National Park Service
U.S. Department of the Interior

Olmsted Center
for Landscape Preservation

Cultural Landscape Report for Gettysburg National Military Park

Record of Treatment: Volume II

The glorious landscape, with its remarkable variety of aspect, in the fresh sunlight, like a panorama was spread before our eyes. . . . I hardly think Gen. Meade was considering the panorama at all—the mountains, the groves and the valleys, with their variety of productions or the streams of water—except in their evident relationship to his military plans.

General Oliver Otis Howard in Richard Sauers, ed., *Fighting Them Over: How the Veterans Remembered Gettysburg in the Pages of The National Tribune*, 168-169.

Cultural Landscape Report for Gettysburg National Military Park

Gettysburg, Pennsylvania

Record of Treatment: Volume II

Battlefield Rehabilitation Framework

Record of Treatment, Areas 11–15

Lessons Learned: An Informal Assessment of Landscape Treatments, 1999–2014

Appendices

Prepared by
Timothy W. Layton, ASLA, Historical Landscape Architect
Daisy Chinburg, Conservation Associate
Ashley Braquet, ASLA, Conservation Associate
Margie Coffin Brown, Senior Project Manager

Olmsted Center for Landscape Preservation
National Park Service, Boston, Massachusetts, 2018

The Olmsted Center for Landscape Preservation promotes the stewardship of significant landscapes through research, planning, and sustainable preservation maintenance. The Center accomplishes its mission in collaboration with a network of partners including national parks, universities, government agencies, and private nonprofit organizations. Techniques and principles of preservation practice are made available through training and publications.

Olmsted Center for Landscape Preservation
National Park Service
15 State Street, 6th Floor
Boston, MA 02109
www.nps.gov/oclp

National Park Service, Denver Technical Information Center Reference Number: GETT 305 146761

Library of Congress Cataloging-in-Publication Data

Names: Layton, Timothy W. (Timothy William), 1974- author. | Brown, Margie Coffin, 1963- author.
Title: Cultural landscape report for Gettysburg National Military Park / Timothy W. Layton, Margie Coffin Brown.
Description: Boston, Massachusetts : U.S. Department of the Interior, National Park Service, 2018. | Includes bibliographical references and index. Contents: Volume 1. Record of treatment -- | Everything below this line needs adapted for “Gettysburg National Military Park”
Identifiers: LCCN 2018039076
Subjects: LCSH: Gettysburg National Military Park (Pa.)--Management. | Gettysburg National Military Park (Pa.)--Antiquities. | Landscape assessment--Pennsylvania--Gettysburg National Military Park. | Landscape protection--Pennsylvania--Gettysburg National Military Park. | Landscape architecture--Conservation and restoration--Pennsylvania--Gettysburg National Military Park. | Historic sites--Conservation and restoration--Pennsylvania--Gettysburg National Military Park. | Gettysburg, Battle of, Gettysburg, Pa., 1863.
Classification: LCC E475.56 .L59 2018 | DDC 974.8/42--dc23
LC record available at https://lccn.loc.gov/2018039076

Cover Photo: View southwest from Devil’s Den toward the Slyder Farmstead, Olmsted Center for Landscape Preservation, 2014.

Title Page: View southeast from the McClean Orchard toward the McClean Farmstead, Olmsted Center for Landscape Preservation, 2013.

TABLE OF CONTENTS

List of Illustrations

FIGURES

INTRODUCTION

RECORD OF TREATMENT

LESSONS LEARNED: AN INFORMAL ASSESSMENT OF LANDSCAPE TREATMENTS, 1999–2014

APPENDIX C: FENCES AND WALLS

TABLES

INTRODUCTION

OVERVIEW OF BATTLEFIELD REHABILITATION

RECORD OF TREATMENT

DRAWINGS

RECORD OF TREATMENT

APPENDIX B: ORCHARDS

APPENDIX C: FENCES AND WALLS

FOREWORD

The following two-volume *Cultural Landscape Report for Gettysburg National Military Park, Record of Treatment*, documents both the process and result of a fifteen-year project aimed at recapturing the essential character of Gettysburg's battlefield landscape. As directed by the park's 1999 *Final General Management Plan and Environmental Impact Statement*, and informed by exhaustive research, this lengthy park-led effort has completed landscape work of an unprecedented scope, with great attention to detail. The landscape rehabilitation was undertaken in order to connect visitors with the tangible battlefield landscape and challenge visitors to confront the social, political, and cultural context of the American Civil War, its causes, its conduct, and its aftermath.

While this report documents what is in our past, we can know with certainty that the park's future will continue to involve management of living landscape resources, by an equally dynamic cast of staff and partners; hoping to serve a public for which the conversation about the events of the summer of 1863 will never be complete. So that future park stewards might learn from the practical experience of those carrying out this ambitious rehabilitation effort, the Olmsted Center for Landscape Preservation has successfully synthesized a detailed record, capturing otherwise fleeting institutional knowledge so that it may serve as a resource for those making landscape decisions in the future. A significant and welcome accomplishment in its own right, Tim Layton, Margie Coffin Brown, and the Olmsted Center for Landscape Preservation project team, in concert with park staff Winona Peterson, Randy Krichten, Randy Hill, Curt Musselman, and Kathy Harrison, have worked with great patience, deliberation, and professionalism in preparation of this report and I am grateful for their efforts on behalf of Gettysburg National Military Park.

Zachary Bolitho, Chief of Resource Management
Gettysburg National Military Park

Acknowledgments

This report has been made possible through the collaborative effort of the Northeast Region's Olmsted Center for Landscape Preservation and Gettysburg National Military Park. Zach Bolitho, Chief of Resource Management, with the support of former Superintendents Bob Kirby and Ed Clark, championed the completion of this two-volume report to serve as an institutional record and inform future decision making at the park. Winona Peterson, Cultural Resources Program Manager, served as the project point of contact, reviewed all draft materials, eagerly shared files, facilitated access to pertinent resources and people involved in the project work, and provided encouragement and support throughout this effort. Kathy Harrison, former Senior Historian, reviewed with the authors her decades of work in preparing the research files and mapping, which informed the battlefield landscape rehabilitation work, and reviewed draft materials. Randy Krichten, Biological Science Technician, and Randy Hill, Supervisory Facility Operations Specialist, interviewed and corresponded with the authors to provide detailed information and to answer specific questions about the implementation and maintenance of the rehabilitation tasks. Randy Krichten and Charlie Brown, Biological Science Technician, completed the 2014 orchard condition assessments that captured information on over 3,000 trees and are summarized in Appendix B. Curt Musselman, Cartographer, provided access to park mapping data and Greg Goodell, Museum Curator, assisted with locating and scanning historic imagery referenced in park research files. Both responded to multiple requests from the authors for additional information. Marc Pratt, Chief of Facility Management, Chris Gwinn, Chief of Interpretation and Education, Dafna Reiner, Biologist, and Katie Lawhon, Senior Advisor, participated in a meeting on the planning and implementation of the rehabilitation effort, and their input aided in the development of the "Lessons Learned" chapter.

