition of the masonry on the Hazen Brigade Monument and the stone headstones.
- 4 Preserve the headstones and monument as needed.
- 5 Continue to provide interpretive information at the monument for visitors.
- 6 Screen views of the adjacent factory from the monument; coordinate with landowners in area. Retain at least a partial and directed view of the rail line from the monument.
- 7 Retain or establish at least a directed view from the monument toward the open fields of the Nashville Pike unit. Limb existing trees as necessary to establish the view.
- 8 Retain and maintain the otherwise open character of the parcel.
- 9 Screen views of the Thompson Lane overpass from the monument.
- 10 Ensure that the parcel is integrated into the overall park tour route and pedestrian trail system for the park.
- 11 Work with the Rutherford County Road Department to establish traffic calming measures in the vicinity of the Hazen Brigade Monument parking area to enhance its safety for visitors.

Source: GIS data provided by Stones River National Battlefield and converted into AutoCAD.

- | | | | | | |
|--|---------------|--|----------------------------------|--|--------------------------|
| | Park Boundary | | Remove non-contributing woodland | | Roads and paths |
| | Tree Cover | | Establish screen plantings | | Traffic calming measures |
| | Fences | | Establish plantings | | Views |
| | Topography | | | | |

Stones River National Battlefield
 Murfreesboro, Tennessee
Hazen Brigade Monument Treatment Recommendations
Figure 186



- Ensure that the parcel is integrated in the overall park tour route and pedestrian trail system for the park.
- Work with the Tennessee Department of Transportation to establish traffic calming measures in the vicinity of the Hazen Brigade Monument parking area to enhance its safety for visitors.
- Consider establishing a contemplative node within this unit to allow for reflection. Refer to the Implementation Guidelines chapter for further guidance.

Fortress Rosecrans

Earthworks Management Issues

Protection and preservation of the remnant earthen fortification resources at Fortress Rosecrans is an important component of the park's stewardship of Stones River National Battlefield resources. If the earthworks are lost through erosion and destruction due to access by visitors and park staff, the site's ability to convey its significant Civil War story will be severely compromised. Working against preservation efforts are natural forces, such as erosion and windthrow of trees, as well as cultural activities, such as damage to earthworks from trampling. The most effective earthworks management scheme will mitigate both types of events through resource maintenance and monitoring and visitor education and control.

Because any ecological system is, by nature, dynamic and complex, vegetation management is typically one of the most critical and difficult aspects of managing earthworks. Vegetation management strategies must be considered in conjunction with the management of cultural resources, such as the earthworks, as well as visitor access, safety, and interpretation. Vegetation management strategies can vary widely in their associated needs. Prior to implementing any vegetation management strategies, maintenance cost estimates must also be developed and taken into consideration. Vegetation management strategies must also take aesthetics into consideration. Plants have the potential to detract from or enhance interpretation and to affect the visitor's impression of the property. Vegetation

maintenance and management can be undertaken in such a way as to enhance or screen views and to elicit a sense of mystery, awe, surprise, or beauty. These qualities may be created or established through simple maintenance practices, such as the removal of dead trees near well-visited areas of the park, selective thinning of vegetation for directed views, and choice of ground cover for the earthworks.

The best method for protecting and preserving these fragile resources is the perpetuation or establishment of vegetative cover that has the ability to retain soil. The two vegetative communities that best serve to protect earthen fortifications are grass or grass/forb cover and relatively mature forest. These two communities function very differently in the way they protect soil resources, and they also require different management strategies to perpetuate them. Both community types are represented and maintained in association with the earthworks at Fortress Rosecrans.

Another management issue associated with the protection of earthworks is the problem of burrowing animals, such as groundhogs. These animals burrow into the side slopes and tops of the earthworks, creating mounds of compacted earth and tunnels. Site managers must address control of animal burrowing using an integrated pest management approach.

The park has already undertaken most of the steps necessary for appropriate management and maintenance of the earthworks associated with Fortress Rosecrans suggested herein. Due to the success of these management practices, the treatment recommendations included below are to be considered when conditions change, problems arise, or in making minor possible adjustments to existing conditions. They also apply to the future management and maintenance of the Pioneer Brigade Earthworks.

Archeological Resources Management Issues

Surviving Civil War earthworks are an archeological resource. Soil erosion caused by exposure of the fortifications to stormwater or visitor access is of great concern due to its potential for destroying archeological resources

in a short amount of time. Soil erosion can be mitigated by maintaining a protective vegetative cover as discussed above, by preventing visitors from interacting with the earthworks, and by periodically monitoring the earthworks for signs of erosion to promote early mitigation of problems. Monitoring requires that a baseline of resource information be available to compare conditions over time. Establishment of the baseline information may include photography from consistent viewpoints, and measurement of the existing soil profiles and their cross-sections.

The key to archeological site preservation is avoidance of subsurface disturbance. Thus, the best soil management strategy for archeological site preservation is that which involves the least disturbance. Maintaining grass is an excellent strategy for preserving subsurface archeological resources. Mown or unmown field grasses protect resources from erosion or other surface disturbance. Land maintained in forest is likely to preserve archeological integrity, except where a lack of plant cover allows for soil erosion. In addition, growing tree roots do have the potential to penetrate and disturb features. When trees are uprooted, significant disturbance is caused within and around the root ball. In addition, removal of trees by means that uproot trees and plants or scrape the ground are destructive practices, and grinding stumps causes significant disturbance for several feet around the stump.

General Recommendations for Fortress Rosecrans Resources

Natural Resources

- Evaluate, through review by a qualified archeologist, the threat posed by areas of standing water associated with the fortification remnants that are not considered wetlands, but are present year-round. Standing water has the potential to kill the vegetation intended to protect the earthworks, exposing soil to erosion. Wet soil is also more easily dislodged and disturbed by pedestrian and vehicular traffic. Water that undergoes freezing and thawing cycles can also disturb the historic soil profile of earthworks. Consider a range of alternatives for mitigating any problems

identified through evaluation of this condition, including pumping, installing drain tile, or utilizing a dry well or cistern system

Vegetation

- Utilize vegetative filter strips and other run-off filtering methods in order to slow, collect, and filter water that drains from parking areas. Filter strips should be sited on the downslope edges of parking areas, or where the highest volume and quickest velocity of run-off occurs.

Buildings and Structures

- Interpret missing features associated with Fortress Rosecrans.

Site Access

- Consider including alternative interpretive materials at the entrances for physically-impaired persons who are unable to experience the entire site. Alternative materials may include pamphlets, a wayside describing the site's history and features, and/or a site model.
- Consider offering materials for the visually-impaired. Include Braille on the waysides, offer audio-tapes, and/or install a "touchable" model of the fortifications.

Circulation

- Consider edging trails with a simple, unobtrusive treatment that will reinforce the need for visitors to stay on the trail. Examples include log edging, low bollards, and rocks.
- Consider installing a simple handrail or barrier/fence where the trail comes within close proximity of a fragile or sensitive resource. Generally, visitors are more inclined to try and access the earthworks when the trail comes within twenty-five feet of the resource.

Views and Vistas

- Screen incompatible views using native vegetation.
- Utilize screening methods that blend with the surrounding character of the site, such as native vegetation, and that do not become a secondary visual intrusion.
- Retain the partially-screened views of the golf course. Although the golf course is not historic, it does permit long views from the lunettes and Curtain Wall No. 2 that can be interpreted. Retain these views by periodically thinning vegetation when it threatens to obscure the view of the golf course. Utilize vegetation removal techniques described earlier in this chapter.
- Incorporate archeology into long-term plans for protection, maintenance, and interpretation of the site.
- Avoid re-grading or filling any historically significant earthen form.
- Avoid establishing trails in areas associated with known sensitive archeological resources.
- Monitor water resource margins for erosion and associated emerging archeological resources.
- Undertake remote sensing studies using ground-penetrating radar to aid in the location of additional archeological resources.

Small-scale Features

- Install the least intrusive site furnishings—benches, trash receptacles, directional and regulatory signage, and bollards—possible when accommodating anticipated visitor needs.
- Ensure that any new site furnishings are compatible with the natural and historic character of the site, but cannot be confused with historic features. Select furnishings that are simple in design and either dark or earth-toned in color. Avoid features that are brightly colored, overly ornate, or contain reflective or shiny surfaces.
- Develop a protocol for measuring erosion associated with the earthworks. Monitor the earthworks periodically for signs of soil erosion and damage from humans, animals, and tree fall. Adjust the monitoring schedule as needed to ensure protection of the archeological resources.
- Consider measures to enhance the security of archeological resources, including the placement of signage and establishing a community watch group.
- Discourage relic hunting within the park. Post signage indicating that disturbing the ground and removing artifacts is illegal.

Land Use

- Monitor local zoning boards and planning committees for nearby adjacent development that may adversely impact the character and cultural resources of the site. Consider participating in the early stages of any development plans.
- Prevent trees from growing on or near artillery platforms. Periodically monitor the artillery platforms for vegetative growth, and remove saplings and young vegetation by hand or chemically before their root systems have had a chance to take hold in the platform soil.

Archeological Resources

- Protect, stabilize, and maintain all known and potential archeological resources.
- Evaluate archeological sites to determine visitor safety and resource protection concerns.
- Use vegetative litter, including leaf litter and native hay and straw from fields that have been inspected by natural resources staff, to cover bare spots on earthworks not maintained under grass cover. Ensure that additional ground is not uncovered when re-distributing the leaf litter. Periodically check the thickness of the leaf litter and re-dress bare spots as needed.

- Prevent the buildup of large fuel loads (i.e., brush), which can generate excessive heat when conducting prescribed fire use, as this can damage archeological resources and imperil firefighters.
- Undertake additional historical research in order to answer remaining questions regarding the earthworks.
- Prepare a ground disturbance policy to be implemented by park personnel and all others who will be physically interacting with the site. Ensure that the ground disturbance policy includes guidelines regarding what constitutes ground disturbing activities; when the site's managers and an archeologist should be consulted; what course of action to take if potential artifacts are uncovered during ground disturbing activities; and any other pertinent information that site managers and cultural resource staff deem necessary for staff maintaining the earthworks to understand.
- Protect archeological sites from disturbance, except for investigations necessary to address important research questions and to consider proposed new additions such as trails and interpretive exhibits, and vegetation management treatments. Avoid ground disturbance associated with archeological excavation unless conducted in support of collecting essential information.
- Document all known and potential archeological resources prior to undertaking any ground-disturbing activities.
- Engage a qualified archeologist to monitor any ground-disturbing activities.
- Avoid clearing large areas of deadfall and leaves in order to conduct a detailed surface survey. Although this endeavor may promote research efforts, it may also damage sensitive cultural resources, and will leave large portions of the site susceptible to soil erosion, growth of invasive and exotic plant species, and trampling by humans and wildlife. If clearing in this manner is necessary, limit it to what can be excavated

and researched in one day and replace stockpiled leaf litter when work is completed. Alternatives to clearing leaf litter include remote sensing, shovel testing, and metal detection.

Recommendations for Earthworks under Grass Cover

Native grass or grass and forb cover is one of the best methods for protecting earthworks from soil erosion. Initially, it can be a great challenge to quickly establish a functioning, erosion-controlling grass and forb cover on a site that has been cleared of trees. One of the more difficult aspects of establishing and maintaining grass and forb cover on earthworks includes the protection of earthen slopes before the grasses have had a chance to germinate and form a dense root mass. Also, site managers will need to regularly suppress woody growth, which has the ability to displace or replace the grass cover if not kept in check. To avoid disturbing the soil on the earthworks, woody growth will likely need to be controlled through prescribed burns, hand removal (cutting/trimming) or the application of an herbicide appropriate for the target species and selected control method. A maintenance plan will establish the appropriate number of mowings/burns annually.

Other problems associated with grass cover include the fact that grass can act as an inadvertent invitation for visitors to climb, recline, or play on the fortification. To curtail visitor use of sensitive portions of the earthworks, it is recommended that the grass and forb cover be allowed to grow to a height that will deter access. Finally, signs should be placed in strategic locations to inform visitors of the fragility of the resource and ask them to refrain from climbing or walking on the earthworks. When signs are found to be insufficient in controlling visitor access, consideration can be given to establishing a simple barrier system in locations where visitors are most frequently leaving the trail to access the resources.

The plant species mix used on the earthworks should include a diversity of plants that are native to the ecoregion and are hardy within the USDA zone. Diversity ensures that the vegetative community will be resilient to climatic

fluctuations, such as periods of heat or drought, or to infestations of a disease or insect.

The grass cover vegetative community that currently exists and as recommended as part of this CLR includes areas with two distinct characters. The first is a tall grass cover on all areas of the earthworks. The second is a more closely mown turf cover in areas accessible to the visitor, such as in association with benches and alongside trail margins. It is desirable to maintain a relatively uniform look for the tall grass cover areas to enhance legibility of the earthen forms. Use of finely textured grasses enhances legibility of the fortification more than coarsely textured species.

For earthworks under grass cover the following recommendations are intended to address any problems and situations that may arise:

- Monitor earthworks to identify invasive alien plant species and woody growth in the grass cover.
- Remove any invasive alien plant species from the earthworks prior to seeding operations, taking care not to disturb the soil. Cut woody stems by hand so that the remaining portion is flush with the surrounding grade.
- Eradicate, at a minimum, woody growth and identified invasive alien plant species annually using direct application of an herbicide appropriate for the target species and selected control method.
- Maintain native grasses whenever possible through prescribed fire.
- Develop guidelines for how personnel access the earthworks to ensure that any mowing activities do not inadvertently lead to soil erosion.
- Ensure that interpretive trails avoid traversing the earthwork parapet and ditch system.
- Encourage visitors to remain on the trail through informational and regulatory signs and brochures. Signs and printed brochures should engender a sense of stewardship for the fragile earthworks that will dissuade visitors from climbing on the earthen structures. Proceed to more restrictive measures, such as barriers, when signage is not sufficient in keeping visitors from accessing the earthworks.
- Establish a one- to three-foot-wide zone of closely mown turf to either side of the trail and in association with wayside exhibits, but allow the grass beyond the mown strip to grow taller to encourage visitors to remain on designated trail routes.
- Avoid activities that may alter the existing landform of the fortification either by earth-disturbing operations or through erosion. All landforms associated with the fortification should be identified and protected.
- Avoid founding additional waysides and wooden bridging or boardwalk systems within the earthen structure of the fortification parapet and ditch system. Founding structures within the earthen fortification sends a contradictory message when advising visitors to avoid accessing the resources.
- Retain and maintain existing grades, except where drainage or soil erosion problems may be identified. Avoid removing soil within the vicinity of the fortification due to the potential presence of archeological resources. Use fill to effect positive drainage as necessary, and possible. If soil is added to improve drainage or in association with the establishment of trails and other visitor-oriented features, the color and/or texture of the added material should be distinguishable from the existing material to identify fill as a non-historic grade.
- Protect the fortification resources from the destructive actions of animals. Determine the species associated with evidence of burrowing within the parapet and ditch. Establish a cyclical monitoring program to discourage future use of the fortification as a burrowing site. Document burrows. Repair burrow sites and document repair. Utilize appropriate IPM approaches in dissuading animals from burrowing in the earthworks.

