

CHAPTER SIX: TREATMENT

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Introduction

This treatment plan was prepared to provide Chickamauga Battlefield, a unit of the Chickamauga and Chattanooga National Military Park, recommendations to guide the long-term management and preservation of the cultural landscape. The treatment plan addresses the management issues identified in Chapter Five, as well as issues identified in various planning documents, such as the 1987 General Management Plan-Development Concept Plan-Environmental Analysis (GMP), 1999 Historic Resource Study (HRS), and the draft Comprehensive Interpretive Plan. The Park's enabling legislation also serves as a guide to treatment, as does the 2004 Traffic Impact Study and Sub Area Transportation Plan (TIS-TP).

Organization

This chapter is divided into three sections:

- 1) Treatment Approach— identifies the treatment goals for Chickamauga Battlefield and presents the four treatment alternatives recognized by the Secretary of the Interior for historic properties; recommends treatment approach;
- 2) General Treatment Guidelines—provides general treatment guidelines on how to approach resource management within the Chickamauga Battlefield landscape;
- 3) Treatment Recommendations—provides specific treatment recommendations by landscape characteristic. For each landscape characteristic, a specific approach to landscape treatment is identified and supported through treatment recommendations. Graphic illustrations of the treatment recommendations are provided at both park-wide and site plan enlargement scales.

Treatment Goals & Approach

This treatment plan is intended to assist Chickamauga Battlefield managers to identify, preserve, and protect natural and cultural resources; improve the site's functionality to accommodate current and projected visitor and administrative needs; and identify resource protection, management, and maintenance needs based on a holistic understanding of the site, its historic development, and its significance.

Treatment Goals

Treatment goals regarding rehabilitation of the Chickamauga Battlefield cultural landscape are based upon the historic significance and integrity of the landscape, the on-going and planned cultural and natural resource management programs, and the planned and anticipated interpretive and visitor access improvements.

The three major goals are as follow:

- Preservation, enhancement, and interpretation of the battle period landscape features;
- Preservation, enhancement, and interpretation of the battlefield as the nation's first military park, and of the large-scale effort to commemorate and preserve an American battlefield landscape; and
- Preservation, enhancement, and interpretation of the natural systems of the park for their intrinsic values and as surviving features of the cultural landscape.

The major character-defining resources surviving from these periods include:

- the overall patterns of spatial organization, including pockets of open fields among forest and woodlots, contrasting with the cluster arrangements at the interpretive sites, as well as the varying spatial experiences along circulation corridors;
- the existing relatively undeveloped character of the Park, including the broad views and vistas of the fields;
- the overall patterns, shapes, forms, and materials of vehicular and pedestrian circulation;
- the monuments, memorials, markers, and tablets erected by the Park Commission and veterans;
- the overall pattern of building clusters;



- the overall character and diversity of natural areas; and
- the multiple uses of the Park, including commemoration, interpretation, recreation, facility operations, maintenance, and employee housing.

The efforts to preserve the Chickamauga Battlefield landscape should balance the need to maintain the essential characteristics associated with the battle period with the significance of the Park as the first effort to commemorate and preserve an American battlefield. These values are intertwined as the commemorative period was dependent on the battle period with both periods impacted by the underlying physiographic and natural systems.

Treatment Approach

The Department of the Interior currently recognizes four appropriate treatment approaches for cultural landscapes: preservation, rehabilitation, restoration, and reconstruction. These are defined and discussed in both The Secretary of the Interior’s *Standards for the Treatment of Historic Properties* and NPS’s *Director’s Order Number 28 (DO-28): Cultural Resources Management Guidelines*. DO-28 provides the following definitions of the four treatment alternatives for cultural landscapes:

Preservation maintains the existing integrity and character of a cultural landscape by arresting or retarding deterioration caused by natural forces and normal use. It includes both maintenance and stabilization. Maintenance is a systematic activity mitigating wear and deterioration of a cultural landscape by protecting its conditions. In light of the dynamic qualities of a landscape, maintenance is essential for the long-term preservation of individual features and integrity of the entire landscape. Stabilization involves re-establishing the stability of an unsafe, damaged, or deteriorated cultural landscape, while maintaining its existing character.

Rehabilitation improves the utility or function of a cultural landscape, through repair or alteration, to make possible an efficient compatible use while preserving those portions or features that are important in defining its significance.

Restoration accurately depicts the form, features, and character of a cultural landscape as it appeared at a specific period or as intended by its original constructed design. It may involve the reconstruction of missing historic features, and selective removal of later features, some having cultural value in themselves.

Reconstruction entails depicting the form, features, and details of a non-surviving cultural landscape, or any part thereof, as it appeared at a specific period or as intended by its original constructed design. Reconstruction of an entire landscape is always a last-resort measure for



addressing a management objective and will be undertaken only after policy review in the regional and Washington offices.¹

Approaches Considered and Rejected

A *preservation* treatment approach to the Chickamauga Battlefield cultural landscape would include cessation of any incremental losses to historic integrity through maintenance and stabilization. This would involve management of the existing forests and fields to perpetuate their current conditions and spatial organization, while allowing for continued agricultural uses (hay contracts) as well as current mowing regimes. It would also involve the preservation of current roads and trails, structures, interpretive features, and visitor facilities. These would be maintained in their existing condition, with exceptions applying to modifications required for safety and stabilization of deteriorating features. Disadvantages to this approach are many, as it would limit the Park's ability to further restore the landscape to better reflect conditions at the time of the battle, accommodate needed changes resulting from increased visitor use, or expand the interpretive program.

A *restoration* treatment approach to the Chickamauga Battlefield cultural landscape would seek to restore the landscape to conditions that existed during the period of significance, with an emphasis on the 1863 battle conditions. While this approach may be appropriate for several landscape characteristics (such as spatial organization), complete restoration would entail removal of noncontributing features and materials that are essential to current park operations and management (such as the Visitor Center addition, waysides, several pull-offs/parking areas, etc.), and necessitate large-scale restoration of agricultural crops that cannot be sustained. Disadvantages to this approach are significant, as it would require removal of features that support visitor experience and understanding.

A *reconstruction* treatment approach to the Chickamauga Battlefield cultural landscape would entail depiction of the form, features, and details of the period of significance. This would include actions such as the reconstruction of missing features dating to the battle, such as including houses and outbuildings. Because reconstruction is always considered as a last-resort, and sufficient opportunity exists to interpret missing resources through alternative means, this approach is not recommended.

¹ U.S. Department of the Interior, National Park Service, *Director's Order 28: Cultural Resource Management Guidelines* (Washington D.C.: Government Printing Office, 1997), 98-102.

Recommended Treatment Approach

The overall treatment approach for Chickamauga Battlefield takes into consideration the Park's desire to maintain, enhance, and restore select features of the 1863 landscape, improve interpretation, develop strategies to manage automobile traffic, provide for visitor amenities, and control or eliminate invasive plant infestations while protecting and preserving contributing features from both the battle and commemorative periods. Based on these considerations, the overall recommended treatment approach for Chickamauga Battlefield is **rehabilitation**. This approach will allow the Park to reestablish aspects of battle period spatial organization, circulation patterns, and forest/field composition as well as represent select missing features. This approach will also permit the removal or replacement of intrusive features with more appropriate alternatives, and allow for improved interpretation of the Park's resources.

A critical component of rehabilitation is the **preservation** of existing historic features and systems. This will ensure the protection and maintenance of the essential character-defining features of Chickamauga's cultural landscape while supporting activities needed to meet current and future needs. Rehabilitation provides for the improvement of facilities to allow for a rich and fulfilling visitor experience, and the careful implementation of necessary functional site improvements with the preservation of the overall historic landscape character and individual historic features. Rehabilitation also allows managers to pursue resource management initiatives intended to promote natural resource protection and sustainability.

The following sections outline treatment guidelines, recommendations, options, and alternatives to be utilized and considered by resource managers to meet park goals, objectives, and needs.

General Treatment Guidelines

The guidelines listed below apply to Chickamauga Battlefield as a whole. They offer general guidance on treatment procedures and methods, and complement the more specific treatment recommendations found in later sections. These guidelines should be consulted before initiating any treatment action, or any new construction proposals. While many of these guidelines are found elsewhere in NPS Director's Orders and the Secretary of Interior's Standards for Historic Preservation, they are listed here with specific regard to cultural landscape management within the Chickamauga Battlefield.

General

- Protect, retain, and maintain, to the greatest extent feasible, all extant contributing features of the Chickamauga Battlefield.
- Undertake all work in compliance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties, Guidelines for the Treatment of Cultural Landscapes, and Director's Order-28: Cultural Resource Management Guidelines* and all applicable local, state, and federal codes, regulations, and policies.
- Undertake all treatment projects under the direction of the appropriate specialists including historical landscape architects, historical architects, archeologists, natural resource management specialists, and qualified technicians and artisans.
- Avoid landscape changes that create a false sense of historic development, including the addition of conjectural, typical, or representative features, and/or the addition of features or completion of plans that were never added or implemented historically.
- Retain and maintain changes to the cultural landscape that have acquired historic significance in their own right, while balancing the need for preservation of these features with the primary goal of preserving, enhancing, and interpreting battle period landscape features.
- Retain the integrity of the historic landscape by protecting individual elements as well as the character of the overall landscape.
- Analyze the potential impacts of change on the site's landscape prior to the implementation of any project.



- Undertake sufficient study and documentation of landscape features requiring modification, repair, or replacement before work is performed to protect research and interpretive values.
- Manage natural features to produce healthy functioning ecosystems and therefore best depict the historic character of natural features in 1863.

Additions to the Landscape

- Avoid adding new features or altering existing features in such a way as to adversely affect the landscape’s surviving rural, agricultural character.
- Consider carefully, when adding new features, the potential impact of development on archeological resources, existing patterns of spatial organization, and the historic character of the site as a whole.
- Base new design within the historic landscape on a thorough understanding of the integrity of the site.
- Differentiate new work from existing historic resources. Design all new additions and alterations to be a product of their time, and compatible with the historic resources in materials, size, scale and proportion, and massing while maintaining a clear differentiation between historic and modern features.
- Design and site new additions or alterations to the landscape in keeping with historic materials, features, and spatial relationships that characterize the cultural landscape.
- To the greatest extent possible incorporate only native plants into new plantings. Specifically, consider planting native species of trees, shrubs, and grasses currently and historically found growing within the Park. Prevent the introduction of any invasive exotic plant species as part of new plantings or otherwise on the site.
- Design and site new additions and alterations to the landscape in such a way that, if removed in the future, the essential form and integrity of the cultural landscape would be unimpaired.
- Minimize disturbance associated with the installation of new facilities and systems that cross or abut sensitive ecosystems to preserve existing landforms, and plant and animal life.
- Limit artificial lighting and design lighting systems in such a way as to prevent light pollution.



Landscape Management

- Identify, document, and protect archeological resources.
- Protect and preserve archeological resources in place. If such resources must be disturbed, undertake mitigation measures such as recovery, curation, and documentation.
- Prior to implementation, complete Section 106 compliance for any construction/demolition project potentially affecting archeological or other cultural resources.
- When necessary, remove damaged or dead trees that threaten cultural or archeological resources. Use a method that minimizes the potential impacts on resources. Undertake tree removal monitored by a qualified archeologist.
- Avoid endangering known or potential archeological resources by limiting activities that may disturb the land until necessary archeological and additional cultural landscape investigations have been completed. If it is not known whether archeological resources are located within an area planned for land disturbing activity, such activity should be preceded by archeological evaluations and investigations.
- Retain and maintain historic buildings and structures using associated materials, features, finishes, and construction techniques.
- Retain spatial relationships within historic building clusters.
- Repair, rather than replace, deteriorated historic features. Repair of deteriorated features should be based on archeological, documentary, or physical evidence.
- Protect biodiversity by monitoring, controlling, and/or removing invasive species using ecologically sound techniques.
- Undertake measures to protect and preserve topographic and landform features. Avoid land disturbance activities and operations that may impact these natural and cultural resources.
- Undertake installation of new plants as necessary in areas of known or potential sensitive historic or archeological resources using acceptable and least-damaging planting techniques accompanied by archeological monitoring. Recommended techniques include: the minimization of ground disturbance through the installation of small plants wherever possible; the installation of plants by hand; the selection of planting locations that are not in conflict with desirable plants to remain; and the protection of existing plants and resources to remain.



- Encourage stewardship of site resources by developing interpretive programs that address layers of cultural resources, natural systems, and their interrelationships. It is preferable to develop interpretive plans prior to implementing landscape changes. Landscape changes should be generated by and/or compatible with interpretive plans.
- Recognize the critical importance of natural resources to the cultural landscape and site history, and strive to maintain the ecological integrity of the site.
- Avoid the use of chemical or physical treatments that cause damage to natural and cultural resources.
- Control and monitor visitor access, use, and impacts to the Park to prevent damage to its cultural and natural resources, particularly, but not limited to, sensitive ecological areas such as riparian corridors and limestone glades as well as known and potential archeological resources.
- Document, through drawings, photographs, and notes, all landscape changes, treatments and removed features. Maintain records of treatments and preserve documentation according to professional archival standards.

Accessibility

- Design and construct all new facilities, features, systems, and programs following the concepts of universal design, which is the design of products and environments to be usable by all people to the greatest extent possible, without the need for adaptation or specialized design.
- Use accessibility as a primary design factor in overall planning, design, and interpretation. All features associated with accessibility should conform to the standards cited in the Uniform Federal Accessibility Standards (UFAS) and Americans with Disabilities Act Accessibility Guidelines (ADAAG). In addition, the latest proposed draft accessibility guidelines for Outdoor Developed Areas prepared by the U.S. Access Board's Regulatory Negotiation Committee should be consulted for interim standards for Interpretive Sites, picnic facilities, and the recreation field.
- As a part of the planning and design process, recognize the potential diversity of visitors.
- Integrate accessibility components fully into the design of new facilities and site improvements to allow for the use and access of all visitors.
- Design operational and administrative facilities to be accessible to the greatest extent feasible.



Sustainability

- Institute cultural and natural resource treatment and maintenance methods that are environmentally and culturally sensitive and sustainable over the long term.
- Minimize areas of vegetative disturbance, soil compaction and excavation, and drainage pattern alteration.
- Undertake site design that incorporates holistic, ecologically-based strategies aimed at contributing to the repair and restoration of natural systems.
- Promote biodiversity by maintaining the different types of habitats located within the park. Considering how forest clearing or field restoration may harm or benefit sensitive species.
- Avoid disturbing areas of sensitive habitat to the greatest extent feasible.
- Undertake vegetation management strategies based on NPS principles of sustainability, as described in the 1993 Guiding Principles of Sustainable Design, and park management objectives.
- Use mitigating devices, such as retaining walls, closed drainage systems, and large areas of cut and fill, sparingly. Implement the least-intrusive activities and those involving stabilization first, and proceed subsequently to the most invasive as necessary. Limit major new interventions to areas that have previously been severely disturbed.
- Emphasize landform-based solutions over hardscape solutions.
- Design new structures to take advantage of solar heating. Consider the direction of prevailing summer breezes and winter winds to help with cooling and ventilation in summer, and to shelter new facilities from harsh winter winds.
- Consider the site's ecology, including topography, soil types, vegetation, wildlife habitats, and ground water, in order to integrate any new buildings with the ecosystem.
- Use locally indigenous materials that are renewable, environmentally sensitive, and reflect the regional vocabulary.
- Take into consideration life-cycle costing of materials to assess the long-term wearing capacity and maintenance costs. Consider materials that are non-toxic, durable, long-lived, and low maintenance.
- Explore the availability of recycled materials, and consider re-usable materials.



- Use only stable, non-hazardous materials that do not emit toxins through off-gassing or soil leaching and avoid petroleum-based materials whenever possible.
- Consider monitoring the effects of developing and operating facilities on surrounding resources to ensure that the limits of acceptable change are not exceeded.
- Consider including information about the relationship of cultural resources to the environment and sustainability in interpretive materials.

Use of Landscape Features to Enhance Interpretation

The Park’s finalized Long-Range Interpretive Plan should inform implementation of the following recommendations.²

- Utilize the full potential of landscape features to enhance interpretation of the battle and the agricultural landscape over which it was fought. Where possible, reestablish historic landscape patterns and features to assist in interpretation.
- Develop an interpretive program for the park that addresses cultural resources, natural systems, and their interrelationships. Include the importance of natural systems as part of the battlefield’s history and the unique fighting situations that were created in wooded areas and the limestone glades.
- Minimize the visual and physical impacts of interpretive and visitor service facilities on cultural resources and natural systems. Develop the least-intrusive interpretive and visitor service physical improvements possible.

Information & Maintenance Management

The abundance, diversity, and complexity of resources within the Chickamauga Battlefield presents challenges to information and maintenance management. The recommendations included within this document further increase logistical demands associated with the inventory and documentation of several hundred circulation features and monuments, the inventory and condition assessment of natural plant communities and areas of invasive species infestation, the development of mowing plans, and the monitoring of landscape restoration projects.

² The Park’s Long-Range Interpretive Plan is scheduled for completion in December, 2004.



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Management of all these features and systems would greatly benefit from the development and use of a Geographic Information Systems (GIS) database. It is recommended that the Park acquire the resources necessary to establish and maintain GIS databases and the technical expertise required to create and manage data. Much data on baseline battlefield resources has already been collected through the 1996-1997 GPS Field Survey.

Treatment Recommendations

The purpose of this section is to provide specific treatment recommendations for the Chickamauga Battlefield landscape. These recommendations take the form of specific projects, which are organized by landscape characteristic. Maps and photographs are provided at the end of each section to illustrate the recommendations.

Natural Systems and Features

Natural systems and features throughout the Park primarily encompass woodland plant communities, riparian areas, and limestone glade communities. These natural systems are closely tied to the history of cultural uses and the interpretive experience of Chickamauga Battlefield, while also contributing to the overall historic character of the battlefield. While this report recognizes the cultural value of natural resources, it also advocates management of natural resources that takes into consideration their ecology to ensure perpetuation of a healthy, functioning, southern ridge and valley ecosystem. The treatment approach towards these features is preservation of cultural and ecological integrity through a management regime that protects and perpetuates ecosystem resources and processes. The following recommendations address projects relating to the management of natural resources.

DEVELOP INVASIVE PLANT CONTROL PROGRAM [MAP 6-1]

Numerous invasive plant species are in evidence within the Chickamauga Battlefield landscape, some of which pose a threat to natural and cultural resources. Treatment of invasive species in National Parks is guided by a number of NPS and federal policies including: *NPS-77 Natural Resources Management Guidelines*, Executive Order 13112, and *NPS Management Policies*. *NPS Management Policies* states that “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.³

Privet likely poses the most serious threat to park resources. Privet infests many of the Park’s road corridors, field edges, stream corridors, wetland areas, and pine woodlands that have been infested by Southern pine beetle. Invasive species with the potential to displace native species observed during CLR field investigations and noted in vegetation studies include:

— Privet	<i>Ligustrum spp.</i>
— Tree-of-Heaven	<i>Ailanthus altissima</i>
— Princess Tree	<i>Paulownia tomentosa</i>
— Honeysuckle	<i>Lonicera spp.</i>
— Multiflora Rose	<i>Rosa multiflora</i>
— Fescue	<i>Festuca spp.</i>
— English Ivy	<i>Hedera helix</i>
— Kudzu	<i>Pueraria lobata</i>
— Canada Thistle	<i>Cirsium arvense</i> ⁴

Populations of these species are present in many locations within the park. Other than privet, English ivy, which was noted south of the Boy Scout camp area, and fescue, which is a primary component of many of the Park’s fields, only small populations of the other species were noted during field investigations. It is important to note, however, that field investigations were limited to road corridors and fields, and portions of four trails.

Recommendations for containing, controlling, and managing the invasive species that pose the most serious threat to battlefield resources follow. These recommendations consider the guidance available in the following sources, which provide additional detail: *Nonnative Invasive Plants of Southern Forests, A Field Guide for Identification and Control, A Handbook for Forest Vegetation Management in Recreation and Historic Parks*,⁵ and at the federal website, Invasivespecies.gov. John M. Randall’s *Invasive Plants: Weeds of the Global Garden* also provides a basic overview of invasive plant species management.⁶ Given the severe infestation of privet at Chickamauga, and the current and potential damage it poses to natural and cultural resources, the park should focus immediate management efforts on developing a comprehensive invasive plant control program. Such a program would involve collaboration on the part of

³U.S. Department of the Interior, National Park Service, *NPS Management Policies* (Washington D.C.: Government Printing Office 2001), 37.

⁴ This species was added per request of Park CRM. More information from the Park is needed on the location/distribution of this species in order to recommend treatment, as it was not observed during fieldwork.

⁵ *Nonnative Invasive Plants of Southern Forests, A Field Guide for Identification and Control*, available at <http://www.invasive.org/eastern/srs/> and *A Handbook for Forest Vegetation Management in Recreation and Historic Parks*, available at <http://www.ext.vt.edu/pubs/forestry/420-143/420-143.html#L31>.

⁶ John M. Randall, et.al, *Invasive Plants – Weeds of the Global Garden* (Brooklyn, NY: Brooklyn Botanic Garden), 1996.



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 Chickamauga to ensure that efforts will not be unexpectedly curtailed.

The recommended approach to developing an invasive plant control program is as follows:

- Map, under the direction of a natural resource specialist, 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.
- Evaluate species and populations for their likely impact upon the Park's ecological health and its natural and cultural resources.
- Prior to treatment, 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 control means may also be effective for some species. Recommended removal techniques for each invasive species identified within the Park are identified at the end of this section.
- Prioritize the application of control measures based on species and populations that pose the greatest threat to natural and cultural resources.
- Educate personnel who will remove invasive species to identify and differentiate these from native species, and train them in appropriate methods for removal/treatment.
- Use ecologically sound removal techniques that will not cause damage to resources or assess potential impacts 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.
- Monitor and document all control and removal activities in order to evaluate the effectiveness of various measures.
- Revegetate cleared areas with appropriate native plant species to prevent re-infestation and erosion problems.

The following considerations and recommendations are provided for the predominant invasive species found within the Park:

Privet dominates the shrub layer and alters the native species composition and natural community structure of an invaded habitat by crowding out native shrub species and shading out most herbaceous species. The resulting lack of vegetative groundcover often results in erosion, and therefore loss of water quality, in surrounding streams.

— Remove privet less than one inch in diameter, by hand pulling the plants, working to ensure that the entire root is removed. This is the most effective method for controlling privet, but also the most labor intensive. Specialized tools, such as the Weed Wrench can be used to speed and ease the removal process.⁷ Care should be taken, as much as feasible, to minimize soil disturbance.

— Cut privet using mechanical means where accessible by heavy equipment. Follow up mechanical cutting with the controlled use of systemic herbicide, such as glyphosate, applied in concentrated form to the cut stumps. If follow-up does not occur, cutting or plowing privet can lead to increased populations.

— Application of diluted glyphosate to privet foliage in late summer or fall after deciduous plants have dropped their leaves can also be used to kill the plants.

— Install trees and shrubs that are native, part of the local flora, and suited to the cultural requirements of the areas where privet is removed.

Tree-of-heaven is a prolific seed producer, grows rapidly, and can overrun native vegetation. Once established, the plant can form impenetrable thickets. Tree-of-heaven produces toxins that may inhibit the growth of surrounding plant species. The root system is aggressive enough to cause damage to sewers and foundations.

— The most effective method of controlling tree-of-heaven is the use of systemic herbicides, such as glyphosate. Herbicides can be applied to foliage, basal bark, cut stumps, or using a “hack-and-squirt” treatment. Along with the aboveground portion of the tree, the root system must be seriously damaged to prevent or limit stump sprouting and root suckering.

— Cutting is typically counter-productive due to the proliferation of stump sprouts and root suckers, although repeated cutting may exhaust plant reserves over several years, provided it stands in heavy shade. The initial cutting should be done in early summer. Attempt to cut large, seed-producing females to temporarily reduce the spread of seed.

⁷ John M. Randall, et al, *Invasive Plants – Weeds of the Global Garden* (Brooklyn, NY: Brooklyn Botanic Garden), 1996. The Weed Wrench is available from New Tribe, Inc. PO Box 638, Grants Pass, OR 97528, Phone (541) 476-9492 or online at <http://www.newtribe.com/>.



- Install trees and shrubs that are native, part of the local flora, and suited to the cultural requirements of the areas where tree-of-heaven is removed. Species might include staghorn and smooth sumac, boxelder, fringetree, ash, and black walnut.

Princess Tree has the ability to spread rapidly through both seed and root sprouts. It is particularly aggressive in disturbed areas, is tolerant of dry, infertile, and rocky conditions, and will quickly colonize disrupted sites such as scoured riverbanks and burned areas. The plant's ability to prolifically produce seed, beginning at a young age, contributes to its ability to spread aggressively and outcompete other plants. Management strategies should include both chemical and mechanical control methods, including:

- Hand-pulling young saplings. This is effective, but labor intensive.
- Cut saplings prior to mid-spring flowering period. Because princess tree sprouts from its rootstock, repeated cutting, and/or application of a systemic herbicide will be required after cutting.
- Foliar applications of glyphosate or tricopyr are possible in stands where there are no other plants to be retained.
- Planting of areas where large colonies of invasive plants have been removed should occur in conjunction with invasive species eradication to ensure that desirable species are given an opportunity to replace the undesirable species. Install trees and shrubs that are native, part of the local flora, and suited to the cultural requirements of the areas where princess tree is removed. Potential replacements for princess tree stands include serviceberry, redbud, flowering dogwood, American holly, spicebush, and sassafras.
- Where princess tree occurs within a stand of natives, mechanical removal of the tree, and direct application of a systemic herbicide to the cut stump is recommended.

Honeysuckle rapidly invades and overtakes a site by forming a dense shrub or vine layer that crowds and shades out native plant species. There are both vine and shrub species of honeysuckle that can be invasive. Honeysuckle decreases light availability, depletes soil moisture and nutrients, and may release toxic chemicals that prevent other plant species from growing in their vicinity. Recommendations for the control of honeysuckle include:

- In shaded forest habitats, repeated cutting of the stems to ground level during the growing season may show positive results. Cutting must be repeated at least once a year because honeysuckle cut once and left to grow often forms stands that are more dense and productive than they were prior to cutting.
- Removal of seedlings or small plants by hand can be effective for light infestations. The same methods used for hand removal of privet are applicable for honeysuckle. Care should be taken, as much as feasible, to minimize soil disturbance.





- Systemic herbicides, such as glyphosate, are also effective in controlling honeysuckle. Seedlings can be controlled by application of glyphosate sprayed onto foliage. Well-established stands of honeysuckle are best managed by cutting stems to the ground and immediately applying concentrated glyphosate to the cut ends.
- Install trees, shrubs, and vines that are native, part of the local flora, and suited to the cultural requirements of the areas where honeysuckle is removed. Examples of suitable vine replacements might include trumpet creeper, crossvine, or false jasmine.

Multiflora rose is extremely prolific. It spreads through suckering, seed, and the establishment of new plants where stems touch the ground and root. It can quickly form impenetrable thickets to the exclusion of all other plant species. This plant invades open woodlands, forest edges, successional fields, savannas, and prairies that have experienced disturbance.

- The most effective method for controlling multiflora rose involves frequent, repeated cutting or mowing at the rate of three to six times per growing season for two to four years. In high-quality native communities, cutting of individual plants is preferred to site mowing in order to minimize habitat disturbance.
- Systemic herbicides, such as glyphosate, can also be used. However, due to long-lived seed stores in the soil, follow-up treatments are often necessary. A combination of cutting, followed immediately by application of concentrated glyphosate to the cut ends, and then spraying re-growth with glyphosate may be highly effective, especially if conducted late in the growing season.
- Install trees and shrubs that are native, part of the local flora, and suited to the cultural requirements of the areas where multiflora rose is removed.

Fescue is a cool-season grass that spreads by expanding its root crown and seed. Some varieties harm livestock and wildlife by infecting them with an endophytic fungus. Fescue is also allelopathic and emits toxins into the soil to prevent the growth of other plants in its vicinity. Fescue was likely not a component of the Civil War-era landscape. Alternatives for eliminating fescue to support establishment of an alternative cover include:

- Application of a systemic herbicide, such as glyphosate to the existing fescue cover in the fall. On upland fields, the root systems of the existing cover, if they are not mechanically disturbed, should be sufficient to hold the soil against erosion during the winter months. In sloped areas, existing vegetation should be overseeded with a temporary cover crop such as winter rye. In the spring it will be necessary to establish a new cover crop, such as warm-season grasses.
- Follow fall herbicide application with either a spring burn, or a second application of herbicide six to eight weeks before planting the fields.





- Alternatively, overseed the fescue with warm-season grasses and manage for their needs over the fescue. This entails withholding lime and fertilizer, and delaying mowing to allow the warm-season grasses to shade out the cool-season grasses. See the section on Native Grass Establishment within Land Use and Cultural Vegetation for more information regarding establishment of warm-season grass fields.