The authors thank Sue Boardman for sharing photographs from her collection that document the features and conditions of the battlefield in the late nineteenth and early twentieth centuries. In addition, the authors thank the Adams County Historical Society for sharing photographs from their collection. Both generous contributions greatly enriched the content of this report.

At the Olmsted Center, Timothy W. Layton, Historical Landscape Architect, and Margie Coffin Brown, Senior Project Manager, served as the report's primary authors. Daisy Chinburg and Ashley Braquet, Conservation Associates, assisted the authors in conducting field reviews and photography of the features, preliminary mapping, drafting fence and wall details, and processing over 3,500 pages of research notes and over eleven gigabytes of scanned historic imagery.

Eliot Foulds, Senior Project Manager, advocated for the "Lessons Learned" meeting and subsequent chapter as a culminating component of this report, and Kim Ramos, Supervisory Budget Analyst, oversaw project accounting and administrative details. Robert Page, Director of the Olmsted Center, provided overall project guidance.

INTRODUCTION

This *Cultural Landscape Report for Gettysburg National Military Park, Record of Treatment*, documents the tremendous effort invested between 1999 and 2014 by the National Park Service and partners to rehabilitate the historic character of the battlefield landscape, while meeting the demands for public access and education that are fundamental to the purpose of the park. The report is organized into two volumes with Volume I containing an introductory chapter, Battlefield Rehabilitation Framework chapter, and Record of Treatment chapter. The Record of Treatment chapter is organized by 15 geographic areas that cover Gettysburg National Military Park, and Volume I presents Area 1 through Area 10. Volume I concludes with period plan and existing conditions mapping that corresponds to these areas. Volume II contains identical introduction and Battlefield Rehabilitation Framework chapters for ease of reference and presents a Record of Treatment chapter covering Area 11 through Area 15 followed by corresponding period plan and existing conditions mapping. The final chapter captures reflective lessons from the planning and implementation of the battlefield landscape rehabilitation. Volume II concludes with appendices addressing removal of non-historic woods and health cuts in historic woodlots, orchards, fences and walls, and Record of Treatment forms to aid in documenting future completed work for the historical record.

PROJECT SETTING AND STUDY AREA

Located in the rolling hills of Adams County, Pennsylvania, Gettysburg National Military Park preserves the site of the Battle of Gettysburg, the Gettysburg National Cemetery, and approximately 1,400 commemorative monuments, markers, and memorials erected by Civil War veterans. Over three days, July 1 to 3, 1863, intense fighting in the fields and woods at the outskirts of the small town of Gettysburg became the "High Water Mark of the Confederacy," when the Union victory halted Confederate Major General Robert E. Lee's ambitious advance into the Northern states. With over 51,000 soldiers killed, wounded, captured, or missing, Gettysburg was a turning point in the war that prompted President Abraham Lincoln to pen his renowned "Gettysburg Address," delivered on November 19, 1863 at the dedication of the cemetery, then known as the Soldiers' National Cemetery (Figure 1).

Under federal oversight beginning in 1893, federal ownership beginning in 1895, and administered by the National Park Service since 1933, the park now lays within a legislative boundary of 6,032 acres and contains 40 miles of scenic roads.[1]

Notable landforms that dictated battle tactics include McPherson Ridge and Oak Ridge, the site of the first day of battle; Seminary Ridge, held by the Confederate troops on the second and third days of battle; and Culp's Hill, Cemetery Ridge, and Little Round Top, held by the Union troops. Presently, over 150 years since the three-day battle, the park consistently receives over one million visitors a year.[2]

Preserving the historic battlefield landscape has been an ongoing challenge. In the half century following the battle, a fraction of the battlefield was preserved, and much of the landscape reverted to woods or was subsequently developed. Under National Park Service management, battlefield protection efforts increased, yet some park management practices altered the physical integrity of the 1863 patchwork of small farms and fields. In particular, the park's efforts to enhance viable agricultural leasing resulted in the removal of fence lines to create larger fields, the installation of tile drains to improve growing conditions, and the regrading of topography to improve contour crops. Up until the late 1990s, the deer population grew unchecked, resulting in damage to crops and altering the vegetation composition of natural areas. At the same time the park added visitor facilities, and in some cases placed buildings on key terrain within the battlefield. When the park legislative boundary expanded by 2,050 acres as a result of Public Law 101-377 in 1990, it was clear that an overall battlefield rehabilitation strategy was needed.

PURPOSE

The purpose of this report is to document landscape rehabilitation efforts between 1999 and 2014 in the format of a 'Record of Treatment.' The general framework and concepts for this report were developed in 2013, by which time the park had implemented the majority of the proposed landscape rehabilitation projects in advance of the 150th anniversary of the Battle of Gettysburg. Landscape rehabilitation efforts have included rebuilding over 17 miles of historic fences, reestablishing 325 acres of fields, establishing 18 acres of riparian buffer habitat, and replanting 112 acres of historic orchards, 49 acres of woodlots, and 28 acres of thickets that were present at the time of the battle in 1863. Collectively this landscape treatment has enhanced the visitor's experience and understanding of one of the country's most tumultuous battlefields.

The report follows the guidance presented in *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques* (National Park Service, 1998) and *NPS 28: Cultural Resource Management Guideline* (1998). In accordance with these guiding documents, the Record of Treatment provides a factual account of the physical changes to the cultural landscape resulting from implemented treatment including the intent of the work, the way in which the work was approached and accomplished, and changes between the proposed and actual treatment. This

historical record will inform future research on the property, as well as serve as a model for other battlefield rehabilitation projects.

The Record of Treatment builds upon the treatment and management approach defined by the park's approved *General Management Plan/Environmental Impact Statement* (hereafter, GMP), which was prepared between 1996 and 1999 with input from park staff, regional specialists, consultants, and public participants. The Record of Decision for the selected action occurred on November 23, 1999. In accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995), the GMP recommends "Rehabilitation" as the overall landscape treatment, to retain and preserve the features that define the park's character as a battlefield, while also preserving the commemorative elements, including the memorials and the Gettysburg National Cemetery. With the direction set by the GMP, the park continues to rehabilitate the battlefield landscape to reflect its historical appearance and to improve the visitor experience, while also enhancing the natural resource values of open grassland habitat and protected riparian corridors.

SCOPE AND METHODOLOGY

The Record of Treatment is organized by 15 areas that cover Gettysburg National Military Park. Within each area, a description of landscape treatment tasks accomplished between 1999 and 2014 mirrors the framework detailed in the park's *Treatment Philosophy: The 1863 Landscape* (2004) and in accordance with the park's GMP (1999).