- Consider interpreting missing fortification features, such as chevaux-de-fraise, abatis, rifle pits, blockhouses, powder magazines, artillery platforms, headlogs, and pickets.
- Consider interpreting the integral relationship between natural resources and the military engineering of earthworks. Also consider interpreting the relationship between existing site conditions and the design and configuration of the earthworks, and the possible connection between their survival and the site's lack of suitability for agriculture.
- Consider using models that are accessible for the visually impaired at each site to provide three-dimensional depictions of the earthworks as they originally existed.
- Undertake soil testing to determine the fertility and composition of the existing soil in areas where enhancement or replacement of grass cover is necessary.
- Overseed, in areas where erosion is occurring, with perennial native grasses and forbs, and amend the soil as necessary based on soil testing to ensure that the seed is given the best possible chance to survive. Consider the use of a biodegradable protective fabric or erosion control blanket, hydroseed fiber mulch, and the inclusion of fast-sowing annual grasses in the seed mix to ensure speedy and effective establishment of new grass cover.
- Consider planting trees in proximity to the earthworks to provide shade for visitors. Site trees far enough away from earthworks maintained in grass cover that they do not shade out the grass cover or become future hazards to the earthworks from toppling, falling limbs, or uprooting.

Recommendations for Earthworks under Mixed Cover

- See recommendations above for earthworks under grass cover, and see recommendations below for earthworks under forest cover.
- Remove all trees from the parapets and ditches of earthworks maintained under

mixed cover. Trees located in proximity to, but not on, these features should remain, as shade is a desirable element in this area of the park.

Recommendations for Earthworks under Forest Cover

Maintaining earthworks under forest cover is another recommended means for protecting these fragile resources. This option has several associated vegetation management issues. The health of the forest must be maintained to ensure a thick mat of leaf litter, which ultimately offers the best protection for the earthworks and other archeological resources. Healthy forests contain a mix of native vegetation species at varying ages, which ensures cyclical regeneration of trees that are capable of replenishing the forest floor. Maintaining a healthy woodland can also involve thinning to maintain light levels and planting saplings to perpetuate cover. Hazard trees—those trees that are dead or dying and may fall or drop limbs on visitors or archeological resources—must be removed as identified. Trees that are over twelve inches diameter at breast height (dbh) and located near or on archeological resources should also be removed to reduce the threat of windthrow disturbance. Trees with shallow roots that are located near or on archeological resources should also be removed. Despite these areas of management concern, maintaining the site under forest cover is a successful method for preserving earthworks.

- Retain as much of the existing, healthy vegetation associated with the forest cover as possible.
- Remove trees greater than twelve inches dbh from the parapets and ditches of earthworks. Trees located in proximity to, but not on these features should remain.
- Avoid removing all vegetation from the archeological resources. Retaining some trees will, in fact, promote preservation of the resource due to the ability of tree roots to hold soil in place.
- Avoid removing so many trees that a thick cover of leaf litter cannot be maintained atop the earthworks. Retain smaller trees if

removal of all trees on the earthworks will severely diminish the supply of leaf litter.

- Avoid removing trees and replacing them with grass cover. Interpret this management approach and its intended objective of protecting the earthworks.
- Remove hazard trees that pose a threat to visitors and archeological resources.
- Ensure the health of the forest by undertaking periodic maintenance and engaging a qualified arborist to periodically inventory and assess the health of the forest. The inventory and assessment should include the genus and species of all vegetation; the general condition of the vegetation; specific analyses of plants that are in poor condition or that need treatment or removal; and a maintenance plan that outlines seasonal and annual steps for promoting a healthy, regenerative forest.

Removing Vegetation

Although much of the forest cover should be retained on site, some trees and other vegetation may require removal. Removal efforts should include hazard trees, which are dead or dying and pose a toppling or limb-drop threat to cultural resources and visitors, and healthy trees that are growing on or near archeological resources. The following recommendations address which types of vegetation should be removed and offers appropriate methods for their removal.

- Remove trees that are greater than twelve inches dbh and are located on or near archeological resources.
- Remove trees that are growing in specific locations on earthworks, such as on the side slopes of the parapet and ditch systems. Trees can be removed in phases if necessary.
- Remove trees that will impact resources should they fall.
- Consider also removing nearby trees that have wide crowns that catch the wind, shallow roots (particularly those trees located in wet soils), or a combination of these factors that may cause a particular tree to uproot. Engage the expertise of an arborist and/or natural resource specialist to aid in the decision to remove a healthy tree that meets these conditions.
- Remove all trees considered hazardous to visitors and/or cultural resources. These include trees that are dead, diseased, or dying, and may fall or drop large limbs.

Earthworks Management Guidelines

Vegetation Removal Techniques

- Utilize the most sensitive means possible to remove trees and other large vegetation.
- Utilize tree removal methods that minimize potential impacts on surrounding cultural and natural resources.
 - Undertake as much of the removal effort by hand—using hand tools or chainsaws, as possible, and avoid introducing wheeled, motorized vehicles, such as loaders or trucks, on site unless absolutely necessary. Equipment used within the site should have rubber wheels. Heavy equipment can disturb and damage archeological resources.
 - Cut trees as close as possible to the ground plane—without damaging sensitive cultural resources—and allow the stumps to decay naturally, rather than grinding or otherwise removing them.
 - Utilize chemical removal methods only when necessary, deferring to mechanical means as much as possible. Treat stumps of species that are known to readily resprout with a systemic herbicide.
 - Employ “soft-logging” techniques, such as removing tree branches that may impale the ground when the tree is felled.
 - Remove trees by sectioning them and lowering sections to the ground using ropes or cables. Place sections to the

outer edge of the earthworks to facilitate removal on the ground.

- Consider chemical means of removal for smaller trees and shrubs. Utilize herbicide that is appropriate for the target species and selected control method. Chemical means of removal may involve a longer period of time, yet will likely require less ground disturbance.
- Ensure that any vegetation management operations, including pruning, planting, and tree removal, that may result in ground disturbance are supervised by a qualified archeologist.

Grass Cover Establishment Techniques

- Seed new grass areas and areas of soil erosion that need stabilization at the proper time of the year and with a seed mixture that is based on an understanding of existing soil and light conditions, hydrology, and native plant communities. Follow the guidance offered in The University of Tennessee Extension's Publication 1736 "A Landowner's Guide to Native Warm-Season Grasses in the Mid-South," when developing the specifications for establishing new field areas and restoring cover to eroded areas. Seed mixtures may include warm and cool season grasses and non-invasive nurse-crop annual species. If possible, seed sources for native grass species should be collected locally. Newly seeded areas require regular, deep watering of between one-half and one inch per week. While fertilizer may not be necessary over time, it may be necessary in conjunction with initial fertility. Composition of fertilizers should be based on soil testing analysis and the needs of the species chosen for planting. Initial applications of lime may also be necessary in conjunction with the establishment of new grass cover on the site.
- Inspect annually grass stands on earthworks to identify all undesirable woody species. Remove by cutting the stem(s) level to the ground, at a height not to exceed two inches, and treat the cut stems immediately with a systemic herbicide to prevent resprouting. If the stem is not large enough to treat with

herbicide, then retain plants and foliar treat with herbicide.

- Repair eroded areas by adding new soil. Lightly scarify base soil patches and re-seed as soon as the next planting season occurs. Cover newly seeded areas with straw mulch to a loose measurement of one-half inch. On steeply-sloped areas, the use of a biodegradable erosion control blanket or fabric soil protector may be necessary to retain the soil. Avoid products that contain plastic of any kind.
- Develop prescribed burning schedules as part of a maintenance plan for the site. Base the frequency of burning on the vegetative composition of the tall grass cover established on the earthworks (these will likely have different requirements than the mown grass areas), and the need to protect the earthen fortifications from visitor access.
- If mowing using string trimmers or similar equipment in areas in which visitor access is not desirable, perform on an annual basis after warm season grass species have gone to seed and several hard frosts have occurred. Mow to a height of no less than twelve inches.

Installing New Vegetation

The installation of new vegetation may be necessary to screen incompatible views, replace vegetation that must be removed for safety reasons, or ensure that the forest remains fully-stocked and capable of producing a thick mat of leaf litter. New vegetation should consist of native plant species that are found within the region and preferably species already in evidence. Installation of new vegetation is considered a ground-disturbing activity and should be undertaken within the proposed ground disturbance policy recommendations cited above. The following recommendations address appropriate plant species selection and installation methods.

- Install only native plants if additional vegetation is required. Utilize the existing, on-site palette of native plants, including those associated with the nearby Lytle Creek

and Stones River corridors, in order to maintain a consistent forest stand.

- Install new plantings only when necessary to maintain a fully-stocked forest or to screen incompatible views.
- Utilize simple designs for screen plantings that serve to enhance the existing, natural feel and appearance of the site. Avoid formal, ornamental designs such as linear rows of vegetation or geometric patterns.
- Utilize only native vegetation when new plantings are necessary. Attempt to use plant species that are already present on site, including those associated with the nearby Lytle Creek and Stones River corridors, before utilizing native species that are typical to the region. When dense screening is necessary, utilize closely planted vegetation, that includes evergreens as possible, and is native to the region, taking into consideration the fact that Eastern red cedar is the only species of evergreen native to the Central Basin of middle Tennessee.
- Enlist the aid of an archeologist when new plantings are installed to supervise ground-disturbing activities, such as digging holes, transporting heavy root balls over the site, and stockpiling soil or large quantities of vegetation to be planted.
- Ensure that watering new plants does not cause harm to archeological resources. Avoid allowing excess water to puddle in or flood nearby cultural resources. Avoid dragging hoses or irrigation equipment over cultural resources. Avoid stockpiling irrigation equipment on site, or if this is necessary, atop resources.

Invasive and Exotic Plant Prevention and Monitoring

Due to the threat posed by invasive alien plant species to healthy native plant populations, policies must be put in place that will support monitoring for, control of, and removal of undesirable plant species. Any type of development and ground disturbance increases a site's susceptibility to the germination and growth of invasive and exotic plants. The Stones

River National Battlefield landscape should be monitored for undesirable vegetation that will periodically arise naturally, but is highly likely to follow any construction activities. Monitoring plans may include appropriate methods for control and removal of invasive and exotic vegetation that will not harm the significant cultural resources. Monitoring guidelines are as follows.

- Complete the draft vegetation management plan for the park.
- Include in the plan lists and photographs of common invasive and exotic plants of the region; any undesirable plants that currently exist on site; contact information for personnel who can conclusively identify undesirable vegetation prior to its removal; a schedule for when periodic monitoring should occur throughout the year; and appropriate removal methods.
- Prevent the growth of invasive and exotic plant species during and after any ground-disturbing activities. Monitor for emerging invasive plants during construction of trails, parking, and other development, as well as after construction is complete.
- Remove invasive and exotic plant material as soon as it is noticed on site. Utilize the most sensitive means of removal possible, beginning with hand-pulling or limited use of biodegradable chemicals.
- Consider the use of controlling methods, rather than removal, if eliminating undesirable vegetation will negatively impact sensitive cultural resources. For example, if the removal of a large amount of invasive vegetation will cause slopes of any fortification resources to become unstable, consider regular pruning and thinning of the vegetation to prevent its spread, rather than wholesale removal at one time.
- Understand that clearing and thinning activities allow additional light and nutrients into the site, promoting growth of both native and invasive plant species. Additional monitoring activities may be needed to prevent the growth of unwanted understory plants and invasive species. Brush cutting

may be necessary to control the density of understory growth as it affects the visual accessibility of the resources. Understory growth, however, may be considered as one of the tools for discouraging visitors from walking over sensitive areas.

- Limit the amount of exposed earth to that necessary for construction purposes and limit the amount of time exposed earth will remain uncovered during construction of parking areas, trails, and any other ground-disturbing development. Consider covering earth that will be exposed for longer amounts of time with a weed barrier fabric or other similar product that will prevent vegetative growth.
- Consider washing vehicle tires, tools, and other equipment prior to beginning construction to minimize tracking dirt on-site that may contain invasive and exotic plant seeds from other sites. Only use hay and straw for projects within the park that has been inspected and approved by the park's natural resource specialist.

Management Guidelines for Archeological Resources

- Avoid grinding stumps in areas that may include subsurface resources. Cut trees to be removed flush with the ground.
- Repair eroded and damaged areas as quickly as possible to prevent additional damage. To repair the damage caused by an uprooted tree, first cut the tree into sections for removal. Cut the stump at the base to dislodge it from the root crown, taking care to avoid standing in the former stump location as the stump can spring back once the tree is cut away. Remove as much of the soil from the root ball as possible and replace it within the hole left by the removal of the root system. Smooth the surface of the soil and cover with organic matter.
- Utilize simple barriers and means of path demarcation to discourage public interaction with archeological resources.
- Resolve drainage issues in the most sensitive manner possible to avoid loss of or damage

to both known and unknown archeological resources. Consider coordinating any ground-disturbing activities with archeological studies.

- Stabilize sites of known archeological resources affected by erosion by establishing and maintaining grass cover. Install erosion-control measures such as textiles and grass using methods that do not further disturb subsurface resources. Avoid the use of material that is visually incompatible with the character of the area, such as riprap or other large stone.
- Undertake any viewshed thinning or clearing activities in a manner that does not result in harm to the archeological resources.