English ivy is another aggressive vine that poses a threat due to its dense growth. English ivy has the ability to scramble over trees and shrubs, limiting their intake of air, and water, and adding cumbersome weight to the plant that renders them more susceptible to being blown over. English ivy spreads by vegetative means as well as by seed. Control methods again range from mechanical to chemical means, or a combination of both. Mechanical means are labor intensive, and any root material left in the soil has the ability to regenerate new vines. The following methods can be effective:

- Consider pulling vines by hand, and properly disposing of them in plastic bags in a landfill.
- Remove vines growing on trees by cutting through the stems at waist height, and pulling the rooted portions from the ground.
- Apply foliar or basal bark applications of triclopyr to evergreen leaves during appropriate warm spells when deciduous species are not in leaf, taking care to avoid herbicidal contact with desirable plants.
- As with all invasive alien plants, repeat applications and follow-up monitoring will be required to ensure that control methods do not increase the vigor of the stand by promoting root growth.

Kudzu was introduced into the United States as a forage crop as well as an ornamental. This extremely fast growing semi-woody vine climbs anything in its path, including trees and shrubs, burying them beneath its thick dense leave coverage. Affected plants are killed when the kudzu smothers, uproots, crushes, or girdles them. Kudzu thrives in open, sunny conditions where winters are relatively mild. The vine spreads primarily through its aggressive vegetative growth, with up to thirty vines emerging from a single root crown, but can also reproduce by seed. Control requires aggressive measures, including:

- Remove by cutting and carefully dispose of all top growth, either by using it as forage, or burning, or bagging and placing it in a landfill;
- Reduce root vigor by close mowing throughout two growing seasons, or repeated cultivation; or
- Apply systemic herbicide to cut stems in conjunction with top growth removal.
- Native vine species to promote in areas where kudzu has been removed might include trumpet creeper, pipevine, and passionflower. Otherwise ensure that trees and shrubs that



are native, part of the local flora, and suited to the cultural requirements of the areas are present or it will be important to install new plantings.

REHABILITATE LIMESTONE GLADES [MAP 6-2]

Once mostly open plant communities occupying thin soil cover atop limestone outcroppings, the park's limestone glades are now characterized by the proliferation of Eastern red cedar and other woody evergreen species. Limestone glades are successional ecosystems. In the absence of fire or some other form of disturbance, Eastern red cedar has and will continue to invade the glades. The shade produced by the cedars reduces light levels and the temperature of the exposed bedrock to which glade species are adapted. These species can not compete in this environment and are being lost. Glade communities are relatively rare within the state, and their protection is recommended.

Managing and controlling the spread of privet and clearing tree and shrub growth, particularly Eastern red cedar, from limestone glades are two of the most important treatment activities to undertake in these areas. Attempts to find new and cost-effective treatments for the control of privet could open new opportunities for the Park to serve as a laboratory for experimental management techniques in a collaborative relationship with federal, state, and educational institutions. Restoration and protection of the limestone glades is important as they are likely the only protected communities in northern Georgia, and home to a number of rare and potentially threatened plant species. Many of the glades were also important areas of engagement during the battle.

The recommended approach to restoration of the limestone glades is as follows:

- Confirm extents of limestone glade habitats within the park using qualified botanists or ecologists; document the habitats with GPS units and mapping.
- Investigate former limestone glade communities using information available on Betts maps, the 1993 University of Georgia vegetation study, The Nature Conservancy's GIS mapping project, and the county soil surveys to identify soil/bedrock conditions appropriate for glade communities in order to assess restoration opportunities. (See bibliography for complete citations).
- Consider immediate stabilization actions for the limestone glades to prevent further decline. Immediate stabilization would entail removal of all privet and thinning of Eastern red cedar populations to at least 50 percent of their current stands. Greater removal of Eastern red cedar populations is recommended if park resources are available.
- Protect the rare plant, moss, and lichen populations which are susceptible to damage from foot and/or equipment traffic. Further action should be based upon approaches developed in concert with a botanist or ecologist who can assist with the development of a long-term management plan.



- Develop a long-term treatment plan for the park’s limestone glades. Of critical concern is removing appropriate species and numbers of trees and shrubs to support reestablishment of the ecological health of limestone glade communities. Consider carefully the potential for using fire as a vegetation management tool.
- Avoid using mowers, tractors, and other heavy equipment in and around glades.
- Limit pedestrian access to the glades. Close and relocate trails that cross or edge glades.
- Educate visitors and hikers about the sensitive nature of the glade communities and the damage that foot traffic can cause.
- Monitor glades for damage.

ESTABLISH AND MAINTAIN RIPARIAN BUFFERS [MAP 6-3]

Riparian buffers protect water quality by controlling overland flow of eroded soil and pollutants. 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 to form riparian buffers. Typically, riparian buffers are comprised of a series of zones or strips: a strip of large trees; another of medium-sized trees and shrubs, and a third strip of grasses.

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. The Georgia Departments of Natural Resources and Community Affairs both provide information for protecting Georgia water quality. The University of Georgia’s (UGA) College of the Environment, Ecology Institute has an Office of Public Service and Outreach that works to protect Georgia’s natural resources. The UGA Institute of Ecology has produced an excellent document that addresses a wide number of riparian buffer issues titled *A Review of the Scientific Literature on Riparian Buffer Width, Extent and Vegetation*.⁸ The results of more than 140 articles have been considered in generating this “legally-defensible basis for determining riparian buffer width, extent, and vegetation” designed to guide local Georgia governments and organizations in buffer delineation and establishment.

Within the Park, where buffers do not exist, or existing buffers do not comply with NPS management objectives, a minimum 100-foot-wide riparian buffer strip should be established on either side of watercourses and wetlands. Chickamauga Battlefield staff, including natural resource specialists, should identify all areas that potentially require a buffer and delineate the 100 feet dimension of the minimal buffer boundaries. See Map 6-3 for delineation of perennial watercourses.

⁸ Seth Wenger, *A Review of the Scientific Literature on Riparian Buffer Width, Extent and Vegetation* (Athens, GA.: Institute of Ecology, University of Georgia, March 1999).





West Chickamauga Creek is the highest priority area for buffer establishment. While most of the creek along the Park border has a forest buffer, much of this is infested with privet. Privet grows so densely that herbaceous plant species are shaded out, leading to severe erosion in some cases. The condition of the forest along the creek needs to be evaluated as to its value as a riparian buffer. Deficiencies should be noted and addressed through implementation of a riparian buffer plan that will likely involve removal of invasive species and either planting or promotion of desirable native plants suited to the cultural conditions of the site, and maintained in the recommended strips.

Vegetative buffers are particularly needed along those streams that run through agricultural fields. Because views and interpretation of the historic battlefield scene are often an important aspect of field management, the composition of buffers within agricultural fields is recommended to remain herbaceous, or, if mixed with woody shrubs, they should include species that can be maintained at a relatively low height through mowing.

There are also a number of wetland areas within the Park boundary. Many are located along West Chickamauga Creek. Others, however, are formed along low areas of other stream corridors in association with exposed limestone. These areas should be evaluated to determine if they require specialized management.

In delineating necessary riparian buffers within the Park, consider the following recommendations, supplemented with expertise provided by water quality experts, ecologists, and biologists:

- Determine whether a riparian forest buffer or alternative vegetative buffer is appropriate given the interpretive goals for an area, as well as park management objectives. For example, establishment of a riparian buffer may not be compatible with an interpreted viewshed corridor; and in some locations tree growth may lead to a negative impact on a cultural or archeological resource. Alternative buffer types are discussed at the end of this section.
- Prepare the site for buffer establishment by removing exotic and invasive vegetation, and protecting sensitive natural or cultural resources. Refer to guidance provided earlier in this section regarding control of invasive and exotic plants.
- Follow established procedures for forest restoration, planting a combination of native trees, shrubs, and herbaceous plants within the riparian buffer zone. Refer to guidance provided in the next section regarding reforestation procedures.
- Based upon the CLR overview of site conditions, the following list of plants are potentially appropriate for riparian buffers within the forested areas of the Park:

- Northern red oak *Quercus rubra*
- Southern red oak *Quercus falcate*
- yellow poplar *Liriodendron tulipifera*





- loblolly pine *Pinus taeda*
- shortleaf pine *Pinus echinata*
- flowering dogwood *Cornus florida*
- red maple *Acer rubrum*
- hickory *Carya spp.*
- sycamore *Platanus occidentalis*
- pawpaw *Asimina parviflora*
- American hornbeam *Carpinus caroliniana*
- ash *Fraxinus spp.*
- blackgum *Nyssa sylvatica*
- spicebush *Lindera spp.*
- sweetgum *Liquidambar spp.*
- sassafras *Sassafras albidum*
- redbud *Cercis canadensis*
- fibrous rooted native grasses (see below) that have the best potential to hold the soil and prevent erosion.

At Chickamauga, certain viewsheds are critical to the visitor’s understanding of the battles that occurred there. Where interpreted viewsheds and sight lines are to be maintained, an alternative buffer type that is comprised of lower-growing vegetation, or vegetation that can be maintained at a lower height, should be used. The following guidelines apply where alternative vegetation buffers for viewsheds are required:

— Utilize native grasses, sedges, and forbs at sites where trees are judged to be incompatible with management objectives. Select species that maintain a fibrous root system that will help stabilize the soil. The following list of plants are potentially appropriate for alternative riparian buffers:

- panic grass *Panicum virgatum*
- sedges *Carex spp.*
- rushes *Juncus spp.*
- switchgrass *Panicum vigatum*
- bluestem (big and little) *Andropogon gerardii; Schizachyrium scoparium*
- purple love grass *Eragrostis spectabilis*
- river oats *Chasmanthium latifolium*

— Maintain alternative buffers through infrequent mowing or controlled burns, on average once per year or every two years.

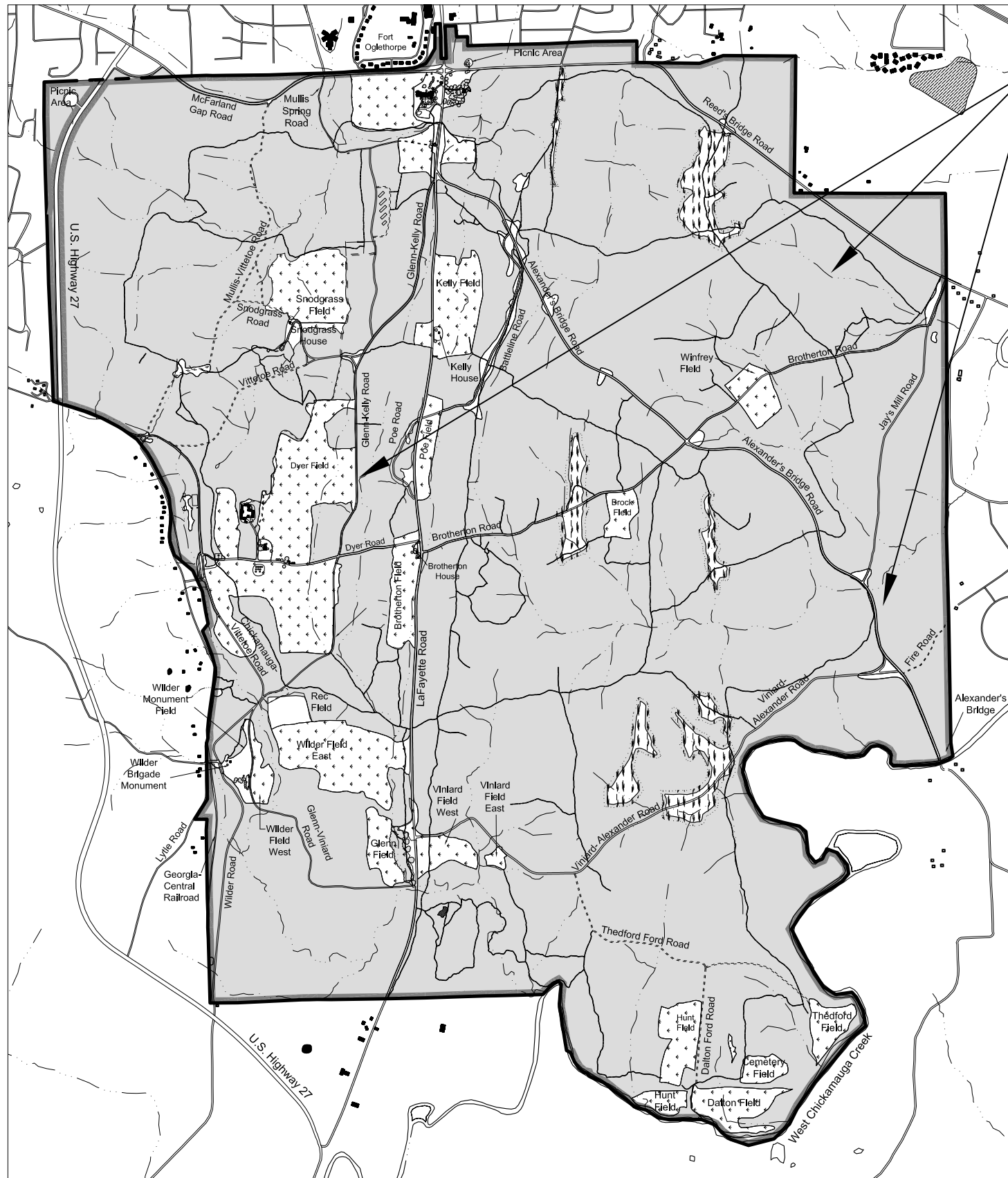
— Tailor site specific selection of species to cultural conditions. Ecologists and plant specialists should be involved in determining the recommended species compositions, densities, and the appropriate season for planting. Seed scarification, dormancy, and the potential for invasive species invasion 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
- 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 run-off into the adjacent water source.
- Monitor post-installation site conditions for plant health and possible invasive or exotic plant species growth on a regular basis.
- Replace failed vegetation immediately.





Legend

- Boundary
- Trails
- Agricultural Fields
- Buildings
- Forest
- Streams
- Paved Roads
- Glades
- Gravel Roads



Scale 1" = 2400'

Privet poses the most serious threat to battlefield resources. Privet infests many of the Park's road corridors, field edges, stream corridors, wetland areas, and pine woodlands that have been infested by Southern pine beetle.



Inventory known and potential invasive species and the location of populations present in the Park under the direction of a natural resource specialist.

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.



Hand-treat or remove by hand invasive plants in sensitive natural areas or around cultural resources.



Map the location, density, and type of invasive species prior to control and removal efforts in order to create a baseline of information for future evaluation of efforts.

Prior to beginning work, consult with natural resource specialists to determine the most effective and sensitive method available to address each specific invasive species population.

Educate personnel who will remove invasive species to identify and differentiate these species from native species, and train them in appropriate methods for removal/treatment.

Use ecologically sound removal techniques.

If necessary, repair damage to resources and mitigate any impacts of removal, such as the potential for soil erosion on steep slopes.

Monitor and document all control and removal activities in order to evaluate the effectiveness of various measures.

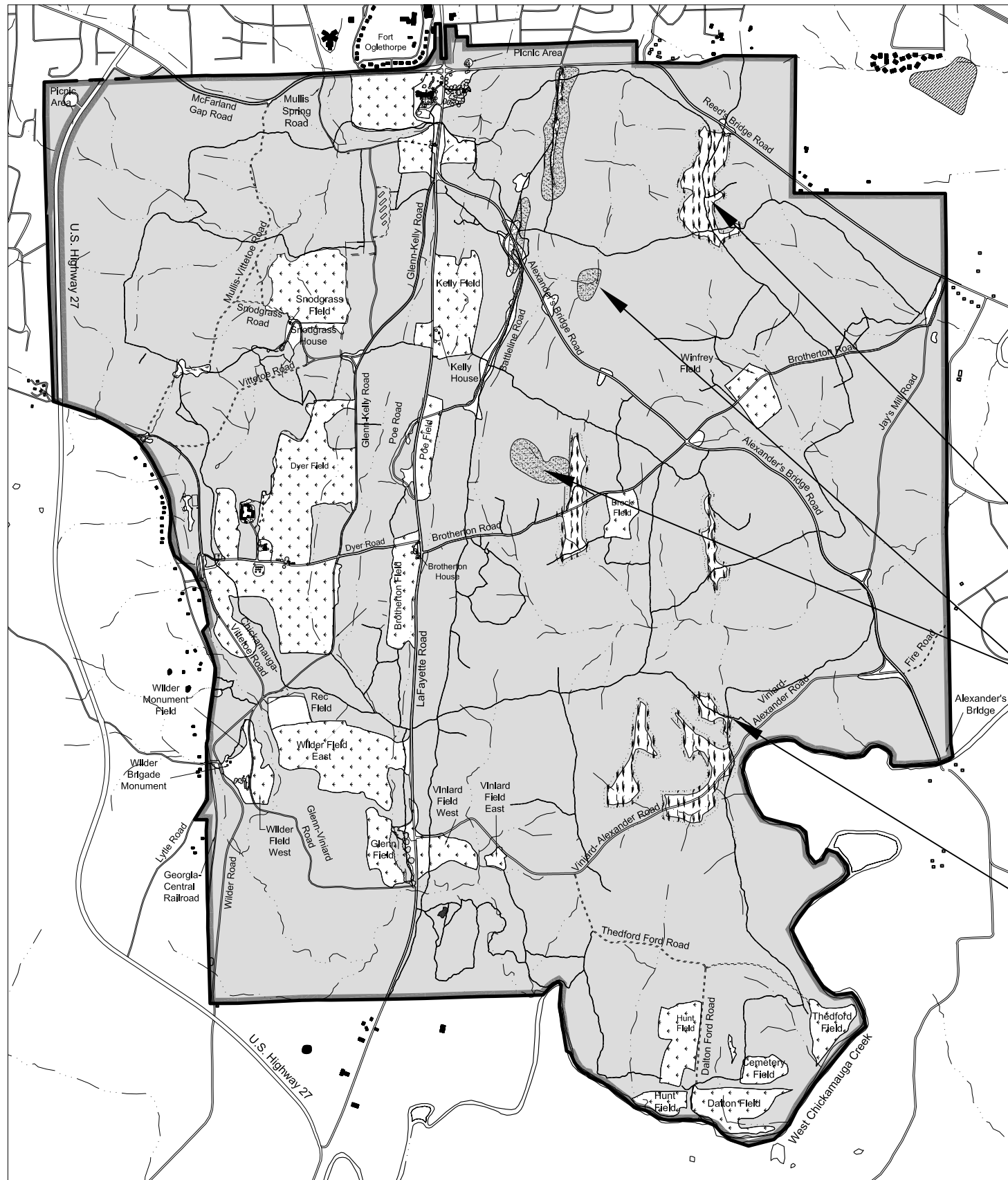
Revegetate cleared areas with appropriate native plant species to prevent re-infestation and erosion problems.

Map 6-I: Natural Systems and Features

Develop Invasive Plant Control Program



Chickamauga Battlefield
Cultural Landscape Report



Stabilize limestone glades through removal of all privet and thinning of Eastern red cedar populations to at least 50 percent of their current stands.



Take precautions not to harm the rare plant, moss, and lichen populations which are susceptible to damage from foot and/or equipment traffic.

Confirm extents of limestone glade habitats within the battlefield using qualified botanists or ecologists; document the habitats with GPS units and mapping.

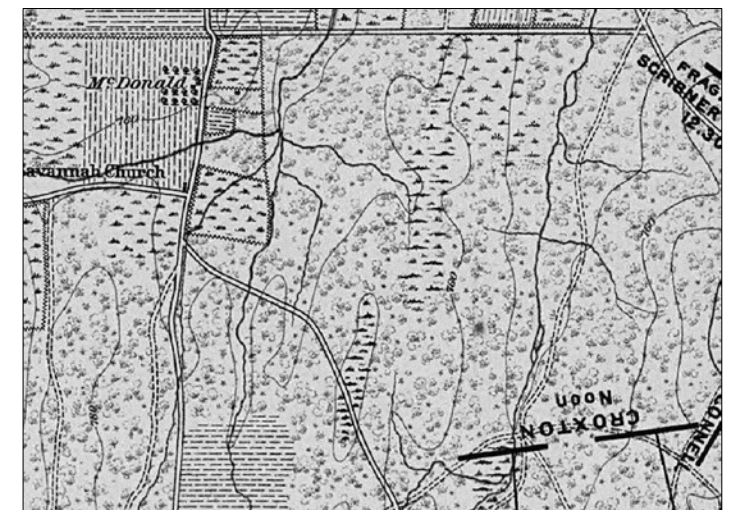
Develop a long-term treatment plan for the Park's limestone glades.

Avoid using mowers, tractors, and other heavy equipment in and around glades.

Limit pedestrian access to the glades. Close and relocate trails that cross or edge glades.

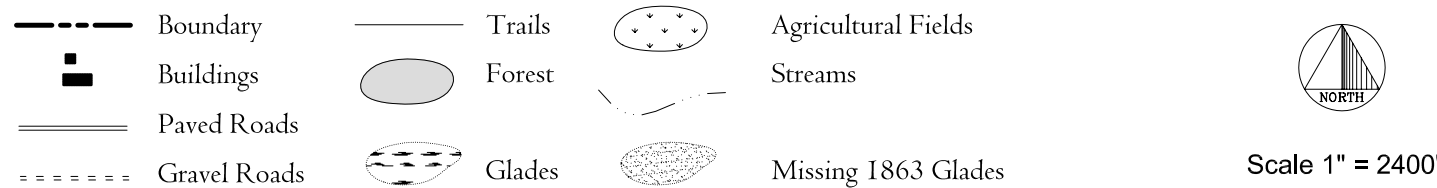
Educate visitors and hikers about the sensitive nature of the glade communities and the damage that foot traffic can cause.

Monitor glades for damage.



Investigate former limestone glade communities in order to assess restoration opportunities.

Legend

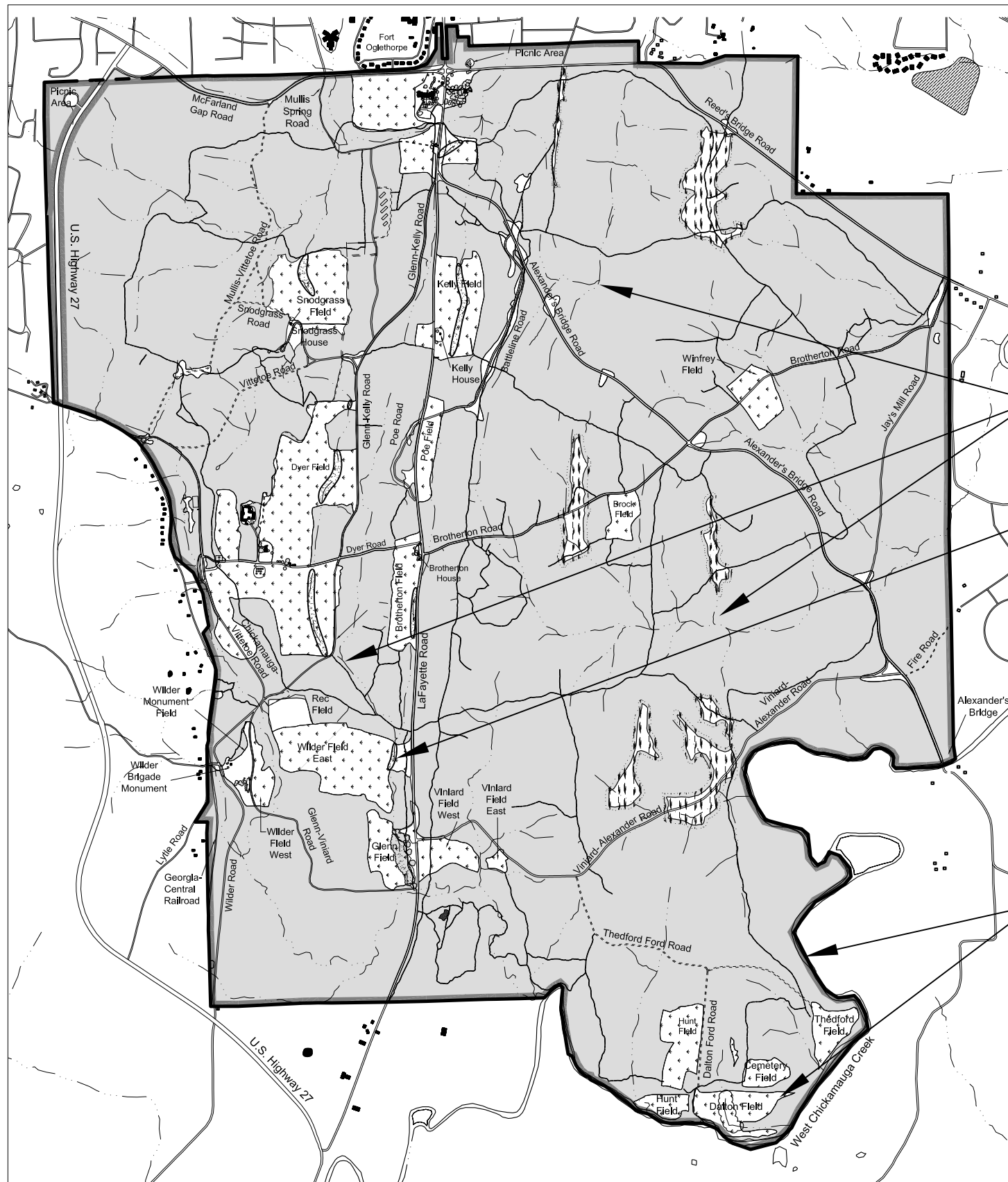


Map 6-2: Natural Systems and Features

Rehabilitate Limestone Glades



Chickamauga Battlefield
Cultural Landscape Report



Establish a minimum 100-foot-wide riparian buffer strip on either side of watercourses and wetlands.

Utilize native grasses, sedges, and forbs at sites where trees are judged to be incompatible with interpretation objectives.

Maintain alternative buffers through infrequent mowing or controlled burns, on average once per year or every two years.

Determine whether a riparian forest buffer or alternative vegetative buffer is appropriate given the interpretive goals for an area.

Prepare the site for buffer establishment by removing exotic and invasive vegetation, and protecting sensitive natural or cultural resources.

Follow established procedures for forest restoration, planting a combination of native trees, shrubs, and herbaceous plants within the forested riparian buffer zone.



West Chickamauga Creek is the highest priority area for buffer establishment and maintenance.

Evaluate wetland areas along West Chickamauga Creek to determine if they require specialized management.

Follow erosion control methods to prevent excessive sediment or chemical run-off into the adjacent water source.

Legend

- Boundary
 - Buildings
 - ==== Gravel Roads
 - Trails
 - Forest
 - Glades
 - Agricultural Fields
 - Streams
 - Potential Alternate Buffer Areas
- Scale 1" = 2400'

Map 6-3: Natural Systems and Features

Establish and Maintain Riparian Buffers



Chickamauga Battlefield
Cultural Landscape Report

Spatial Organization

The spatial organization of the Park is primarily derived from its patterns of fields and forests. As identified in Chapter Four, Analysis and Evaluation, this pattern has changed since the time of the battle. While many of the key fields present during the battle have been maintained in open vegetative cover, or their open character has been restored, several have reverted to forest. Other formerly wooded areas have been cleared and managed as open fields since the establishment of the National Military Park. At the time of the battle, open areas consisted mainly of cultivated or uncultivated fields, and open areas around houses. Open areas were important because they provided sight lines critical to the military strategies of the battle commanders and to the placement of artillery positions.

The treatment approach recommended as part of the CLR for maintaining and rehabilitating historic patterns of spatial organization is to represent the historic locations and character of fields as well as woodlands as they appeared in 1863, as much as feasible, in order to provide a visitor experience that is informative and educational. The following treatment recommendations support this approach:

CLEAR EXISTING FOREST TO REESTABLISH HISTORIC FIELDS [MAP 6-4]

The clearing of portions of existing forest to reestablish important historic fields would improve interpretation of the 1863 battle. Based on historic maps, sufficient documentation exists to reestablish field patterns.⁹ Before fields are cleared, however, there should be a thorough evaluation to establish priorities for interpretation and determine what costs and benefits are associated with the reestablishment. By law, any landscape management activity that moves, breaks, or disturbs soil requires some level of Section 106 and/or NEPA compliance clearance 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. All potential cultural and natural resource impacts should be evaluated before determining which sites will be cleared. Once forests have been approved for clearing, park maintenance staff could be trained to undertake the monitoring process, manage invasive plant growth and soil erosion, and plant warm-season grass cover.

The following criteria should be considered when weighing the decision to clear woodland and reestablish a field (the Park's finalized Long-Range Interpretive Plan should inform implementation of the following recommendations):

⁹ Analysis of historic maps included comparisons between those of Boyd (1864) and Betts (1896). Generally these maps depict areas of forest and open fields in the same locations, with the same configurations. The major exception to this is the area in the vicinity of the Brock and Winfrey farmsteads along Brotherton Road, which may result from the incomplete nature of the Boyd survey. Additional research is recommended prior to undertaking further restoration efforts in this area.