Record of Treatment Timeframe

Due to the dynamic qualities inherent in landscape characteristics and features and the park's ongoing efforts to preserve and enhance battlefield landscape character, a key component of the Record of Treatment scope was establishing a timeframe for the completed landscape treatment tasks. The project team agreed upon beginning in 1999 with the completion of the park's GMP since this planning document established publicly-vetted decisions for the management of the park and serves as a foundation for implementing battlefield landscape treatment. Through continued dialog and draft and interim reviews, the project team agreed upon an end date of 2014. Importantly, the 2014 date captures all treatment tasks completed prior to the 150th anniversary of the Battle of Gettysburg. In addition, the 2014 date combines several collaborative efforts and serves as a consistent element in the Record of Treatment presentation. The Olmsted Center completed their final field inventory, mapping review, and existing conditions photography in September 2014. The park received new ortho imagery, taken in Spring 2014, and this imagery served as a major source in the

Olmsted Center's existing conditions mapping. The park's Resource Management division completed an orchard condition assessment project in late autumn 2014 and the details from this assessment appear in the orchard treatment task narratives and in 34 maps available in an appendix.

At the time of the Record of Treatment report's publication, additional tasks and replacement-in-kind projects have been completed that are beyond the report's timeframe. For example, the park replanted the Lee's Headquarters Orchard after 2014 when the condition assessment recorded over 70 percent of its tree missing. The park's quick action to improve the character of the orchard is commendable, however; to maintain the consistency of the Record of Treatment's narratives and mapping, all 40 orchard locations would require another condition assessment. The park and dedicated volunteers have completed similar replace-in-kind efforts for fencing, most visibly along United States Avenue in 2016. Finally, the park completed a $1.5 million dollar project to rehabilitate the northern end of Cemetery Ridge based the treatment plan prepared for the *Cultural Landscape Report: Defense of Cemetery Hill* completed in 2004. The continued work is impressive but all landscape treatment tasks completed after 2014 are not included in this Record of Treatment so that the document presents a consistent narrative, documentation, and mapping for the treatment completed between 1999 and 2014.

Record of Treatment Areas and Mapping

The 15 Record of Treatment areas are listed in Table 1 and shown in Figure 2.[3] The bounds of each area generally fall along park boundaries, 1863 property lines, roads, and areas demarcated for completed cultural landscape reports. To date, cultural landscape reports are complete or in progress for Defense of Cemetery Hill, Gettysburg National Cemetery, Emmitsburg Road Ridge, and Little Round Top. The Record of Treatment areas favor road and 1863 property boundaries rather than battle action boundaries in order to capture the rehabilitation projects as they relate to farmsteads that existed at the time of the battle. For example, the rebuilding of fence lines, reestablishment of fields and woodlots, and replanting of orchards were based on 1863 owner's land use, materials, and workmanship.

Record of Treatment tasks are illustrated in the report on a set of 25 foldout maps. The maps cover the entire legislative area of the park and were developed using a consistently sized grid for 11x17-inch sheets at a scale of 1 inch equals 400 feet. Each sheet has a consistent north-south and east-west overlap with adjacent sheets. With the exception of three maps in the East Cavalry Field area, the Record of Treatment maps are presented side-by-side with sheets of the hand-drawn 1863 period plan prepared by Senior Historian Kathy G. Harrison, now retired, which depict the land owners, farm buildings, fences, and agricultural uses within the area. The East Cavalry Field area is presented side-by-side with sheets from the

1880 Maxson Survey of the Warren Map Extension. The park has not completed documentation nor period plans for the East Cavalry Field area and has been using the 1880 Maxson Survey as the base map and reference for 1863 landscape character. As will be described later in this chapter, the 1863 period plans were a key component of the research for the battlefield rehabilitation and 26 overlapping hand-drawn sheets have been scanned and merged to match the extents of the Record of Treatment maps. The maps begin in the northwest portion of the park and move southeast, concluding with the East Cavalry Field area located two miles to the east. A summary of the Record of Treatment areas and plan numbers is available in Table 1.

TABLE 1: RECORD OF TREATMENT AREAS & CORRESPONDING SHEET NUMBERS

#	Area (See Figure 2)	Acreage	Description	1863 Period Sheet #	Record Sheet #
1	First Day, Union 1st Corps	845.00	Area 1 is delineated by the north, west, and south park boundary within the First Day Battlefield and by the Forney-McClean and McPherson-Gilbert property lines to the east. The area includes Seminary Avenue and the non-contiguous First Shot Monument property.	1, 3, 4, 6, 7, 8	1, 2, 4, 5, 6, 7
2	First Day, Union 11th Corps	526.55	Area 2 is edged by the north, east, and south park boundary for the First Day Battlefield and by the Forney-McClean and McPherson-Gilbert property lines to the west. The area includes the non-contiguous Jones Battalion Avenue and Coster Avenue properties.	1, 2, 4, 5	2, 3, 5
3	Picketts Charge-Pitzer-McMillan-Bliss	528.64	Area 3 encompasses several farmsteads along Seminary Ridge and is bounded on the south by the southern extents of the Pitzer, McMillan, Bliss, and Benner properties.	9, 10, 13, 14	7, 9, 10, 12, 13
4	Defense of Cemetery Ridge	317.39	Area 4 is bounded by three completed cultural landscape report boundaries, including Defense of Cemetery Hill to the north (Area 5), Emmitsburg Road Ridge to the west (Area 10), and Little Round Top to the south (Area 13). Area 4 is also bounded by Taneytown Road to the east and extends to Wheatfield Road to the south, where it slightly overlaps the Little Round Top CLR study area. The northwest portion of Area 4 also includes a small parcel on the west side of Emmitsburg Road.	15, 19	10, 13, 16
5	Defense of Cemetery Hill	43.85	Area 5 matches the study area of the completed Defense of Cemetery Hill CLR.	10, 15	10, 13
6	Gettysburg National Cemetery	23.70	Area 6 is defined by the original cemetery and cemetery annex perimeters and matches the study area of the in-progress Gettysburg National Cemetery CLR.	12	10
7	Culp's Hill and Attack on East Cemetery Hill-Benner-A. Spangler	711.73	Area 7 encompasses the Culp's Hill area and is bounded on the west by Baltimore Pike. While Area 7 is a large area and includes multiple farmsteads, the western boundary along Baltimore Pike divides the Abraham Spangler farmstead, which spans both sides of the road. A portion of the 1863 Abraham Spangler farmstead on the west side of Baltimore Pike falls within Area 8, but has limited integrity.	11, 12, 16, 26	8, 10, 11, 14