Connections between Noncontiguous Park Units and Parcels

Stones River National Battlefield comprises six noncontiguous parcels. At initial contact, the park visitor should be provided with information that indicates the preferred tour route, explains the relationship between the parcels, suggests the length of time it will take to experience each site and the park in its entirety, and wayfinding information. Visual clues should be established along the roadways that provide connections between the noncontiguous units. The information that guides the visitor through the park and its history and resources should also provide context about how this site fits into a broader system of interpreted Civil War sites in the Nashville/Franklin/Murfreesboro vicinity. For those publicly accessible sites with a clear and established association with Civil War events, it would be possible, and desirable, to identify the relationships between the sites and utilize this information to augment the existing interpretive plan conveying the stories to visitors. The identified relationships between sites and resources could support additional theme development, suggesting key relationships and ultimately recommendations for regional tours that explore the themes. For example, tours might explore sites that relate to:

- different aspects of a single battle
- chronological events or battles

- geographic proximity of related resources
- examples of military engineering (encampments and earthworks)
- Confederate sites
- Union sites

Links might also provide information about physical proximity, establishing the parameters for manageable walking, biking, or driving tours. Sites in close enough proximity to Stones River might include those in downtown Murfreesboro or along the Stones River Greenway Trail.

Specific recommendations relating to these issues:

- Consider developing an overall interpretive plan for visitors that includes all of the park's noncontiguous parcels and takes into consideration sites related by geography and/or historic event. Update existing interpretive themes, and identify the sites and resources that best convey the themes. Develop an interpretive tour or tours for visitors to follow to learn about the themes and related resources.
- Consider linking the Stones River parcels physically and aesthetically within the framework of a tour route.
- Consider installing regional context maps at each site that pinpoint the locations of other Civil War sites within the park and Civil War sites within the vicinity. An alternative to installing signage is to provide pamphlets that offer similar information; pamphlets could also be taken away by visitors and used for directional purposes while driving.
- Utilize a consistent palette of materials and features to develop identity, access, and interpretation features for the sites included on the tour.
- Work with the Tennessee Department of Transportation, City of Murfreesboro, Rutherford County, and adjacent landowners to install visual markers along both sides of Old Nashville Highway that will aesthetically and physically connect the park's noncontiguous parcels, including the

Nashville Pike unit, the Hazen Brigade Monument, the two headquarters sites, and Fortress Rosecrans. Similar features should also guide the visitor to the McFadden Farm unit. Consider the following alternatives for marking the routes:

- Alternative One: Historically appropriate fences to suggest the extent of the historic battlefield.
- Alternative Two: Contemporary yet compatible and sensitively designed bollards to create a visually cohesive roadway aesthetic.
- Alternative Three: Signature vegetation, such as a low hedge, to help create a more unified roadway character.

Implementation Guidelines

Introduction

This chapter describes the means for implementing many of the recommendations included in the Treatment Plan chapter. These implementation guidelines have been organized into a series of seventeen projects, each presenting a goal or vision for treatment and laying out a process for achieving it. The projects are intended to support the park's ability to secure funding, and are presented in accordance with the requirements of National Park Service's (NPS) Project Management Information System (PMIS) forms that are utilized to request funding. Responding to the guidance offered in the park's General Management Plan (GMP) and other planning documents, these projects also address life safety considerations and visitor accessibility and interpretation needs. All projects are subject to review under Federal Section 106 and National Environmental Protection Act (NEPA) compliance. Most of the projects listed below depend on the completion of one or more park- or area-wide studies or plans, some of which are currently underway. The breakdown of tasks for each project does not include project management, compliance-related reviews, and other management elements typically undertaken by NPS personnel as part of the planning, design, and construction phases of a project.

Each project is presented individually with a summary description; considerations or justifications; identification of the project's location; and specific implementation actions, including additional research and physical investigations.

Projects

1. Remove invasive plants from cedar glade communities.
2. Rehabilitate cedar brake and dense cedar woodland communities in areas of interpretive value.
3. Enhance and expand native warm-season grass fields and meadows.
4. Establish filter strips in association with crop exhibits, roads, parking areas, and trails.
5. Remove non-contributing woodland vegetation.
6. Manage mixed woodlands to promote a combination of natural and cultural resource values.
7. Update invasive plant species control plans.
8. Establish screen plantings in specific locations to manage views.
9. Protect the Pioneer Brigade Earthworks and manage woodland environs to preserve associated resources.
10. Mark and interpret the locations of historic buildings and structures missing from the battlefield landscape.
11. Restore fencelines missing from the battlefield landscape.
12. Consider alternatives for establishing and maintaining non-historic fencelines, controlled visitor access points, and linear connections between park units.
13. Rehabilitate portions of historic Van Cleve Lane.
14. Convert a portion of the tour road to a pedestrian trail that connects with the proposed new tour route.
15. Establish design guidelines for contemporary park features, such as site furnishings.
16. Enhance connections between noncontiguous park units and parcels.

1. Remove invasive plants from cedar glade communities

Description

Cedare glade communities are a relatively rare habitat within the state of Tennessee; many have been lost to development and other cultural activities. Stones River National Battlefield includes extensive areas of remnant cedare glades. Cedar glades support rare and potentially threatened plant species. In addition to having a high natural resource value, many of the glades were areas of engagement during the battle, and so contribute to the historic character of the battlefield landscape. The cedar glades within the park are potentially threatened by the encroachment of invasive and non-native plant species. They are also very fragile and could easily be damaged by cultural activities. Protection strategies and restoration efforts that ensure the perpetuation of this important natural and cultural resource are recommended.

Location

Most of the park's cedar glade communities are located within the central portion of the Nashville Pike unit.

Considerations/Justification

Once mostly open plant communities occupying thin soil atop limestone outcroppings, the park's cedar glades are now threatened by the proliferation of Chinese privet (*Ligustrum sinense*) and bush honeysuckle (*Lonicera maackii* and *L. fragrantissima*), and the encroachment of Eastern red cedar (*Juniperus virginiana*). The invasion of these habitats by bush honeysuckle and Chinese privet has likely led to an accretion of soil, allowing for the establishment of Eastern red cedar. The shade produced by the cedars reduces the light levels to which glade species are adapted. These species can neither adapt nor compete with these environmental changes and are being lost. These invasive species have the potential to wreak havoc on these highly sensitive communities. Other non-native species currently invading the glade communities include sweet clover (*Melilotus officinalis*) and Japanese honeysuckle (*Lonicera japonica*). Managing cedar glades by protecting them from the spread of Chinese privet and bush

honeysuckle and clearing encroaching tree and shrub growth, particularly Eastern red cedar, are two important treatment activities to be undertaken in these areas.

Additional Studies Recommended

- Develop a long-term management plan for the park's cedar glades. Of critical concern is removing appropriate species and numbers of trees and shrubs to support reestablishment of the glades' ecological health. Ensure that the plan addresses protection of the rare plant, moss, and lichen populations that are susceptible to damage from foot and/or equipment traffic.

Related Implementation Projects

- 7. Update invasive plant species control plans.

Project Implementation Process

1. Conduct site visits and field surveys with natural resource specialists to evaluate the current state of vegetation in and adjacent to glade communities.
2. Identify invasive species, such as Chinese privet, bush honeysuckle, and Eastern red cedar, to be removed.
3. Mark the native woody species to be removed. Remove and treat all invasive plants.
4. Remove Eastern red cedars mechanically every three years. Allow mechanical clearing of cedars and other woody material only under conditions of very dry or frozen soils to ensure there is no rutting, pitting, or other damage to the soil. Allow only hand cutting with chain saws, brush clearing saws, handsaws, and loppers in sensitive areas. Avoid using mowers, tractors, and other heavy equipment in and around glades.
5. Follow the integrated pest management (IPM) guidance relating to removal of Chinese privet and bush honeysuckle, taking care to follow the considerations indicated above.

6. Monitor progress of restoration to determine long-term management needs, and monitor glades for damage.

2. Rehabilitate cedar brake and dense cedar woodland communities in areas of interpretive value

Description

Cedar brakes are a primary feature of the battlefield landscape for interpreting the events and tactics of the Battle of Stones River. Occupying a large portion of the center of the Nashville Pike unit, these areas have been dominated by cedar forest since prior to the Civil War and continue to be characterized by cedar woodlands today. As such, they are an important park interpretive tool. However, the composition of these communities has been altered by the introduction of an invasive shrub—Chinese privet (*Ligustrum sinense*)—which has gained a tremendous foothold within the park, but was not present during the Civil War. Also of concern is the invasive bush honeysuckle (*Lonicera maackii* and *L. fragrantissima*). Many of the cedar woodlands have a dense understory of Chinese privet. Control or removal of Chinese privet, as well as other invasives such as bush honeysuckle, is a current goal of the park’s vegetation management program.

As an alternative to full replanting of the cedar brakes, those segments of the cedar brakes that are visible from primary interpretive routes, such as the tour road and interpretive trails, could be rehabilitated. This would require removal of Chinese privet and bush honeysuckle and additional planting of cedar along the margins of existing brakes where there is sufficient sunlight to support growth. The depth of the enhanced brake communities that will be required for interpretive purposes should be determined in the field, based on visibility from trails or tour routes.

Location

The majority of the cedar brakes and dense cedar woodlands are located within the central portion of the Nashville Pike unit. Segments of current and proposed tour routes edge these communities, as do existing and proposed pedestrian trails. The project is located at all points where the park’s tour roads and trails edge contributing areas of cedar brake community.

Considerations/Justification

Unfortunately, Eastern red cedar (*Juniperus virginiana*) is a shade-intolerant species, meaning that cedar can not necessarily be planted to replace the Chinese privet and bush honeysuckle if insufficient sunlight is available in the planting area. There are no shade-tolerant evergreen species native to the region, and therefore no suitable tree for underplanting within the existing woodlands. Over time, unless managed, the cedar brakes can be expected to yield to hardwoods, as shade tolerant species such as oaks grow up and replace the shorter-lived cedars. Given the lack of an evergreen replacement, and the fact that complete rehabilitation of the cedar brakes is not a viable alternative unless entire stands are cut over and replaced at once, the park will need to take an active role in managing these features for interpretation of the battlefield landscape.

Establishment of even-aged stands of trees that will be difficult to sustain over time should be avoided by planting additional saplings every few years. Assessment and protection of cultural features should precede planting. Proper plant installation methods should be followed, including mulching and watering, to ensure survival of newly planted vegetation. Erosion control methods should be considered as part of the re-vegetation plan.

Over time, rehabilitation of the cedar brakes can best be accomplished through replanting a section at a time.

Park personnel should delineate areas to be reforested, and work with a botanist/ecologist to develop the re-vegetation plan. Park maintenance staff could also be trained to undertake the monitoring process, invasive plant removal, and planting of new trees.

Additional Studies Recommended

This project should be developed as part of the park’s vegetation management plan.

Related Implementation Projects

- 7. Update invasive plant species control plans.

Project Implementation Process

1. Delineate in the field, with input from a historical landscape architect, archeologist, and botanist/ecologist, the extent of each area to be rehabilitated.
2. Remove invasive plant species from existing cedar brake communities.
3. Remove woody vegetation other than Eastern red cedar along paths and interpretive trails in support of enhancing the historic character of the cedar brakes and woodlands. Determine the appropriate depth for the removal effort into the stand based on what is visible from interpretive trails and paths.
4. Plant cedar saplings along the margins of the existing cedar brake communities and in the gaps left by the removal of Chinese privet, bush honeysuckle, and other woody plants, phasing the planting over three years. Install saplings relatively densely.
5. Initiate a monitoring program to periodically evaluate the health of the new plantings and to look for evidence of colonization by invasive species.
6. Continue to remove Chinese privet, bush honeysuckle, and other invasive species as identified.

3. Enhance and expand native warm-season grass fields and meadows

Description

Some areas of the park where open crop fields or pasture existed at the time of the Civil War are currently maintained under forest cover. Other areas that were crop fields or pasture during the war are currently maintained in open vegetative cover, primarily comprised of cool-season grasses such as fescue, which are invasive and detrimental to native plant communities. Removing woodland from areas of the park that were in open vegetative cover at the time of the Battle of Stones River and replacing it with native warm-season grass fields will perpetuate the appearance of historic agricultural land uses and support the park's interpretive goals. Converting fescue fields to native warm-season grass fields will maintain contributing patterns of spatial organization while enhancing the sustainability of park land cover management. This project suggests converting areas known to have been used for crop fields and pasture at the time of the Battle of Stones River to native warm-season grass fields, with limited areas utilized to interpret historic crop activities.

Location

Non-contributing woodland cover to be converted to native warm-season grass fields exists in various locations within the McFadden Farm unit, and smaller areas within the central and western portion of the Nashville Pike unit. Small areas of fescue fields also exist in both of these areas. The park is already in the process of converting many of these fescue fields to native warm-season grasses.

Considerations/Justification

Converting fescue fields to native warm-season grass fields will allow the perpetuation of important open conditions, limit the park's dependence on agricultural leases, and support NPS sustainability initiatives. As with many historical parks, management of agricultural fields has proven complex. Finding willing lessees to manage fields given the environmental restrictions placed on farming operations by the NPS is challenging for parks. Much cost and

labor is associated with keeping fields cleared. When budgets are insufficient to maintain open fields, parks are forced to release them to succession. Once under forest cover, there are often environmental and social issues and concerns related to maintenance practices and interpretation issues, including aversion to the use of fire as a management tool, and reluctance to remove trees.