- The area to be cleared should be located along one of the existing or proposed primary interpretive routes. These routes are those associated with the Park’s auto-tour route that is narrated through a brochure and audio tape.
- Historic fields that are known to have played an important role in the battle and are visible from the interpretive tour route should have higher restoration priority than those that fall outside the tour route viewshed.
- Historic fields that would assist in interpretation of the first day of the battle should be given priority over those interpreting the second day of the battle, which is already represented by existing fields.
- 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. This can be mitigated by ensuring a 100-foot-wide forest buffer is maintained along the perimeter of the Park boundary.

The forests identified for clearing should be evaluated 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. According to the 1988 GMP, very few, if any, threatened or endangered plant or animal species have been identified within park boundaries. A comprehensive survey for rare, threatened, and endangered species at Chickamauga has not been conducted, although habitats certainly exist to support their existence. The Park should conduct the necessary surveys to determine whether these species exist prior to any type of forest clearing or thinning project. If endangered or threatened plant or wildlife species are identified, recommendations that may alter their habitats should be reevaluated prior to undertaking any construction or woodland removal project. Consideration should also be paid to evaluating the potential impact on rare, threatened, or endangered plant and animal populations whose habitat is consistent with the environmental conditions present at Chickamauga. The following guidelines also apply:

- Clearing should not be undertaken within wetlands and other sensitive ecological areas. Park wetlands should be delineated before field clearing begins. All federal, state, and local laws associated with wetlands or other sensitive ecological areas should be considered in the evaluation.
- Clearing should not be undertaken within the 100-foot-wide riparian forest buffer associated with Chickamauga Creek.
- Clearing existing woodland in areas with slopes that are steeper than 15 percent, and on soils that are classified as highly erodible or stony, should be avoided, although removal of invasive species should be undertaken in as many areas as possible.

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

- Will the clearing result in a loss of wildlife habitat and further fragmentation of wildlife habitat in a quickly developing suburban area?



- Will the improvement to environmental health offered by the removal of invasives like privet offset the environmental costs of tree removal? In areas that are so infested with privet that many native species are crowded out, soil erosion is prominent, and wildlife have limited native habitat, a healthy stand of native grasses may be an ecological improvement. Severely infested wetlands areas should be similarly evaluated.
- How much can the loss of topsoil and reduction in water quality, due to increased run-off during clearing and for a period of time afterwards, be mitigated?
- How much can the loss or damage of archeological resources, due to clearing and stump removal and seedbed preparation, be mitigated?
- 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?

Two options exist for woodland clearing: clear-cutting and gradual removal of the overstory vegetation. The selection of the most appropriate method for each field should be based upon considerations of cost, time available for project duration, and other factors as described below:

Clear Cutting

Although clear-cutting is generally recognized as the quickest and most-efficient method of removing forest, the following must be taken into consideration:

- Will such a drastic change in appearance, or views of a clear-cut, disturb visitors?
- Will clear-cutting expose any sensitive vegetation, such as historic trees, that had previously been protected by surrounding woodland?
- Exotics and invasive species may become opportunistic within surrounding woodland stands.
- Clear-cutting is a more expensive option than gradual thinning and removal of vegetation. Heavier machinery, increased labor, and stump removal raise costs.

Thinning and Gradual Removal

Thinning and gradual removal of overstory vegetation is a lower-impact method of tree removal. Issues relating to this method include:

- The process may take 5-10 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.

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

- Perform archeological testing of the site by a qualified archeologist.
- Conduct archeological and cultural landscape analyses within areas identified as potential archeological resources, 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.
- Prior to clearing woody growth, consider carefully the proper locations for establishing sight lines that are consistent with 1863 military events.
- 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.
- Retain existing woodlands, allow woodlands to grow up, or plant woodlands along the Park perimeter to maintain a visual buffer. Buffers should consist of mixed species woodland with understory plants, and should be a minimum of 100 feet in width. Promote varied plant composition, and consider locally native woodland species for buffer plantings.
- Incorporate silvicultural methods that minimize the impacts and threats to cultural and natural resources and known and potential archeological resources. Undertake forest harvesting monitored by an historical landscape architect and archeologist.
- Manage timber operations to protect environmental resources, reduce clearing costs, and maximize income to the NPS from any marketable timber by employing the steps included in the three categories listed below:
 - Pre-harvest planning: Delineate the actual boundary of the site to be cleared using an interdisciplinary team, including at least one historian, archeologist, historical landscape architect, forester, soil scientist, and wildlife biologist. The team should collectively delineate the locations and alignments of all timber haul roads, loading areas, stream-side management zones, and other related conditions of the harvest. The forester should then inventory the timber to be harvested and recommend the provisions to be included in the timber sale contract.
 - Timber Harvest Administration: The forester's responsibilities should include regular inspections of the timbering operation to monitor compliance with the



terms of the contract and applicable laws. The archeologist, soil scientist, and/or other professionals may also participate in these inspections.

- Site Restoration: Adoption of Best Management Practices (BMPs) to protect resources should be an ongoing provision of the timbering contract. At completion of the harvest, final BMP installation and maintenance should be performed by the timber buyer, subject to the approval of the forester. Appropriate BMPs and erosion control measures should be included in the contract. The new fields should be planted with native warm-season grasses. Information contained within this report should be used to guide native grass establishment, however, vegetation experts should be consulted to ensure the success of new grasses.
- Work should be conducted by a tree removal service with successful experience working at historically significant sites.

- Treat stumps and sprouts with herbicide, such as glyphosate, to discourage and control woody regeneration. Control of woody plant regeneration through chemical means should be conducted by a certified herbicide applicator—either qualified park staff, or a landscape contractor.
- Cut stumps; do not uproot them. Remove by using a stump grinder. Test the perimeter for archeological resources before grinding stumps.
- Perform cutting or thinning in the fall and winter. 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.
- Minimize the use of heavy vehicles; restrict use to times when soil is firm.
- Remove felled trees without dragging, which gouge the ground surface.
- Employ measures to stabilize soil and minimize erosion.
- Minimize disturbance to the surface when planting new cover.
- Consider where forest clearing is not feasible or desirable, thinning the forest understory and removing the lower branches of forest trees to permit views in key interpretive areas where the landscape would have been open in 1863. Avoid sensitive ecological areas in implementing this recommendation.
- Establish native grass and forb cover over areas that have undergone forest clearing (see Establish Warm-season Grasses section).
- Preserve, protect, and maintain trails, cemetery gravestones, and evidence of former cultural features in areas undergoing forest clearing.





REESTABLISH HISTORIC FOREST AREAS [MAP 6-5]

As noted previously, interpretation of the Civil War-era Chickamauga Battlefield will be enhanced through the reinstatement of historic patterns of spatial organization. In addition to wooded areas that are known to have been maintained in open vegetative cover 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 currently open fields to woodlands is recommended in support of restoring historic spatial patterns.

This having been said, the issue of determining and replicating the character of a mid-19th century woodland condition remains complex. Nineteenth century woodland character was often heavily affected by local cultural practices. Many types of woodland were used as woodlots where trees were harvested by the land owners to supply wood for construction materials or fuel. In addition, livestock was allowed to roam, and frequently used woodlots to forage. Resulting woodlands were likely 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, would be the most appropriate candidates for management in a cleared understory condition.

Species that are native to the region that could be planted or fostered to comprise restored woodlands include:

Mesic/Hydric Conditions (moist to wet habitat)

red maple	<i>Acer rubrum</i>
pawpaw	<i>Asimina parviflora</i>
American hornbeam	<i>Carpinus caroliniana</i>
American beech	<i>Fagus grandifolia</i>
white ash	<i>Fraxinus americana</i>
green ash	<i>Fraxinus pennsylvatica</i>
possumhaw	<i>Ilex decidua</i>
spicebush	<i>Lindera benzoin</i>
sweetgum	<i>Liquidambar styraciflua</i>
yellow poplar	<i>Liriodendron tulipifera</i>
sweetbay magnolia	<i>Magnolia virginiana</i>
black gum	<i>Nyssa sylvatica</i>
sycamore	<i>Platanus occidentalis</i>
water oak	<i>Quercus nigra</i>



Mesic/Xeric Conditions (moist to dry habitat)

pignut hickory	<i>Carya glabra</i>
mockernut hickory	<i>Carya tomentosa</i>
redbud	<i>Cercis canadensis</i>
American yellowwood	<i>Cladrastis lutea</i>
dogwood	<i>Cornus florida</i>
American persimmon	<i>Diospyros virginiana</i>
American holly	<i>Ilex opaca</i>
sourwood	<i>Oxydendron arboreum</i>
white oak	<i>Quercus alba</i>
Southern red oak	<i>Quercus falcata</i>
overcup oak	<i>Quercus lyrata</i>
chinquapin oak	<i>Quercus muehlenbergii</i>
blackjack oak	<i>Quercus marilandica</i>
chestnut oak	<i>Quercus prinus</i>
Northern red oak	<i>Quercus rubra</i>
post oak	<i>Quercus stellata</i>
sassafras	<i>Sassafras albidum</i>
lowbush blueberry	<i>Vaccinium atrococcum</i>
highbush blueberry	<i>Vaccinium corymbosum</i>

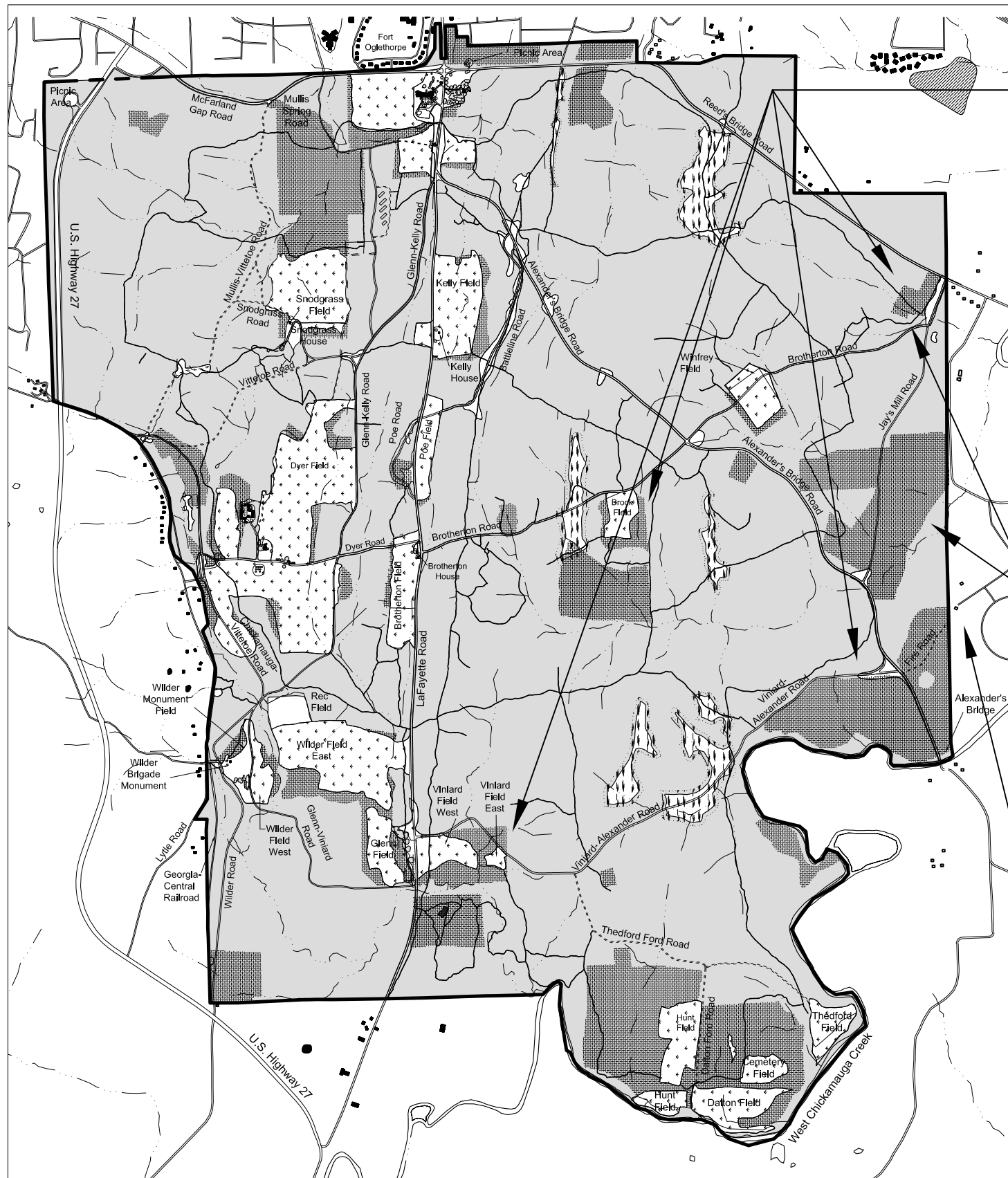
Specific species locations should be based on knowledge of local soil, soil moisture, aspect, and orientation conditions.

Allowing the areas proposed for restoration to undergo secondary succession, while maintaining them free of invasive alien species, is a viable alternative for the restoration process. Regular periodic monitoring, species sampling, and record keeping, and comparison of species observed against the mature woodland predictive model provided by a botanist would be needed to support this reforestation process. Removal of invasive species as observed would be critical to the success of this effort.

Another alternative would be to plant saplings of local native vegetation, eventual woodland dominants if possible, to jump start the process. To avoid establishment of an even-aged stand of trees, it would be important to plant additional saplings every few years. Assessment and protection of cultural features should proceed planting. Proper plant installation methods should be followed, including mulching and watering techniques, to ensure survival of newly planted vegetation, and erosion control methods should be considered as part of the re-vegetation plan.

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 materials. If the desired future condition is open-grown woodland with limited understory growth to replicate grazed woodlots, park personnel could also be involved in the management of this condition through thinning and pruning activities. The following steps are recommended:

- Prioritize the locations where currently open fields should be converted to woodland in support of restoring the 1863 historic scene. The following criteria should be considered when weighing the decision to reestablish a historic forest:
 - The area to be reforested should support the goals of the Park’s finalized Long-Range Interpretive Plan.
 - The area to be reforested should be located along one of the primary existing or proposed interpretive routes. These routes are those associated with the Park’s auto-tour route that is narrated through a brochure and audio tape.
 - Historic forested areas that are known to have played an important role in the battle and are visible from the interpretive tour route should have higher restoration priority than those that fall outside the tour route viewshed.
- Delineate in the field, using an historical landscape architect, archeologist, and botanist/ecologist, the extent of each area to be converted to woodland.
- Develop a revegetation plan based upon the cultural conditions of the site to be converted to woodland. Document the predicted composition of naturally occurring woodland given existing cultural conditions.
- Remove invasive alien plants from areas to be converted to woodland.
- Implement revegetation plan, either through allowing woodland to develop through secondary succession, or through planting.
- Initiate a periodic monitoring program to evaluate the development of the woodland, and to look for evidence of colonization by invasive species.
- Manage vegetation to promote the establishment of stable, healthy, woodland comprised of species typically found in similar natural areas. See above for recommended species.
- Consider thinning understory plants as an interpretive aide to replicate 19th-century woodlot character.

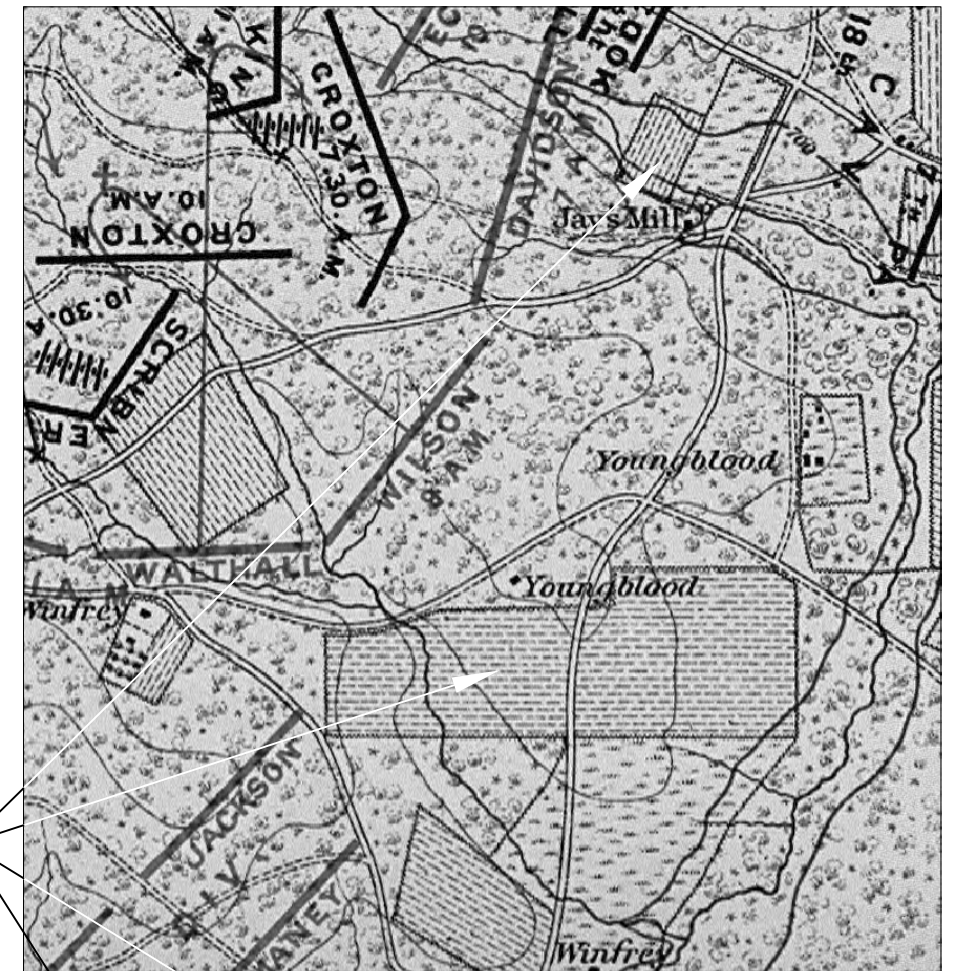


Prioritize areas for historic field reestablishment and work with botanists/ecologists to perform the environmental impact assessments.

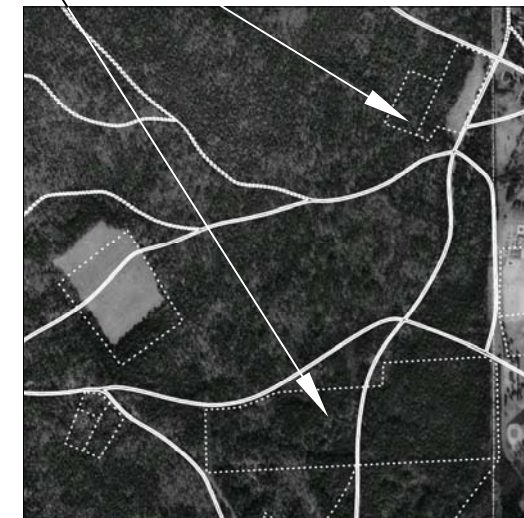
Prioritization should consider:

- Support of the finalized Long-Range Interpretive Plan.
- Location along one of the existing or future interpretive tour routes.
- Importance in interpreting the battle, particularly the first day of fighting.
- Visibility from the interpretive tour route (existing and/or future).
- Potential visual impacts from surrounding development.

Missing fields have been identified by comparing Betts' maps of the battle with maps and aerial photos of existing conditions.



Avoid opening views to areas outside the Park that would have a negative effect on interpreting the historic scene. This can be mitigated by ensuring a 100-foot-wide forest buffer is maintained along the perimeter of the park boundary.



Clearing should not be undertaken in sensitive ecological areas. Maintain a 100-foot riparian forest buffer associated with Chickamauga Creek.

Legend

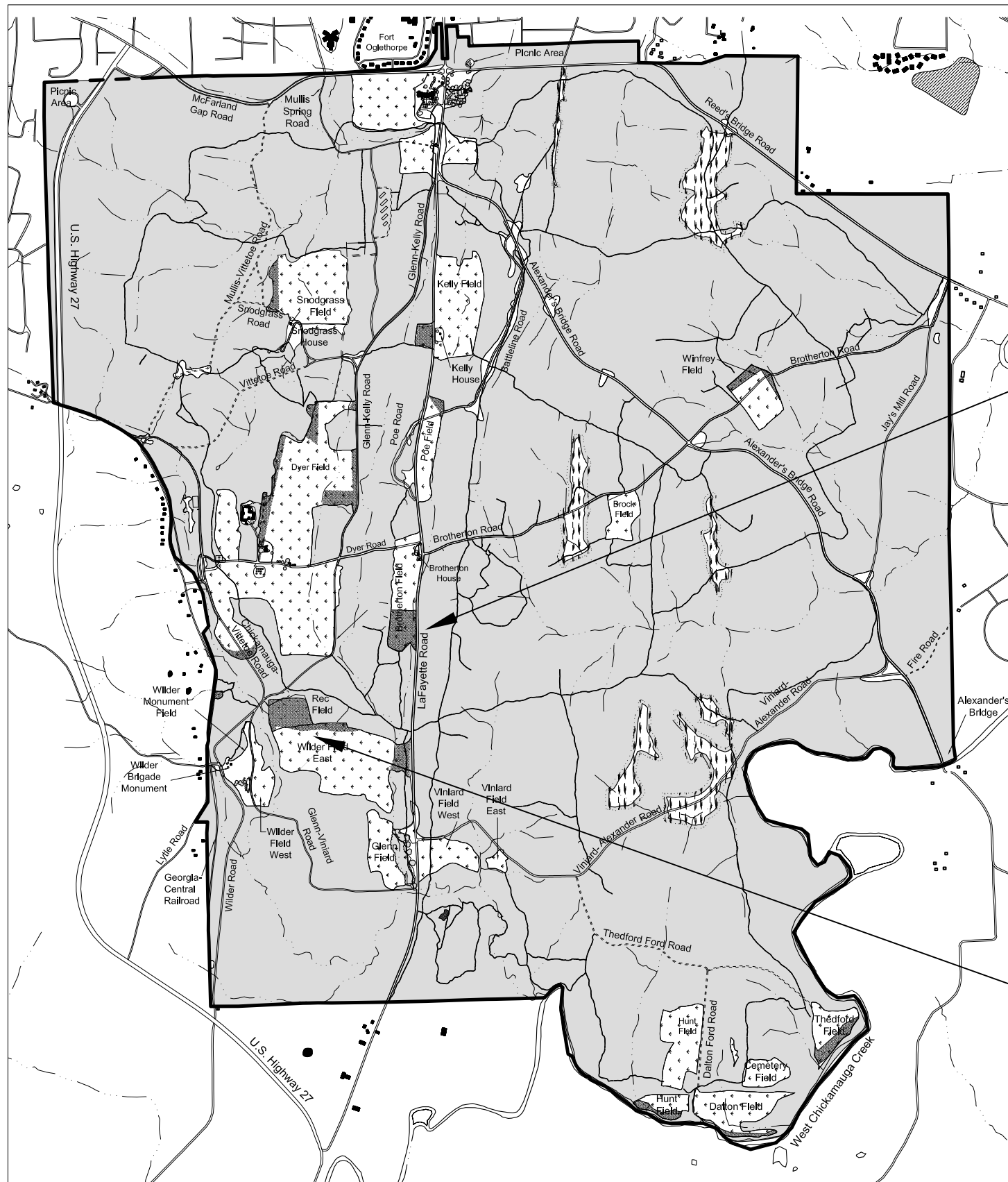
- Boundary
- Buildings
- == Paved Roads
- ==== Gravel Roads
- Trails
- Forest
- Glades
- Agricultural Fields
- Streams
- Extents of Agricultural Fields in 1863
- Scale 1" = 2400'

Map 6-4: Spatial Organization

Clear Existing Forest to Reestablish Historic Fields



Chickamauga Battlefield Cultural Landscape Report



Existing fields that were in forest at the time of the battle have been identified by comparing Betts' maps of the battle with maps and aerial photos of existing conditions.

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

Delineate in the field, using an historical landscape architect, archeologist, and botanist/ecologist, the extent of each area to be converted to woodland.

Develop and implement a revegetation plan, either through allowing woodland to develop through secondary succession, or through planting.

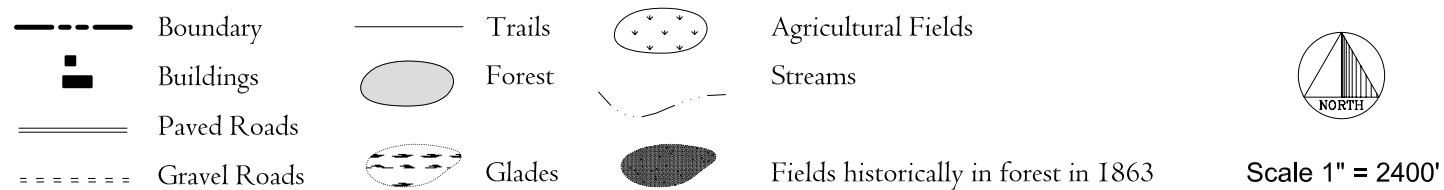
Initiate a periodic monitoring program to evaluate the development of the woodland.



Manage vegetation to promote the establishment of a stable, healthy, woodland comprised of species typically found in similar natural areas.

Remove invasive alien plants from areas to be converted to woodland.

Legend



Map 6-5: Spatial Organization

Reestablish Historic Forest Areas



Chickamauga Battlefield
Cultural Landscape Report

Land Use and Cultural Vegetation

In 1863, farming reflected the cultural traditions and agricultural economy of the antebellum period. At the time of the battle, fields were cultivated, fallow, or used as pasture. Although corn was the most common crop grown in the area, most of the corn had been harvested by the time of the battle, leaving views across these fields open. Livestock would have been present in the pastures. Today the species composition of the fields has changed to support the production of hay. No livestock is present, and orchards, once significant components of the landscape at the time of the battle, are also missing.

The treatment concept regarding land use and cultural vegetation within the Park is to represent, as much as feasible, the historic character of the fields as they appeared in 1863. Open fields should be maintained for interpretation of 1863 conditions, yet the vegetative cover should be carefully considered to ensure that its management does not detract from the goal of maintaining sustainable, healthy, and functioning ecosystems. This will effect both the enhancement of the visitor experience and the environmental quality of the landscape.

CONVERT FIELDS TO NATIVE WARM-SEASON GRASSES [MAP 6-6]

Currently, park fields are maintained in open grass cover for hay production through special-use permits or by park personnel. These fields are primarily composed of fescue, which is a non-native invasive grass, and other non-native herbaceous perennials. Low wet areas of some fields and along stream corridors include native wetland plant communities. Future management of these fields should consider the removal of invasives such as fescue, and support the perpetuation of habitats that support state-listed threatened and/or endangered species (see Chapter Three).

The primary recommended project for the Park's open fields is their conversion from fescue to native warm-season grasses. Native warm-season species are more ecologically sustainable than fescue, requiring little or no pesticide or fertilizer applications after their establishment, yet they can also provide high-quality pasture, hay, and wildlife habitat, while also serving as components of riparian buffer plantings. They are also significantly more drought tolerant than fescue.

As is the case in other historical parks, management of agricultural fields has proven complex. Much cost and labor is associated with keeping fields open. When budgets are insufficient to maintain open fields, parks are forced to release them to succession. At Chickamauga, the effort of maintaining open fields is rendered more difficult by the extensive network of stream corridors and wetlands where woody species grow more quickly, particularly invasives such as privet. There are also environmental and social issues and concerns that are factored into maintenance practices, including aversion to the use of fire as a management tool, and to cutting the trees and brush that have replaced open fields. Finding willing lessees to manage fields given

the environmental restrictions placed on farming operations by the NPS has also proved a challenge for the Park.

Converting fescue fields to 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. Warm-season grass fields will also, at a broad level, perpetuate the appearance of agricultural land uses. Mowing patterns, for example, can be utilized as an interpretive aid to differentiate between fields for interpretive purposes. Within the recommendation to convert open fields, it is possible to consider creative means for providing interpretive tools for visitors; the choice of species utilized in planting different areas could also result in delineation of former field patterns, military lines, or other missing features of the Civil War-era landscape through distinctions in texture, height, and/or color of the plant materials. The following treatment recommendations relate to the objective of maintaining open fields:

- Convert existing fescue fields to native warm-season grass fields. Consider species such as switchgrass, big and little bluestem, and Indian grass as the dominants of the seed mix for the new field cover. See Native Grass Establishment below for more detail.
- Identify and protect areas of habitat that may support rare, threatened, or endangered species.
- Establish or maintain a 100-foot-wide riparian forest buffer along Chickamauga Creek on the southern boundary of the agricultural fields in that area.
- Establish a 50-foot-wide alternative buffer along streams and wetlands in agricultural fields. See Riparian Buffer Management.
- Clear privet and shrub growth along stream corridors in existing fields and from the margins of fields to the edge of existing woodland, and establish native warm-season grass cover.
- Continue to issue agricultural leases to local farmers to harvest hay and maintain open fields until this option is no longer feasible. Consider phasing-in field conversion to warm-season grasses as leases expire or fail to be renewed.