TABLE 1: RECORD OF TREATMENT AREAS & CORRESPONDING SHEET NUMBERS

#	Area (See Figure 2)	Acreage	Description	1863 Period Sheet #	Record Sheet #
8	Powers Hill and Union Rear-Guinn-Lightner-A. Spangler	377.54	Area 8 is bounded by Baltimore Pike to the east and Taneytown Road to the west.	15, 20, 26	10, 13, 14, 16, 17
9	Pickett's Charge-Codori-H. Spangler-Staub-Sherfy	442.54	Area 9 meets Area 3 along the Emanuel Pitzer-Sam Pitzer and Benner-Codori property line. Area 9 extends east across Emmitsburg Road to include the eastern portion of the Codori farm. Area 9 is also bounded on the east by the completed CLR boundary for Emmitsburg Road Ridge (Area 10). Area 9 extends across Emmitsburg Road again at its southwest corner and the Millerstown Road/ Wheatfield Road intersection to include the eastern and southern portions of the Wentz and Sherfy farms, hence capturing the four corner parcels at the intersection of these roads.	14, 17, 18	12, 13, 15
10	Emmitsburg Road Ridge	194.28	Area 10 encompasses the Emmitsburg Road Ridge CLR, and contains a portion of the Codori Farm. Rather than absorb Area 10 into the adjacent Areas 4 and 9, it remains as a separate area because the treatment work accomplished here was some of the first. As such, it served as a pilot and demonstration project, which in turn influenced the methodology for rehabilitating other areas within the park.	14, 18	12, 13, 15, 16
11	Defense of Rose Ridge and Houck's Ridge-Snyder-Warfield	369.72	Area 11 is bounded by Millerstown Road to the north, but does not include the Wentz parcel or the Sherfy's Peach Orchard as these areas are included in Area 9. Area 11 includes the Rose, Snyder, Warfield, Bisecker, and George Weikert parcels, and is bounded to the east by the Rose-Houck property line and to the southeast and south by the Snyder-Guinn and Snyder-Slyder property line.	17, 18, 21, 22	15, 16, 18, 19
12	Big Round Top-Devil's Den-Plank-Weikert	400.96	Area 12 includes Devil's Den, Big Round Top, and the properties to the east including Plank and the majority of Emanuel and Jacob Weikert. While the northern half of this area could be absorbed into the Rose farm (Area 11) based on the battle action, the Record of Treatment team chose to keep it separate due to the amount of documentation and treatment specific to the Devil's Den area.	22, 23, 24	16, 18, 19, 21, 22
13	Little Round Top	111.94	Area 13 encompasses the completed Little Round Top CLR and includes managed woodlots south of the summit belonging to Emanuel and Jacob Weikert.	19, 22, 24	16, 19
14	South Cavalry Field and Confederate Attack-Hammer/ Bushman-Slyder	472.37	Area 14 includes the South Cavalry Field and the Hammer/ Bushman and Slyder parcels.	21, 23, 25	18, 19, 20, 21
15	East Cavalry Field	670.37	Area 15 covers the East Cavalry Field area. The Eisenhower Farm is not included in the Record of Treatment.	Not available	23, 24, 25

Record of Treatment Areas and Rehabilitation Task Narratives

For each of the 15 areas, the Record of Treatment includes a description of the bounds and physical character of the area, as well as a brief historical summary of the significance and historic appearance of the area. This overview is followed by a description of each implemented rehabilitation task. Landscape rehabilitation tasks are consistently presented in each Record of Treatment area by a feature type defined in the *Treatment Philosophy: The 1863 Landscape* (2004). The feature types and related tasks include:

- Agricultural Fields
  - Removal of non-historic woody vegetation
- Woodlots and Groves
  - Health cuts in historic woodlots
  - Replanting historic woodlots
- Orchards and Nurseries
  - Replanting historic orchards
- Fencing
  - Replacement of historic fencing
- Thickets
  - Replanting historic thickets
- Streams
  - Reestablishment of non-historic riparian buffer habitat for water quality

For each rehabilitation task completed, a narrative description includes the purpose and intent of each treatment action, and how the treatment implementation has improved the park's ability to interpret the strategy and outcome of the 1863 battle. Specifically, the narrative includes:

- Summary of intent of rehabilitation work with respect to key landscape characteristics and the battle (KOCOA)
- Rehabilitation task completed, where, acreage, when, and by whom [GIS ID cross reference]
- Historic images and post-implementation photographs

When available, additional documentation is included in an appendix, including field notes and interviews; contract documents; detailed specifications, methods, and materials; and as-built plans.

HISTORICAL OVERVIEW, 1863 TO 1996

The battle of Gettysburg took place two years after the Southern states declared their secession and formed the Confederate States of America, and after Confederate victories at Fredericksburg in December 1862 and Chancellorsville in May 1863. Hoping for another decisive victory that would end the war, Major General Robert E. Lee led the Confederate Army of Northern Virginia into the Union states. By this time, the Union troops were plagued by a succession of generals and demoralized by heavy losses in battle. After the defeat in Chancellorsville, President Lincoln replaced Major General Joseph Hooker with Major General George G. Meade to lead the Union Army of the Potomac north from Washington, D.C. in pursuit of the Confederate Army.

In June 1863, as Lee's army of 75,000 men moved north into the Pennsylvania, the Confederate cavalry under Major General J.E. B. Stuart was responsible for scouting. Stuart was engaged to the east, hence Lee had no way of knowing the location of the Union troops. By late June 1863, Lee's army was dispersed but generally north and west of Gettysburg, while the Union army of 97,000 men was to the south. Somewhat by chance, Union cavalry encountered Confederate troops on June 30 and engaged near the McPherson farm on July 1. While neither Lee nor Meade intended to fight at Gettysburg, a full-scale three day battle ensued, with tremendous losses to both armies.

Initially, Union troops hoped to hold a defensive line near the McPherson farm along Seminary Ridge until reinforcements arrived. Though outnumbered, they held their position until the afternoon, when they were driven into the town and retreated to Cemetery Ridge (Figure 3). Seeing Cemetery Hill and Ridge as the key terrain and high ground, the main body of the Union army arrived throughout the night and fortified the position.

Lee's troops also converged in Gettysburg and encamped along Seminary Ridge to the west. Hoping to overwhelm the Union troops, but uncertain of their force, Lee ordered attacks on both Union flanks, to the north and east of Cemetery Hill and the west and south of Little Round Top. After an intensive afternoon of fighting on July 2, Confederate troops were unsuccessful in flanking Union troops, but had gained positions on Culp's Hill at the Union right flank and in the Peach Orchard and Wheatfield below the Union left flank (Figure 4).

Confident that the Confederate army could overwhelm the Union forces in the third day of the battle, Lee ordered a frontal attack across open fields, later known as Pickett's Charge. After a two-hour artillery bombardment of the Federal line on Cemetery Ridge and Cemetery Hill, some 12,000 Confederate soldiers advanced toward the Union line. Unsuccessful, the attack cost the Confederate army over 5,000 soldiers in one hour (Figure 5).

During the three days of fighting at Gettysburg, the Union and Confederate armies suffered a total of 51,000 casualties, of which 10,000 were killed or died of wounds, 30,000 were wounded, and 11,000 were captured or reported missing. The war continued for two more years, but the Confederate army never regained its strength.

After the battle, dead and wounded soldiers lay in the fields, woods, and along streams swollen by heavy rain. Both armies established field hospitals near potable water sources, the Union by Rock Creek and the Confederates by Willoughby's Run or Marsh Creek. The town and surrounding farms were devastated. Structures had been burned or destroyed by shells, field fences had been dismantled, rock walls had been toppled or rearranged, livestock and horses lay dead, earthen trenches and breastworks lay throughout the area, and crops were trampled. Photographers arrived shortly after the battle and recorded the horrific images, particularly where Confederate soldiers lay unattended for several days. Eventually, thousands of dead soldiers were hastily buried in the fields where they lay (Figure 6).