Native warm-season grass fields are generally composed of regionally native perennial bunch grasses that are more ecologically sustainable than fescue. They can provide high-quality pasture, hay, and wildlife habitat, while also serving as components of riparian buffer plantings. Established using a modicum of soil amendments, warm-season grasses require few or no additional applications of herbicides, fertilizers, or pesticides, and are significantly more drought tolerant than fescue. Native warm-season grass fields can be cut over for hay production, perpetuating historic agricultural land uses; controlled seasonal burning can also be utilized to reduce mowing. Native warm-season grass fields can be difficult to establish and maintain in the early stages. However, the publication *A Landowner's Guide to Native Warm-Season Grasses in the Mid-South* produced by the University of Tennessee Agricultural Extension Agency provides an excellent overview of the methods and issues involved in establishing native warm-season grasses within the region, as well as additional contacts and sources of information.¹²⁶

Native warm-season grasses are more frequently being used as a field cover for historic agricultural sites within the National Park system and for conservation purposes throughout the country. Great Smoky Mountains National Park managers, for example, have begun to reestablish the historic character of agricultural fields in the Cades Cove Historic District by converting fescue to native warm-season grasses. The resulting research data and experience from this and other parks could be used to aid in management and treatment techniques for the fields at Stones River National Battlefield.

Stones River National Battlefield has already begun this process and is working hard to

126. <http://www.utextension.utk.edu/>

establish and maintain new native warm-season grass fields. Knowledge gained from this experience should be applied to the on-going conversion of additional fields from fescue and other non-native cool-season grasses and to establishing new fields where non-contributing woodland is removed. Each season, only discrete areas of a manageable size should be selected for field establishment based upon available labor, equipment, and other resources.

The park's interpretive plan should consider the role that native warm-season grass fields can play in the interpretation of historic conditions such as farm fields and dwelling precincts. Mowing patterns, for example, can be utilized to differentiate fields and create visual aids to interpret missing historic conditions. Grass species with distinctions in texture, height, and/or color can be planted in limited areas in support of interpretive needs to delineate former field patterns, military lines, or other missing features of the Civil War-era landscape.

Additional Studies Recommended

- Specific implementation recommendations for this project should be included in the park's vegetation management plan. Development of the implementation plan should take into consideration available literature relating to this issue, the experience of park personnel, other national parks, and experts in the field. Ecologists and plant specialists should be involved in determining the recommended species compositions, densities, appropriate season for planting, and maintenance techniques.
- Prior to beginning work, park staff should identify the appropriate vegetation community to establish in each proposed new field. Low, wet areas within some fields and along stream corridors may include native wetland plant communities that should be protected, and disturbance of these communities should be avoided. Habitat that may support rare, threatened, or endangered species should be identified and protected from conversion.
- The park should apply the appropriate Integrated Pest Management (IPM)

techniques to establishing and maintaining the desired vegetation stands.

- Seed mixes should be consistent with the reference xeric limestone prairie communities within the middle Tennessee region that the park has identified as target communities for field plantings. Should conditions change, the park should continue to consider options for species and seed mixes, taking into consideration availability of seed sources and the results of past efforts to establish fields at the park.
- A field management plan, including delineation of mowing regimes, should be developed to support interpretation of historic field patterns as part of the park's vegetation management plan and interpretive plan. The seasonal nesting cover and food requirements of open-field wildlife in the park, such as birds and small mammals, should be accommodated when determining mowing schedules.

Related Implementation Projects

- 4. Establish filter strips in association with crop exhibits, roads, parking areas, and trails.
- 5. Remove non-contributing woodland vegetation.
- 7. Update invasive plant species control plans.
- 10. Mark and interpret the locations of historic buildings and structures missing from the battlefield landscape.

Project Implementation Process

1. Conduct a field survey of the area to be converted after woodland and invasive species clearing operations are complete and prior to establishment of native warm-season grass fields. Stake the limits of the area to be converted. Engage an archeologist and a historical landscape architect to identify any previously undocumented cultural resources within the affected area.
2. Follow the guidance offered in the vegetation management plan to prepare the area to be

converted during the season or seasons prior to planting. Alternatives to be considered include the application of a systemic herbicide to areas where incompatible vegetation currently exists, or overseeding with native warm-season grass species and managing for their needs over the needs of cool-season species.

3. Follow the guidance offered in the vegetation management plan to prepare the area just prior to seeding. Where overseeding is not being used, consider using prescribed fire prior to planting to remove stubble and newly emerging seedlings, or applying additional herbicide six to eight weeks before planting and discing the field.
4. Seed the fields following the guidance offered in the vegetation management plan.
5. Manage the stands as recommended in the vegetation management plan, including the specific recommendations for mowing practices during establishment, and thereafter, and for prescribed fire.

4. Establish filter strips in association with crop exhibits, roads, parking areas, and trails

Description

Vegetative filter strips (also called grass filter strips or grass buffer strips) are used to filter and clean sediment, organic material, nutrients, chemicals, and other pollutants from stormwater runoff water as it leaves a non-point source (Fig. 187). Planted with densely growing or clump-forming grasses, filter strips are particularly crucial at locations edging drainages, streams, sinkholes, drainage wells, ponds, wetlands, or lakes to protect surface water. Placed between pollution sources and water resources, these planted filter systems can effectively mitigate soil erosion and polluted runoff.

Establishment of filter strips along roads and trails, parking areas, and crop exhibit areas is recommended in support of park sustainability initiatives and enhance regional water quality. This project would especially help mitigate runoff from large areas of paving, such as the main parking area at the Visitor Center, and from areas where the soil is more frequently exposed, such as the crop field exhibits.

Location

Filter strips are recommended for all road, trail, and parking area margins and the margins of current and proposed crop field exhibit areas within the park. This includes areas within the Nashville Pike unit as well as at the McFadden Farm unit. For roads and trails, filter strips should begin beyond a mown strip that allows water to flow off of the paved surface to avoid areas of standing water. The depth of the mown strip will depend on the cross-slope of the paved area as well as the landform that edges it and whether the juncture between the two affords a slope conducive for positive drainage.

Considerations/Justification

Vegetative filter strips are a Best Management Practice (BMP) for reducing runoff associated with some agricultural non-point source contaminants, such as soil nutrients, organic material, and pesticides bound to soil particles, and are considered an integral part of a land

conservation system. As water is slowed, larger soil and organic particles rapidly settle out. Smaller clay particles need a longer flow distance to settle out in the filter. Therefore, a wider strip is needed for removing finer sediments. Filter strips work best when water flows at a shallow, uniform depth across the filter. If water becomes concentrated in small channels, the effectiveness of the strip is drastically reduced. Filter strips also work best on shallower slopes. Filters cannot, however, remove all runoff water contaminants, and they may require replacement if sediments build and erosion gullies begin to form.

Factors impacting filter strip effectiveness:

- Shallow, uniform flow is more effective for filtering runoff flow than concentrated flow conditions.
- The first eight to twelve feet of the strip is the most effective in removing sand- and silt-sized particles of sediment. A filter must be wider to effectively trap clay-sized particles.

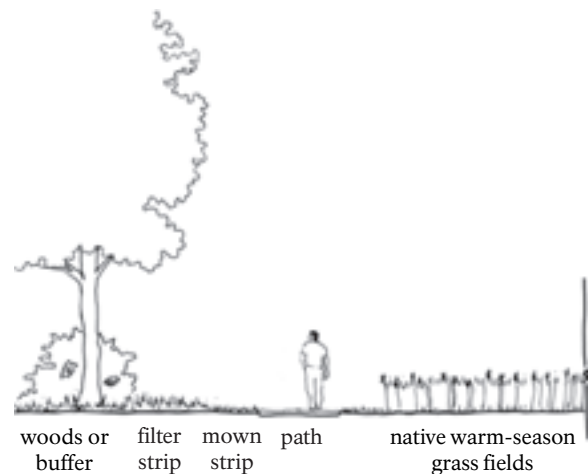


FIGURE 187. Section showing the relationship between park trails and filter strips, as well as other recommended conditions.¹²⁷

127. Figure from "Glendale and Malven Hill Units, Richmond National Battlefield Park Cultural Landscape Report and Archeological Inventory," John Milner Associates, Charlottesville and Alexandria, Virginia, for the National Park Service, Richmond National Battlefield Park, October 2004.

- The strip is most effective when its width, location, and vegetation are matched to the soil, slope, and drainage conditions of a specific site.
- The strip becomes less effective as the cropland area drained through the vegetated area is increased.
- The strip also becomes less effective when the depth of flowing water moving through it is greater than the height of the vegetation in the filter. Vegetation tends to lie over, which may help protect the filter strip area from erosion, but dramatically decreases filtering efficiency.
- The strip becomes less effective as sediment and nutrients build up in the vegetation.
- The strip is also less effective in trapping sediment and nutrients if runoff events occur very frequently with little or no rest or growth period between events.
- The strip is less effective when not adequately maintained.

Filter strips will alter the character of the landscape associated with some of the high visitor use areas due to the nature of the clump-forming grasses used to trap sediments and pollutants. Interpretation or education regarding the importance of these features to the environment will help mitigate the impact to the visitor experience.

Additional Studies Recommended

- Design and implementation of filter strips should be considered as part of the vegetation management plan being prepared for the park.
- The park should determine the best species composition for filter strips based on current knowledge regarding species viability.

Related Implementation Projects

- 3. Enhance and expand native warm-season grass fields and meadows.
- 7. Update invasive plant species control plans.

Project Implementation Process

1. NPS natural resource specialists should conduct site visits and field surveys to determine necessary filter strip widths and placement. Design filter strips to be at least ten to twenty-five feet wide, depending on the slope of the field; steeper slopes require wider filter strips. Keep drainage areas relatively small, with no more than thirty acres of field draining to one acre of filter. In the case of impervious surfaces or intensive uses such as parking areas, the ratio should be smaller.
2. Assess the condition and effectiveness of any grass filter strips that currently exist at the park and rehabilitate as necessary using BMPs for agriculture if the buffer is not stable, for example, if vegetation is in poor health, there are numerous invasive plants, or the existing buffer is too narrow. Remove invasive plants using the guidelines provided in this document.
3. Examine current site conditions to determine species to be seeded, considering the following elements:
 - Soil characteristics
 - Slope of land
 - Shape and area of the field draining to the filter strip
 - Hydrology
 - Type and condition of existing vegetation
 - Land use history
 - Location of cultural and archeological features
4. Remove invasive vegetation and refuse and protect sensitive natural and cultural resources in preparation for filter strip establishment.
5. Plant species native to local riparian zones. Ecologists and plant specialists should determine the species compositions, the densities that will be required, and the

appropriate season for planting. Avoid use of fertilizers and pesticides in riparian zones.

6. Monitor post-installation site conditions for seed germination and growth of invasive plant species.
7. To maintain filter strips:
 - Inspect regularly, especially after heavy precipitation events.
 - Remove accumulated sediment periodically.
 - Repair and reseed bare spots and areas where erosion channels begin to form.
 - Mow vegetation to a six-inch height two to three times per year, or burn, and remove woody vegetation and weeds.
 - Test soil periodically to assure continued plant health.

5. Remove non-contributing woodland vegetation

Description

The clearing of non-contributing woodland to reestablish historic land cover conditions would enhance interpretation of the 1862–1863 battlefield landscape. Based on historic maps, sufficient documentation exists to reestablish fields that were open during the battle but are now in forest cover. In some cases, non-contributing woodland helps to screen views of incompatible contemporary development and should therefore remain. In other cases, non-contributing woodland plays an important role in maintaining the health of the environment.

Location

The Nashville Pike unit and McFadden Farm unit both include areas of non-contributing woodland.

Considerations/Justification

Before any existing woodlands are cleared, two factors must be considered: the impact of clearing on the environment and the role that clearing will play in interpretation. Woodland cover along Stones River is important as a riparian buffer that protects water quality. Some woodland areas serve as habitat for rare or unusual plant species or communities, a value that may be considered more important than battlefield restoration. The park's interpretive plan should help to identify the specific sites and degree of clearing required to enhance the visitor experience and the park's ability to tell the story of the Battle of Stones River. The park should evaluate priorities for interpretation and determine what costs and benefits are associated with clearing. If existing non-contributing woodland is found to play another important role in the park landscape, consider whether battlefield stories can be told elsewhere.

The following criteria should be considered when weighing the decision to clear woodland:

- The area to be cleared should support the goals of the park's interpretive plan.

- The area to be cleared should be located along one of the primary tour routes, or within view of interpretive trails or sites.
- Reestablishing a historic field should not result in open views to areas outside the park that would have a negative affect on interpreting the historic scene. Ensure that a 100-foot wide forest buffer is maintained along the perimeter of the park boundary.

The following guidelines apply to woodland clearing:

- Clearing should not be undertaken within wetlands and other sensitive ecological areas. Delineate park wetlands before field clearing begins. Consider all federal, state, and local laws associated with wetlands or other sensitive ecological areas in the evaluation.
- Clearing should not be undertaken within the 100-foot riparian forest buffer of Stones River.
- Avoid clearing existing woodland on slopes steeper than 15 percent and on soils classified as highly erodible or stony, although removal of invasive species should be undertaken in these areas when possible.

The following economic and environmental costs should also be considered when weighing interpretive benefits:

- Will the clearing result in a loss or fragmentation of wildlife habitat?
- Will the improvement to environmental health offered by the removal of invasives like Chinese privet and bush honeysuckle offset the environmental costs of tree removal?
- Heavy infestations of Chinese privet and bush honeysuckle reduce appropriate habitat for native plants and animals. When these infestations are removed, soil erosion may occur. In this case, a healthy stand of native grasses may be an ecological improvement in both uplands and wetlands.
- Can the loss of topsoil and reduction in water quality due to increased runoff during

clearing be mitigated to an acceptable degree?

- Can the loss or damage of archeological resources due to clearing and stump removal and seedbed preparation be mitigated to an acceptable degree?
- What is the financial cost of meeting Section 106 compliance in testing, collecting, and inventorying environmental and archeological resources?
- What is the financial cost of monitoring by specialists during clearing?
- What is the financial cost of managing new fields by mowing and/or controlled burns?
- What is the financial cost of establishing native grass field cover?
- Can the costs of clearing be offset by the sale of the timber harvested?

Additional Studies Recommended

- By law, any landscape management activity that moves, breaks, or disturbs soil requires some level of Section 106 and/or NEPA compliance before activities can begin. The compliance process must be completed before any ground-disturbing activity can begin.
- Park personnel should prioritize areas to be cleared, and work with botanists/ecologists to perform the environmental impact assessments. Evaluate all potential cultural and natural resource impacts before determining which sites will be cleared.
- Evaluate the forests identified for clearing to ensure that there are no federal or state threatened, endangered, or rare species present, or rare habitats that are likely to support such species. A comprehensive survey for rare, threatened, and endangered species has not been conducted for the park, although habitats exist to support them. The park should conduct the necessary surveys to determine the presence of these species prior to any type of forest clearing or thinning project. If endangered or threatened plant or wildlife species are

identified, recommended actions that may alter their habitats should be reevaluated. Also, consider evaluating the potential impact on rare, threatened, or endangered plant and animal populations whose habitat is consistent with environmental conditions in the park.