Native Grass Establishment

Warm-season grass fields are generally composed of native perennial bunch grasses that occur naturally in the region. They can be established using no-till methods and a modicum of soil amendments. Once established, they require few or no additional applications of herbicides, pesticides, or fertilizer, and they are relatively drought tolerant. Warm-season grass fields can be cut over for hay production, or burned seasonally. Controlled burning can be utilized to reduce mowing. A publication titled "*Native Warm-season Grasses for Georgia, Alabama, and South Carolina*," produced by the Natural Resources Conservation Service (NRCS) and Georgia Plant Material Program provides an excellent overview of the methods and issues involved in establishing warm-season native grasses within the region, as well as additional contacts and sources of information (see Appendix C).

Warm-season grasses are more frequently being used as a field cover for historic agricultural sites within the National Park Service 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 Chickamauga Battlefield.

The method of field preparation most appropriate for Chickamauga Battlefield would likely initially involve the use of a systemic herbicide, such as glyphosate, the first year. This would result in fewer disturbances to the soil and to potential archeological resources than tilling. The herbicide would best be applied during the fall prior to field establishment. Glyphosate breaks down upon contact with the soil, limiting its threat to the ecosystem. There are other systemic herbicides that could be used at Chickamauga; the range of available herbicides should be considered carefully prior to implementation to determine the one least likely to have a deleterious effect on water resources. The root system of the cover plants, if they are not mechanically disturbed, should be sufficient to hold the soil against erosion over the course of the ensuing winter months. In steeply sloped areas, it may be necessary to establish a cover crop to hold the soil. The cover crop should be a temporary or annual species such as winter rye. In the spring, a controlled burn or another round of herbicide applied six to eight weeks before planting would be required to remove stubble and/or newly emerging seedlings.

An alternative approach is the use of overseeding warm-season grass species and managing for their needs over the needs of cool-season species such as fescue. Generally, this entails withholding lime and fertilizer and delaying mowing to allow the newly established warm-season grasses to shade out the cool-season species. Subsequent seedbed preparation should follow the recommendations included in the NRCS publication. Also consider, when seeding areas of erodible soils or steep slopes, no-till methods for warm-season grass establishment. With no-till, planting occurs in a narrow seedbed or slot created by equipment called disk openers, thereby reducing the soil erosion and sedimentation that can result from tilling. However, use of no-till methods beyond initial establishment of field grasses, or for annual crops, is not recommended due to an increased need for chemical herbicides.

Recommendations for establishing warm-season grass fields include:

- Prioritize field conversion as follows: Begin by converting a field area that is out of view of the primary visitor interpretive experience. Identify a field that preferably includes upland areas, has privet to be removed, and is associated with water resources in order that the project consider the range of issues to be addressed throughout the Park.
- Prior to beginning work, park staff should discuss and identify the appropriate type of cover vegetation to plant in each field. Open fields should only be implemented within areas known to have been used for agriculture in 1863.
- After woodland and invasive species clearing operations are complete and prior to establishment of field cover crops, a field survey of the site should be conducted by an

archeologist and historical landscape architect to identify any previously undocumented cultural resources.

- Acquire, from a local source if possible, a seed mixture based on the recommendations made by the NRCS publication. Species will likely include switchgrass, Indian grass, and bluestem. Supplemental small applications of nitrogen may be necessary to enhance the vigor of the bluestem. If seed is not available from an Eastern United States source, Midwestern sources are preferable to those located in Texas.
- Undertake planting of seed between June 15 and July 15. Planting can begin up to two weeks earlier when weeds are not a problem (later planting allows for all weed seeds to germinate and adequate time to control them).
- Allow the warm-season grasses to remain unmown for the first growing season. Reduce grassy weed competition by mowing high during seedling establishment period.
- Develop a field management plan, that includes delineation of mowing regimes, and which supports interpretation of historic field patterns. For instance, cultivated field representation can be supported by mowing once per year (either before mid-May or after mid-September), resulting in taller vegetation which may be representative of cultivated crops such as corn. Uncultivated field representation may be supported through more frequent mowing to maintain the grasses around eight to ten inches in height, thus simulating the appearance of periodically grazed pastures.
- Accommodate the seasonal nesting cover and food requirements of any open-field wildlife present in the Park, such as birds and small mammals, when determining mowing schedules.
- Consider a schedule of controlled burns that occurs once every three years in spring.
- Phase the establishment of warm-season grass fields. Over a single season, only discrete areas of a manageable size should be selected for field establishment. This will allow the Park to evaluate each field after a season or two and to make necessary adjustments in their establishment procedures prior to undertaking work on additional fields. Begin with a limited and manageable area based upon available manpower and equipment resources. Utilize the knowledge gained from the initial implementation efforts to modify the implementation strategy as necessary. The biggest drawbacks associated with warm-season grasses include the difficulty and duration associated with their establishment. Taking a slow and methodical approach will help to limit the number of problems encountered along the way.

REESTABLISH 1863 ORCHARD PATTERN [MAP 6-7]

According to the 1896 Betts map, a number of orchards existed within the battlefield landscape during the second half of the 19th century. Reestablishment of orchards at interpretive sites and other key, highly visible sites along the tour route will greatly enhance interpretation of the agricultural character of the battlefield and the distribution of farmsteads in 1863.

One of the most important considerations in the establishment of orchard exhibits is the selection of appropriate tree species; maintenance of orchard trees can be labor intensive and time consuming, and many species require chemical inputs that are antithetical to NPS sustainability initiatives. If trees are not maintained, their health and therefore effectiveness as interpretive features will be limited. Selection of historic cultivars may require more maintenance than park personnel can provide. Alternative species are available that would approximate, but not replicate precisely, 1863 conditions.

Although it is not possible to infer from the Betts map what species were used in the orchards, it is likely that they included apple and peach trees. While further research may reveal additional information about the orchards, this research is beyond the scope of this project. Agricultural census data and personal records of individual farmsteads may indicate the types of fruit trees grown in the area. However, it remains highly possible that specific information about the exact species and cultivars will never be located. Unless such information is located, reestablished orchards should be treated as exhibits and interpreted as such. Cultivars and/or species that were typically used for orchards in the region during the period can be selected to support interpretation (see below). It is also possible to select more contemporary orchard tree species that require minimal maintenance. Species selection for the exhibit orchards should take into consideration the amount of NPS labor available to care for these trees.

While it is not possible to interpret the 1896 Betts map literally and assume that the exact number of trees noted on the map was included in each orchard, an approximate scale of each orchard can be determined. Agricultural census data, if located, might be utilized to revise the number of trees used to depict the historic feature. Orchards could be reestablished using one or more of the methods below (listed in order of maintenance requirements):

- Planting heritage trees, preferably cultivars that date from the Civil War-era to more closely approximate 1863 orchard composition if NPS staff are willing to perform cyclical and seasonal maintenance necessary to maintain the health of these species, which frequently are more susceptible to pests and disease; NPS will need to harvest or remove the ripe fruit during production season.
- Based upon review of a book entitled *Apples* by J.A. Warder that dates from 1867, there are numerous apple varieties that were considered to originate from Georgia that might be appropriate for planting. The CLR team researched the varieties listed in the 1867 book by contacting regional experts in heritage apples. Based upon discussions with Jim Lawson of Lawson's Nursery in Ball Ground, Georgia, and Lee Calhoun, author of *Old Southern Apples*, who resides in Pittsboro, NC, and operates a nursery of heritage apples, the following varieties are appropriate for planting at Chickamauga due to the fact that they are known to have been popular and prevalent within the area during the 1860s:
 - Buckingham
 - Disharoon/Equinetelee
 - Horseapple
 - Red June



- Shockley

Both Mr. Lawson (telephone 770/893-2141) and Mr. Calhoun can be contacted for technical information, or to order stock for establishing orchards using these varieties. Mr. Calhoun maintains a collection of old nursery catalogues, including nurseries located in Georgia in the 1860s, that could be consulted for additional information. Mr. Calhoun suggested that wide-spread spraying of orchard trees did not begin until the 1870s. He suggested that the minimal care regime would include a single application of appropriate pest management sprays within six weeks of petal fall.

- Consider, as an alternative, planting contemporary fruit tree cultivars to establish an orchard exhibit that approximates 1863 spatial conditions but replaces heritage cultivars with less labor-intensive species. Select species that are pest-resistant (particularly to borers); disease-resistant (particularly to blight and rust); and can survive local climatic conditions.

Reestablishment of orchard patterns at historic farm sites should be prioritized based on the following conditions (see Map 6-7 for recommended sites):

- Existing interpretive exhibits (based upon the Betts map, the Kelly farm site is the only one of the three historic farmsteads to have an orchard).
- Agricultural fields of historic farm sites that already exist as open fields.
- Farm site is located along the main auto tour (existing and/or future) and can be seen from the road once the historic field is reestablished.

The existing orchard located along Dyer Road is in poor condition and does not convey the extent of the historic orchard. Poor mowing practices have necessitated the need for fencing to protect the tree trunks from damage. The following recommendations apply:

- Rehabilitate the orchard by removing existing trees and fencing, and replanting with heritage species or contemporary cultivars (see recommendations above).
- Plant enough trees to convey the extent of the historic orchard, based upon the Betts maps of the battlefield. This may involve planting trees along the width of the orchard along Dyer Road and supplementing exhibit with interpretive signage.
- Educate maintenance employees about mowing techniques that will not damage tree trunks.

REESTABLISH 1863 CROP FIELDS AT INTERPRETIVE SITES [MAP 6-8]

The farmsteads that existed within the Chickamauga Battlefield in 1863 had a variety of small crop fields associated with them, with corn being the dominant crop. The Betts maps of the battlefield differentiate between cultivated and uncultivated fields. Reestablishment of limited crops at one or more of the interpretive sites would also greatly enhance the interpretation of the



farmsteads and their agricultural and domestic nature, as well in the interpretation of the character and complexity of the agricultural landscape at the time of the battle.

The following guidelines should be used in crop field reestablishment:

- While it would be ideal to reestablish the entire extent of the historic cultivated field, labor, capital, and environmental constraints may make this option prohibitive. In this case, consideration should be given to reestablishing a portion of the crop as an exhibit, and using interpretive signage or living history demonstrations to educate visitors about the former extents of the field, historic cultivation techniques, and the role of the agricultural fields in the battle.
- Locations of historic crop fields should be based on the 1896 Betts map of the battlefield, and additional documentation specific to house site (1860/1870 census, deed descriptions, tax maps, etc.).
- Crop species should be selected on the basis of historical accuracy and on documentary (census data) or physical evidence (archeology). Species should be limited to those causing the least deleterious impact on the environment. When making substitutions from crops that were not present in 1863 due to environmental or labor concerns, select crops that have similar heights, colors, textures, and planting patterns as the crop cover that was historically present in the agricultural fields (e.g. wheat, corn, and native grasses).
- Make every effort to cultivate the crops in a manner that is consistent with the practices of the period(s).
- Consider modifying historically accurate methods when sustainability concerns arise. Utilize sustainable, low-impact maintenance practices, integrated pest management, and other Best Management Practices in establishing and maintaining these exhibits. Interpret modifications of historic farming practices to educate visitors about sustainability.
- Avoid no-till methods for crop farming in exhibit areas, as no-till is a contemporary method that creates an appearance that is not consistent with farming at Chickamauga during the period of significance.
- Promote sustainability by avoiding the use of chemical additives such as pesticides, herbicides, and excessive use of chemical fertilizers as much as possible. Interpret these possible deviations from historic practices, and encourage similar stewardship in interpretive materials.
- Avoid planting crops on slopes of ten percent or greater.
- Avoid planting crops that are considered invasive alien or noxious weed species in the state of Georgia. Establish guidelines for site access by farm equipment that ensure invasive species seed germ is not transported onto the site; for example, require cleaning or washing the equipment off-site.
- Examine proposed sites for potential archeological resources and evaluate their susceptibility to damage from activity prior to any implementation.

REHABILITATE ADMINISTRATIVE AND MAINTENANCE SITES [MAP 6-9]

Administrative and maintenance sites within the Park include the Administration Building/Visitor Center, Superintendent's Residence, Maintenance Area (which includes garages, shops, equipment storage areas, offices, materials yard, and an associated dump area), and the Dyer House (which provides housing for the chief law enforcement officer). These sites were developed during the commemorative period and are critical to park operations. The overall treatment concept for these sites is the preservation of commemorative period features combined with careful rehabilitation to meet current and future visitor, administrative and maintenance needs. Impact on battle period landscape features should be minimized as much as possible.

Considerations for these sites include the Park's interest in reducing the size of the maintenance facilities, limiting their expansion, or removing them altogether. The Park is also interested in relocating the parking lot from the south side of the Administration Building/Visitor Center to its north side in order to reestablish historic field patterns and allow an unobstructed view of the battlefield from the south side of the building.

Because the location of the maintenance facility is located within a forested area, it is not very visible from the road and its visual impact can be further mitigated through additional vegetative screening. Therefore, removal of the maintenance facility is not recommended. If further expansion of the maintenance facility is required, it should occur to the north and continue to be adequately screened by the surrounding forest vegetation. Consideration should be given to moving the maintenance facility only if the anticipated visual impact of the expansion cannot be mitigated.

Additional recommendations for the Maintenance Yard/Dyer House area are as follows:

- Reestablish historic forest/field edge along the west side of Dyer Field to better screen the maintenance entry drive from view of the surrounding roads and interpretive waysides.
- Consider marking the location of the missing battle-era Dyer House and barn.
- Represent the domestic Dyer house yards through reestablishment of the 1863 fencelines.
- Indicate on the interpretive wayside along Dyer Road that the existing Dyer House is not a battle era resource. Opportunities exist to interpret it as a product of the commemorative period.

The plan to relocate the visitor parking lot from the south side of the Administration Building/Visitor Center to its north side is recommended for further evaluation. As the upper parking bay dates to the commemorative period, this action would alter historic spatial organization and circulation patterns (visitor approach and arrival sequence) that date to the 1930s. While reestablishment of views and historic field patterns to the south of the Administration Building is desirable, this benefit must be weighed against the loss of the contributing commemorative period characteristics that compliment the Administration Building.

Further analysis is also recommended to determine how changes to the traffic pattern (visitor entry and exit on McFarland Gap Road vs. LaFayette Road) would be accommodated by the existing intersection, as this analysis exceeded the scope of the TIS-TP. If the decision is made to relocate parking to the north side of the building, the following recommendations apply:

- Maintain the Administration Loop Drive.
- Consider retaining the upper parking bay for exclusive NPS staff and administrative use. If this is not possible, consider retaining the existing grade/spatial organization of the upper parking bay and reusing the terrace as an area for orientation and outdoor education.
- Remove the lower parking bay and regrade to natural topography.
- Reestablish the historic extents of McDonald Field. Follow guidelines for field restoration and native warm-season grass establishment provided earlier in this Treatment Plan.
- Consider implementing an alternative riparian buffer along the creek south of the lower parking bay.
- Locate the new parking area in an area that will not cause removal of cannons located on the north side of the Administration Building.
- Provide for pedestrian and bike connections between the new Visitor Center entry and LaFayette Road, as new streetscape improvements north of the Park boundary are proposed in the TIS-TP. New parking lot design should not discourage pedestrian traffic between these two areas.
- Provide for a strong connection between new parking area and tourist attractions in the Fort Oglethorpe Historic District, as proposed in the TIS-TP.

REDUCE RECREATIONAL FACILITIES ON THE BATTLEFIELD [MAP 6-10]

Although recreational uses within the Chickamauga Battlefield existed during the Army's administration of the Park (1890-1933), and persisted during its administration by the NPS (1933-present), some recreational activities are today considered incompatible with the Park's enabling legislation. It is important to note that recreation was not allowed under early administration of the NMP by the Park Commission.

The Park's current GMP recognizes the recreational value of Chickamauga Battlefield to the surrounding community and allows for casual outdoor recreation. Park staff also recognizes that recreational activities bring people to the Park who may otherwise not have been inclined to visit, and that these visitors leave with a better understanding of history. As the recreational facilities within the Park influence the way the battlefield landscape is interpreted and experienced, consideration of further reduction of the recreational landscape is recommended during the Park's GMP update planning process.



There are a number of factors that should be taken into consideration before altering recreational resources, such as the picnic areas and Recreation Field. First, there must be a compelling reason to make an alteration. At Chickamauga, the compelling reasons for removing the picnic areas and recreation field are to improve interpretation and respect the sanctity of historic events and lives lost in September 1863.

Prior to removal, there must also be an evaluation of the significance and value of the historic resources. Not all resources are equal. Alterations should be evaluated to determine how they affect other resources. At Chickamauga, these considerations must be applied to each of the sites individually. Historic records indicate that the CCC constructed picnic areas during the commemorative period. Given the limitations of the project scope, it was not possible to determine if and where these picnic areas were located within Chickamauga Battlefield. While it may be possible that both the Alexander Bridge Road/Brotherton Road picnic area and Recreation Field picnic area were constructed by the CCC during the commemorative period, the current physical appearance of these sites indicate that their features post-date the end of the period of significance. Therefore, neither of these areas retains integrity to the period.

The Alexander Bridge Road/Brotherton Road picnic area is located in an area of the battlefield that is otherwise undeveloped and retains significant integrity to the battle period. Its tables and trash receptacles are located adjacent to and among the monuments, markers, and memorials that were placed by veterans. Its location lacks respect for the events and lives that were lost, interrupts what is otherwise a relatively intact battle period landscape, and has little if any integrity to the historic period. The removal of this picnic area would improve interpretation by allowing a more accurate depiction of the battle period landscape. Therefore, it is recommended that the Park consider the removal of this picnic area and reestablishment of forest in this area.

Based upon analysis of historic aerial photographs dating to the end of the commemorative period, it is evident that the Recreation Field is maintained as open space. Given the limitations of the project scope, there was not enough documentation available to determine the intended use of this area during the period of significance—rather that it simply existed as an open field. Based upon field assessments the physical features associated with its nearby picnic area appear to post-date the end of the period of significance and do not retain integrity to the commemorative period.

The Recreation Field and picnic area are located in a relatively undeveloped area of the battlefield, which retains a high degree of integrity to the battle period. It is also located along the auto tour route. Activities associated with these areas detract from the battle period integrity of the landscape, and also detract from the somber and contemplative environment envisioned by the veterans. The removal of these features would improve interpretation by allowing a more accurate depiction of the battle period landscape. Therefore, it is recommended that the Park consider the removal of this picnic area and the Recreation Field and reestablishment of forest in this area.

While both the Reed’s Bridge Road and U.S. Highway 27 Picnic Areas post-date the period of significance, it is recommended that they be retained as they are located in portions of the Park



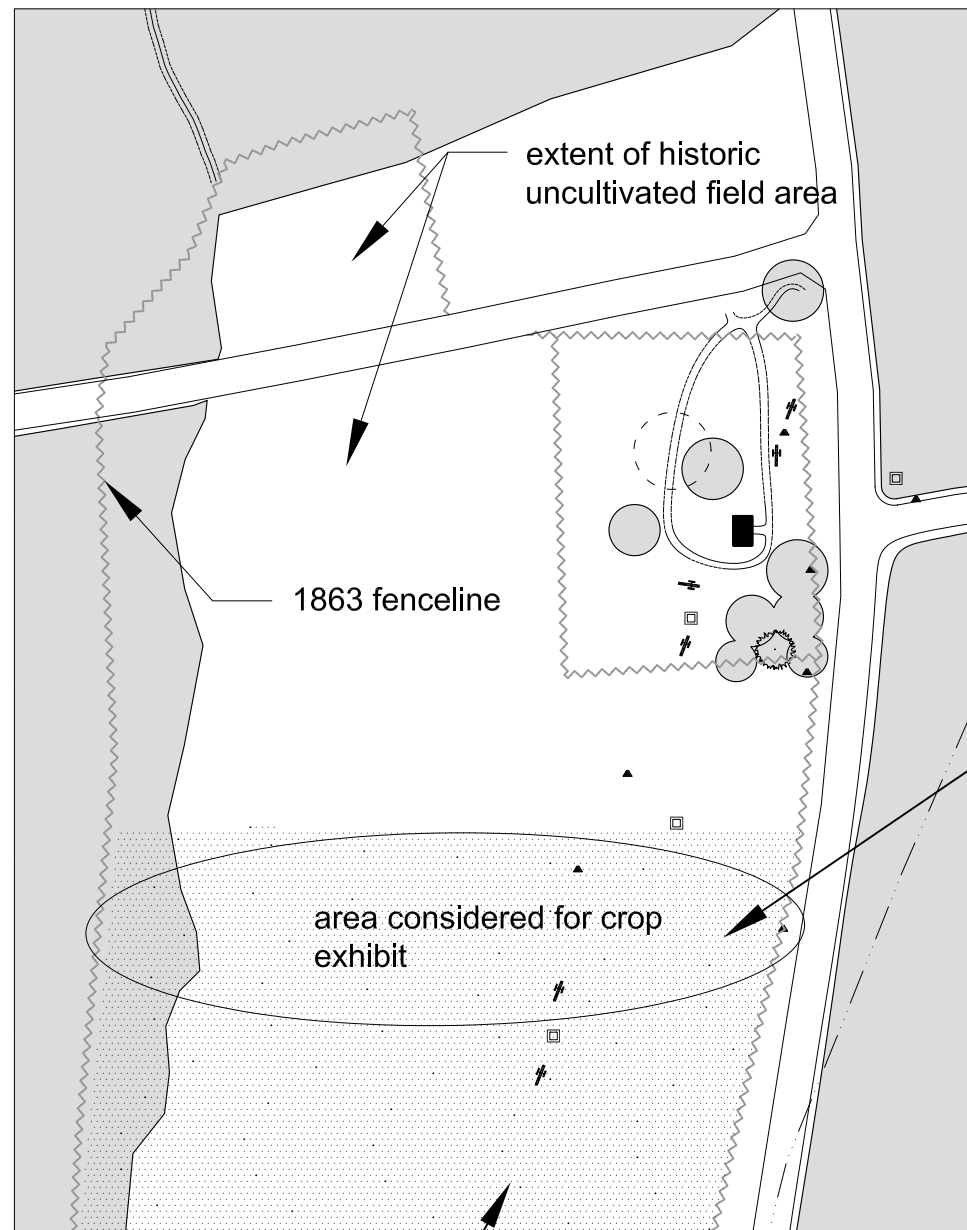


that do not retain battle period integrity and neither is located along the auto-tour route. The existing network of trails is also recommended for retention, as they provide access to key sites within the battlefield and expand the interpretive experience. The Horse Unloading Area is also recommended for retention as it is located off the main auto tour route in an area of the battlefield that does not retain integrity to the battle period. It also provides services that support a unique means of interpreting the landscape's history.

As the surrounding region continues to develop, the demand for open space and recreational facilities continues to increase. The surrounding communities have come to depend upon Chickamauga Battlefield for recreational land, and any reduction in the facilities available will no doubt put additional pressure on other parks in the area. Chickamauga also affords a restful and serene environment at a scale that is not available anywhere within the nearby community. Additional recreational land and facilities should be made available to offset any reductions in the battlefield. Mitigation measures could include:

- Development of the planned Chickamauga greenway along the West Chickamauga Creek, to serve as a regional recreational trail and linear park.
- Acquisition of lands (through purchase or easement) adjacent to the battlefield which were not part of the original National Military Park and which could be developed to offset the loss of the recreation field. Agricultural lands along the West Chickamauga Creek would meet these criteria, as well as serve as a node along the planned greenway.
- Development of additional picnic facilities in other areas of the battlefield that lack integrity to the battle period.
- Development of additional parkland within Fort Oglethorpe, Walker county, and Catoosa county. The Park should work with the local municipalities and planning organizations to ensure growing open space needs are being accounted for in the comprehensive planning process.
- Signage and educational materials to inform visitors of the reasons behind landscape change.





Consider reestablishment of a portion of the crop as an exhibit, and use of interpretive signage or living history demonstrations to educate visitors about the former extents of the field, historic cultivation techniques, and the role of the agricultural fields in the battle.

Locations of historic crop fields should be based on the Betts map of the battlefield, and additional documentation specific to house site (1860/1870 census, deed descriptions, tax maps, etc.).



Reestablishment of limited crops at one or more of the interpretive sites would enhance the interpretation of the farmsteads and their agricultural and domestic nature, as well in the interpretation of the character and complexity of the agricultural landscape during the second half of the 19th-century.

Crop species should be selected on the basis of historical accuracy and on documentary (census data) or physical evidence (archeological).

Make every effort to cultivate the crops in a manner that is consistent with the practices of the period.

Consider modifying historically accurate methods when sustainability concerns arise. Utilize sustainable, low-impact maintenance practices, integrated pest management, and other Best Management Practices in establishing and maintaining these exhibits. Interpret modifications of historic farming practices to educate visitors about sustainability.

Avoid no-till methods for crop farming in exhibit areas, as no-till is a contemporary method that creates an appearance that is not consistent with farming at Chickamauga during the period of significance.

Promote sustainability by avoiding the use of chemical additives such as pesticides, herbicides, and excessive use of chemical fertilizers as much as possible. Interpret these possible deviations from historic practices, and encourage similar stewardship in interpretive materials.

Avoid planting crops on slopes of ten percent or greater.

Avoid planting crops that are considered invasive alien or noxious weed species in the state of Georgia.

Examine proposed sites for potential archeological resources and evaluate their susceptibility to damage from activity prior to any implementation.

Legend

	Boundary		Trails		Agricultural Fields		Tablets
	Buildings		Forest		Streams		Interpretive Signs
	Paved Roads		Glades		Cannons		Monuments, Markers, Memorials
	Gravel Roads						



Scale 1" = 150'

Map 6-8: Land Use and Cultural Vegetation

Reestablish 1863 Crop Fields at Interpretive Sites



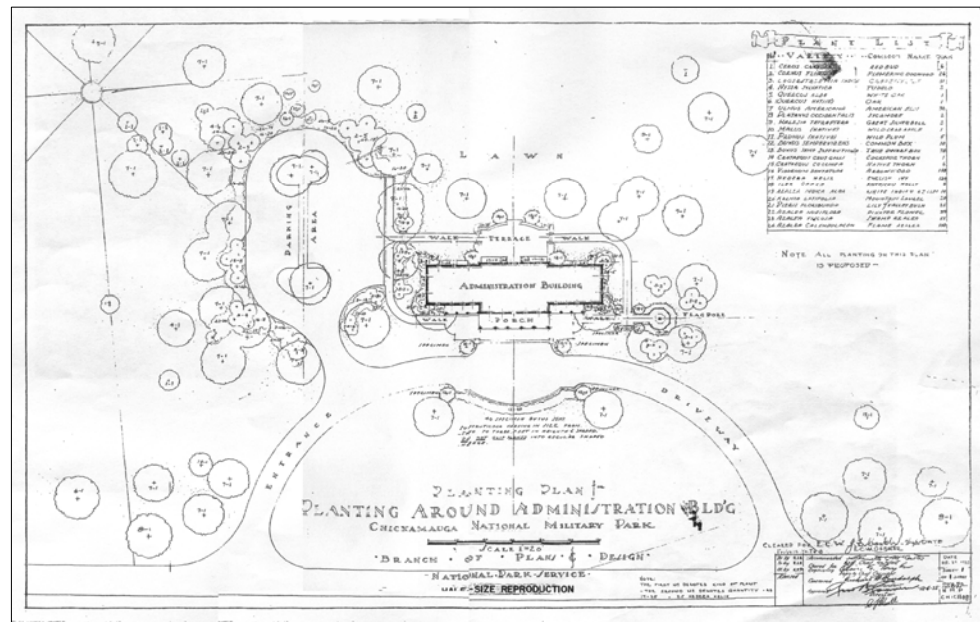
Chickamauga Battlefield Cultural Landscape Report

Chickamauga and Chattanooga National Military Park
Fort Oglethorpe • Georgia • National Park Service



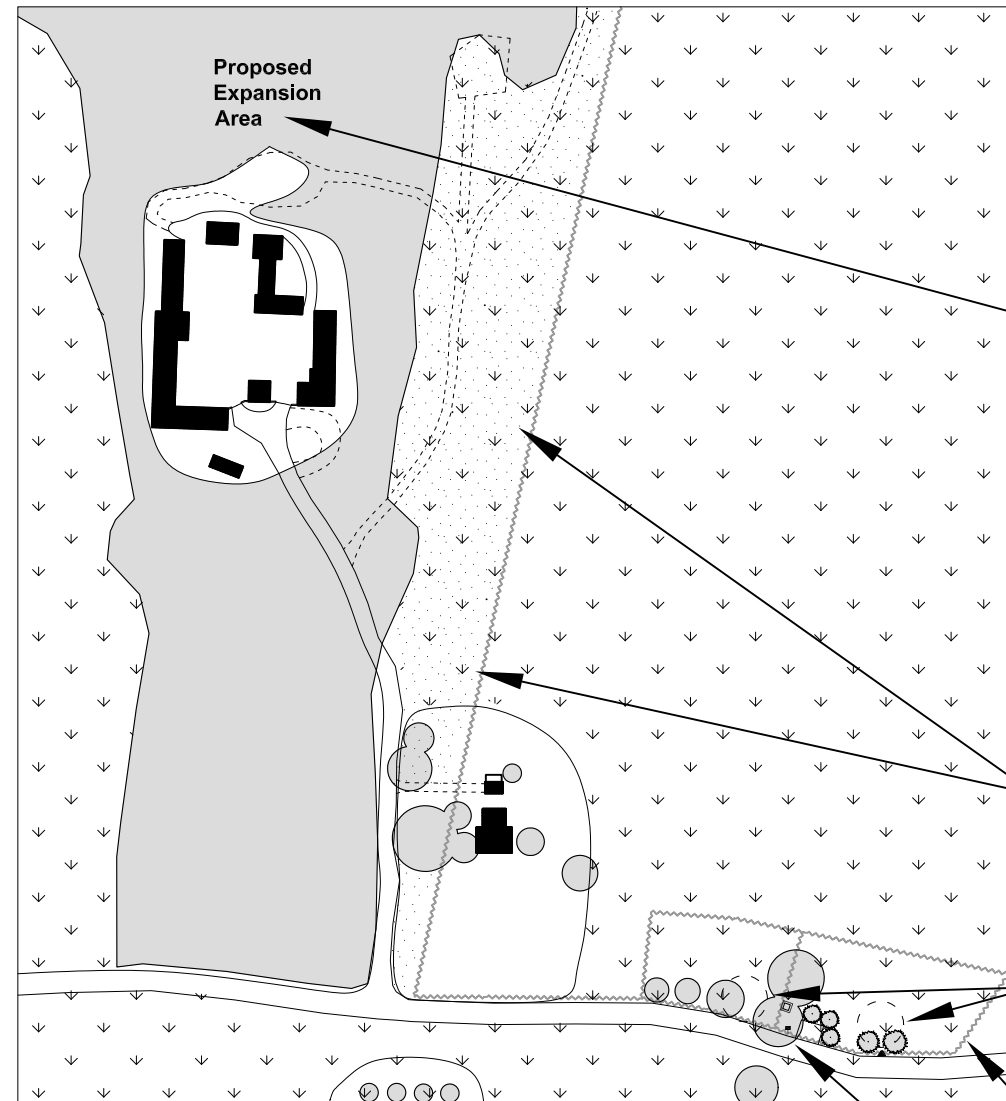
If the decision is made to relocate parking to the north side of the visitor center, the following recommendations apply:

- Maintain the Administration Building Loop Drive.
- Consider retaining the upper parking bay for exclusive NPS staff and administrative use. If this is not possible, consider retaining the existing grade/spatial organization of the upper parking bay and reusing the terrace as an area for orientation and outdoor education.
- Remove the lower parking bay and regrade to natural topography.
- Reestablish the historic extents of McDonald fields and forest. Follow guidelines for forest and field restoration and native warm-season grass establishment provided earlier in this Treatment Plan.
- Consider implementing an alternative riparian buffer along the creek south of the lower parking bay.
- Locate the new parking area in an area that will not cause removal of cannons located on the north side of the Administration Building.
- Provide for pedestrian and bike connections between the new Visitor Center entry and LaFayette Road, as new streetscape improvements north of the park boundary are proposed in the TIS-TP. New parking lot design should not discourage pedestrian traffic between these two areas.