Pennsylvania Governor Andrew Curtin commissioned a local attorney, David Wills to purchase land for a proper cemetery for the Union dead and a landscape designer, William Saunders, to provide a design for the cemetery. On November 19, President Abraham Lincoln traveled to Gettysburg to dedicate the new Soldiers' National Cemetery. In his Gettysburg Address, Lincoln transformed the Gettysburg battlefield into a symbol of citizenship and sacrifice for the principle of human equality, stating "we here highly resolve that these dead shall not have died in vain—that this nation, under God, shall have a new birth of freedom." By December 1864, 3,500 Union soldiers were reinterred in the Soldiers' National Cemetery and 3,320 Confederate soldiers were removed from the battlefield to cemeteries in the South.

In the two months that followed the battle, private citizens initiated a preservation movement and formed the Gettysburg Battlefield Memorial Association. Through donations, state appropriations, and memberships, the Association began acquiring farmland on which the battle had been fought. While protecting battle features, such as breastworks and battle positions, they leased most of the arable land back to local farmers. The Association eventually acquired many of the major battle terrain features, buildings, battlefield circulation routes, and established monument plots. The approach of the 25th anniversary of the battle in 1888 heightened interest in commemoration and by 1890, more than 300 monuments had been erected (Figure 7).

On February 11, 1895, President Cleveland signed an act to establish Gettysburg the country's third national military park. In collaboration with Civil War veterans and historians, the Secretary of War and his commission expanded the battlefield park to include the Confederate lines of battle and associated earthworks. The

commission improved the system of designed avenues, standardized markers and tablets, added more monuments, trees, observation towers, a storage building, and site furniture within the battle landscape. At the same time, portions of the battlefield were modified for military use, including training facilities and a prisoner-of-war camp.

In 1933, administration of the park passed to the National Park Service. Using Civilian Conservation Corps (CCC) labor, the new administration removed internal fence rows to consolidate fields for more favorable acreage for farm leases and added features to improve visitor amenities. The CCC crews also cleared views, repaired the remaining fences and stone walls, cleaned monuments, added comfort stations, improved the park's storage building, altered bridges and culverts, and improved water supply, sewer, and service connections. Woodlots were left unmanaged and wet areas were either improved with tile drains or allowed to revert to woods. Land acquisition continued and by the 100th anniversary in 1963, the park covered over 3,000 acres, which was still just a fraction of the 22,000 acres of land occupied by the troops during the battle.

As part of the Mission 66 program in the 1950s and in conjunction with the 100th anniversary, the park added completed projects that both diminished and enhanced the authenticity of the battlefield landscape. The park constructed the Cyclorama complex, a new vehicle bridge over the railroad cut, realigned some of the avenues, added field exhibits and pullouts along the auto tour road, and installed an amphitheater in Pitzer Woods near the site of the CCC camp. In an effort to enhance views of the battleground, the park used the Warren map as a guide and removed about 280 acres of woods to restore the 1863 open field landscape (Figure 8). The park continued to expand the agricultural leasing program, and in some cases removed cultural and natural features to create larger field areas, to install tile drains, and to improve contour farming. By this time, approximately one third of the park was managed through agricultural leasing.[4]

In 1982 the park completed a General Management Plan, which preceded the 125th anniversary of the battle in 1988. A key directive was to complete a boundary study in response to requests for additional land acquisition, to establish a permanent and widely accepted boundary, and to authorize appropriate cooperative efforts with the local community and other entities to protect the historic setting of the park and its resources. Public Law 101-377 (August 17, 1990), Public Law 106-209 (October 16, 2000), and Public Law 113-201 (December 19, 2014) expanded the park's legislative boundary to 6,032 acres.[5]

LANDSCAPE REHABILITATION PLANNING, 1996 TO 2013

Major rehabilitation of the Gettysburg landscape between 1999 and 2014 has been informed by several cultural landscape reports, public planning processes, and guiding management and treatment plans—most notably the park's current *General Management Plan/Environmental Impact Statement* (GMP). Initiated in 1996 and completed in 1999, the park's GMP provides a management philosophy for the park and provides a framework for future decision making. When initiated in 1996, key issues to address in the planning process included the 1990 expansion, the proposed relocation of the park visitor center from the hallowed ground of Cemetery Ridge, guidance on the park's commemorative landscape of avenues and monuments, and the need for an improved deer management policy to address the impact of overpopulation on the park landscape. As part of this process, the park completed a Strategic Park Management Plan in accordance with the Government Performance Results Act (GPRA). Through the GMP and GPRA planning efforts, the park set forth a vision for major landscape rehabilitation in advance of the park's 150th commemorative year in 2013. To accomplish this, a tremendous amount of research and documentation on the 1863 battlefield landscape was necessary.[6]

RESEARCH TO INFORM THE GENERAL MANAGEMENT PLAN

With the GMP underway, the park's cultural resources program was faced with the daunting task of synthesizing detailed information on the appearance of the 1863 landscape in order to guide its rehabilitation. By 1997, park historians had compiled extensive information about the 1863 battlefield landscape. From studying the 1863 photographs, the research team realized that the 1868 maps prepared by Brevet Major General G. K. Warren did not accurately reflect the battle landscape, but the landscape as it appeared in 1868. A thorough examination of other sources of information was needed. While the research was far from complete at the time of the GMP, an understanding of the general appearance of the 1863 battlefield landscape allowed the park to develop alternative landscape treatments. By developing cursory period plans, park historians were able to show the extent of open (fields) versus closed (forested) landscape in 1863 at the time of the battle, in 1895 at the end of management by the Gettysburg Battlefield Memorial Association, in 1927 at the end of management by the veterans of the Civil War, and in 1993 when aerial photography documented the current conditions. These plans portrayed the extent of change in the landscape.[7]

To quantify the extent of change in the landscape, the park digitized data from the many hand-drawn period plans to clarify and calculate areas that changed in character and the extent of treatment needed to bring back the 1863 appearance

of the landscape. In comparing the 1863, 1895, 1927, and 1993 period plans, historians were able to quantify the number of features from 1863 that had disappeared, changed, evolved, or been added. Notable comparisons between 1863 and 1993 included an increase in woodlots and woodlands from 898 to 1,974 acres; a reduction in orchards from 230 to 18 acres; and a reduction in historic fences from 160 to 43 linear miles.[8]

Resource Management Areas and Alternatives

To guide management decisions, the GMP defined four park resource areas: Major Battle Action Resource Area, Gettysburg National Cemetery Resource Area, Battlefield Commemorative Resource Area, and Other Resource Areas (Figure 9).[9]

- Major Battle Action Area: The largest area, the Major Battle Action Area includes places within the park boundary of major combat and battle action, troop placements, massing and bivouac areas, and troop movement corridors. The area also includes important topographic, natural, and built features that were significant to the outcome of the battle.

- Gettysburg National Cemetery: Includes the original cemetery designed by William Saunders in 1863 as well as the cemetery annex that extends to Steinwehr Avenue.

- Battlefield Commemorative Resource Area: Comprises the narrow corridors with monuments and monument groups that mark the positions of troops and the commemorative avenues that mark the lines of battle. The area also includes the associated settings of the markers and avenues, which in general are the areas that were once enclosed by the War Department to form the park-like setting.