- The boundary of the site to be cleared should be delineated by an interdisciplinary team, including an ecologist, rare plant specialist, hydrologist, forester, archeologist, and historical landscape architect. The team should collectively delineate the locations and alignments of all timber haul roads, loading areas, riparian management zones, and other related conditions of the tree removal effort.
- Two options exist for woodland clearing: clear-cutting and gradual removal of the overstory vegetation. Clear-cutting is not recommended for removal of non-contributing woodland within Stones River National Battlefield. With gradual removal, issues relating to this method include:
 - The process may take five to ten years to completely remove woodland, and re-establish an open field.
 - The method will likely have less impact on the surrounding woodlands and environment.
 - It will be a less dramatic change for visitors.
 - Continual maintenance and removal labor will be needed. A management plan for removal may be required to adequately address issues involved with this type of tree removal.

Related Implementation Projects

- 3. Enhance and expand native warm-season grass fields.
- 6. Manage mixed woodlands to promote a combination of natural and cultural resource values.
- 7. Update invasive plant species control plans.

Project Implementation Process

After a field has been identified as suitable for clearing, the following steps are recommended:

1. Perform archeological surveys and associated testing of the site by a qualified archeologist.
2. Conduct archeological and cultural landscape analyses within areas identified as potential sites, including but not limited to road traces, prior to forestry or clearing/grading operations. Allow forest to remain where archeological resources exist with integrity in unplowed contexts.
3. Prior to clearing woody growth, consider carefully the proper locations for establishing sight lines that are consistent with 1862–1863 military events.
4. Prior to clearing, field check clearing locations with an archeologist, natural resource specialist, and historical landscape architect to ensure that natural or cultural resources will not be adversely affected. Preserve, protect, and maintain trails, gravesites, and evidence of former cultural features in areas undergoing forest clearing.
5. Perform cutting or thinning in the fall and winter, when fewer visitors are at the park, dormant trees are less likely to be damaged, there are no nesting birds or animals in the vegetation, and sufficient time would be available to remove ground vegetation before spring growth.
6. Minimize the use of heavy vehicles, use low tire-pressure vehicles, and restrict use to times when soil is firm to reduce compaction. Employ measures to stabilize soil and minimize erosion.
7. Incorporate silvicultural methods that minimize the impacts and threats to cultural and natural resources and known and potential archeological resources. Ensure that forest harvesting is monitored by an historical landscape architect and archeologist. An archeologist should be present during any clearing operation.
8. Manage tree removal operations to protect environmental resources.
 - Tree removal contract management. Work should be conducted by a tree removal service with successful experience working at historically significant sites. The park should regularly inspect tree removal operations to monitor compliance with the terms of the contract and applicable laws. The archeologist, soil scientist, and/or other professionals should participate in these inspections.
 - Site restoration. Ensure that BMPs and erosion control measures are employed by the entity undertaking the tree removal work.
 - Landcover. Immediately begin establishment of native warm-season grass cover in areas where trees have been removed. Use information contained within this report to guide native grass establishment, and consult vegetation experts to ensure the success of new grasses.
9. Cut stumps; do not uproot or grind them.
10. Treat stumps and sprouts with herbicide, such as glyphosate, to discourage and control woody regeneration. Chemical control of woody plant regeneration should be conducted by a certified herbicide applicator—either qualified park staff, or a landscape contractor.
11. Remove felled trees without dragging, which gouges the ground surface.
12. Establish native grass and forb cover over newly cleared areas. Minimize disturbance to the surface when planting new cover.

6. Manage mixed woodlands to promote a combination of natural and cultural resource values

Description

Interpretation of the Civil War-era Stones River battlefield will be enhanced through the reinstatement of historic patterns of spatial organization. In addition to currently wooded areas that are known to have been open during the Civil War, there are sites on the battlefield that are currently open that are known to have been wooded in 1863. Conversion of these fields to woody cover is recommended in support of restoring historic spatial patterns. In other areas, the removal of non-contributing woodland—woodland that has arisen since 1863 on former agricultural fields and pasture—is recommended to support rehabilitation of historic patterns of spatial organization. Some areas of non-historic woodland, however, currently have high natural resource values and should be retained. In particular, this includes riparian buffers, which protect water quality by controlling overland flow of eroded soil and pollutants. Riparian buffers should be maintained adjacent to streams and wetlands within the park to ensure protection of water quality. Where non-contributing woodland remains to support natural resource values, it may conflict with interpretive goals. Interpretive goals indicate the need for establishing and maintaining view corridors where currently, valuable woodland should be retained, or in areas where woodland is recommended to be established. In these areas, careful manipulation of existing woodland cover is recommended. View corridors may in many cases be achievable through site-specific manipulation of the woodland, including limbing up of canopy trees, removal of saplings and shrubs, and clearing of small areas of trees to establish a vista between a viewpoint and a specific view.

Three different woodland treatments are considered below: reestablish historic forest areas; establish and maintain riparian buffers; and thin woodland to establish viewsheds for interpretation.

Reestablish historic forest areas

Considerations/Justification

Determining and replicating the character of a mid-nineteenth century woodland condition is complex. Nineteenth century woodland character was often heavily affected by local cultural practices. Woodland areas were often used as woodlots where trees were harvested by the land owners to supply wood for construction materials or fuel, and livestock was allowed to forage. Area woodlands were thus more open, with less understory vegetation, than is typical today. Those areas to be managed and maintained in forest cover in close proximity to visitor use areas, particularly those adjacent to former farmsteads, are the best candidates for management in a cleared understory condition. Removal of invasive shrubs will open up the understory considerably and contribute to this effort.

Allowing the areas proposed for restoration to undergo secondary succession, while maintaining them free of invasive plant species, is a viable alternative for the restoration process. Regular periodic monitoring, species sampling, record keeping, and comparison of species observed against the mature woodland predictive model provided by a botanist will support this reforestation process. Removal of invasive species is critical to the success of this effort. Planting saplings of local native vegetation, eventual woodland dominants if possible, will accelerate the process. Additional saplings should be planted every few years to avoid establishment of an even-aged stand of trees.

Location

Portions of the Nashville Pike unit are currently maintained in grass cover where woodland existed during the Civil War.

Additional Studies Recommended

- Assessment and protection of cultural features should precede planting.
- Develop a revegetation plan that takes into consideration the goals of the interpretive plan, in reestablishing woodlands on

historically wooded sites along the visitor interpretive routes. The plan should specify planting of species that are native to the region and are suited to the specific soils, hydrology, aspect, and orientation conditions of the area to be revegetated. Consider erosion control methods as part of the re-vegetation plan. Document the predicted composition of naturally occurring woodland given existing cultural conditions in the plan.

- Prioritize the locations where currently open fields should be converted to woodland in support of restoring the 1863 historic scene.

Related Implementation Projects

- 7. Update invasive plant species control plans.
- 8. Establish screen plantings in specific locations to manage views.

Project Implementation Process

1. Delineate in the field, using a historical landscape architect, archeologist, and botanist/ecologist, the extent of each area to be converted to woodland.
2. Remove invasive plant species from areas to be converted to woodland.
3. Implement the revegetation plan, either by allowing woodland to develop through secondary succession, or by planting saplings or native trees.
4. Follow proper plant installation methods, including mulching and watering techniques, to ensure survival of newly planted vegetation.
5. Initiate a periodic monitoring program to evaluate the development of the woodland and to look for evidence of colonization by invasive species.
6. Manage vegetation to promote the establishment of stable, healthy woodland comprised of species typically found in similar natural areas. Consider thinning understory plants as an interpretive aid to

replicate nineteenth-century woodlot character.

Establish and Maintain Riparian Buffers

Considerations/Justification

Riparian buffers should be established and maintained adjacent to streams and wetlands within the park to ensure water quality protection. Riparian buffer vegetation can vary greatly, but there are many species of trees, shrubs, and native grasses that can be successfully used along the waterway. Typically, riparian buffers are composed of a series of zones or strips between the flood zone and the edge of the water: a strip of large trees; another of medium-sized trees and shrubs, and a third strip of grasses (Fig. 188).

While most of the river along the park boundary is edged by woodland, the condition of the community along the river needs to be evaluated in terms of its value as a riparian buffer. For example, it may include various invasive plant species, and there may be gaps in the extent of the woodland. Adjacent landowners whose properties front the river should be encouraged to establish buffers on their property as well.

Methods for delineating wetland buffers and buffers associated with perennial watercourses vary from region to region. There is a great deal of available information and guidance provided by a number of organizations, including the U.S. Department of Agriculture Natural Resources Conservation Service within Tennessee State.

Location

Lands extending for 100 feet to either side of Stones River are the highest priority area for buffer maintenance and establishment.

Additional Studies Recommended

- The park should include a riparian buffer plan as part of the vegetation management plan. The plan should identify all areas that potentially require a buffer and delineate the 100-foot dimension of the minimal buffer boundaries on a map of the park. The locations should be field verified, and any

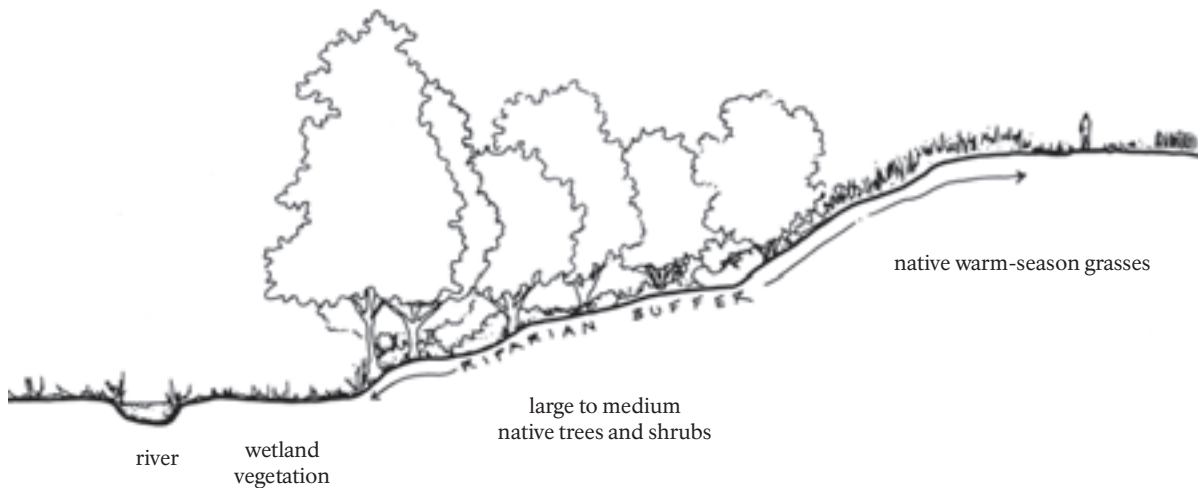


FIGURE 188. Section through a typical riparian buffer.¹²⁸

existing deficiencies in the existing riparian forest should be noted and addressed in the plan. The plan should identify a list of desirable native species for inclusion in the buffer planting. The site specific selection of species should be tied to cultural conditions. Ecologists and plant specialists should be involved in determining the recommended species compositions, densities, and the appropriate season for planting. Seed scarification, dormancy, and the potential for colonization by invasive species are often dependent on seasonal issues. Planting schemes should be based upon a detailed evaluation of the following elements:

- Soil type(s)
- Slope of buffer zone
- Stability of soil organic layer
- Vegetation type(s) and communities
- Hydrology
- Type and condition of adjacent waterway
- Land use history
- Location of cultural and archeological features

- The park should identify the appropriate character for riparian buffers in areas where interpretation of key events associated with the Battle of Stones River is desirable. Trees will generally provide better erosion control in riparian zones because of their extensive netted root system, and the canopy that reduces the impact of rainfall on soils. Trees also shade, and therefore help to cool, water resources. To accommodate site-specific interpretive objectives, consider thinning the stand of trees within the riparian buffer and/or limbing up individual trees to open views that support interpretive goals, or establish a visual connection between two important locations by removing a limited number trees and tall shrubs, while maintaining low-growing alternative buffer vegetation; (see the section that follows.)
- The park should contact adjacent landowners and owners of parcels along Stones River to consider establishing similar woodland features on their land.

Related Implementation Projects

- 3. Enhance and expand native warm-season grass fields.
- 7. Update invasive plant species control plans.

¹²⁸. Ibid.

Project Implementation Process

1. Prepare the site for buffer establishment by removing exotic and invasive vegetation and protecting sensitive natural or cultural resources.
2. Follow established procedures for forest restoration, planting a combination of native trees, shrubs, and herbaceous plants within a 100-foot-wide riparian buffer zone. Fibrous-rooted native grasses have the best potential to hold the soil and prevent erosion.
3. Follow proper plant installation methods, including mulching and watering techniques, to ensure survival of vegetation. During plant installation, follow erosion control methods to prevent excessive sediment or chemical runoff into the adjacent water source.
4. Monitor post-installation site conditions for plant health and possible invasive or exotic plant species growth on a regular basis.
5. Replace failed vegetation immediately.

Thin Woodland to Establish Viewsheds for Interpretation

Considerations/Justification

The following woodland thinning techniques are intended to render the ground plane and landform of important interpretive viewsheds more visually accessible in places where removing non-contributing woodland is not a viable option given natural resource protection needs (Figs. 189 through 191). The techniques that can be used to enhance visual accessibility while retaining tree cover include thinning, the selective removal of trees and shrubs, and the pruning of lower branches.