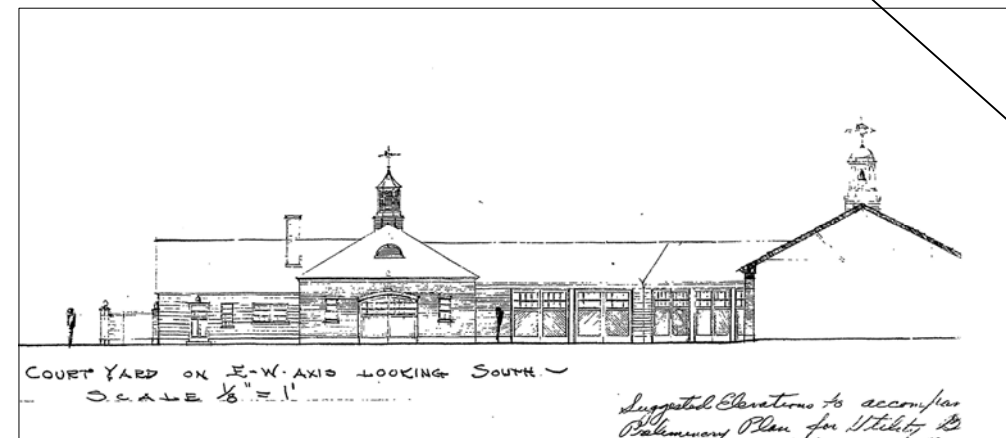
1935 planting plan showing historic conditions around Administration Building.

- Provide for a strong connection between new parking area and tourist attractions in the Fort Oglethorpe Historic District, as proposed in the TIS-TP.



Because the location of the maintenance facility is located within a forested area, it is not very visible from the road and its visual impact can be further mitigated through additional vegetative screening. Therefore, removal of the maintenance facility is not recommended as such action would require maintenance facilities to be located outside of the Park. If further expansion of the maintenance facility is required, it should occur to the north and continue to be adequately screened by the surrounding forest vegetation. Consideration should be given to moving the maintenance facility only if the anticipated visual impact of the expansion cannot be mitigated. Additional recommendations for the Maintenance Yard/Dyer House area are as follows:

- Reestablish historic forest/field edge along the west side of Dyer Field to better screen the maintenance entry drive from view of the surrounding roads and interpretive waysides.
- Consider marking the location of the missing battle-era Dyer House and barn.
- Represent the domestic Dyer house yards through reestablishment of the 1863 fencelines.
- Indicate on the interpretive wayside along Dyer Road that the existing Dyer House is not a battle-era resource.



1935 drawing showing original design of maintenance buildings.

Legend

- Boundary
- Buildings
- ==== Gravel Roads
- Trails
- Forest
- Agricultural Fields
- Streams
- ▲ Tablets
- ⊥ Interpretive Signs
- Monuments, Markers, Memorials
- Glades
- Cannons

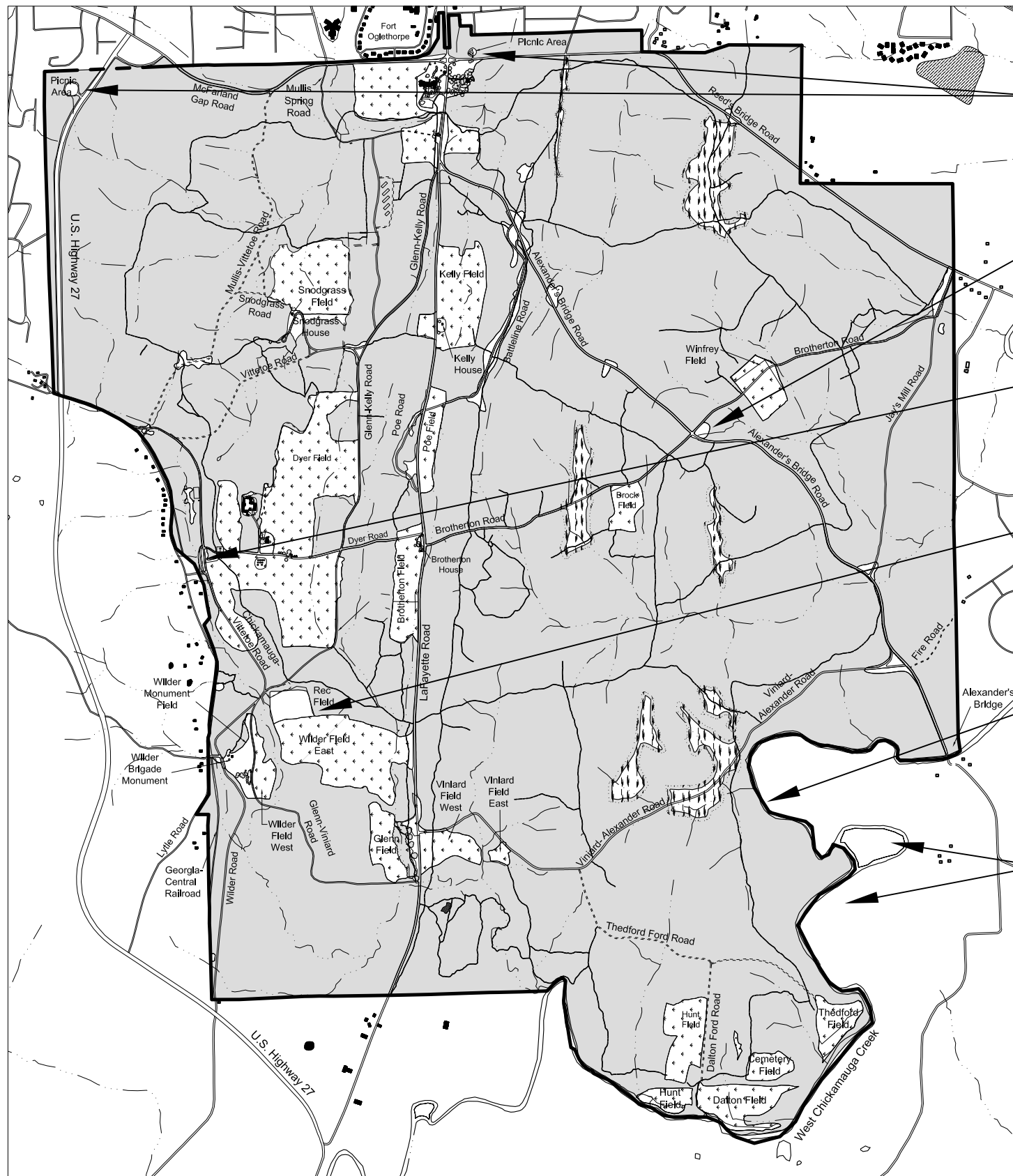


Scale 1" = 200'

Map 6-9: Land Use and Cultural Vegetation
Rehabilitate Administration and
Maintenance Sites



Chickamauga Battlefield
Cultural Landscape Report



Legend

- Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Trails
- Forest
- Streams
- Agricultural Fields
- Glades



Scale 1" = 2400'



Consider removal of the Brotherton/Alexander's Bridge Road picnic area and the reestablishment of the battle period landscape.



Consider removal of the Recreation Field and picnic area and reestablishment of battle period landscape characteristics.



Maintain the Reed's Bridge Road and U.S. Highway 27 Picnic Areas.



Maintain the Horse Unloading Area.

Support the development of the planned Chickamauga greenway along the West Chickamauga Creek, to serve as a regional recreational trail and linear park.

Consider acquisition of lands (through purchase or easement) adjacent to the battlefield which were not part of the original National Military Park and which could be developed to offset the loss of the recreation field.



Consider development of additional picnic facilities in other areas of the park that lack integrity to the battle period and which are not along the existing or future tour route. Location of these facilities along West Chickamauga Creek may compliment the recreational use of the creek as a proposed greenway.

Map 6-10: Land Use and Cultural Vegetation
Reduce Recreational Facilities on the Battlefield



Chickamauga Battlefield
Cultural Landscape Report

Circulation

Circulation features within the battlefield include historic and modern roads as well as a variety of pull-offs and wayside areas. Circulation throughout the battlefield landscape is at the heart of the visitor experience but also constitutes one of the primary management concerns. Many of the roads that cross the battlefield are used by local and regional commuters as shortcuts or scenic drives. The result is an increased volume of automobiles and increased average speeds on park roads. Large trucks and commercial vehicles also use park roads despite restrictions. The north-south corridor of LaFayette Road is the most problematic area, as it served as U.S. Highway 27 until an alternative route around much of the battlefield was opened in 2001. While the number of drivers using LaFayette Road has dropped, many still take the old route through the middle of the battlefield. The high traffic volumes and speeds create dangerous situations when there are also park visitors who are traveling more slowly, stopping to observe historic features and interpretive displays.

The less traveled gravel and rough pavement roads within the battlefield offer visitors a closer representation of early road character. These roads offer unique and intimate experiences of the Park's historic and natural resources for those who do not or cannot venture down park trails. Several of these roads have unfortunately been closed to automobile traffic in efforts to reduce and eliminate illegal activities that occur in more isolated areas of the battlefield.

Also associated with circulation corridors are a variety of pull-offs, parking areas, and wayside exhibits. These include formal areas that are paved with asphalt or crushed stone as well as informal earthen areas that have been created by drivers repeatedly pulling off in the same spot. A designated tour route leads visitors to some of the critical areas of the battlefield. This route, however, was influenced by restrictions relating to the heavy use of LaFayette Road before U.S. Highway 27 was relocated. A number of interpretive audio stations are located along this tour route. The Park is currently considering expanding the auto tour or including a second tour route option encompassing sites important to the first day of battle at Chickamauga.

In 2002 the NPS, using funds provided by the Federal Highway Administration (FHWA), began the Chickamauga and Chattanooga National Military Park Traffic Impact Study and Sub-area Transportation Plan (TIS-TP) to evaluate current and future traffic patterns in and around the Chickamauga Battlefield resulting from the completion of the U.S. 27 relocation, determine current and future transportation needs and issues, and recommend short- and long-term transportation improvements for both study areas that consider impacts on both areas. The TIS-TP recommended several improvement strategies to improve visitor safety, enhance opportunities for interpretation, and enhance multimodal opportunities for visiting sites within the battlefield. It also included strategies for additional evaluation in the General Management Plan (GMP) update process, which the transportation study could not fully address. Where appropriate, results of the TIS-TP have been coordinated with the treatment recommendations in this CLR.

The primary treatment approach for circulation features is to protect and maintain, and where appropriate rehabilitate, the historic rural character of park roads, to include the cultural and natural resources within their corridors. Specific recommendations regarding these objectives, as well as rehabilitation of cultural features and expanded interpretive opportunities are provided below.

REHABILITATE HISTORIC CIRCULATION SYSTEM [MAP 6-11]

- Preserve key aspects of historic road character including spatial experience, views, width, surface materials, and edge conditions.
- Consider gate closures to limit through traffic from outside the battlefield. Those considered for closure in the TIS-TP include park entrance locations on Lytle Road, Long Hollow Road, Osburn Road, Wilder Road, Alexander’s Bridge Road, and Jay’s Mill Road.
- Consider circulation changes on Brotherton Road (one-way westbound), Viniard-Alexander Road (one-way eastbound), and Jay’s Mill Road (one-way northbound). The TIS-TP has found that these circulation changes would further decrease daily traffic along LaFayette Road south of Brotherton Road, improve the interpretive experience for Park users and visitor safety, and support future development of the expanded automobile tour route.
- Rehabilitate pull-offs and parking areas along road corridors, where necessary, while maintaining an appropriate historic character.
- Evaluate informal pull-offs based on need and resource protection. Those determined necessary should be formalized, while the others should be removed.
- Remove or screen intrusive features within circulation corridors as much as possible.
- Ensure that all signs along the road corridors are consistent throughout the battlefield and as unobtrusive as possible. See recommendations in the Small-scale Feature section of this report.
- Protect and enhance views from circulation corridors by following CLR treatment recommendations regarding the proper management of forests and agricultural fields.
- Establish or maintain a minimum 100-foot-wide vegetative buffer along both sides of the relocated U.S. Highway 27.

Where road resurfacing is necessary, the following recommendations apply:

- Maintain existing road grade as much as possible; if regrading is necessary, conform to the natural topography to the greatest extent possible.
- Avoid excessive cuts/fills that appear unnatural.
- Protect and preserve historic circulation system features (bridges, culverts, etc.)

- Maintain existing road cross section as much as possible; take measures to reduce traffic volume/speed before changing road architecture to accommodate increased traffic.
- Use stabilized turf shoulders, where necessary.
- Do not stripe road, unless necessary for traffic volume/speed safety.
- Resurface with materials that appear natural in color and texture to the surrounding environment). Asphalt prime and double seal road surface (with rough textured browns and/or grey aggregates), or concrete with exposed aggregate surface treatment is recommended. Avoid asphalt road surface treatments that appear black/blue-black in color.

DEVELOP PLAN FOR DOCUMENTING AND MAINTAINING HISTORIC CIRCULATION FEATURES [MAP 6-12]

Relatively little documentation exists of the stone bridges, culverts, headwalls, and remnant stone-lined drainage ditches within Chickamauga Battlefield. Construction of these features occurred during the commemorative period (1890-1942) as the roads were improved. While there are only five stone bridges within the Park, there are over 100 culverts constructed of stone or concrete, with associated stone or concrete headwalls located throughout the battlefield. The Historic American Engineering Record (HAER) project conducted in 1998 provides a detailed typological graphic description of these features, but documentation of the location and condition of individual structures does not exist. Also, very little information is available on the several miles of stone-lined drainage ditches constructed along roads during the early commemorative period. Only remnants of these remain today, as most were removed during the 1980s. Those that remain have become covered with earth and debris during road work. It is recommended that the Park develop a plan for documenting and maintaining these historic circulation features, as follows:

- Inventory, document, and locate by GPS all bridges and culverts, by type and date of origin, and remaining stone lined drainage ditches.
- Integrate this data into the database of cultural landscape features developed during the 1996-1997 GPS Field Survey. It is recommended that a photographic inventory be integrated into this database for future maintenance and management purposes (photos can be “hot-linked” to individual features in the Geographic Information Systems (GIS) database).
- Integrate these features into the List of Classified Structures (LCS) database, if not already listed, based upon NPS criteria for LCS management. If some historic circulation features do not meet criteria for addition to the database, it is recommended that their inventory data be managed through the GIS database.
- Perform an initial condition assessment of all circulation features and integrate this information into the LCS and/or GIS database, as appropriate. This assessment should



serve to identify major structural problems or decay. Where maintenance is necessary, the following guidelines apply:

- Photograph in detail all stone work prior to repair;
 - Preserve original materials and finishes;
 - Repair damages by conserving as much original material as possible;
 - Replace features in-kind that are beyond repair, taking care to match original materials;
 - If unavailable, replace with comparable materials to match original characteristics;
- Establish a preservation maintenance plan for these historic circulation features that is specific to Chickamauga Battlefield. Consider the following information in the development of the plan:
- Annual existing conditions survey
 - Materials analysis, sources, costs
 - Measured drawings/original drawings
 - Routine/cyclical maintenance tasks
 - Checklists and calendar of routine tasks
 - Consultants/contractors
 - Cost data
 - Maintenance procedures
 - Original construction records
 - Maintenance & repair records
- Train maintenance employees in proper procedures to ensure no further damage to stone culverts, bridges, and drainage ditches occurs during maintenance operations such as mowing and road repair.

RESTORE HISTORIC ROAD CHARACTER [MAP 6-13]

While it served as the corridor for U.S. Highway 27, LaFayette Road was improved to meet state requirements with two twelve-foot-wide travel lanes, eight-foot-wide shoulders, and a regraded (raised) road surface along many sections. Since the relocation of U.S. Highway 27, the speed limit has been reduced from 45 to 35 mph, with a 30 mph section near the Visitor Center. This relocation has resulted in reductions in traffic volume on LaFayette Road from an average of 13,200 vehicles per day in 2000 to 3,700 vehicles per day in 2002. Commercial vehicles are also now prohibited. One of the strategies recommended for additional evaluation in the GMP update



process in the TIS-TP was to lower the speed limit on LaFayette Road even further in order to reduce non-park traffic through the battlefield and the conflicts that arise between those seeking a contemplative visitor experience and those interested in cutting through the battlefield on their way to other destinations.

Lower speed limits and traffic volumes provide opportunities to modify the character of LaFayette Road to more closely reflect historic conditions. These opportunities include regrading of the horizontal and vertical alignment of the roadbed to better conform to the natural topography and reducing the width of travel lanes and shoulders. Opportunities to change the road's surface material to be less intrusive to the historic scene and better represent historic conditions also exist. Given these opportunities, several alternatives for road character restoration should be considered.

1) *Restore historic road corridor to reflect the character of the battle period.*

At the time of the battle, roads were unpaved and served only horse and wagon traffic. Road alignments likely followed the natural topography with little or no drainage improvements. commemorative period road improvements, including regrading and resurfacing, as well as the construction of stone culverts, headwalls, bridges, and gutters, were undertaken to address these issues. These commemorative period features now contribute to the historical significance of the Park. Even with the reduced traffic speeds and volumes, current maintenance and safety issues associated with these conditions would make restoration to Civil War-era conditions unfeasible and unsustainable at a large scale.

While this alternative is not recommended for any one road in particular, it may be possible to restore portions of historic road beds or traces that are not currently part of the existing road network. Although alignments of the current road system very closely correspond with historic alignments, there are a few instances where deviations occur. This is the case along the eastern most portion of Dyer Road and a one-quarter mile segment of LaFayette Road located along the eastern edge of historic Brock Field (Wilder Field East). LaFayette Road is considered the most significant road corridor in the battlefield as it is recognized as an important north-south supply route during the Civil War, and the line along which Confederate forces engaged Union troops during the September 1863 battle. Battle-era restoration of a segment of this historic road corridor provides opportunities to create an interpretive exhibit open to pedestrian traffic and educate visitors about the conditions of the 1863 circulation network and its role in the battle. This approach has been undertaken at a large scale at the Minute Man National Historical Park in Massachusetts, where restoration of the five-mile Battle Road Trail has been designed to recapture the sense of the colonial landscape in selected areas in order to provide visitors with a feeling of the physical conditions that existed on April 19, 1775. If this alternative is considered, the following recommendations would apply:

- Conduct necessary research and archeological investigations to determine if the battle period road horizontal/vertical alignment and width can be determined.
- Identify potential impacts to archeological resources within the road trace corridor and recommend precautionary steps or methods to protect those resources.



- Perform archeological clearing of the site by a qualified archeologist.
- Maintain the road trace as an unpaved surface with pedestrian access.
- Install interpretive signage to educate visitors about the conditions of the 1863 circulation network and its role in the battle.

2) *Restore road corridor to reflect the character of the commemorative period.*

This alternative seeks to restore LaFayette Road to reflect the character of the early commemorative period, when the Park Commission rehabilitated the road network within the battlefield. The costs associated with this alternative would be very high, due to the large-scale research and archeological investigations necessary to determine if commemorative period road horizontal/vertical alignment and width can be determined. This would likely involve test sites along several segments of the road. Recommendations relating to this alternative include:

- If the historic alignment can be determined, the Park, working in cooperation with the Federal Lands Highway Division of the Federal Highway Administration (FHWA), should compare these to new road design controls and criteria based upon the lower speed limit (design speed) and daily traffic volumes (design volume) to evaluate safety and feasibility.
- If restoration of commemorative period road architecture is determined feasible:
 - Conduct further evaluations to comment on the potential impacts to archeological resources within the road corridor and recommend precautionary steps or methods to protect those resources.
 - Inventory, document, and locate by GPS all stone bridges, culverts, headwalls, and remaining stone-lined drainage ditches.
 - Protect and maintain stone bridges, culverts, headwalls, and remaining stone-lined drainage ditches throughout the restoration process.
 - Establish and maintain stabilized turf shoulders, as necessary, to contribute to the rural quality of road corridor.
 - Discourage the development of any design that requires safety barriers, as these do not appear as part of the historic scene.
 - Research, in association with the Federal Lands Highway Division of the FHWA, alternatives to the existing asphalt road surface to better represent the texture, sound, and color of historic gravel surfaces.

3) *Rehabilitate the road corridor to establish rural character more reflective of the battle period, while protecting the contributing resources of the commemorative period.*

This alternative seeks to rehabilitate the existing road corridor in order to establish a greater sense of rural character than what currently exists. Unlike the previous alternatives, it does not seek to accurately restore road architecture to any one period, but rather rehabilitates the existing road alignment to better conform to existing topography, reduces the road cross-section and



minimizes visually intrusive features in order to enhance rural character. While the costs associated with this alternative are high, the need for extensive archeological investigation and documentation associated with restoration is not as great. Recommendations associated with this alternative are as follows:

- Work with the Federal Lands Highway Division of the FHWA to develop new road design controls and criteria based upon the lower speed limit (design speed) and daily traffic volumes (design volume).
- Design road alignment to conform to the natural topography as much as possible, while avoiding sensitive archeological resources and commemorative period features.
- Maintain historic stone bridges and culverts as integral components of the road design, rather than as isolated features.
- Establish and maintain stabilized turf shoulders, as necessary, to contribute to the rural quality of road corridor. Shoulder widths should be reduced based upon new design controls and safety criteria.
- Work with the Federal Lands Highway Division of the FHWA to continue research on alternatives to the existing asphalt road surface to better represent the texture, sound, and color of earthen road surfaces.
- Consider the use of steel-backed timber guardrails similar to those used elsewhere in the Park when safety barriers are deemed necessary.

EXPAND AUTO-TOUR AND INTERPRETIVE SITES [MAP 6-14]

The automobile tour route within Chickamauga Battlefield has been in place since 1957. This route incorporates designated tour stops that identify key points on the battlefield which correspond to numbered descriptions on the official map and guide distributed at the visitor center. An expansion of this tour route has been considered several times over the years (1964, 1977, and 1982). However, recommendations were never implemented due to safety considerations relating to heavy traffic along LaFayette Road (formerly U.S. 27). A tape/CD tour, which is available for purchase at the visitor center, does follow the battle action for both days. The current set of waysides supports interpretation of this route.

Over the past several years, the Park staff has again begun to reconsider official expansion of the tour route in order to better interpret events that took place on the eastern side of the Park, and which correspond to troop movement and contact early in the battle (September 18 and 19, 1863). While alternatives for the expanded tour route are still in draft form and have not yet been adopted by the NPS, they are recognized here as potential tour routes which can play a role in interpreting the history and significance of the battlefield and shaping the visitor experience. The following criteria are consistent with the approach recommended in this CLR:



- Tour route should support the goals of the Long-Range Interpretive Plan.
- Tour route should maximize interpretive opportunities for both the first and second days of the battle.
- Tour route should provide for a smooth circulation flow and minimize back-tracking.
- Tour route should, as much as possible, present events in chronological order.
- Tour route should minimize safety hazards as much as possible.

Issues associated with two of these alternatives (which have been found to represent the broadest expansion of the tour route and interpretation of landscape features) have been identified for future planning purposes. It is recommended that the Park further evaluate these issues and opportunities during its GMP update planning process, as they relate to the Long-Range Interpretive Plan, and consider the issues and impacts to cultural landscape resources, as identified below.

Alternative One: Alexander’s Bridge Road to Jay’s Mill Road to Brotherton Road to LaFayette Road

The following visitor circulation changes would apply to this concept: Starting at the visitor center, visitors would proceed south on LaFayette Road to Alexander’s Bridge via Alexander’s Bridge Road. From there, visitors would travel north on Alexander’s Bridge Road to Jay’s Mill site. Here a gate closure at the end of Jay’s Mill Road would prevent thru traffic between it and Reed’s Bridge Road. The tour would then continue west along Brotherton Road, with a stop at Brotherton Cabin before turning south on LaFayette Road to the Heg Monument. Visitors would then turn around to proceed north on LaFayette Road, with a stop at Kelly Cabin, before picking up the existing auto-tour. Changes to the current Day Two auto-tour include west-bound travel along Dyer Road before proceeding south on Chickamauga-Vittetoe Road to the Wilder Monument. Visitors will no longer travel along Glenn-Viniard Road, but rather use the existing parking area located to the east of the Wilder Bridgade Monument.

Issues and opportunities associated with Alternative One:

- Interpretation of Alexander Farm. As recognized by the Park, this is a good opportunity to establish the historic context of the rural landscape at the time of the battle. It was a successful farm with 38 slaves. It was also the site of a Confederate field hospital. Currently, the historic fields require restoration, and may present an opportunity to interpret the Park’s landscape restoration program.
- Interpretation of Alexander’s Bridge/Chickamauga Creek. The opportunity presented here is significant, as no interpretive stops or waysides currently exist to interpret the crossing of Chickamauga Creek and its role in the battle. It is the only improved road that provides public access to the creek within the bounds of the Park. While the bridge does not retain integrity to the time of the battle, it does reflect the improvements of the early commemorative period and the character of the surrounding area remains rural.





- Improved Circulation. This alternative takes advantage of the TIS-TP recommended one-way conversion of Jay’s Mill and Brotherton Roads, allowing for greater parking opportunities along those roads, as well as possible accommodation of a bike lane.

Alternative Two: Reed’s Bridge Road to Jay’s Mill Road to Brotherton Road to LaFayette Road

The following visitor circulation changes would apply to this concept: Starting at the visitor center, visitors would travel east on Reed's Bridge Road and travel outside the Park boundary to Reed's Bridge where a new interpretive station and parking area would interpret the crossing of the creek. From here, visitors would travel to Jay’s Mill site. Like Alternative One, the tour would then continue west along Brotherton Road, with a stop at Brotherton Cabin, before turning south on LaFayette Road to the Heg Monument. Visitors would then turn around to proceed north on LaFayette Road, with a stop at Kelly Cabin, before picking up the existing auto-tour. This alternative also recommends changes to the current Day Two auto-tour to include west-bound travel along Dyer Road before proceeding south on Chickamauga-Vittetoe Road to the Wilder Monument.