- Other Resource Areas: Includes the remainder of the park, outside of the three resource areas described above. It includes places that were used for troop movements, encampments, hospitals, or other support activities. Also included are areas within the park boundary for administrative or managerial purposes, or to provide for the protection of important views or gateways to the park.[10]

Subsequent battlefield landscape rehabilitation efforts focused on the Major Battle Action Resource Area. The GMP then identified four alternative approaches to treating the landscape. The first alternative, titled No Action, focused on preservation of existing resources. The second alternative, titled Minimum Required Actions, focused on the rehabilitation of major landscape features, such as the pattern of open fields versus wooded areas and circulation corridors. The third alternative, titled the Proposed Plan, focused on the rehabilitation of

significant features associated with the outcome of the battle, including major features such as open fields and wooded areas, plus small-scale features that influence the battle outcome such as fences and woodlots. The fourth alternative, Maximum Park Rehabilitation, focused on rehabilitation of all features from the 1863 historic period that could be identified and documented.

The selected third alternative, "The Proposed Plan: Rehabilitation of Landscapes Significant to the Battle of Gettysburg and its Commemoration," laid out an ambitious plan for reinstituting the pattern of open fields and wooded areas present in 1863, as well as the patterns of circulation that were present at the time of the battle, within the Major Battle Action Area. In addition, it called for the rehabilitation of small-scale landscape elements and structures within the Major Battle Action Area that were significant to the outcome of the battle. The GMP acknowledged that "the landscape that results would not fully reflect the conditions present in 1863, but it would convey its history and retain and preserve the features that define its character as a battlefield." The GMP determined that these actions would have "a positive impact on the historic landscape of the 1863 battle."[11] The selected alternative also supported ongoing agricultural operations in the fields, orchards, and woodlots to perpetuate the character of the 1860s landscape. The proposed plan would also preserve and restore monuments and reconstruct pipe-rail fencing to delineate the designed commemorative landscape from the historic landscape of the 1863 battle. The proposed work was projected to take 15 to 20 years to implement, with extensive vegetation removal, fence reconstruction, orchard replanting, thicket maintenance, and more. After a year of public comment, meetings, and revisions, the park published the GMP in June 1999, with a Record of Decision signed on November 23, 1999.[12]

BATTLEFIELD CULTURAL LANDSCAPE REPORT

In the process of preparing the GMP, the park initiated cultural landscape reports for the battlefield and Emmitsburg Road Ridge, which included the Codori and Trostle thickets, and updated a draft cultural landscape report for Gettysburg National Cemetery.[13] These reports were carried out by park staff, regional specialists, university faculty, and professional historians.

In 1997, concurrent with the development of the General Management Plan, a team of park historians initiated a cultural landscape report for the battle areas with the park.[14] Entitled the "Five Year Plan" and also known as the Gettysburg 1863–1865 Cultural Landscape Report, the plan focused on an analysis of open (fields) versus closed (woods) areas. Eric Campbell drafted an "Open versus Closed Cultural Landscape Report" for the south end of the park as a result of the management decision to include construction of fencing. The project team also conducted historical analysis of the battle tactics and the contested terrain, including an extensive assessment of the present day landscape features

as compared to those that existed at the time of the battle. In addition to the 1868 Warren maps, the battlefield landscape research team examined other maps prepared shortly after the battle by E. B. Cope, S. G. Elliott, and John B. Bachelder, as well as War Department after-action reports written by officers of the battle units, letters from soldiers, diaries, newspaper accounts, battle-period photographs, battle-period sketches, and damage claims by Gettysburg residents. The team also reviewed post-battle, nineteenth-century photographs to confirm the existence of features still in place that were documented in earlier sources. Ultimately, the research team compiled 34 three-ring binders of annotated historic photographs and an 1863 period plan for the battlefield on 32 hand-drawn sheets. Compiled in 1999, the draft "Five Year Plan" remained in draft while components of the research advanced, most notably the 34 notebooks of photographs and the 32 sheets of 1863 period plans. Work on the actual cultural landscape report ceased as it became apparent that the study area was too large to document in one report. The data compiled for the report morphed into the "Battlefield Landscape Rehabilitation Plan," which guided the park's rehabilitation work through 2013. The document was populated with information from the notebooks of photographs and multiple sheets of hand drawn maps, described below. The park also initiated "Plan Lite," a document intended to distill the physical appearance of the historic landscape in a 100–150-page summary.[15]

ANALYSIS OF HISTORIC PHOTOGRAPHS (34 NOTEBOOKS)

Historic photographs dating to 1863 or a few years later provided an understanding of the extent of open and wooded landscapes, types of crops, locations and types of fences and gates, farm lanes, farm buildings, and other details about the 1863 landscape. The bulk of the photographic records consulted for the plan were those in the Sue Boardman Collection, a private collection of nearly 1,500 images; images published in William A. Frassanito's *Early Photography at Gettysburg*; and photographs maintained by the Adams County Historical Society. Due to time constraints, only a cursory look was given to the park's Tipton Photograph Collection, general historical photograph collection, and museum collections. Researchers scanned historic photographs and used computer enhancement capabilities to scrutinize the array of landscape features visible in the 1860s images.

Familiar with the park collections, the historians pulled those photographs with known features for this detailed analysis, but did not go through each of the nearly 6,000 photographs in the collections. Hence, additional research is needed to assure that all known features are documented and eventually included in cultural landscape reports for the entire battlefield. Notes on historic photographs were compiled into 34 three-ring binder notebooks, and each image was labeled according to the landscape features evident in the historic image.[16]

PREPARATION OF 1863 PERIOD PLANS (32 SHEETS)

After a thorough analysis of historic photographs, early maps, and other battle records, park historians created 1863 "base maps" (hereafter referred to as 1863 period plans) for the Major Battle Action Area. This effort was led by Senior Historian Kathy Georg Harrison with assistance from Cultural Resource Specialist Winona Peterson. Using the 1868 Warren maps as a base and working at a scale of 1 inch equals 200 feet, Harrison initially produced 25 hand-drawn sheets, then produced another 7 overlapping sheets for a total of 32 sheets. The use of 1863 photographs, the Bachelder, Cope, and Elliott maps, soldier and civilian written descriptions from the battle era, and early post-war photographs, drawings, and paintings, led to changes depicted on the 1868 Warren map and ultimately resulted in the 1863 period plans.