For sites where a riparian buffer is recommended, but tree cover interferes with important views, an alternative buffer type is recommended, comprised of vegetation that can be maintained at a lower height, such as native grasses, sedges, and forbs that maintain a fibrous root system capable of stabilizing the soil. As noted above, trees provide the best erosion control within riparian buffers. However, there may be instances where thinning the trees within the riparian buffer and/or limbing up individual

trees will be necessary to open up views in support of interpretive goals. In some very limited instances, it may be necessary to remove tree and large shrub cover in small areas to accommodate site-specific interpretive objectives. In these areas, an alternative riparian buffer is recommended comprised of grasses, sedges, and forbs that maintain a fibrous root system capable of stabilizing the soil. This type should only be utilized when thinning and limbing is not successful in achieving an important interpretive objective.

Location

Thinning and clearing of specific sight lines is recommended for views across Stones River to the artillery position of the Union Army on January 2, 1863. Both banks of the river were maintained in open vegetative cover during the Civil War period.

Additional Studies Recommended

- Assessment and protection of cultural features should precede removal of trees.
- The identification of important views and viewsheds should be determined as part of the interpretive plan.

Related Implementation Projects

- 3. Enhance and expand native warm-season grass fields.
- 6. Remove non-contributing woodland vegetation.
- 7. Update invasive plant species control plans.

Project Implementation Process

1. Engage an archeologist, natural resource specialist, and historical landscape architect to field-check the areas to be cleared and ensure that no cultural or natural resources will be adversely affected prior to removal of woodland vegetation.
2. Follow BMPs for vegetation removal and thinning.

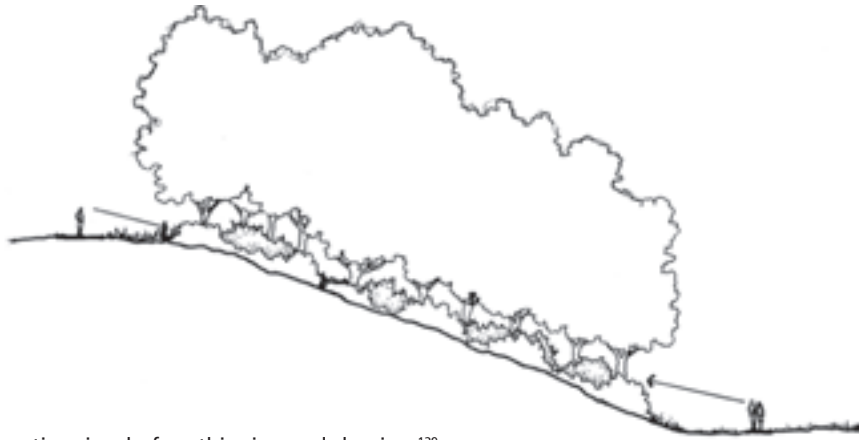


FIGURE 189. Interpretive view before thinning and clearing.¹²⁹

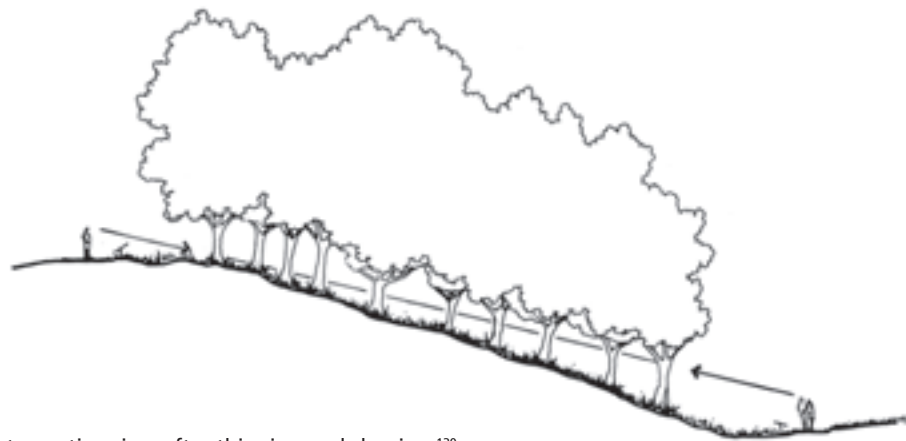


FIGURE 190. Interpretive view after thinning and clearing.¹³⁰

3. Perform work in phases to ensure that the minimum amount of vegetation is removed to meet interpretive needs:
 - Phase One: Begin by removing exotic and invasive vegetation and trees that are diseased, unhealthy, present a danger to visitors, or are a windthrow hazard. Remove the majority of saplings and shrubs. Prune and remove branches up to fifteen feet above the ground. Seed with appropriate native grass, rush, sedge, and forb species.
 - Phase Two: Evaluate the success of phase one thinning operations. Further enhance visibility as needed by selectively thinning additional trees.
 - Continue to remove exotic, invasive, and diseased vegetation.
 - Phase Three: Evaluate the success of phases one and two thinning operations. If the viewshed remains obscured, continue to selectively thin trees without negatively affecting water quality until the viewshed meets interpretive needs. As woodland is opened, seed with relatively shade-tolerant native grasses, rushes, sedges, and forbs to prevent soil erosion and establishment of unwanted opportunistic and invasive species. Maintain understory grasses by periodically removing woody competition as needed. Also thin woody

129. Ibid.

130. Ibid.

- cover on a periodic basis as needed to maintain visual access.
- Alternatively, opt to clear trees between a specific view point and a viewed landscape feature in a narrow cone of vision. Interpret the cleared area for visitors.
4. Maintain alternative buffers through infrequent mowing or controlled burns, on average once per year or every two years.



FIGURE 191. An example of a viewshed carefully cleared in support of interpretation.

7. Update invasive plant species control plans

Description

Control of invasive plant species is a goal of park management. The park is currently in the process of developing an integrated pest management plan for invasive exotics as part of its vegetation management plan. This plan provides several types of information, including a rating system gauging the threat that individual species pose; the locations of troublesome stands; a description of each invasive plant species and its growing habit; and a history of each invasive species' introduction and success of past control methods. The draft of this study is not yet complete, but it will clearly be a critical document for park management. The document also outlines approaches to vegetation management for different types of communities, such as native warm-season grass fields. The information that follows is intended to complement the vegetation management plan. Completion of the plan and its implementation will support natural and cultural resources goals.

Location

This project applies to the park as a whole.

Considerations/Justification

Numerous invasive plant species are in evidence within the Stones River National Battlefield landscape, some of which pose a threat to natural and cultural resources. Invasive or exotic plant species have become a troublesome component of the Stones River National Battlefield landscape, even in well-maintained areas. Whether introduced intentionally or accidentally to the landscape, invasive species cause native communities to degrade and lose quality. The consequences of the invasion of such species ranges from merely annoying to seriously threatening the park's natural systems and cultural resources. Invasive species were not a part of the 1863 landscape and are incompatible with the character of historic vegetation.

Treatment of invasive species in national parks is guided by a number of National Park Service and other federal policies including: *NPS-77 Natural Resources Management Guidelines*, Executive

Order 13112, and *NPS Management Policies*. *NPS Management Policies* states, "Exotic species will not be allowed to displace native species if displacement can be prevented." Also,

All exotic plant and animal species that are not maintained to meet an identified park purpose will be managed—up to and including eradication—if (1) control is prudent and feasible, and (2) the exotic species:

- Interferes with natural processes and the perpetuation of natural features, native species or natural habitats;
- Disrupts the genetic integrity of native species;
- Disrupts the accurate presentation of a cultural landscape;
- Damages cultural resources;
- Significantly hampers the management of park or adjacent lands;
- Posts a public health hazard;
- Creates a hazard to public safety.¹³¹

Bush honeysuckle and Chinese privet likely pose the most serious threat to park resources. Both of these species infest many of the park's road corridors, field edges, stream corridors, wetland areas, and woodlands. Other invasive species with the potential to displace native species observed during the field investigations for this report or noted in park vegetation studies include:

- Tree-of-Heaven (*Ailanthus altissima*)
- Mimosa (*Albizia julibrissin*)
- Garlic mustard (*Alliaria petiolata*)
- Musk thistle (*Cardus nutans*)
- Queen Anne's lace or wild carrot (*Daucus carota*)
- Climbing euonymus (*Euonymus fortunei*)

131. U.S. Department of the Interior, National Park Service, *NPS Management Policies* (Washington, D.C.: Government Printing Office, 2001), 37.

- Japanese honeysuckle (*Lonicera japonica*)
- Multiflora rose (*Rosa multiflora*)
- White and sweet clover (*Melilotus alba*, *M. officinalis*)
- Sericea lespedeza (*Lespedeza cuneata*)
- Johnsongrass (*Sorghum halapense*)
- Tall fescue (*Lolium arundinaceum*)
- Japanese grass (*Microstegium vimineum*)
- Kudzu (*Pueraria lobata* or *montana*)
- Common mullein (*Verbascum thapsus*)
- Japanese smartweed (*Polygonum cespitosum*)
- Lady's thumb (*Polygonum persicaria*)
- Field hedge-parsely (*Torilis arvensis*)
- Bachelor's buttons (*Centaurea cyanus*)
- Japanese clover (*Kummerowia striata*)
- Japanese chess (*Bromus japonicus*)
- English ivy (*Hedera helix*)
- Ox-eye daisy (*Leucanthemum vulgare*)
- Yellow goat's beard (*Tragopogon dubius*)
- Rose of Sharon (*Hibiscus syriacus*)
- Star of Bethlehem (*Ornithogalum umbellatum*)
- Chickory (*Chichorium intybus*)
- Yam-leaved clematis (*Clematis terniflora*)

Recommendations for containing, controlling, and managing the invasive species that pose the most serious threats to park resources can be found in the following sources: *Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control*; *A Handbook for Forest Vegetation Management in Recreation and Historic Parks*; and at the National Invasive

Species Information Center internet site.¹³² John M. Randall's *Invasive Plants: Weeds of the Global Garden* also provides a basic overview of invasive plant species management.¹³³ Given the infestation of Chinese privet and bush honeysuckle at Stones River, and the current and potential damage these plants pose to natural and cultural resources, the park should focus immediate efforts on completing its integrated pest management plan for invasive exotics" to include control methods for these two species. Such a program will involve collaboration among natural resource specialists such as biologists and ecologists and experts from state and federal institutions to compile the most up-to-date scientific data for managing invasive species. The park should also investigate additional sources of funding and support for invasive species management at Stones River to ensure the completion of such efforts.

When invasive species appear to be well-established, the most effective action may be to prevent their spread or lessen their impacts. For certain invasive species, adequate control methods are not available or populations are too widespread for eradication to be feasible.

Consideration of the environmental impacts of control actions requires that environmentally sound methods be available and judiciously deployed, especially in highly vulnerable areas. Often, further research is needed on the biology of invasive species and the ecosystem's vulnerability to them and on means to detect and interdict invasive species that threaten to become established. Natural resource managers and site stewards are often the ones gathering evidence while managing highly invasive species. This hands-on trial and error approach to invasive species control is often highly valuable and should be comprehensively recorded and documented in landscape monitoring reports.

132. James H. Miller, *Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control*, rev. ed. (Asheville, North Carolina: U.S. Department of Agriculture, Forest Service, Southern Research Station, 2003); Amy Cimarolli Helm and James E. Johnson, *A Handbook for Forest Vegetation Management in Recreation and Historic Parks* (Blacksburg, Virginia: Virginia Cooperative Extension, 1995); www.invasivespeciesinfo.gov

133. John M. Randall, et al., *Invasive Plants: Weeds of the Global Garden* (Brooklyn, New York: Brooklyn Botanic Garden, 1996).

If an invasive species is eradicated in an area where its impacts on the environment were small, recovery can be rapid. In many cases, however, disturbances caused by invasive species have multiple effects throughout an ecosystem and may be exacerbated by human alterations of the environment. Invasive plant control measures must be continued on a regular and periodic basis; lapses in treatment due to a lack of funding can compound the problem.

Continue using invasive species control programs as an opportunity to educate the general public about the harm that invasive species cause and the importance of preventing their introduction.

Additional Studies Recommended

- Consult with natural resource specialists on-site to determine the most effective and sensitive method available to address each specific invasive species population. Typical removal options include chemical (herbicides), mechanical (cutting, mowing), and prescribed burning, although biological controls may also be effective for some species. Determine which methods are available and most appropriate to control each invasive species of concern.

Project Implementation Process

The invasive species control plan is implemented only after the first three steps are completed. One of the steps is to reevaluate periodically the goals and the plan for modification as needed. This is the essential “adaptive” process required by the strategy.

1. Evaluate current planning documents and maintenance records to determine how to appropriately update and/or modify the existing invasive plant species control program.
2. Put in place the following key elements for developing an early detection and rapid response system:
 - Up-to-date reliable scientific and management information;
 - Rapid and accurate species identification;
 - Standard procedures for rapid risk assessment;
 - Adequate technical assistance such as quarantine, monitoring, information sharing, research and development, and technology transfer; and
 - Rapid access to funding for emergency response efforts, including accelerated research of invasive species biology, survey methods, and eradication options.
3. Allow for an adaptive approach to the management and control of invasive plant species.
4. Under the direction of a natural resource specialist, map the location, density, and type of invasive species populations prior to control and removal efforts in order to create a baseline of information for future evaluation of efforts.
5. Establish management goals for the various restoration areas. Determine if any plant species threaten or have the potential to threaten management goals.
6. Evaluate species and populations for their likely impact upon the park’s ecological health and its natural and cultural resources. Prioritize the application of control measures based on species and populations that pose the greatest threat to natural and cultural resources.
7. Develop and implement the invasive species control plan designed to move conditions toward the management goals.
8. Train personnel to identify invasive and native species and to use appropriate methods for removal/treatment. Follow the park’s vegetation management plan for species-specific control and eradication procedures.
 - Use ecologically sound removal techniques that will not cause damage to resources.

- Assess potential impacts of removal methods on resources to ensure that treatment benefits outweigh negative effects.
 - Remove invasive plant species in the vicinity of historic and archeological resources in such a way as to minimize ground disturbance and damage to native vegetation. Removal should be undertaken only after surrounding landscape features and resources have been protected. Hand-treat or remove by hand invasive plants in sensitive natural or cultural resource areas.
 - If necessary, repair damage to resources and mitigate any impacts of removal, such as the potential for soil erosion on steep slopes.
 - Revegetate cleared areas with appropriate native plant species to prevent re-infestation and erosion problems.
9. Monitor and assess the impacts of the invasive species management actions in terms of the management goals, and in order to evaluate the effectiveness of various measures.
10. Repeat the process by reevaluating conclusions made in the first three steps and modify as necessary.