Issues and opportunities associated with Alternative Two:

- Interpretation of Reed’s Bridge/Chickamauga Creek. As recognized by the Park, this site is desirable for future land acquisition in order to interpret the crossing of the creek. However, this road lacks the integrity of many other battle-era roads within the battlefield. It also passes briefly through a small residential development outside the Park boundary. The current visitor experience along this road is also compromised by heavy traffic. This bridge also lies outside the Park boundary and lacks historic integrity. Current conditions do not provide a safe area for visitor auto pull-off or pedestrian access. Significant changes would need to be implemented (such as road widening to create a pull-off area, pedestrian trail construction to facilitate views to and from the bridge, additional signage for wayfinding and safety improvements, accommodations for turn-around areas, etc.). The cost of these improvements would have to be considered within the context of the surrounding area (which has little historic integrity, and includes modern roadside residential development).
- Improved Circulation. This alternative does not take advantage of the TIS-TP recommended one-way conversion of Jay’s Mill Road.

Issues and opportunities associated with both Alternative One and Two:

- Interpretation of Winfrey Field. The Park has identified this site as a popular stopping point to explore night-fighting stories and living history programs. An expanded parking area and interpretive wayside would be necessary.
- Interpretation of Brock Field. The Park has identified this site as a good location for interpreting the continuing ebb and flow of fighting that occurred on September 19, 1863. An expanded parking area and interpretive wayside would be necessary.





- Interpretation of Brotherton Cabin. This alternative shifts the parking further south along LaFayette Road so that visitors following this new route can make a left hand turn, park, and then proceed south to Viniard Field. The existing parking area would be removed.
- Interpretation of Kelly Cabin. Currently Kelly Cabin is not recognized as a formal interpretive stop within the battlefield. As one of only three contributing battle period structures within the battlefield, it is important to take advantage of this resource. The Kelly Farm site is also the only one of the three historic farmsteads to have an orchard and reestablishment of the 1863 orchard at this site would also improve visitor interpretation.
- Interpretation of the Breakthrough. This alternative recognizes the park’s desire for an expanded parking/interpretive stop for the Confederate Breakthrough at Brotherton Cabin.
- Interpretation of Longstreet’s Headquarters/Dyer Road. The Park has identified this site as a new stop along the auto tour for Day Two. It would require an expanded parking area. An interpretive wayside is already located here.
- Parking at Wilder Brigade Monument. Both alternatives recommend visitors access the Wilder Brigade Monument from the existing eastern parking lot, after which they would then turn around and proceed north on Wilder Road to pick up the existing auto route along Glenn-Kelly Road. This may create two-way traffic congestion on the west side of the monument where a small parking area and the Lytle Road intersection converge. Wilder Road is not currently part of the existing auto-tour.

Recommended Auto-Tour

Based upon the issues and opportunities identified above, Alternative One is preferred because it results in greater options for interpretation of the cultural landscape and an improved visitor experience by avoiding higher traffic volumes along Reed’s Bridge Road and its associated areas of lower integrity. In addition, it is recommended that the park consider converting Wilder Road to one-way (southbound) and maintaining the connection between the existing eastern parking lot and Glenn-Kelly Road to avoid congestion along the west side and facilitate loop circulation around the monument.

ESTABLISH LOOP TRAIL TOUR [MAP 6-15]

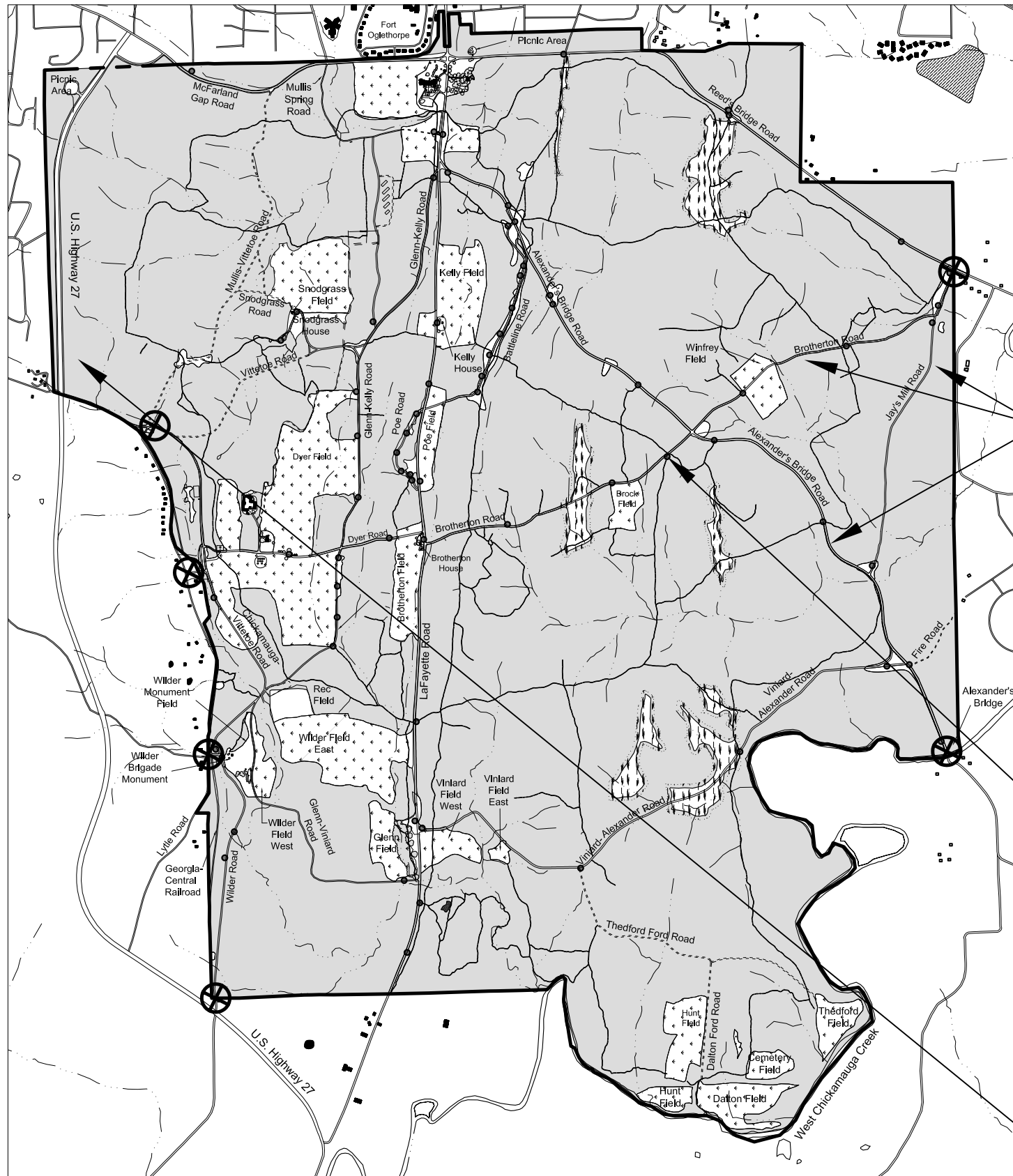
Chickamauga Battlefield currently has an extensive network of trails that provides an alternative experience to the auto-tour, allowing visitors an up-close and personal experience of the terrain and vegetation that troops would have experienced at the time of the battle. Some trails are designated for pedestrian use only, while others are designated for both horse and foot traffic.



The majority of the trails within the battlefield do not follow historic road corridors and their dates of origin are currently undetermined. While a few of the trails, such as the Sawmill Fork Trail, Hall's Ford Trail, and Kelly Road Trail follow historic road beds that date to the battle period, these trails are mere segments and do not necessarily provide a convenient nor comprehensive network for a pedestrian tour of the battlefield.

It is recommended that the Park consider developing a designated loop trail tour as an alternative to the auto-tour route by utilizing the existing trail network. A recommended seven-mile loop is delineated on Map 6-14, which provides access to the majority of the interpreted waysides associated with the current auto-tour. Although this route follows existing trails and closed roads as much as possible, there are a few areas where connections between trails are missing and would need to be established if this recommendation was implemented. Shorter loop tours should also be considered for visitors who are not interested in a full-day hike. These would require sharing some of the roads with vehicular traffic. Opportunities and constraints to the route are as follows:

- Trail begins at Visitor Center where visitors can orient themselves to the battlefield before walking to Tour Stops One and Two using existing trails.
- Visitors will be able to take an existing trail as a side excursion to the Kelly farmstead before continuing south.
- At Brotherton Road, a new trail segment would be required to allow visitors to travel west to the Brotherton Cabin (Tour Stop Four). If the battle-era alignment of Dyer Road is restored, this segment can serve to interpret the conditions of the 1863 road network and NPS restoration efforts.
- From Brotherton Field, visitors can walk south to Tour Stop Five using an existing trail.
- If Glenn-Viniard Road ceases to become part of the auto-tour, it may become a one-way road with shared pedestrian use (similar to Glenn-Kelly Road), providing access to Tour Stop Six. Otherwise, visitors should double-back to the Saw Mill Fork Trail to access the Wilder Brigade Monument from the north. Opportunities exist to interpret the Saw Mill Fork Trail as a battle-era road remnant.
- From the Wilder Brigade Monument, pedestrians can utilize the existing trail that passes through Dyer Field and which continues past Rosecrans Headquarters site to Snodgrass Hill and Tour Stop Eight.
- From the Snodgrass House, visitors can return to the Visitor Center by utilizing both existing trails and roads that have been closed to automobile traffic (Snodgrass-Savannah Road and Mullis Spring Road). Opportunities exist here to interpret the WAAC remains and Mullis Springs.



Legend

- Boundary
- Trails
- Agricultural Fields
- Possible gate closures
- Buildings
- Forest
- Streams
- Paved Roads
- Glades
- Pull-off Areas
- Gravel Roads

Preserve key aspects of historic road character including spatial experience, views, width, surface materials, and edge conditions.



Consider gate closures to limit through-traffic from outside the park.

Consider circulation changes on Brotherton Road (one-way westbound), Viniard-Alexander Road (one-way eastbound), and Jay's Mill Road (one-way northbound) IAW TIS-TP.



Rehabilitate pull-offs and parking areas along road corridors, where necessary, while maintaining the appropriate historic character. Avoid curbs and gutters unless absolutely necessary.

Evaluate informal pull-off based on need and resource protection. Those determined necessary should be formalized, while the others should be removed.

Establish or maintain a minimum 100-foot-wide vegetative buffer along both sides of the new U.S. Highway 27.



Historic road traces give a good indication of the original road grades.

Where road resurfacing is necessary, the following recommendations apply:

- Maintain existing road grade as much as possible; if regrading is necessary, conform to the natural topography to the greatest extent possible.

- Avoid excessive cuts/fills that appear unnatural

- Protect historic circulation system features (bridges, culverts, etc.)

- Maintain existing road cross section as much as possible; take measures to reduce traffic volume/speed before changing road architecture to accommodate increased traffic.

- Use turf shoulders, where necessary.

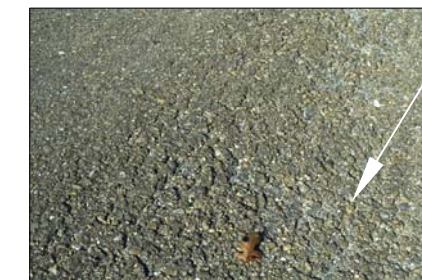
- Do not stripe road, unless necessary for traffic volume/speed safety.



Pull-off areas without curbs or gutters are less intrusive to the historic scene.

- Resurface with materials that appear natural in color and texture to the surrounding environment.

- Avoid asphalt road surface treatments that appear black/blue-black in color.



Map 6-II: Circulation

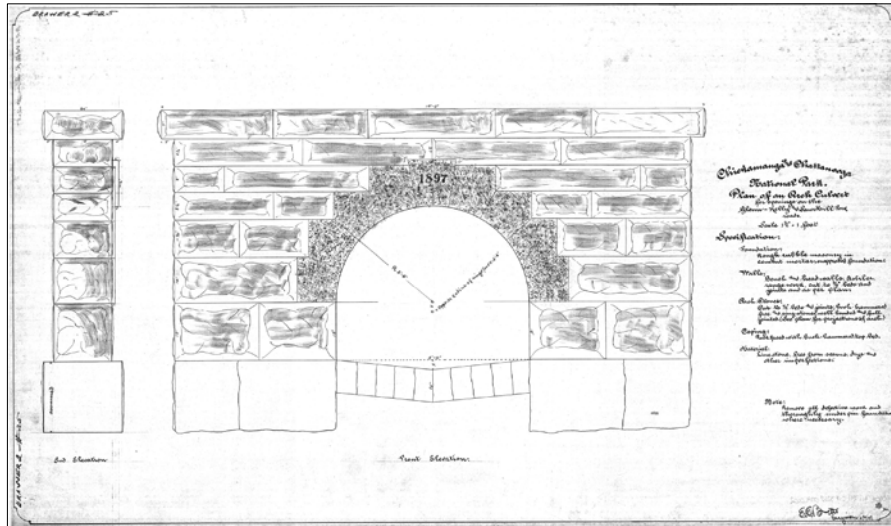
Rehabilitate Historic Circulation System



Scale 1" = 2400'



Chickamauga Battlefield
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1897 drawing and construction specifications by E. Betts of arch culvert near Glenn-Kelly and Sawmill Fork Road intersection.



Existing conditions photo of same culvert. Original drawings should become an element of the preservation maintenance plan.

Establish a preservation maintenance plan for these historic circulation features that is specific to Chickamauga Battlefield. Consider the following information in the development of the plan:

- o Annual existing conditions survey
- o Materials analysis, sources, costs
- o Measured drawings/original drawings
- o Routine/cyclical maintenance tasks
- o Checklists and calendar of routine tasks
- o Consultants/contractors
- o Cost data
- o Maintenance procedures
- o Original construction records
- o Maintenance & repair records

It is recommended that the Park develop a plan for documenting and maintaining the historic stone bridges, culverts, headwalls, and remnant stone-lined drainage ditches within Chickamauga Battlefield, as follows:

- Inventory, document, and locate by GPS all bridges and culverts, by type and date of origin, and remaining stone-lined drainage ditches.
- Integrate this data into the database of cultural landscape features developed during the 1996-1997 GPS Field Survey.
- Integrate these features (individually) into the List of Classified Structures (LCS) database, based upon NPS criteria for LCS management.
- Perform an initial condition assessment of all circulation features and integrate this information into the LCS and/or GIS database, as appropriate.

Where maintenance is necessary, the following guidelines apply:

- o Photograph in detail all stone work prior to repair;
- o Preserve original materials and finishes;
- o Repair damages by conserving as much original material as possible;
- o Replace features in-kind that are beyond repair, taking care to match original materials;
- o If unavailable, replace with comparable materials to match original characteristics.

Train maintenance employees in proper procedures to ensure no further damage to stone culverts, bridges, and drainage ditches occurs during maintenance operations such as mowing and road repair.



One of five stone bridges within the battlefield.



Example box culvert.



Example of headwall along Mullis-Vittetoe Road that has been damaged by road equipment and overgrown with vegetation.



Example arch culvert. Location, condition, materials, and construction and maintenance records information should be collected for each culvert within the Park.



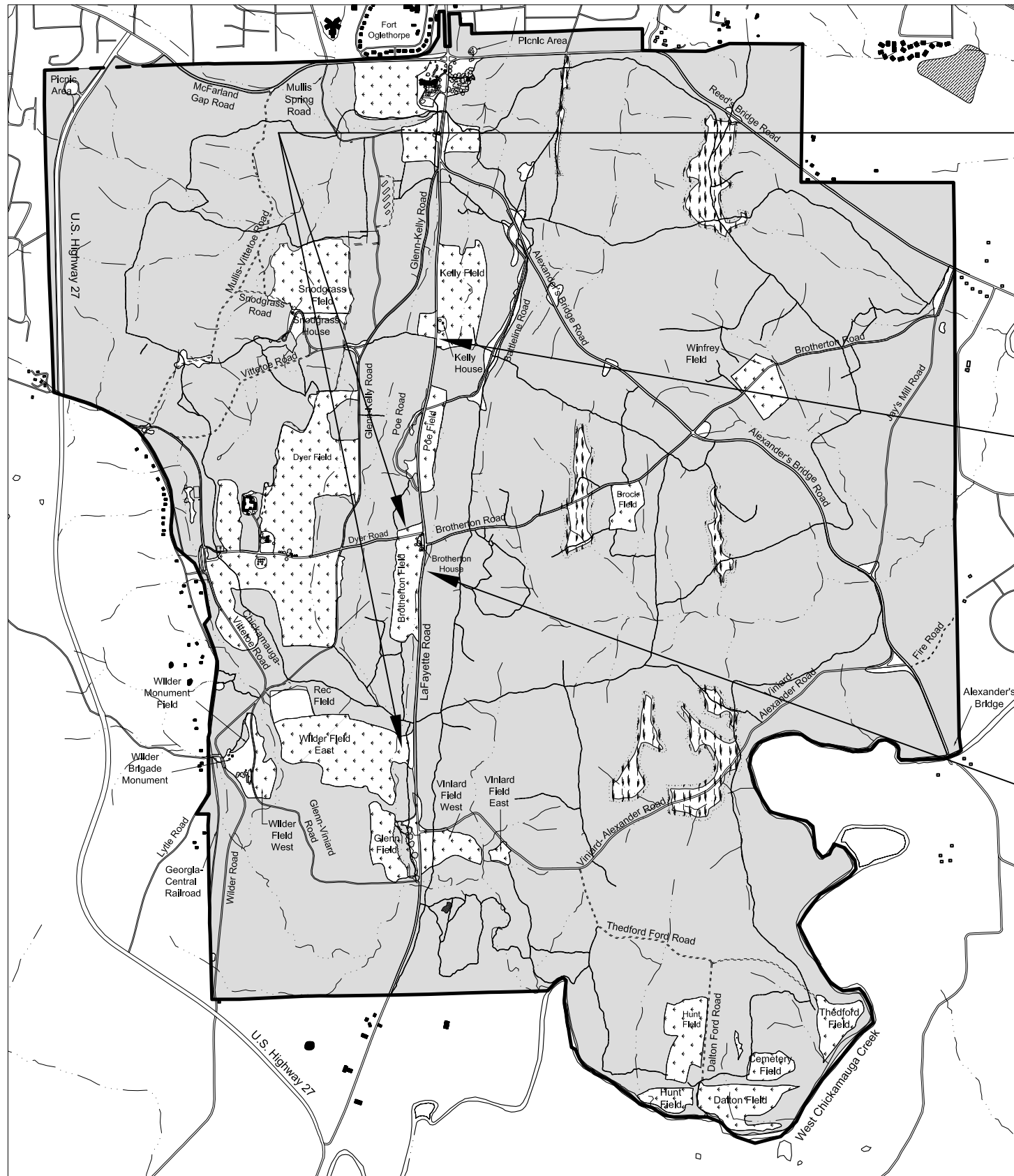
Location of all remaining remnant stone-lined drainage ditches should be documented.

Map 6-12: Circulation

Develop Plan for Documenting and Maintaining Historic Circulation Features



Chickamauga Battlefield Cultural Landscape Report

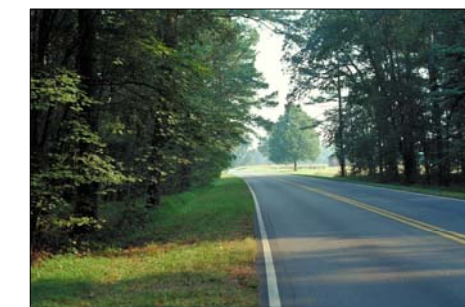


Consider restoring, to battle-era conditions, portions of historic road beds that are not currently part of the existing road network. Restoration of historic road segments presents opportunities to provide visitors with a feeling of the physical conditions that existed in 1863.

Aerial photo of existing conditions overlaid with 1863 road alignment and fencelines illustrates an opportunity for further archeological investigations of a one-quarter-mile segment of LaFayette Road.



Consider restoring road corridor to reflect the character of the commemorative period.



Comparative view of circa 1900-1915 (left) and 2003 (right) character of LaFayette Road (looking north towards Kelly Field).

Consider rehabilitating the road corridor to establish a rural character more reflective of the battle period, while protecting the contributing resources of the commemorative period.












Existing character of LaFayette Road near Brotherton Field.



Same image edited to reflect the character of LaFayette road with reduced cross-section, less fill, and no striping.

Legend

-  Boundary
-  Buildings
-  Paved Roads
-  Gravel Roads
-  Trails
-  Forest
-  Glades
-  Agricultural Fields
-  Streams



Scale 1" = 2400'

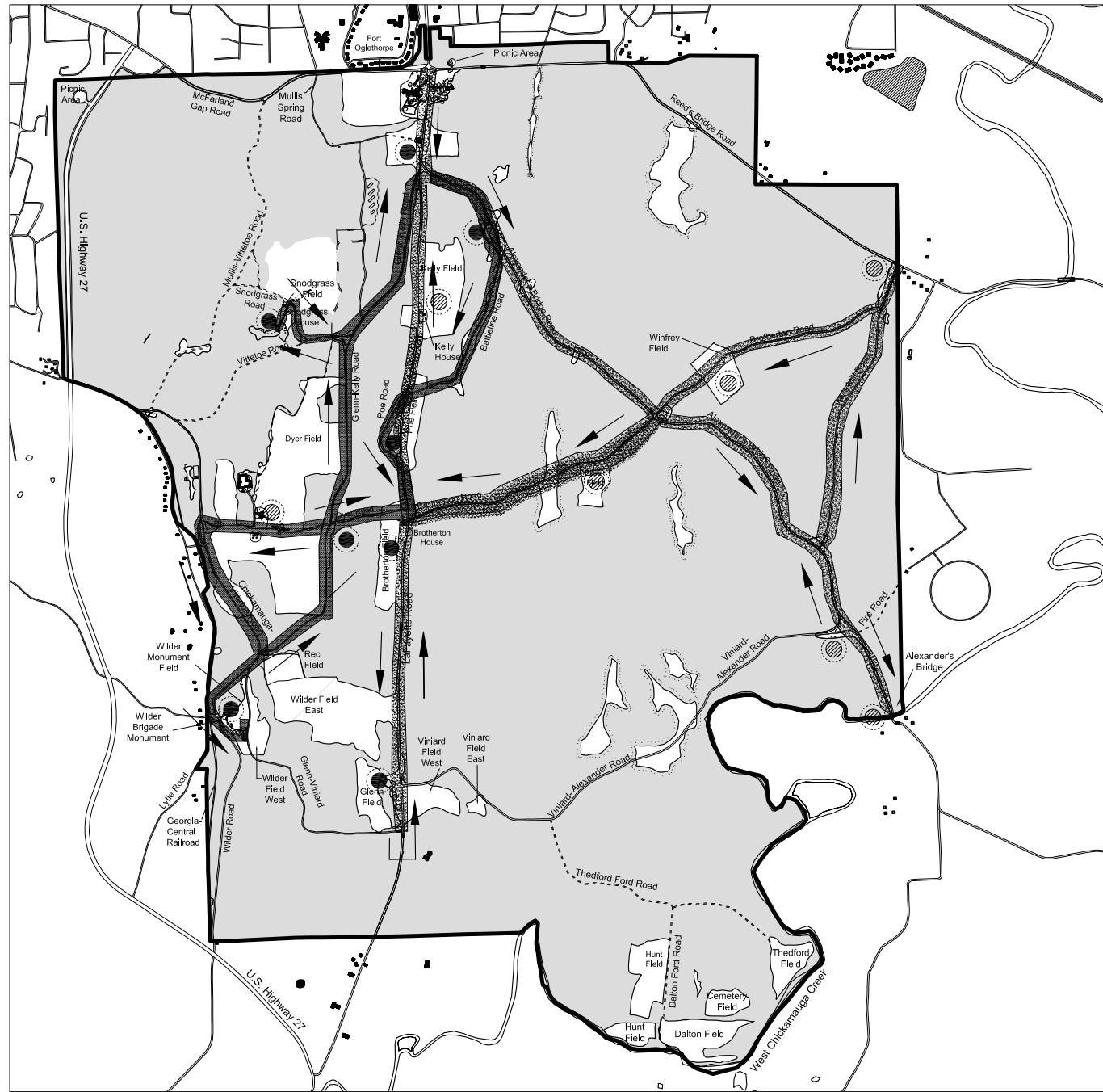
Map 6-13: Circulation

Restore Historic Road Character

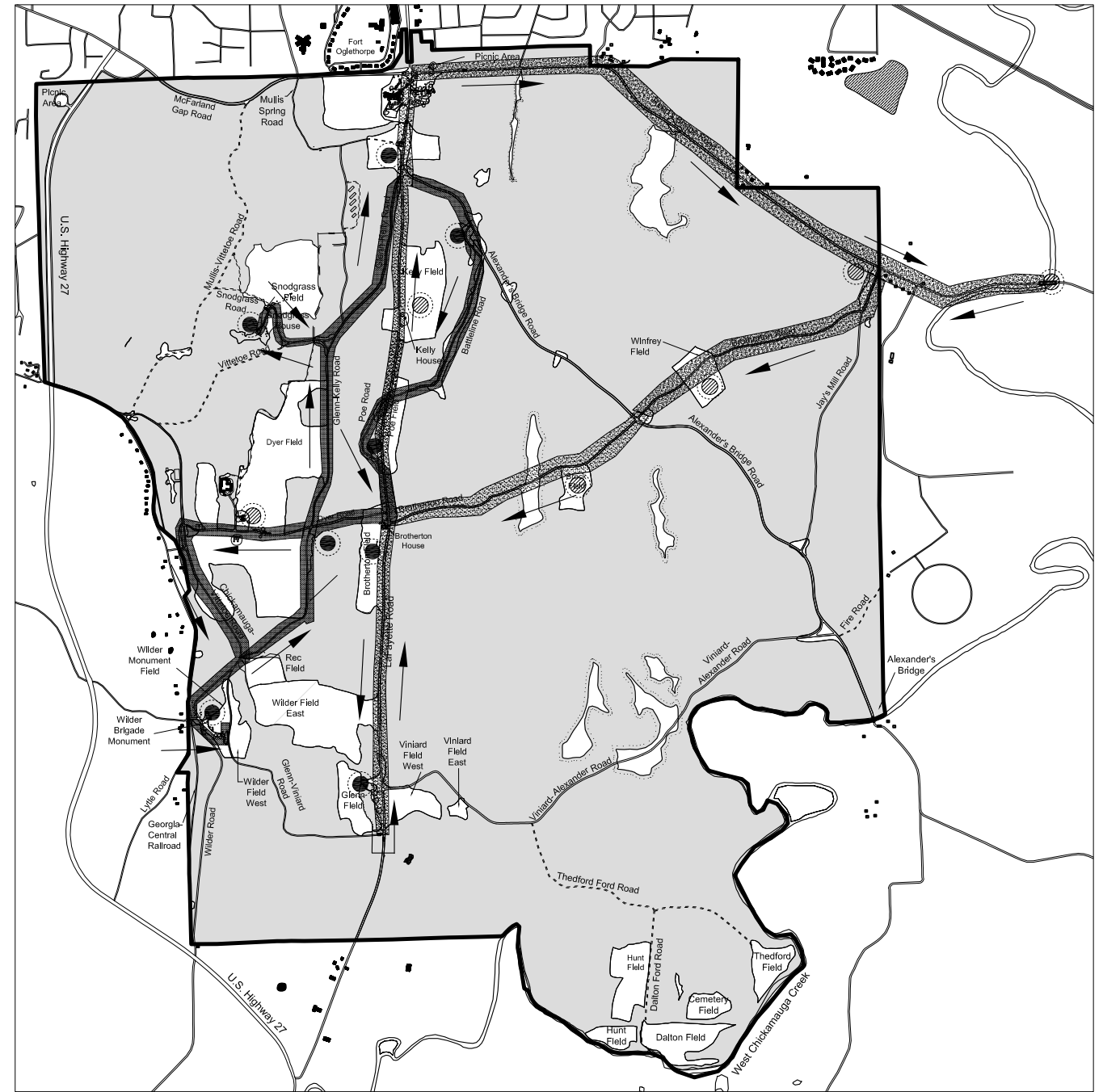


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Alternative One: Alexander's Bridge Road to Jay's Mill Road to Brotherton Road to LaFayette Road



Alternative Two: Reed's Bridge Road to Jay's Mill Road to Brotherton Road to LaFayette Road

Legend

- Boundary
- Buildings
- Paved Roads
- Gravel Roads
- Forest
- Glades
- Existing tour route stops
- Possible tour route stops
- Proposed Day-Two tour
- Proposed Day-One tour



Scale 1" = 3000'