The 32 sheets covered most of the park area except East Cavalry Field and a few gaps within the park that were missed due to overlapping maps.[17] The Chief of Maintenance at the time requested the layout of the sheets to frame key maintained areas within the park—the resulting overlap and gaps later hampered the park's ability to stitch the maps together in their Geographic Information System.[18]

In conjunction with each 1863 sheet, Peterson and Harrison created a spreadsheet to record parcel names, identification reference numbers, how the feature influenced the battle (described in greater detail below), and sources of information. The research team intended the spreadsheets to help identify which features were the highest priorities for rehabilitation dollars and effort. In addition, the spreadsheets served as footnotes to capture data gaps. The maps and associated spreadsheets represent a distillation of several decades of research by park historians, though the spreadsheets were not fully completed.[19]

EMMITSBURG ROAD RIDGE CULTURAL LANDSCAPE REPORT (2002)

In 2002, the park completed a cultural landscape report for the Emmitsburg Road Ridge area with assistance from the Olmsted Center for Landscape Preservation. The report contains a site history, existing conditions documentation, an analysis and evaluation, and treatment recommendations. Focusing on an area in the heart of the battlefield, the project team documented portions of the battle-era Codori and Trostle farms, and the entire Klingel Farm. A key vegetation feature in the study area included the Codori and Trostle thickets along Plum Run and key topographic features included the Emmitsburg Road Ridge, the Codori Knoll, and the Trostle-Neinstedt Ridge.

Based on the draft Battlefield Cultural Landscape Report and the 1999 draft of the Emmitsburg Road Ridge Cultural Landscape Report, the park carried out

a demonstration project between 1999 and 2000 to ground truth the planning process and recommended implementation plan articulated in the GMP and Cultural Landscape Reports. The park selected the Codori-Trostle Thicket area because of its dramatic change in character since the 1863 battle due to tree growth, its central location within the battlefield, and the importance of the area with respect to battle tactics. The project involved tree removal, replanting thicket-type vegetation, reestablishing circulation features, creating a riparian buffer, and rebuilding fences. Based on the success and lessons learned, the park scoped additional rehabilitation projects and continued to research the historic appearance of the battlefield, how landscape features influenced the battle outcome, and what treatment actions were necessary.[20]

KOCOA: FEATURES SIGNIFICANT TO THE OUTCOME OF THE BATTLE

With the information compiled in 34 binders and the 1863 period plan, the park created a terrain analysis map, which paired battle action with features that were significant to the outcome of the battle. To identify significant features, the research team applied a military analysis method, KOCOA, and landscape character analysis.

The US Army uses terms in their manuals to analyze terrain and battle tactics in an organized and systematic fashion. This battlefield analysis method, KOCOA, was used to determine the effect that various battlefield features had upon the battle action. The acronym KOCOA represents **K**ey and decisive terrain, **O**bstacle, **C**over and concealment, **O**bservation and fields of fire, and **A**venue of approach. 'Key terrain' refers to any locality or area that affords a marked advantage to whichever combatant seizes, retains, or controls it, while 'decisive terrain' is a feature that must be held in order to achieve victory. 'Observation' is defined by what can be seen from a given feature and 'Fields of fire' is the area that can be covered by an infantry or artillery fire from a given feature. 'Cover' is protection from enemy fire. 'Concealment' is protection from enemy observation, and examples include stone walls, woods, and ridges. 'Obstacles' are any natural or man-made feature that prevents, delays, or diverts the movement of military forces, such as fences, buildings, and field fortifications. 'Avenues of approach' are defined as the routes used by troops, including roads, farm lanes, and open fields. In the GMP (1999), the park prepared a map showing Key Battle Landscape Features based on KOCOA principles (Figure 10). Detailed definitions of these terms are contained in the introduction and glossary to the *Treatment Philosophy* (2004).

Using KOCOA, each feature that played a role in determining battle tactics was documented and mapped. For example, the Herbst Woodlot was an avenue of approach for troops, hence movement through its open character was critical, a characteristic which was documented in historic photographs. In contrast, the

Patterson Woods were used for concealment only, hence the size, density, and boundary were critical to the battle action. Both man-made and natural landscape features were included in the analysis.

Once the significant features were identified, they became a priority for preservation and rehabilitation. Large-scale features were those that influenced the decisions of the generals for both armies, while small-scale features affected the experiences of the soldiers. Examples of large-scale terrain features include the pattern of open versus wooded, or closed, land and the 1863 circulation system of turnpikes, railroads, farm lanes, and local roads. Hence, priorities for preservation and rehabilitation became the removal of woods where in 1863 there were fields, to better interpret the key and decisive terrain, and the observation and fields of fire that were pivotal during the battle. Similarly, farm lanes that had fell into disuse were to be reinstated. Based on this analysis the park identified 576 acres of woodlands to be removed, 115 acres of open areas to revert to woods, and 16.7 miles of historic lanes and roads to be repaired, rehabilitated, or reconstructed.

Small-scale features that impacted the soldiers were also to be repaired or replaced, including fences, orchards, open woodlots, and buildings. This effort would allow visitors to better understand the terrain, obstacles, and avenues of approach that affected the soldiers during combat. Based on the research analysis, the park identified 39.1 miles of field boundaries to be reinstated using fencing, vegetation patterns, and hedgerows to restore the patchwork field patterns; 160 acres of orchards to be replanted to reflect their historic size and spatial configuration; 278 acres of forest to be rehabilitated to match the character of 1863 woodlots; and 65 acres of thickets to be managed at the height of 10 to 15 feet, as they appeared in 1863 battlefield images.[21]

TREATMENT PHILOSOPHY: THE 1863 LANDSCAPE (2004)

Implementation of the landscape rehabilitation required more detailed guidance. To fill this need, the park prepared the *Treatment Philosophy: The 1863 Landscape,* completed in 2004, to synthesize the general guidance from the GMP and the research findings of the draft Battlefield Cultural Landscape Report. The *Treatment Philosophy* provides treatment principles to preserve and rehabilitate the resources relating to the Battle of Gettysburg within the Major Battle Action Area. Organized by category (cultural features, natural features, defense works, and industrial sites), then by feature type, the document aids in the prioritization of rehabilitation efforts across the entire battlefield landscape. The intent of the treatment philosophy is to:

- Define the appropriate level of rehabilitation including the extent of open versus wooded areas and viewsheds within and beyond the park boundaries,

- Provide guidance on rehabilitating, restoring, preserving, maintaining, removing landscape features to better interpret and comprehend the battle strategy and outcome,
- Provide guidance on replacing or reconstructing features that were present in 1863, but missing in 2004,
- Prioritize the maintenance of historic structures with limited funds,
- Identify types of archeological resources that require protection, and
- Define a balance between natural resource and environmental concerns with preservation of the park's historic landscape.[22]

The *Treatment Philosophy* continues to serve as the guiding document in the landscape rehabilitation and management process. Key points are extracted in the next chapter of this report as part of the Battlefield Rehabilitation Framework.