8. Establish screen plantings in specific locations to manage views

Description

Residential and commercial development and accompanying expansion of transportation infrastructure is occurring rapidly within the Murfreesboro area. Stones River National Battlefield is edged in many areas by land that is already, or expected to be, under development pressure. As the park continues to enhance the rural, agricultural character of its historic landscape to interpret 1863 conditions, views to development along its boundary undermine these efforts. Views of light industrial development, highway overpasses, and residential subdivisions detract from the interpretive potential of the park. Mitigation of these views should be undertaken. One of the most effective means for mitigating undesirable views is to establish screen plantings along portions of the park's boundaries edged by development, or that have the potential for future development. Screen plantings may be composed of existing woodland supplemented with additional evergreen trees and shrubs, or additional depth. In some areas, establishment of a new woodland screen may be necessary.

Location

Screen plantings are recommended along park boundaries where there are views of current or potential incompatible development.

Additional Studies Recommended

- Minimize development impacts adjacent to and near the park by working with developers during the planning process, suggesting increased setbacks and the least intrusive location and character for new structures and roads.
- Monitor and participate in regional planning activities in order to protect adjacent resources and the larger setting of the park.
- Develop working relationships with adjacent landowners to yield information that may determine where additional buffers should

be established to most effectively screen proposed development.

- Develop a revegetation plan as part of the park's vegetation management plan that identifies the appropriate species for consideration as part of park screen plantings.

Related Implementation Projects

- 6. Manage mixed woodland to promote a combination of natural and cultural resource values.

Project Implementation Process

1. Delineate the extent of each area where screen plantings are to be established, using a historical landscape architect, archeologist, and botanist/ecologist.
2. Evaluate the extent and condition of existing woodland to serve as a visual screen or buffer.
3. Remove all invasives within the area designated for buffer establishment.
4. Plant native evergreen and deciduous trees and shrubs with dense character that are suited to local conditions.

9. Protect the Pioneer Brigade Earthworks, and manage woodland environs to promote preservation of the associated resources

Description

The Pioneer Brigade Earthworks are located in close proximity to the visitor center, but are currently not included in the visitor interpretive experience at Stones River National Battlefield. Earthworks are one of the few tangible above-ground resources that survive from Civil War battlefields. The Pioneer Brigade Earthworks offer a special interpretive opportunity at the park and should be made accessible to the public.

Location

The Pioneer Brigade Earthworks are located west of the Visitor Center within the Nashville Pike unit.

Considerations/Justification

Due to the fragile nature of earthwork resources, any visitor access and interpretive improvements must be carefully considered to avoid degradation of the Pioneer Brigade Earthworks. A management plan should be developed that explores the best methods for protecting the earthworks while allowing for interpretation. Given the current woodland vegetative cover, the best approach to managing the earthworks will likely be to maintain the woodland community and a surficial layer of leaf litter to prevent soil erosion. If the existing trees do not generate enough leaf litter, additional material may need to be brought to the site and used to cover the soil of the earthworks.

Consideration should be paid to the fact that the woodland surrounding the earthworks is considered non-contributing to the Civil War period. As the park considers removing non-contributing woodland, it may be desirable to maintain a buffer of woodland surrounding the earthworks to effect the protection described above. The park's natural resource specialist should consider the extent of the buffer required to protect the earthworks, and this buffer should

be maintained when tree removal is effected in this area. Within the buffer, however, the woodland will need to be managed to limit potential threats to the earthworks and the visitor. Trees with shallow roots systems and larger than twelve inches in diameter are susceptible to wind-throw. In many cases, this can include the disruption of soil areas when the root ball is dislodged. Large trees and trees that present a windthrow hazard should therefore be removed from the parapet and ditch system of the earthwork. Hazard trees are those that have the potential to fall or drop large limbs on earthen resources or visitors. These should also be removed. If the remaining woodland cover is not substantial enough to protect the earthworks, additional tree saplings should be planted to support the establishment and maintenance of a healthy woodland stand.

Trails leading to and around the earthworks should be carefully designed so that they do not invite visitors to climb on the earthworks and should be sited in the least intrusive and destructive way possible. Signage should encourage visitor stewardship of the resources; if signage is not successful in keeping visitors from climbing on the earthworks, more restrictive measures, such as installing fencing or bollards and chains, may be required. New structural features, such as boardwalks or viewing platforms, should not be founded in soil that is part of the parapet or ditch system to avoid confusing visitors about stewardship of the resources and to protect them.

Additional Studies Recommended

- Woodland health evaluation.
- Plan for removal of windthrow hazard trees and shallow rooted trees growing in and on the earthworks.
- Consideration of interpretation at the site as part of the park interpretive plan.
- Design of a new visitor trail and interpretive exhibits.
- Review of plans by archeologist to determine conflicts with known and potential resources.

Related Implementation Projects

- 5. Remove non-contributing woodland vegetation.
- 7. Update invasive plant species control plans.

Project Implementation Process

1. Remove trees that pose a hazard to the earthworks or visitors, are invasive exotics, or are greater than twelve inches in diameter and are growing on the earthworks. Employ the tree removal techniques and guidelines included in the Fortress Rosecrans section of the Treatment Plan chapter.
2. Evaluate leaf litter cover on the earthworks to determine if additional material needs to be added. Add leaf litter to earthworks as needed, after material has been approved by the park's natural resource specialist.
3. Plant additional saplings as needed to ensure future tree cover. Follow the guidelines in the Fortress Rosecrans section of the Treatment Plan chapter.
4. Establish a new visitor access trail leading to the earthworks and interpretive exhibits, designed in accordance with the park's interpretive plan. Consider a trail surface that is muted in color, and requires the least amount of soil disturbance possible, yet is universally accessible, such as warm brown-colored crushed aggregate, crushed limestone, or a pervious pavement material. Employ an archeologist to monitor any ground disturbance.
5. Screen views to adjacent properties that are not consistent with the historic setting.
6. Place signs in key locations where the trail comes into close contact with the earthworks that point out the fragility of the earthworks and urge visitors to remain stewards of the site by not climbing on the earthworks. Consider more restrictive features, such as wood bollards or small fence sections, when signs are not successful in preventing visitors from accessing the resource.

10. Mark and interpret the locations of buildings and structures missing from the battlefield landscape

Description

There are currently no park interpretive exhibits focusing on the lifeways of the local residents at the time of the battle. While there were few buildings or structures extant within the park landscape in 1862–1863, some residential features did exist. None survive today, but their presence and general locations were recorded on Civil War-era maps. These buildings include the McFadden farmstead, a log cabin along the Old Nashville Highway, cabins near the intersection of Van Cleve Lane and Wilkinson Pike, and the structure appropriated for use by General Rosecrans as his headquarters. In addition, a toll gate and block house were located along the pike and the rail line, and other dwellings were located outside of, but near the park boundary. There were also several buildings and structures associated with Fortress Rosecrans that no longer survive.

The sites of these missing features afford an additional opportunity for interpreting the historic character of the 1863 landscape. They are of critical value to depicting the domestic and agricultural nature of the battle landscape. Some of these sites are located along the tour route and could be experienced by many visitors. The interpretive potential of these sites is presently not fully realized, as the character of the existing landscape falls short in terms of representing the historic character and complexity associated with the farmsteads, making it difficult for visitors to appreciate the 1863 landscape that the soldiers experienced. A more accurate representation of historic character will greatly improve interpretation at these sites and the park as a whole. Representation of missing structures at the house sites, combined with reestablishment of cultural vegetation, offers the most feasible and effective treatment option for interpretation of historic agricultural character.

Location

There are multiple sites within the Nashville Pike unit to be considered for this treatment, as well

as the McFadden Farm within the McFadden Farm unit. Buildings and structures originally associated with Fortress Rosecrans should also be considered for this treatment.

Considerations/Justification

Given that very little documentation survives to support a clear understanding of the physical composition, character, and size of the battlefield's missing buildings and structures, restoration or reconstruction of these features is not a viable option when considering the Secretary of the Interior's Standards. Interpretation of these features will need to rely on creative exhibit design that depicts general patterns of spatial organization and conveys what is known and not known about the sites.

Over time, buildings and structures have been demolished or removed from Stones River National Battlefield for various reasons. While reconstructing these elements is one option, it may be inappropriate where little documentation of the physical form and appearance of each feature is available. Other, less challenging options exist that involve representing the missing features through alternate means, such as outlining the footprint or three-dimensional form of a missing house; providing an artist's rendering of the feature; or marking the corners or foundation of a missing building using masonry, wood posts, or plant material. This option not only avoids historical inaccuracy, it is often less expensive in terms of initial installation and maintenance.

Park managers must determine which buildings or structures would be best to interpret. Park managers and interpretive planners should also consider the most appropriate representation method. For instance, the park may want to reserve more intrusive, upright or physically imposing representations for features that have the most interpretive or educational value.

Additional Studies Recommended

- Archival research should occur as part of the data collection required to support development of new interpretive exhibits along with archeological investigations of the sites of missing mid-nineteenth century

buildings and structures located within the park.

- The park interpretive plan should assess which features should be interpreted by determining those that have the most significant educational value.

Related Implementation Projects

- II. Restore fencelines missing from the battlefield landscape.

Project Implementation Process

- I. Using archeological information, consider interpreting missing buildings through various means, including:
 - Ghost structures. When the overall dimensions, roofline, and massing of a missing building or structure are known, consider developing a three-dimensional “ghost structure” on the site.
 - Foundation outlines. When the dimensions and location of the footprint of a missing building or structure are known, an outline or other demarcation such as a low wall or corner markers can be placed on the ground to aid interpretation. If footings are necessary, avoid digging into the ground. Instead, add a minimal layer of fill over the site to protect any archeological resources. A foundation outline can be constructed of

typical local building materials utilized during the period when the building was standing, such as stone or brick (Fig. 192). However, the foundation outline should clearly be a product of its own time, so that it is not confused as a historic foundation or ruins.

Foundations outlines may also be marked with fencing (Fig. 193), or with mowing patterns (Fig. 194).

- Markers. When locations of missing structures are known, but overall dimensions have yet to be determined, consider installing metal signs or medallions in the ground. These may be coordinated with an interpretive wayside with an artist’s rendering of the farmstead during the time of the battle to represent the character of missing structures and bring the historic scene to life.
5. Enlist an exhibit designer, in coordination with park staff, to plan representative features. Enlist a qualified archeologist to monitor ground-disturbing activities during construction. Enlist qualified park staff or a landscape contractor to install the chosen representative features, as well as any wayside signage.
 6. Reestablish the historic fencing configuration within each site.



FIGURE 192. Example of the foundation of a missing structure marked with brick corners at the Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park.



FIGURE 193. Example of the foundation of a missing structure marked with fencing at the Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park. Also, an artist’s rendering of the missing feature is shown on the interpretive sign.

7. Alter vegetation management regimes, such as mowing schedules and planting palettes, in such a way as to yield a diversity of appearances. For example, pasture or uncultivated areas would be cut more frequently than cultivated crop areas, and different grass species could be used to represent different “crops.”
8. Reestablish small areas of crops at one or more of these sites as appropriate given specific knowledge of their character and composition at the time of the battle.
9. Supplement existing interpretive media and programs with new materials to enhance the

depiction of the life and work of the inhabitants of the area when the battle began. Locate new interpretive media in as unobtrusive a manner as possible to avoid detracting from the historic scene.



FIGURE 194. Property lines and building locations of missing features can be marked through mowing patterns.

11. Restore fencelines missing from the battlefield landscape

Description

Fences are strong visual aids when used for interpretive purposes, depicting historic patterns of spatial organization and property ownership. Ed Bearss's Historic Fence and Ground Cover map of the Stones River battlefield, which was based on careful analysis of Official Record accounts of the battle and review of historic military engineer maps, suggests the locations of fences in 1862–1863 to a high level of detail. Although in many cases it remains difficult to determine exactly what type of fencing occurred in each specific location, worm or snake fencing, board fencing, picket fencing, and paled fencing appear all to have been in use within the area. This project suggests restoring historic fencelines that are missing from the battlefield landscape.

Location

Areas best suited for reestablishing 1863 fence patterns are those that would have been present at current and proposed future interpreted sites—along Van Cleve Lane, the southern park boundary, the eastern half of the Nashville Pike unit, and within the McFadden Farm unit parcel.

Considerations/Justification

Reestablishment of fencing in historic locations without accurately depicting the fence type and location can be misleading to the public. It will be important to take every precaution to ensure that the design of fencelines to be reestablished is as accurate to the historic period as possible. Historic photographs, narrative accounts, and historic maps of the mid-nineteenth century should be scrutinized as part of the design process for clues regarding these important features.

Worm fencing, which utilizes a large amount of materials and takes up a lot of space, but is easy to construct, was likely the most prevalent fence type utilized within the area. Paled fences, including palisades and picket fences, would typically have been used around smaller precincts such as house yards and gardens, or animal enclosures, as they were more labor-intensive to construct but had a minimal

footprint. It is not known whether these fences were highly finished or not.

Although additional research may help to verify these, and any other fence types utilized within the battlefield landscape, it is possible that no more information will present itself.

Additional Studies Recommended

- Inventory and map current fence locations and types.
- Using the Michler map and any other primary source maps, in conjunction with Ed Bearss's "Historic Fence and Ground Cover Map," determine which historic fencelines present during the battle are not currently depicted. Compare these with the proposed visitor tour route and interpretive program to identify fences that should be reestablished in support of enhancing the historic scene. Determine the locations for restored fencelines as part of the park interpretive plan.

Related Implementation Projects

- 10. Mark and interpret the locations of buildings and structures missing from the battlefield landscape.
- 13. Rehabilitate portions of historic Van Cleve Lane.

Project Implementation Process

1. Reestablish historic fence patterns in recommended areas.
2. Reestablishment of 1863 fence patterns should conform to the historic fencing type based on functional location: worm fencing around larger fields, paled fencing around house lots, gardens, and livestock enclosures; material: wood; construction method: as discussed above; and location: based on the Michler map.
3. Consider carefully the addition of fencing in areas where it could increase the difficulty of managing the agricultural fields.