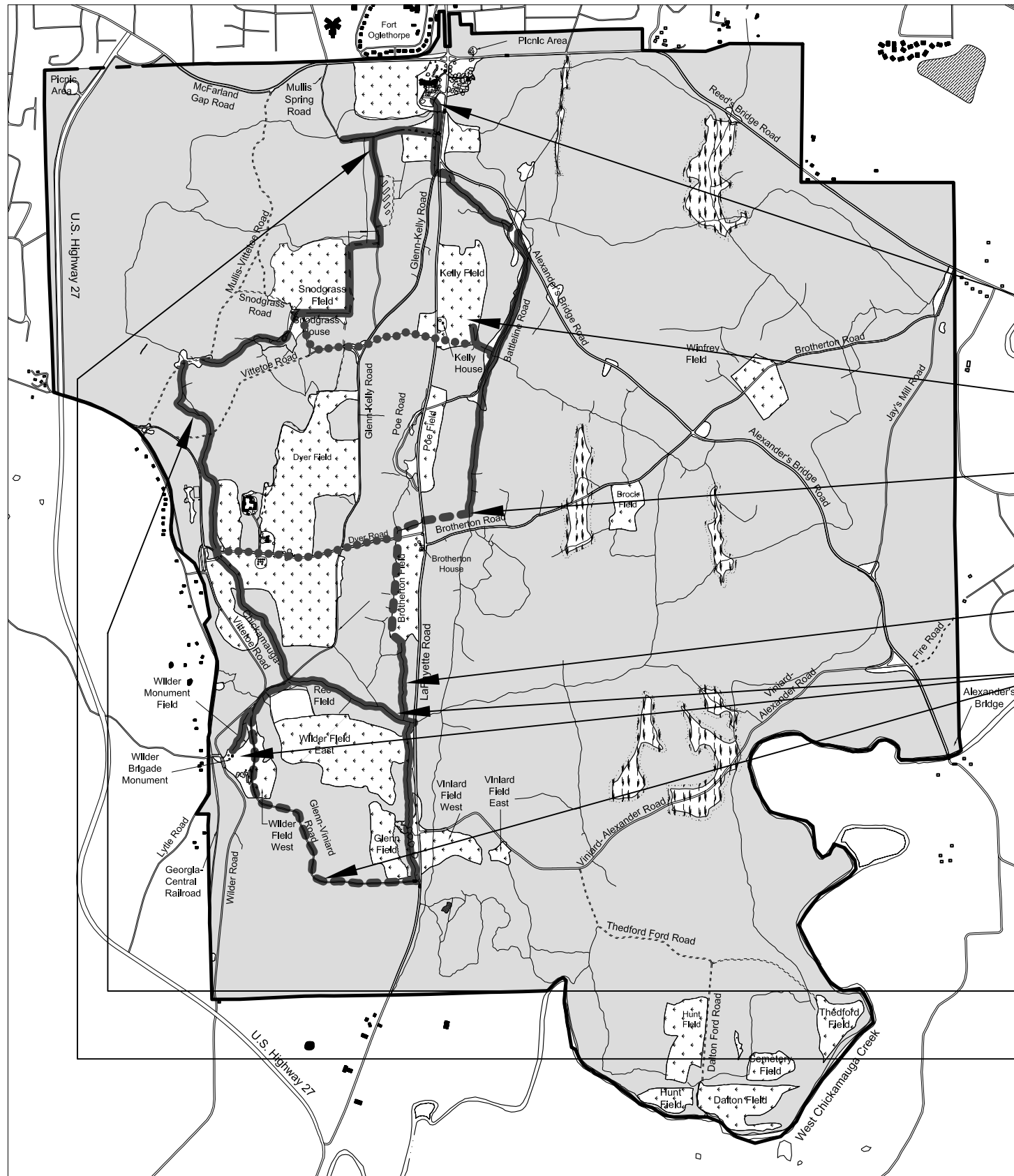
Map 6-14: Circulation

Expand Auto-Tour and Interpretive Sites



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It is recommended that the Park consider developing a designated loop trail tour as an alternative to the auto-tour route by utilizing the existing trail network. A recommended seven-mile loop provides access to the majority of the interpreted waysides associated with the current auto-tour. Although this route follows existing trails and closed roads as much as possible, there are a few areas where connections between trails are missing and would need to be established if this recommendation was implemented. Shorter loop tours (three-and-a-half miles and five-and-a-half miles) should also be considered for visitors who are not interested in a full-day hike. However, these may require sharing some of the roads with vehicular traffic. Opportunities and constraints to this route are as follows:

- Trail begins at Visitor Center where visitors can orient themselves to the battlefield before walking to Tour Stops One and Two using existing trails.
- Visitors will be able to take an existing trail as a side excursion to the Kelly farmstead before continuing south.
- At Brotherton Road, a new trail segment would be required to allow visitors to travel west to the Brotherton Cabin (Tour Stop Four). If the battle-era alignment of Dyer Road is restored, this segment can serve to interpret the conditions of the 1863 road network and NPS restoration efforts.
- From Brotherton Field, visitors can walk south to Tour Stop Five using an existing trail.
- If Glenn-Viniard Road ceases to become part of the auto-tour, it may become a one-way road with shared pedestrian use (similar to Glenn-Kelly Road), providing access to Tour Stop Six. Otherwise, visitors should double-back to the Saw Mill Fork Trail to access the Wilder Brigade Monument from the north. Opportunities exist to interpret the Saw Mill Fork Trail as a battle-era road remnant.
- From the Wilder Brigade Monument, pedestrians can utilize the existing trail that passes through Dyer Field and which continues past Rosecrans Headquarters site to Snodgrass Hill and Tour Stop Eight.
- From the Snodgrass House, visitors can return to the Visitor Center by utilizing both existing trails and roads that have been closed to automobile traffic (Snodgrass-Savannah Road and Mullis Spring Road). Opportunities exist here to interpret features that most visitors do not see, such as the WAAC remains and Mullis Spring.



Existing trail and footbridge south of the Visitor Center



Trail tour would mostly utilize existing trails and roads closed to traffic.



Mullis Spring



Interpretive sign marking entry to the South Post (WAAC remains)

Legend

- | | | | |
|--------------|--------|---|---|
| Boundary | Trails | Agricultural Fields | Non-existing trail segments |
| Buildings | Forest | Streams | Recommended route segments for shortened tour |
| Paved Roads | Glades | Proposed trail loop using existing trails | |
| Gravel Roads | | | |



Scale 1" = 2400'

Map 6-15: Circulation

Establish Loop Trail Tour



Chickamauga Battlefield
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and effective treatment options for improving the interpretation of historic agricultural character. For each site, the following recommendations apply:

- Using archeological information, consider interpreting the location of ruins and missing outbuildings through various means, including (listed in order of accuracy/complexity):
 - 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 adding 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. However, the foundation outline should clearly be of a product of its own time, so that it can be distinguished from surviving historic foundations or ruins.
 - 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 that visually communicate the complexity of the site. These may be coordinated with an interpretive wayside that graphically depicts an artist’s rendering of the farmstead during the time of the battle to represent the former character of missing structures and bring life to the historic scene.
- Reestablish the historic fencing configuration within each site. Guidelines for this project are discussed in detail under the Small-scale Features section of this treatment plan.
- Alter vegetation management regimes, such as varying mowing schedules and grass species, in such a way as to yield a diversity of appearances (i.e. pasture or uncultivated areas would be cut more frequently than cultivated crop areas, and different grass species could be used to indicate variations in “crops”). Guidelines for this project are discussed in detail under the Land Use and Cultural Vegetation section of this treatment plan.
- Reestablish historic orchard at the Kelly farm site. Guidelines for this project are discussed in detail under the Land Use and Cultural Vegetation section of this treatment plan.
- Reestablish small areas of crops at one or more of these sites. The spatial organization and topography of the Brotherton farm site provides the best opportunity for this treatment. Guidelines for this project are discussed in detail under the Land Use and Cultural Vegetation section of this treatment plan.
- 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 interpretative media in as unobtrusive a manner as possible to avoid detracting from the historic scene.

DEVELOP PLAN FOR PROTECTING & MAINTAINING COMMEMORATIVE MONUMENTS,
MARKERS, TABLETS, AND MEMORIALS [MAP 6-17]

Significant documentation exists of the commemorative monuments, markers, tablets, and memorials within Chickamauga Battlefield. Each feature has been located (with accompanying attribute data including identifying information and LCS number) through the use of Global Positioning Systems (GPS) equipment during the 1996-1997 GPS Field Survey by the Washington D.C. Cultural Resources Geographic Information Systems (GIS) office. It is recommended that this database be integrated into the management regime and used as a basis for developing a monument preservation plan. It is also recommended that key NPS staff be trained in the use of GIS technology if a GIS technician is not already assigned (ESRI ArcView 8.x is commonly used throughout the NPS system), and that a dedicated workstation be assigned for GIS use to maintain management records. The following recommendations apply:

- Perform an initial condition assessment of all monuments, markers, tablets, and memorials if this information has not been collected previously. Note observed repairs or previous preservation treatments.
- Record each feature using black and white photography. Use a mirror to help light a shaded monument, text, or engraving.
- Record additional information about each marker or monument, including the type and color of stone, their size, shape, and description of the feature. Identify the name of the artist or sculptor if known. For each tablet, record the inscription if not already documented.
- Where maintenance is necessary, the following guidelines apply:
 - Photograph monument in detail prior to repair;
 - Preserve original materials and finishes;
 - If damaged, repair by conserving as much original material as possible;
 - If beyond repair, select replacement in-kind to match original materials;
 - If materials are unavailable, replace with comparable materials to match original characteristics;
 - Conduct all cleaning and repair work in consultation with a materials conservation professional.
- Establish a preservation maintenance plan for the monuments within Chickamauga Battlefield. This plan should incorporate the historic bridges and culverts (see treatment recommendations regarding Circulation features). One of the most important precautions enabling monument protection is ensuring that damage does not occur through routine maintenance, or visitor mistreatment due to a lack of awareness of the fragility of carved stone. Proper training of maintenance personnel, visitor education, and the imbuing of stewardship values are crucial to commemorative monument protection. Regular and

periodic evaluation of monument conditions and correction of problems when they first appear are other important preventative measures to be implemented.

- Post or identify rules of appropriate conduct and behavior for those visiting the site, and their behavior regarding commemorative monuments. Convey park prohibitions against climbing, jumping, swinging, sitting, and leaning on monuments through printed brochures, park information pamphlets, notices on information boards and kiosks, or signs near collections of monuments if necessary. Where visitors are using monuments for sitting, consider providing a bench in an unobtrusive location.
- Educate maintenance employees to ensure no further damage to monuments occurs due to maintenance practices, particularly lawn mowing operations. Ensure protection of monuments through the use of hand held equipment in the vicinity of the feature, and the use of rubber bumpers and a blade guard on power mowers. Employ string trimmers around monuments; hand mow using hand clippers around soft stones such as soap stone or unstable stone.
- Avoid the use of herbicides around stone monuments, which contain salts or acids that are damaging to most stones, particularly limestone and marble. Employ fertilizer sparingly for the same reason.
- Establish procedures for handling broken monuments and fragments. Document any fragment before moving it. Identify an appropriate storage facility for fragments; fragments are frequently the object of souvenir collection. Storage facilities should accommodate, in a climate controlled environment, permanently available space that can house large, broken stones and fragments, and allow for cataloguing, and retrieval. Identification tags should be applied to each stone fragment stored.
- Maintain the area around each monument free of vines, dense foliage that helps to retain moisture, and trees and shrubs growing so close to a monument that their roots could dislodge the stone. Consider carefully the significance of the plantings themselves, however, before removing them. In some cases, a creative means for saving rare, unusual, or particularly aged plants that threaten monuments might be worth the time and consideration of saving them.
- If, for some reason, monuments need to be moved or relocated, the following recommendations apply:
 - Ensure the monument has been located by GPS and is included in the GIS database.
 - Photograph the monument prior to relocation.
 - Mark the historic location, if possible, with durable materials (such as metal pins) to assist in relocation.
 - If it is not possible to mark the historic location, use GPS equipment to relocate monument.

PRESERVE CEMETERIES AND BURIAL SITES [MAP 6-18]

The protection of cemeteries and burial sites within the boundaries of the Chickamauga Battlefield will likely range from identification through mapping and photography, protection by limiting access and development within burial grounds, maintenance, conservation of gravestones and monuments associated with burial grounds, and restoration of deteriorated or damaged gravestones and monuments.

The first effort necessary is the development of a comprehensive plan for burial ground protection. Important considerations in the development of the plan include:

- Identifying the legal body with jurisdiction over the burial ground
- Identifying the local ordinances governing cemeteries in the community
- Identifying the pertinent laws of the state regarding conservation-related activities within cemeteries
- Determining if a perimeter enclosure is needed for security and to prevent cemetery vandalism
- Documenting existing grave markers, including their inscriptions (as possible)
- Performing a condition assessment to identify any necessary conservation or restoration work

Specific recommendations for protecting burial grounds include:

- Limit or prohibit gravestone rubbing.
- Post or identify rules of appropriate conduct and behavior for those visiting the burial ground. Include hours, gravestone rubbing regulations, and prohibitions to climbing, jumping, swinging, sitting, and leaning on gravestones. Where visitors are using stones for sitting, consider providing a bench in an unobtrusive location.
- Map the graveyard using GPS and a base map to record the locations of graves, head and footstones, and other monuments.
- Record each feature using black and white photography. Use a mirror to help light a shaded stone or inscription.
- Conduct an archeological survey in conjunction with any cemetery documentation effort.
- Record additional information about each marker or monument, including the type and color of stone, their size, type, and description of the carvings. Identify the name of the carver if known.
- Assess the condition of each stone if this information has not been collected previously. Note observed repairs or previous preservation treatments.
- Record the inscriptions associated with each marker or monument, and the name, and date of death, of each individual buried within the cemetery.

Buildings, Structures, and Objects

As mentioned above, there were 24 farmsteads located within what was to become the boundaries of the Park. Altogether, these contained approximately 65 buildings and structures, including dwelling houses and domestic outbuildings such as barns, smokehouses, privies, etc. There was also a church and a log school on the battlefield. Two small cemeteries are also believed to pre-date the battle.

Research indicates that the Vittetoe, Viniard, Park, Hall, Hunt, Cooper and Thedford houses and the log schoolhouse survived the battle intact, although damaged. These buildings were subsequently removed. The Brotherton, Kelly, and Snodgrass Houses, which figured prominently in the battle, were heavily damaged in the fighting. Aside from these structures, all other historic buildings dating from the battle are no longer extant.

The Brotherton, Snodgrass, and Kelly Houses were rebuilt after the end of the war and subsequently altered. They now represent long-standing elements of the Park's interpretive program and help to create a scene similar to what existed in fall 1863. These structures, as well as the hundreds of monuments, markers, cannons, and tablets help interpret the battle by marking troop positions and important events. Rehabilitation and maintenance of these features is recommended in order to enhance the interpretive experience and ensure their preservation.

REHABILITATE INTERPRETIVE HOUSE SITES [MAP 6-16]

The Kelly House, Brotherton House and Snodgrass House are the most substantially developed interpretive stops on the tour route with parking areas, walks, interpretive materials, and historic structures. The three houses contribute to both the battle and commemorative periods and serve to represent the 24 farmsteads that were present during the battle. They provide the best opportunity for interpreting the historic character of the 1863 landscape. These sites are of critical value as no others within the battlefield depict the domestic and agricultural nature of the battle landscape. Located along the tour route, they are frequented by many visitors and the views of these sites are critical for those who experience the battlefield primarily via automobile. However, 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. Missing and/or inaccurate features make it difficult for visitors to appreciate the 1863 landscape that soldiers experienced.

The primary treatment concept for interpreted sites is the preservation, protection, and repair of historic structures and fabric, in conjunction with the reestablishment and representation of select aspects of the 1863 landscape. A more accurate representation of historic character will greatly improve interpretation at these sites and the overall park. Representation of missing structures at the house sites, combined with reestablishment of cultural vegetation, offers the most feasible



- Record the locations of ornamental plantings and other major vegetation.
- Conduct necessary maintenance and clean-up after documentation has been completed.
- Avoid damage to markers and monuments due to maintenance practices, particularly lawn mowing operations. Ensure protection of monuments through the use of hand held equipment in the vicinity of markers and monuments, and the use of rubber bumpers and a blade guard on power mowers. Employ string trimmers around stones and markers; hand mow using hand clippers around soft stones such as soap stone or unstable stones.
- Avoid the use of herbicides around stones and markers, which contain salts or acids that are damaging to most stones, particularly limestone and marble. Employ fertilizer sparingly for the same reason.
- Establish procedures for handling broken stones and fragments. Document any fragment before moving it. Identify an appropriate storage facility for fragments; fragments are frequently the object of souvenir collection. Storage facilities should accommodate, in a climate controlled environment, permanently available space that can house large, broken stones and fragments, and allow for cataloguing, and retrieval. Identification tags should be applied to each stone fragment stored.
- Maintain the area around stones free of vines, dense foliage that help to retain moisture, and trees and shrubs growing so close to markers and monuments that their roots might dislodge the stone. Consider carefully the significance of the plantings themselves to the cemetery, however, before removing them. In some cases, a creative means for saving rare, unusual, or particularly aged plants that threaten grave markers might be worth the time and consideration of saving them.
- Clean stone only in consultation with a gravestone conservation professional.
- Reset stones only if inscriptions have been obscured, or if a leaning condition threatens to lead to damage. Most stones are fragile, possibly in a weakened or brittle condition due to exposure to the elements.
- Follow the guidance available in Lynette Stanstad's *A Graveyard Preservation Primer* (Walnut Creek, CA: Altimira Press, 1995) for resetting and repairing markers and monuments.

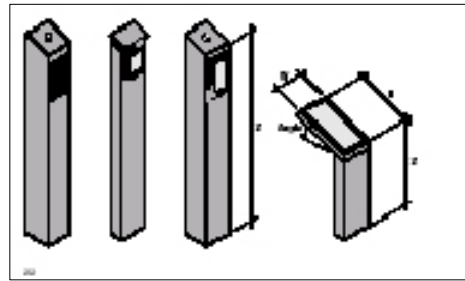




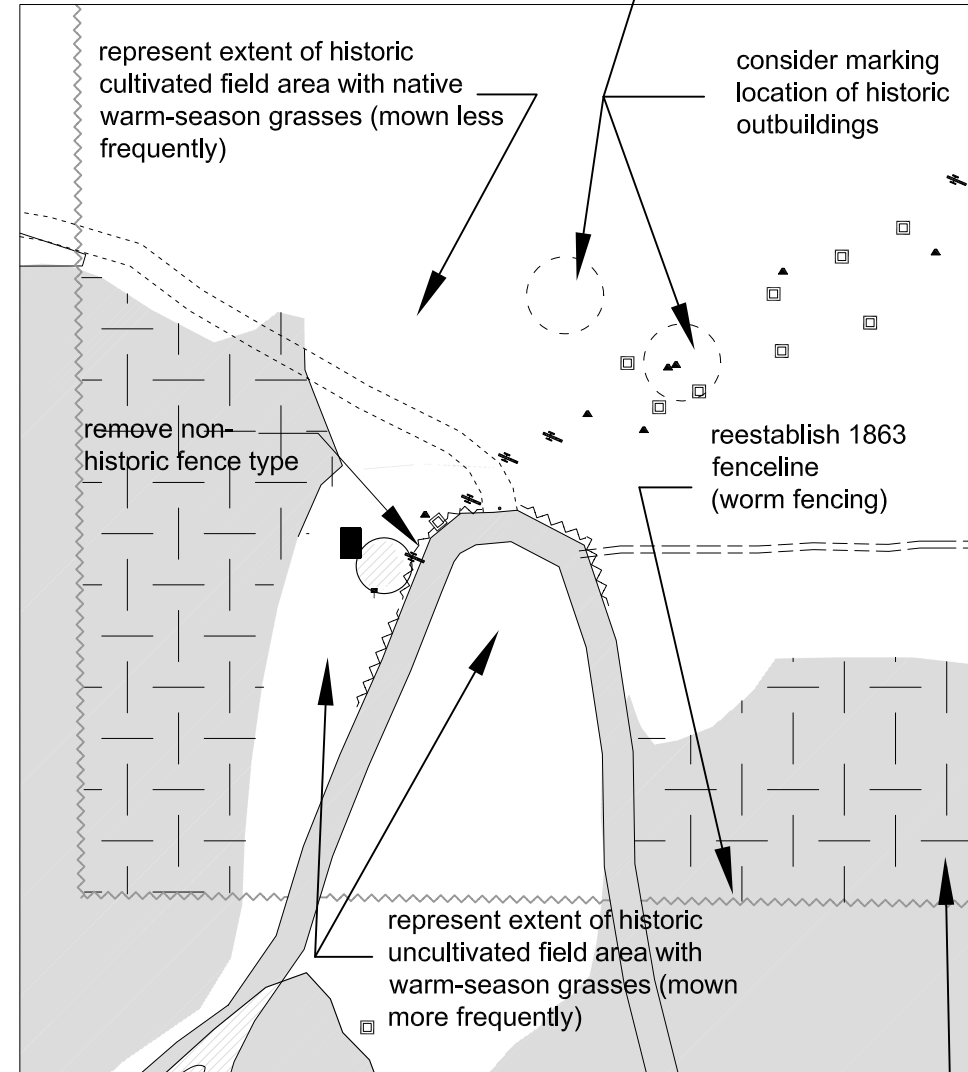
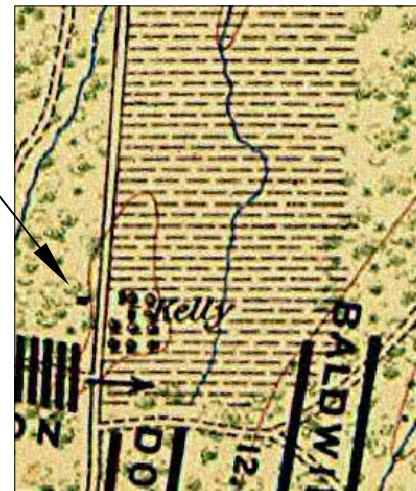
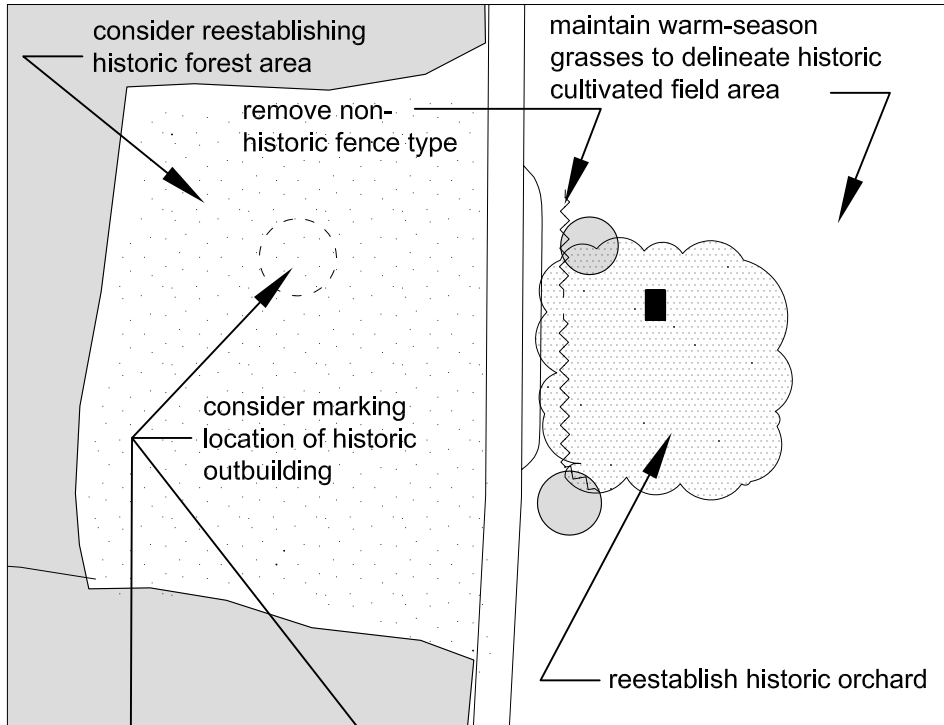
Example of foundation markings at Montpelier, VA.



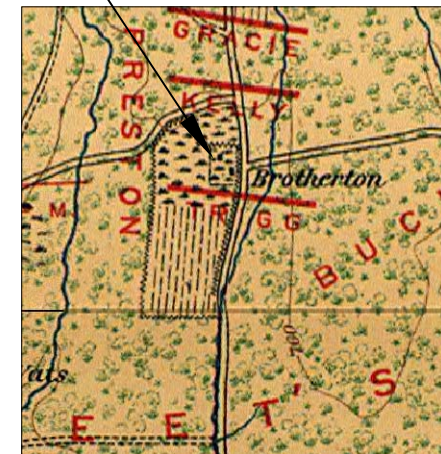
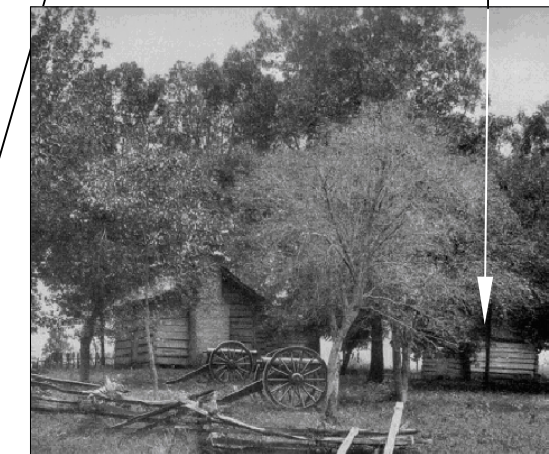
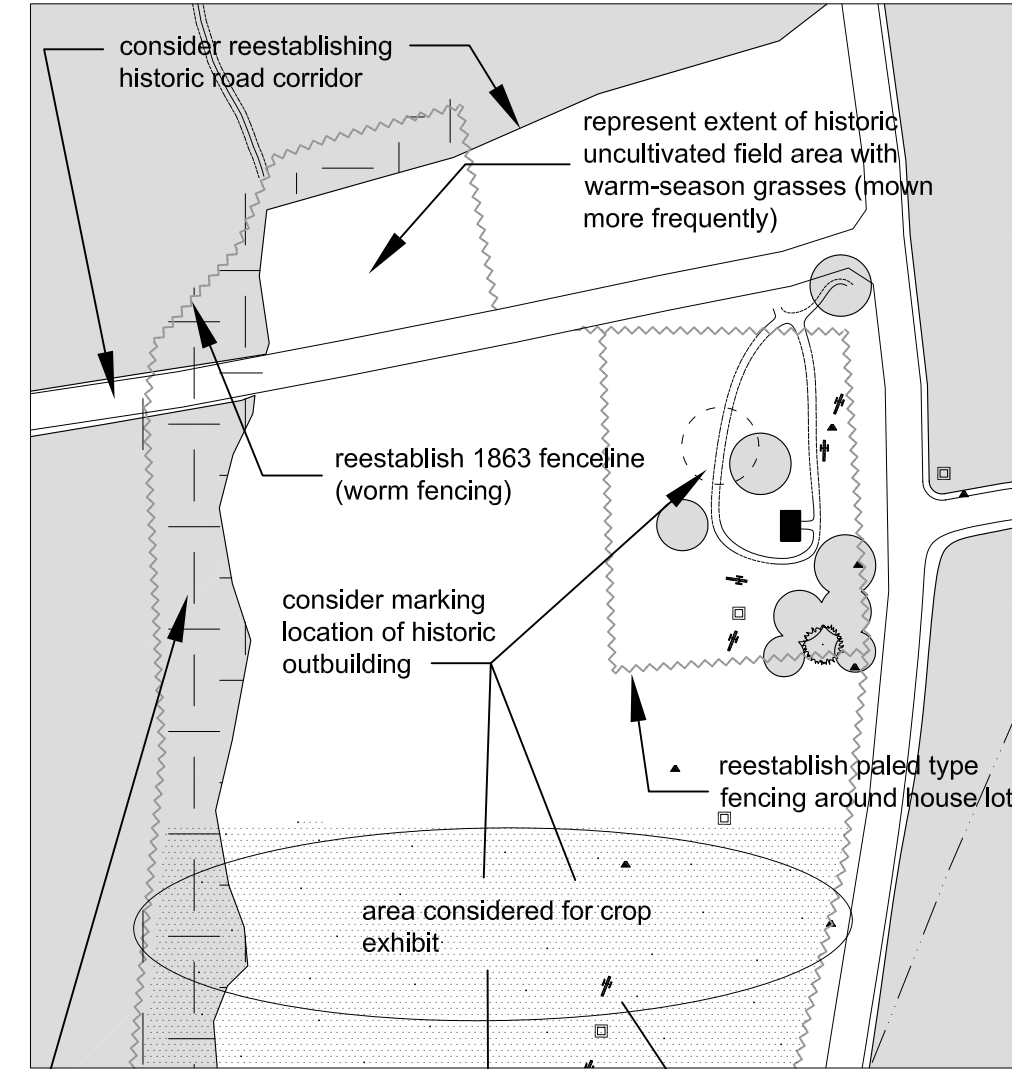
Example of ghost structure at Franklin Square, Philadelphia, PA.



Example of typical markers for historic (missing) building locations.



Representation of missing structures at the house sites, combined with reestablishment of cultural vegetation, offers the most feasible and effective treatment options for improving the interpretation of historic agricultural character.