12. Consider alternatives for establishing and maintaining non-historic fencelines, controlled visitor access points, and linear connections between park units

Description

Currently, worm fencing is used in areas where fencing was not present at the time of the Battle of Stones River. This historic fence type has been used along park boundaries and to limit vehicular access to areas that are interpreted but not open to the public. This presents an inaccurate historic picture that may interfere with the enhanced interpretation proposed for the park. Replacing worm fencing in these areas with compatible contemporary fence types and reestablishing worm fencing and other historic fence types where they occurred in 1863 would improve visitor understanding of the battlefield.

Location

Most instances of fencing that should be replaced are located within the Nashville Pike unit at the entrance to Van Cleve Lane and along the eastern boundary of the Nashville Pike Unit, and the McFadden Farm unit. The fencing that encloses the Bragg's Headquarters site should also be replaced.

Considerations/Justification

In addition to replacing worm fencing in non-historic locations, the park will need to consider new fencing at the Rosecrans's Headquarters site and along the roadway connections between noncontiguous parcels.

Additional Studies Recommended

- Inventory and map current fence locations and types.
- Using the Michler map and any other primary source maps, in conjunction with Ed Bearss's Historic Fence and Ground Cover Map, determine which existing fences correspond to historic fence locations and which are located in areas where fences did not exist.

Related Implementation Projects

- 8. Establish screen plantings in specific locations to manage views.
- 10. Mark and interpret the locations of buildings and structures missing from the battlefield landscape.
- 13. Rehabilitate portions of historic Van Cleve Lane.
- 15. Establish design guidelines for contemporary park features, such as site furnishings.
- 16. Enhance connections between noncontiguous park units and parcels.

Project Implementation Process

1. Replace historic fence types used in contemporary locations with contemporary but compatible fencing types and materials.
2. Design new fencing as a product of its time and compatible with the historic resources in materials, size, scale and proportion, while maintaining a clear differentiation between the historic and contemporary fencing. Contemporary fencing may include horizontal board privacy fencing at Rosecrans's Headquarters; a more open, and planed board fence with square posts along the routes of travel between noncontiguous parcels; and simple planed board fencing along contemporary park boundaries and for limiting vehicular access to Van Cleve Lane. Any fencing employed in association with the farm fields in the eastern portion of the McFadden Farm unit should be as transparent as possible, given the lack of fencing indicated on historic maps. Wood post and wire fencing may be the most appropriate for these fields, if fencing must be included at all.
3. Consider the visual impact of new fence design. Contemporary fencing should be functional but not detract from the historic setting or views. In some areas, alternatives to fencing, including boulders, bollards, low edging materials, posts and chains, and vegetation might be effective and less intrusive.

13. Rehabilitate portions of historic Van Cleve Lane

Description

Van Cleve Lane follows the route of a local roadway that was present at the time of the Battle of Stones River. The road corridor that extends between Old Nashville Highway and Wilkinson Pike has continued in use as part of the park's circulation network since the 1930s. A segment of the road also extends north of Old Nashville Highway as a trace. Current park plans include a reorientation of the tour route to include a portion of Van Cleve Lane. The portions not integrated into the auto tour road should be incorporated into the pedestrian trail system. Twentieth century improvements to the road corridor, such as asphalt paving, widening, and stormwater management features, should be removed, and a surface material added along the southern section not incorporated into the auto tour route that more accurately depicts historic conditions and supports sustainability objectives. Where overland flow of stormwater is currently blocked by the road grade or prism, grading should be used to reinstate natural drainage patterns. The trace to the north should be located, identified using GPS equipment, and investigated by an archeologist. After a preservation strategy for the trace has been effected, the former road corridor could be cleared of woody vegetation and an appropriate trail surface applied to integrate this route into the pedestrian experience at the park. Connect this road trace to the existing trails associated with the Hazen Brigade Monument.

Location

This project is located in the eastern half of the Nashville Pike unit to the north and south of Old Nashville Highway.

Considerations/Justification

At the time of the Battle of Stones River, local roads were unpaved and served only horse and wagon traffic. Road alignments likely followed the natural topography with few, if any, drainage improvements. Van Cleve Lane was modified in the 1930s as part of the development of the park, and these historic characteristics were altered to accommodate visitor automobile traffic. The

road was regraded and resurfaced, and ditches were established to carry stormwater. The segment to the north of Old Nashville Highway was abandoned during the twentieth century, and is generally no longer accessible.

Rehabilitation of portions of Van Cleve Lane supports the interpretive goals of the park and provides opportunities to educate visitors about the conditions of the 1863 circulation network and its role in the battle.

Additional Studies Recommended

- Conduct archeological investigations and other research to determine the battle period road horizontal and vertical alignment and width.
- Identify potential impacts to archeological resources within the road corridor and recommend actions to protect those resources.
- Engage a historical landscape architect to design the rehabilitated road corridor.

Related Implementation Projects

- 3. Enhance and expand native warm-season grass fields and meadows.
- 4. Establish filter strips in association with crop exhibits, roads, parking areas, and trails.
- 5. Remove non-contributing woodland vegetation.
- 6. Manage mixed woodlands to promote a combination of natural and cultural resource values.
- 8. Establish screen plantings in specific locations to manage views.
- 10. Mark and interpret the locations of buildings and structures missing from the battlefield landscape.
- 14. Convert a portion of the tour road to a pedestrian trail in concert with proposed new tour route.

- 15. Establish design guidelines for contemporary park features, such as site furnishings.

Project Implementation Process

1. Engage a qualified archeologist to perform archeological clearing of the site.
2. Remove asphalt surfacing from the future pedestrian portion of Van Cleve Lane to the south of Old Nashville Highway.
3. Regrade in association with the southern segment of the road corridor, if approved by an archeologist, to establish a relatively level road corridor that is consistent with the surrounding topography, does not impede stormwater flow, and is crowned to drain. Utilize archeological investigations of the northern trace segment to determine the historic approach to stormwater management along the road corridor.
4. Resurface the road corridor with a material that is compatible with the historic character of the road corridor, and promotes, as possible, sustainability objectives. Alternatives include warm brown colored crushed aggregate, crushed limestone, or a pervious pavement material that promotes infiltration of stormwater. Ensure that the corridor more closely approximates the historic width of the road.
5. Establish a trail connection to the Hazen Brigade Monument trail system as part of the rehabilitation of the northern trace segment.
6. Install interpretive signage to educate visitors about the conditions of the 1863 circulation network and its role in the battle.
7. Re-vegetate the road margins, including the establishment of filter strips.
8. Maintain the rehabilitated trail for universally accessible pedestrian access.

14. Convert a portion of the tour road to a pedestrian trail in concert with proposed new tour route

Description

The park is currently developing a new tour route for the interpretation of the Nashville Pike unit. Implementation of the new plan will lead to the abandonment of the western portion of the existing tour road. This abandoned circulation route can either be revegetated and obscured, or integrated into the pedestrian circulation system at the park. To integrate it into the pedestrian system, the park should alter the existing paved surface to more appropriately match the scale of pedestrian use and make it a less intrusive element within the historic battlefield landscape. Refer to the Tour Road Plan for more information regarding this project.

Location

This project is located in the Nashville Pike unit.

Considerations/Justification

In designing the new pedestrian trail, the park should consider narrowing the paved area, while potentially accommodating mixed uses, such as pedestrian and bicycle traffic, with designated lanes. The park should also consider regrading the corridor to establish a relatively level trail prism that is consistent with the surrounding grades, does not impede stormwater flow, and is crowned to drain. The trail surface material should be universally accessible and accommodate the programmatic needs of the visitor. To accommodate universal accessibility standards, options for the trail surface include stabilized crushed brownstone or hard-packed earth, asphalt, or concrete. No matter which material is selected, the pavement should have a coloration that trends towards the browns, rather than the blues, cool grays, or whites.

Additional Studies Recommended

- Conduct necessary research and archeological investigations to determine if any resources will be adversely affected by the conversion project.

- Identify potential impacts to archeological resources within the road trace corridor and recommend actions to protect those resources.
- Engage a historical landscape architect to design the converted corridor.

Related Implementation Projects

- 2. Rehabilitate cedar brake and dense cedar wood communities in areas of interpretive value.
- 3. Enhance and expand native warm-season grass fields and meadows.
- 4. Establish filter strips in association with crop exhibits, roads, parking areas, and trails.
- 5. Remove non-contributing woodland vegetation.
- 6. Manage mixed woodlands to promote a combination of natural and cultural resource values.
- 8. Establish screen plantings in specific locations to manage views.

Project Implementation Process

1. Engage a qualified archeologist to perform archeological assessment of the site.
2. Remove asphalt surfacing from the future pedestrian portion of the tour road.
3. Regrade, if approved by an archeologist, the road corridor to establish a relatively level prism that is consistent with the surrounding topography, does not impede stormwater flow, and is crowned to drain.
4. Resurface the road corridor with the material suggested in the design as appropriate for the new trail system.
5. Install interpretive signage in association with important battle events in accordance with the park's interpretive plan.
6. Revegetate the road margins, including the establishment of filter strips.

7. Maintain the rehabilitated circulation corridor as a universally accessible, non-vehicular route.

15. Establish design guidelines for contemporary park features, such as site furnishings

Description

Implementation of new interpretive and access improvements within Stones River National Battlefield will require the National Park Service to consider the design and character of the physical features associated with the improvements. Preparation of a design guide that establishes a comprehensive standard for contemporary landscape features and systems would facilitate the addition of necessary new features, as well as the replacement of non-historic features currently in poor condition. The guide would illustrate standards for new landscape features and systems to accommodate park visitor use, interpretation, and management and maintenance, such as paths, walks, trails, road surfaces, parking and pull-off areas, contemporary fencing, site furnishings such as benches, and parking area features such as bollards, wheelstops, and curbing. The guide would identify products, materials, and dimensions for non-historic site furnishing, and include typical details and installation information. Use of the guide would enhance the park's unique identity and also serve to simplify the palette of materials within the park, which in turn would diminish the impact of non-historic features on the historic scene.

Location

This project is for the park as a whole.

Considerations/Justification

The design guidelines for contemporary park features at Stones River National Battlefield Park Service system-wide standards as well as the rural, vernacular character of the battlefield. New features should always clearly be a product of their own time, and as simple, sturdy, and unobtrusive as possible. The design guidelines would address appropriateness of scale, materials, and physical composition to ensure visual compatibility, consistency, and integration with the overall character of the battlefield landscape. Park-wide standards for signage should also be developed.

Additional Studies Recommended

In anticipation of preparing the design guidelines, the team should collect all of the information that is available regarding NPS standards for contemporary landscape features.

Related Implementation Projects

- 12. Consider alternatives for establishing and maintaining non-historic fencelines, controlled visitor access points, and linear connections between park units.
- 14. Convert a portion of the tour road to a pedestrian trail in concert with proposed new tour route.
- 16. Enhance connections between noncontiguous park units and parcels.

Project Implementation Process

1. Assemble a design team, including a landscape architect, architect, and park maintenance staff to develop the park-wide design guidelines.
2. Consider carefully the character and identity that is appropriate for necessary non-historic features associated with Stones River National Battlefield.
3. Review existing conditions documentation photographs for current examples of site furnishings, fencing, road edging materials, circulation surfacing, signage, and visitor use and interpretation features. Consider the viability of using some of these existing features to serve as a park-wide standard.
4. Review product catalogues for images of additional appropriate features.
5. Review as a group the individual elements proposed for inclusion within the design guideline.
6. Develop details, installation procedures, and other supporting information for each standard feature.
7. Consider the palette in its totality to ensure the individual elements are cohesive and work well together, and are consistent with

NPS standards, before making final selections.

8. Complete the comprehensive signage program currently being prepared by the Harpers Ferry Center, and follow the recommendations included therein, as well as the guidance offered in the NPS Sign Standards Reference Manual, NPS Uniguide Sign Program, NPS Uniguide Standards Manual, and NPS Graphic Identity Program.

16. Enhance connections between noncontiguous park units and parcels

Description

The park is currently working on enhancing its auto tour route and interpretive program. One of the issues of concern is the lack of integration of the outlying parcels into the visitor experience. Visitors frequently overlook the two headquarters sites as well as the Fortress Rosecrans parcels, and may find it difficult to navigate the route to the McFadden Farm unit. Visitors would have a better chance of understanding these park resources if physical connections were provided between the Nashville Pike unit and the other parcels. Physical connections could take the form of a consistent application of linear visual clues, such as trees, fencing, bollards, or boulders, to direct visitors from one site to the next.

Location

The roads leading between the six noncontiguous parcels that comprise the park.

Considerations/Justification

Given that the park does not own the road margins that link the noncontiguous parcels, implementation of this recommendation will require the cooperation of and collaboration with the Tennessee Department of Transportation, City of Murfreesboro, Rutherford County, and/or adjacent landowners. Safety concerns are associated with parking at the Hazen Brigade Monument site, as well as the travel route leading between the Nashville Pike and McFadden Farm units.

As the park works to establish a prescribed tour route for visitors that integrates all units and resources into a cohesive interpretive program, the following criteria are consistent with the approach recommended in this CLR:

- The tour route should support the goals of the park's interpretive plan.
- The tour route should maximize interpretive opportunities for both the battle and the

later occupation of Fortress Rosecrans by the Union army.

- The tour route should provide for a smooth circulation flow and minimize back-tracking.
- The tour route should, as much as possible, present events in chronological order.
- The tour route should minimize safety hazards.

Additional Studies Recommended

- Interpretive plan
- Design Guidelines for Contemporary Park Features

Related Implementation Projects

- 12. Consider alternatives for establishing and maintaining non-historic fencelines, controlled visitor access points, and linear connections between park units.

Project Implementation Process

- Complete a design plan for features along the road margins connecting the noncontiguous parcels of the park in accordance with the park's guidelines for contemporary features.
- Work with the Tennessee Department of Transportation, City of Murfreesboro, and Rutherford County to implement the plan.
- Work with the Tennessee Department of Transportation to establish traffic calming measures at the Hazen Brigade Monument parking area.