Legend

- Boundary
- Trails
- Agricultural Fields
- Buildings
- Forest
- Streams
- Paved Roads
- Glades
- Cannons
- Gravel Roads

- Tablets
- Interpretive Signs
- Monuments, Markers, Memorials



Scale 1" = 150'

Map 6-16: Buildings, Structures, and Objects

Rehabilitate Interpretive House Sites



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Engraved text on some of the monuments has become difficult to read over time. These inscriptions should be documented, and cleaned in consultation with a materials conservation specialist.



Some monuments and markers have components missing. This should be documented in the condition assessment.

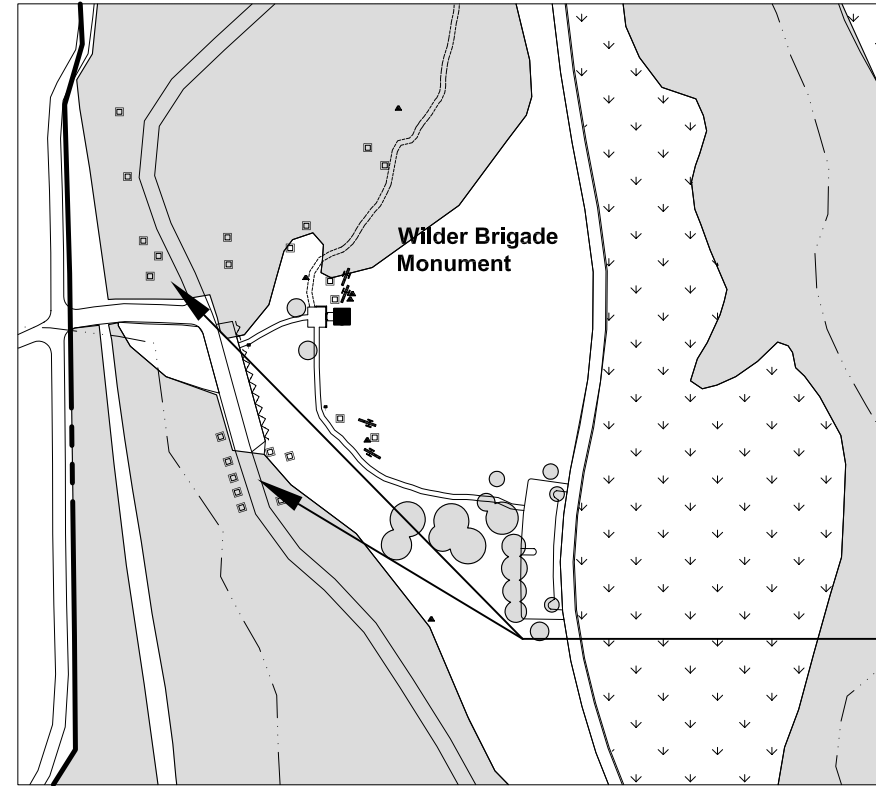


Example of damage resulting from lawn mower blades. Educate maintenance employees to ensure no further damage to monuments occurs due to maintenance practices.

Perform an initial condition assessment of all monuments, markers, tablets, and memorials if this information has not been collected previously. Note observed repairs or previous preservation treatments.

Record each feature using black and white photography. Use a mirror to help light a shaded monument, text, or engraving.

Record additional information about each marker or monument, including the type and color of stone, their size, shape, and description of the feature. Identify the name of the artist or sculptor if known. For each tablet, record the inscription if not already documented.



If, for some reason, monuments need to be moved or relocated, the following recommendations apply:

- o Ensure the monument has been located by GPS and is included in the GIS database.
- o Photograph the monument prior to relocation.
- o Mark the historic location, if possible, with durable materials (such as metal pins) to assist in relocation.
- o If it is not possible to mark the historic location, use GPS equipment to relocate monument.

Eighteen monuments surrounding the Wilder Brigade Monument were moved in anticipation of road construction in 1966 and were restored to their original location in 2001. The current GIS database requires updating to reflect relocation. The map at left approximates their current location.

Post or identify rules of appropriate conduct and behavior for those visiting the site, and their behavior regarding commemorative monuments.

Avoid the use of herbicides around stone monuments, which contain salts or acids that are damaging to most stones, particularly limestone and marble. Employ fertilizer sparingly for the same reason.

Establish procedures for handling broken monuments and fragments.

Maintain the area around each monument free of vines, dense foliage that helps to retain moisture, and trees and shrubs growing so close to a monument that their roots could dislodge the stone.



Photo of relocated monuments along Wilder Road.

Establish a preservation maintenance plan for the monuments within Chickamauga Battlefield. Where maintenance is necessary, the following guidelines apply:

- o Photograph monument in detail prior to repair;
- o Preserve original materials and finishes;
- o If damaged, repair by conserving as much original material as possible;
- o If beyond repair, select replacement in-kind to match original materials;
- o If materials are unavailable, replace with comparable materials to match original characteristics;
- o Conduct all cleaning and repair work in consultation with a materials conservation professional.

Legend

	Boundary		Trails		Agricultural Fields		Tablets
	Buildings		Forest		Streams		Interpretive Signs
	Paved Roads		Glades		Cannons		Monuments, Markers, Memorials
	Gravel Roads						



Scale: 1"=300'

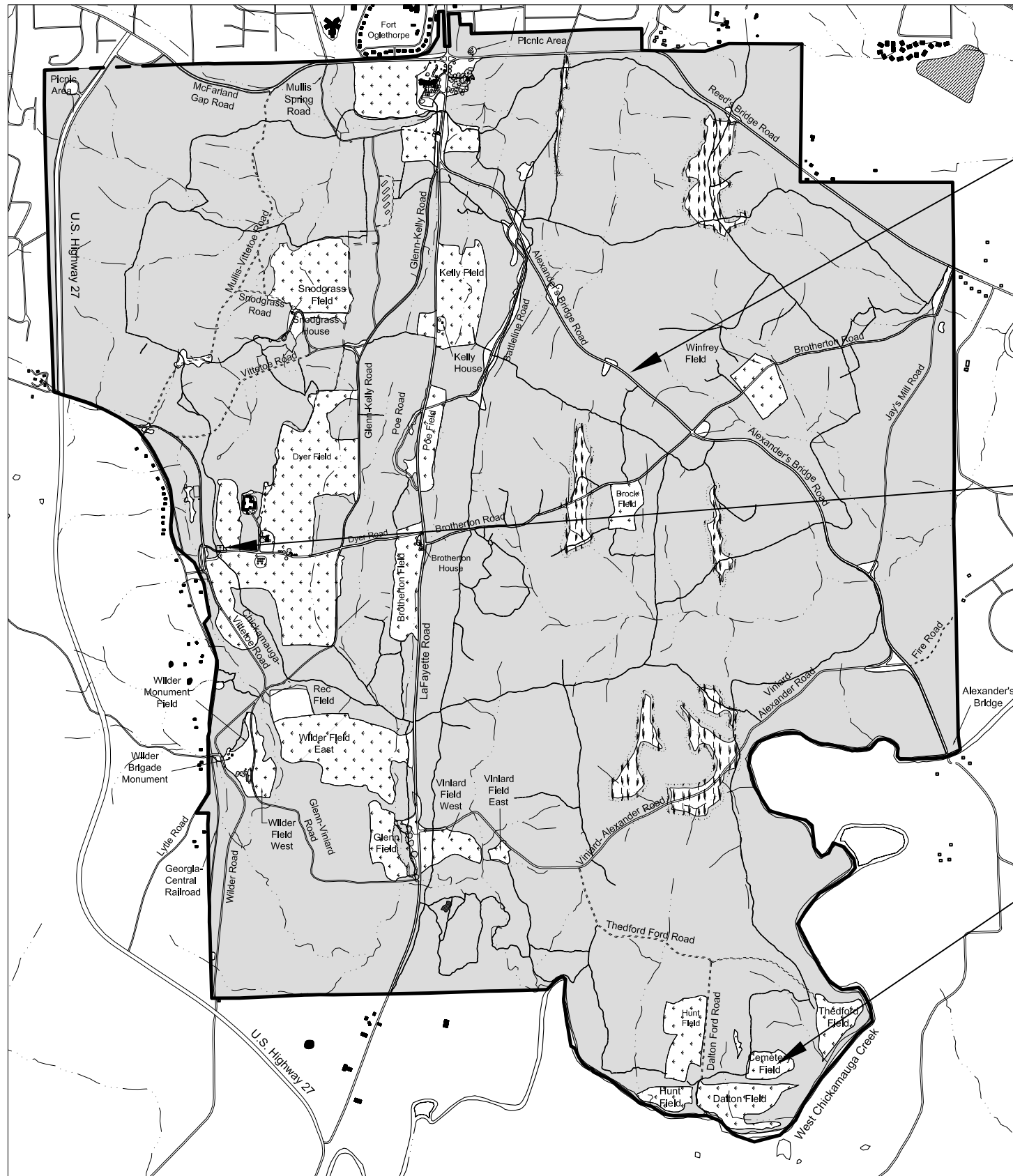
Map 6-17: Buildings, Structures, and Objects

Develop Plan for Protecting and Maintaining Commemorative Monuments, Markers, Tablets, and Memorials



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Legend

- | | | | | | |
|-----------|--------------|-----------|--------|-------------|---------------------|
| — — — — — | Boundary | — — — — — | Trails | ○ ● ○ ● ○ ● | Agricultural Fields |
| ■ ■ ■ ■ ■ | Buildings | ● ● ● ● ● | Forest | — — — — — | Streams |
| ===== | Paved Roads | ○ ○ ○ ○ ○ | Glades | | |
| ----- | Gravel Roads | | | | |



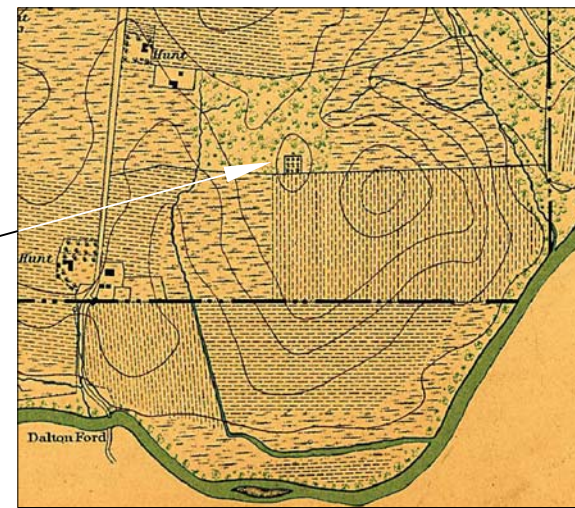
Scale 1" = 2400'



Private cemetery of Confederate soldier along Alexander's Bridge Road



Cemetery along Dyer Road



Cemetery in the vicinity of the Hunt and Thedford farms

- Develop a comprehensive plan for burial ground protection, to include:
- Identification of the legal body with jurisdiction over the burial ground;
 - Identification of local ordinances governing cemeteries in the community;
 - Identification of the pertinent laws of the state regarding conservation-related activities within cemeteries;
 - Determination of the need for a perimeter enclosure for security and prevention of vandalism
 - Documentation of existing grave markers, including their inscriptions (as possible)
 - Condition assessment to identify any necessary conservation or restoration work

- Specific recommendations for protecting burial grounds include:
- Limit or prohibit gravestone rubbing.
 - Post or identify rules of appropriate conduct and behavior for those visiting the burial ground.
 - Map the graveyard using GPS and a base map to record the locations of graves, head and footstones, and other monuments.
 - Record each feature using black and white photography.
 - Conduct an archeological survey in conjunction with any cemetery documentation effort.
 - Record additional information about each marker or monument, including the type and color of stone, their size, type, and description of the carvings. Identify the name of the carver if known.
 - Assess the condition of each stone if this information has not been collected previously, including repairs or previous treatments.
 - Record the inscriptions associated with each marker or monument, and the name, and date of death, of each individual buried within the cemetery.
 - Record the locations of ornamental plantings and other major vegetation.
 - Conduct necessary maintenance and clean-up after documentation has been completed.
 - Avoid damage to markers and monuments due to maintenance practices, particularly lawn mowing operations.
 - Avoid the use of herbicides around stones and markers.
 - Establish procedures for handling broken stones and fragments.
 - Maintain the area around stones free of vegetation.
 - Clean stone only in consultation with a gravestone conservation professional.
 - Reset stones only if inscriptions have been obscured, or if a leaning condition threatens to lead to damage.
 - Follow the guidance available in Lynette Stanstad's *A Graveyard Preservation Primer* (Walnut Creek, CA: Altimira Press, 1995) for resetting and repairing markers and monuments.

Map 6-18: Buildings, Structures, and Objects

Preserve Cemeteries and Burial Sites



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Small-scale Features

REESTABLISH HISTORIC FENCE LOCATIONS AND STYLES [MAP 6-19]

Fences are strong visual aids when used for interpretive purposes, depicting historic spatial organization and property ownership. The 1896 Betts map (of 1863 conditions) indicates the locations of fences during the battle to a high level of detail. While the map uses only a zigzag fence symbol, there were other types of fencing present on the battlefield in 1863. In period photographs, both worm fences and paled fences are visible (see Figures 2-9 and 2-20). Worm fencing, (which utilizes a large amount of materials and takes up a lot of space, but is easy to construct) was typically used in outlying areas, along roads or boundaries, and for large enclosures. Paled fences (also sometimes called palisades or picket fences) would typically have been used around smaller precincts such as house yards, gardens, or animal enclosures, as they were more labor-intensive to construct but had a minimal footprint. The paled fences in the photographs appear to be constructed of wooden posts set into the ground and connected with a double row of thin rails, likely wood; the rails were fortified with vertical stakes, creating a solid enclosure. These fences appear to have a relatively unfinished character (stakes not sawn planks, fence not whitewashed). Additional research will be necessary to verify any additional fence types.

Currently, worm fencing is used in areas where historically no fencing was present. This historic fence type has been added in non-historic locations such as pull-offs, parking areas and other areas that relate to contemporary park management and maintenance requirements. The result is an inaccurate historic picture inferring that these contemporary features (using historic forms) were part of the historic landscape. Replacing worm fencing in these areas with contemporary, but compatible, fence types and reestablishing worm fencing and other historic fence types where they occurred in 1863 would correct this false picture and improve visitor understanding.

Consider the following guidelines in developing such a plan:

- Inventory and map current fence locations and types.
- Using the 1896 Betts map of the battle, determine which existing fences correspond to historic fence locations and which are located in areas where fences did not exist.
- Replace historic fence types used in contemporary locations with contemporary but compatible fencing types and materials.
- 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.
- 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, and vegetation might be

effective and less intrusive. Posts and chain-link fencing (such as that found at the Recreation Field parking area would be a suitable alternative).

In conjunction with the removal of historic fence types in non-historic locations, and in the interest of a more accurate depiction of the 1863 landscape, the Park should consider reestablishing historic fence patterns in certain areas. Areas best suited for reestablishing 1863 fence patterns are those that would have been present at the interpreted sites (Brotherton and Snodgrass) and other interpretive locations along the tour route (e.g. Jay’s Mill site, Viniard farm, Brock farm, etc.).

- 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 Betts’ maps).
- Carefully consider the addition of fencing in areas where it could increase the difficulty of managing the agricultural fields.

DEVELOP A COMPREHENSIVE SIGNAGE PROGRAM [MAP 6-20]

Well designed interpretive programs should include a complementary system of signs, exhibits, and printed materials such as brochures and site maps in order to assist the visitor in understanding the physical organization of the site. At Chickamauga Battlefield, there are many different types of interpretive, regulatory, informational, and wayfinding signs. Several of these are historic (such as the pointers), which date to the commemorative period, while others are contemporary landscape features (such as trail markers, interpretive waysides, wooden road signs, and auto-tour route markers).

It is recommended that the Park, in coordination with the Harper’s Ferry Center Graphic Identity standards, develop a comprehensive signage program that will establish a coordinated visual identity for all signs within the battlefield. The Graphic Identity program establishes standards for NPS graphics and typefaces, print publication templates, sign standards, and emerging NPS graphic standards.

While removal of signs in good condition is not recommended, new signs designed to support the graphic identity of the Park can replace existing signs when necessary. Signs new to the battlefield, such as historic farmstead markers should be designed with sensitivity to the historic scene, and directional and informational signs necessary to support the new auto interpretive tour route should be coordinated with regards to the larger graphic identity of the Park.

Likewise, development of a regional auto-tour has been promoted by local agencies and groups and recommended by the TIS-TP. As Chickamauga Battlefield will likely become part of a larger auto-tour, it is important to coordinate signage programs for regional wayfinding and interpretation. The Park should consider developing an identity symbol for the battlefield that

could be used on regional tour systems to indicate information relating to Chickamauga. Also consider unifying the graphic elements, such as the use of a unique color, typography, and use of an identifying symbol, on the signs associated with the various tour systems to tie them together.

DEVELOP DESIGN GUIDELINES FOR LANDSCAPE FEATURES [MAP 6-20]

To facilitate the implementation of necessary new features and replacement of non-historic features lost due to condition issues, consider preparing a park-wide design guide. The guide would illustrate standards for new landscape features and systems to accommodate park visitor use, interpretation, and management and maintenance. Such features might include 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 serve to simplify the palette of materials within the battlefield, which in turn would diminish the impact of non-historic features on the historic scene.

The design guide would be intended to augment NPS system-wide standards, with guidelines and standards specific to Chickamauga Battlefield. Design of these features should be compatible with the rural, vernacular character of the battlefield, clearly a product of their own time, and as simple, sturdy, and unobtrusive as possible. Consider, as part of the design of these new features, attention to scale, the use of materials, and physical composition, to assure visual compatibility, consistency, and integration with the overall character of the battlefield landscapes. The following recommendations apply:

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

Develop Design Guidelines for Landscape Features

It is recommended that Chickamauga Battlefield consider preparing a park-wide design guide. The guide would illustrate standards for new landscape features and systems to accommodate park visitor use, interpretation, and management and maintenance. Such features might include 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 following recommendations apply:



Contemporary traffic mitigation standards should ensure functionality without detracting from the historic setting or views. In some areas, alternatives to fencing such as boulders or bollards may be less intrusive. This example at Gettysburg National Military Park provides an example of traffic bollards (photo by JMA).

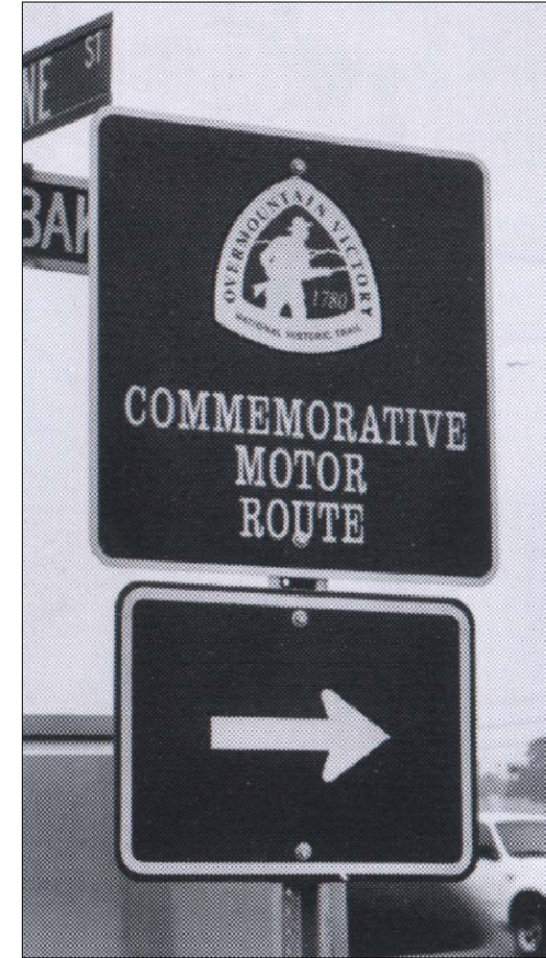


New fencing standards should ensure fencing is a product of its time and compatible with the historic resources in materials, size, scale, and proportion, while maintaining a clear differentiation between the historic and contemporary fencing. This example at Gettysburg National Military Park provides an example of contemporary fencing used for pedestrian control (photo by JMA).

- Assemble a design team, including a landscape architect, architect, and appropriate Park maintenance staff to develop Park-wide design guidelines.
- Consider carefully the character and identity that is appropriate for necessary non-historic features associated with Chickamauga Battlefield.
- Review existing conditions documentation photographs for current examples of site furnishings, fencing, road edging materials, circulation surfacing, signage, and visitor use and interpretation features to consider the viability of existing features to serve as a Park-wide standard.
- Review product catalogues for images of appropriate features.
- Review as group the individual proposed elements for inclusion within the design guideline.
- Develop details, installation procedures, and other supporting information for each standard feature.
- Consider the palette in its totality to ensure the individual elements are cohesive and work well together before making final selections.

Develop a Comprehensive Signage Program

It is recommended that the Park develop, in coordination with the Harper's Ferry Center Graphic Identity standards, a comprehensive signage program that will establish a coordinated visual identity for all signs within the Battlefield.



Example of a graphic identity symbol used for directional signs concerning the Overmountain Victory National Historic Site (from National Park Service, "Overmountain Victory National Historic Trail: A progress report on the status of the Trail," Vol. 1, No. 1, Winter 2004).

Unify the graphic elements on the signs associated with the various tour systems to tie them together (i.e. the proposed Day One tour, Day Two tour, trail tour, and regional-auto tour).



Example of the graphic identity symbol (from Project for Public Spaces: Creating Park Signage. <http://www.pps.org/topics/design/Signage>)

New signs designed to support the graphic identity of the Park can replace existing signs when necessary.

Signs new to the battlefield should be designed with sensitivity to the historic scene and coordinated with regards to the larger graphic identity of the Park.

Map 6-20: Small-scale Features

Develop a Comprehensive Signage Program & Design Guidelines for Landscape Features



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Fort Oglethorpe • Georgia • National Park Service

Views

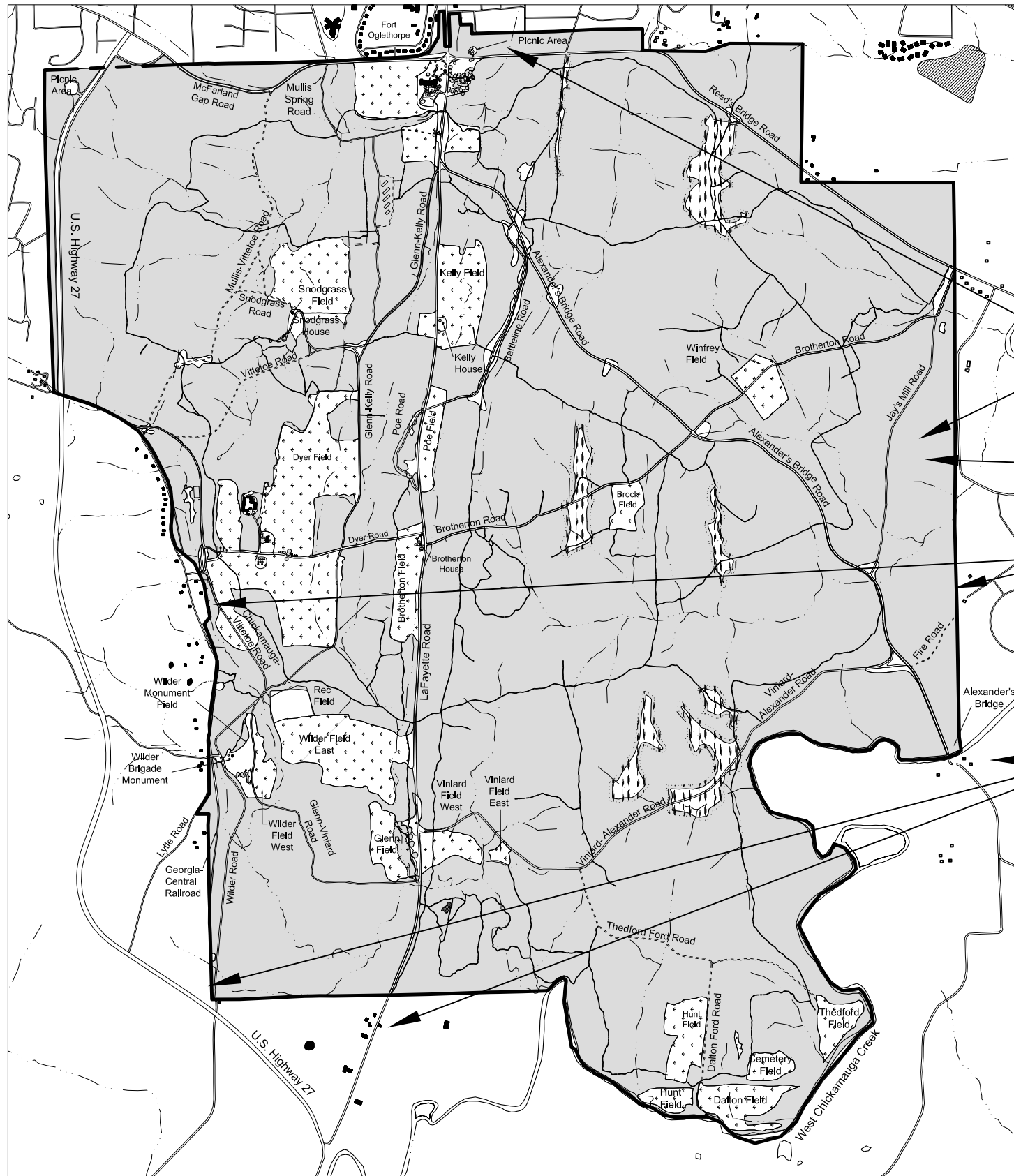
Many of the views within the battlefield are greatly influenced by the spatial organization of vegetation, road corridor alignment, and forest density. These conditions have been carefully managed to ensure that the views and vistas present during the time of battle are reflected in the existing conditions of the battlefield. Recommendations found throughout this treatment plan support further restoration of battle-era views. As view conditions on the periphery of the battlefield are significantly influenced by adjacent land use and management, it is important for the Park to monitor local planning and development proposals to ensure they do not compromise the historic scene. Specific recommendations are as follows:

PROTECT VISUAL QUALITY & MONITOR ADJACENT LANDS [MAP 6-21]

- Protect and maintain contributing views of important battle lines and commemorative features within the battlefield.
- Evaluate on a case-by-case basis, any plans for forest clearing for their impact on views within the battlefield. Actions that will result in views intrusive to the historic scene must be weighed against interpretive opportunities resulting from such action.
- Where necessary, establish visual buffers along edges of woodlands that, if cleared for field restoration, would afford views of developed areas and compromise the integrity of the historic scene.
- Maintain visual buffers along the Park's boundary abutting developed lands.
- Monitor local planning and development activities, and develop working relationships with adjacent land owners to yield information that may determine where additional buffers should be established to most effectively screen proposed development. Consider establishing buffers along lands that will likely be developed.
- Minimize development impacts adjacent to and near the battlefield by working with developers during the planning process, suggesting increased setbacks and the least intrusive location and character for improvements and new structures.
- Monitor and participate in regional planning activities in order to protect adjacent resources and the larger setting of the battlefield.
- Work with local citizens to develop a program of monitoring unauthorized access to and destruction of resources on park land.

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- Educate adjacent property owners regarding resources located on their lands. Work with these owners to develop programs for the protection of resources on their lands.



Legend

- Boundary
- Trails
- Agricultural Fields
- Buildings
- Forest
- Streams
- Paved Roads
- Glades
- Gravel Roads



Scale 1" = 2400'

Many of the views within the Park are greatly influenced by the spatial organization of vegetation, road corridor alignment, and forest density. These conditions have been carefully managed to ensure that the views present during the time of battle are reflected in the existing conditions of the battlefield. Recommendations found throughout this treatment plan support further restoration of battle-era views. As view conditions on the periphery of the battlefield are significantly influenced by adjacent land use and management, it is important for the Park to monitor local planning and development proposals to ensure they do not compromise the historic scene. Specific recommendations are as follows:

- Protect and maintain contributing views of important battle lines and commemorative features within the Park.
- Evaluate on a case-by-case basis, any plans for forest clearing for their impact on views within the Park. Actions that will result in views intrusive to the historic scene must be weighed against interpretive opportunities resulting from such action.
- Where necessary, establish visual buffers along edges of woodlands that, if cleared for field restoration, would afford views of developed areas and compromise the integrity of the historic scene.
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- Monitor local planning and development activities, and develop working relationships with adjacent land owners to yield information that may determine where additional buffers should be established to most effectively screen proposed development. Consider establishing buffers along lands that will likely be developed.
- 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 improvements and new structures.
- Monitor and participate in regional planning activities in order to protect adjacent resources and the larger setting of the battlefield.
- Work with local citizens to develop a program of monitoring unauthorized access to and destruction of resources on Park land.
- Educate adjacent property owners regarding resources located on their lands. Work with these owners to develop programs for the protection of resources on their lands.



Managed views within the Park provide opportunities for interpreting the battle.



Residential development along the east boundary of the Park.



Residential development along the west boundary of the Park along Lytle Road.



Agricultural land east of the Park has been planned for residential development.

Map 6-21: Views
Monitor Adjacent Lands & Protect Visual Quality



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