UPDATED NATIONAL REGISTER DOCUMENTATION (2004)

Two informative documents were completed at the outset of the GMP process, a Cultural Landscapes Inventory (CLI) in 1995 and a final draft National Register nomination for the enlarged park in 1996.[23] Initiated by the Denver Service Center and completed by Gettysburg National Military Park staff Kathy G. Harrison and Winona Peterson, the CLI and National Register documentation provided base information on the history and evolution of the battlefield and park landscapes and maps that were incorporated into the park's Geographic Information System. The CLI and National Register documentation called attention to the significance of cultural landscape features in interpreting the battlefield story, and the extent to which the landscape had changed since the Civil War battle. However, more detailed research was necessary to fully document the park's historically significant resources. As a result, the National Register documentation was not finalized until 2004 and more detailed research on the landscape was called for in the format of a series of cultural landscape reports.[24]

Prior to the National Register update in 2004, the park was administratively listed in the National Register of Historic Places with the establishment of the program in 1966, when the park covered 3,865 acres. The park was subsequently included in the Gettysburg Battlefield Historic District, which was listed in the National Register in 1975. The park updated the National Register documentation in 2004 to encompass 5,989 acres within the parks 1990 expanded legislative boundary. The updated documentation recognizes three nationally significance landscapes: the site of the Battle of Gettysburg, the Gettysburg National Cemetery, and the commemorative landscape of avenues and monuments. Within these three landscapes, the National Register listing identifies 135 contributing buildings, 277 contributing structures, and 929 contributing objects that include stone fences, breastworks, lunettes, monuments, gravestones, historic roads and avenues, and bridges. The listing also recognizes 112 contributing sites with topographic

features that influenced the outcome of the battle, including farm fields, meadows, thickets, hedgerows, orchards, groves, woods, ridges, knolls, hills, runs, creeks, outlots, as well as a railroad cut, ravine, gorge, spring, and copse of trees.[25]

The listing ascribes national significance under Criterion A, for its association with the Civil War; Criterion B, for its association with several significant persons including Abraham Lincoln, Robert E. Lee, George Meade, Daniel Sickles, John Bachelder, John Nicholson, David McConaughty, Emmor Bradley Cope, and William Saunders; Criterion C, for designed landscape elements relating to the commemoration of the battlefield; Criterion D, for remaining Civil War research questions that can be answered through archeological investigations; Criteria Consideration D, for the Gettysburg National Cemetery, and Criteria Consideration F, for a property primarily commemorative in intent with its own historical significance.[26]

The documented areas of significance for the property include military, politics/government, landscape architecture, conservation, and historic archeology. The period of significance extends from 1863, the time of the battle, to 1938, the 75th anniversary of the battle, when Franklin D. Roosevelt dedicated the Eternal Light Peace Memorial. Additional key dates include 1864, when commemorative efforts began; 1893, when the Gettysburg Battlefield Commission was established and park development began; 1895, when the battle ground became federal land; 1896, when the US Supreme Court supported federal management of the battlefield under the War Department in *United States v. Gettysburg Electric Railway Co* (160 U.S. 668); 1913, the 50th reunion of the battle when a Peace Memorial was proposed; 1927, and the death of Emmor Bradley Cope, the last surviving Battlefield Commission designer.[27]

DRAFT GETTYSBURG BATTLEFIELD LANDSCAPE REHABILITATION PLAN AND PRIORITIZATION SPREADSHEETS, 2004–2007

To provide detailed guidance for treatment implementation, the park developed the "Gettysburg Battlefield Landscape Rehabilitation Plan," also known as the "Cultural Landscape Report: Reestablishing the Major Patterns that Organized the 1863 Battlefield Landscape" and informally known as the "Five-Year Plan."[28] This effort continued the research and documentation carried out for the Battlefield Cultural Landscape Report. Though the document remained in draft throughout the battlefield rehabilitation effort, the research team of Kathy G. Harrison and Winona Peterson used the document to provide specific guidance for identifying rehabilitation needs within the Major Battle Action Area.

A key component of the Battlefield Landscape Rehabilitation Plan was a spreadsheet to guide ongoing treatment implementation, in which the research team compiled a list of features and their importance with respect to the 1863

battle. The spreadsheet included prioritization of features to rehabilitate based on how they impacted the outcome of the battle in each part of the battlefield within the park. The team provided a two tiered ranking. First tier features were to be rehabilitated with available funding and second tier features could be rehabilitated if additional funds became available. However, the spreadsheet was not completed for the entire park, hence work continued until 2010.[29]

Research for the Battlefield Landscape Rehabilitation Plan followed the approval of the GMP and included some revisions to the park's earlier understanding of the landscape and its features. Since the scope of the plan was all-encompassing and was intended to be carried out at an exhaustive level of research as defined by park standards, the plan was not completed before rehabilitation was initiated. However, the historical data compiled for the plan is used throughout this Record of Treatment to describe battle-era conditions, implemented treatment tasks, and sources of historical information.

DEFENSE OF CEMETERY HILL AND ADDITIONAL CULTURAL LANDSCAPE REPORTS, 2004–2016

Following the updated National Register documentation, the park completed cultural landscape reports for the Defense of Cemetery Hill in 2004 and Little Round Top in 2012. Both reports were completed under an indefinite delivery/ indefinite quantity (IDIQ) contract. The detailed documentation in these reports underscored the importance of managing both the battlefield landscape and the commemorative features, and both cultural and natural features that contribute to the understanding of the battle.[30]

In 2004, the park completed a cultural landscape report for the Defense of Cemetery Hill through a contract with the architecture/engineering firm Einhorn, Yaffee Prescott and its subcontractor Rhodeside & Harwell Incorporated. The report's project area focused on the northern portion of Cemetery Ridge, occupied by the battle line of the Union Army from the evening of July 1 throughout the remainder of the battle, and included 1863 properties owned by David Ziegler, Abraham Brian, Peter Frey, and Lydia Leister. The report contained chapters for site history, existing conditions, analysis and evaluation, treatment, and a cost estimate for implementing the treatment recommendations.

In the Defense of Cemetery Hill project area, the park's GMP called for the existing Visitor Center and Cyclorama Building and their associated parking lots to be removed and to reestablish the 1863 landscape, which was key terrain held by Union troops. The treatment recommendations include limiting parking in the rehabilitated area, restricting elements that were not part of the battle or commemorative eras, and utilizing existing curb cuts to retain a paved vehicular connector between Taneytown Road and Emmitsburg Road. Recommendations

also include the preservation of all existing battle-era features, the burial of overhead utility lines, the addition of pedestrian walkways and interpretive signs, rehabilitation of the topography, orchards, woodlots, walls, and fence lines, and relocation of monuments moved from their original location during the Cyclorama construction.[31]

Work associated with the rehabilitation of the landscape studied as part of the Defense of Cemetery Hill Cultural Landscape Report was divided into three phases. Phase I included reconfiguring the former Cyclorama parking lot, including the rehabilitation of the ravine, and prompted further study by the park and the Gettysburg Foundation on the current and future use of the parking lot.[32] Phase II included the rehabilitation of the former Visitor Center parking lot and began in January of 2014. The contracted work includes bringing in fill to rehabilitate battle-era topography and reconstructing a stone wall and installing a sidewalk along Taneytown Road. The park completed Phase III in two parts. The first component, IIIA, included rehabilitation of the Brian orchard, Frey orchard, meadow, and field, and a portion of the Leister large field. The second component, IIIB, completed in March 2013, included the demolition of Cyclorama Building and subsequent removal of the sidewalks. The removal of the associated parking areas is pending.[33]

Initiated in 2010 and completed in 2012, the Little Round Top Cultural Landscape Report was completed by a team that included Einhorn, Yaffee Prescott Architecture & Engineering; Rhodeside & Harwell Landscape Architecture & Planning; Hunter Research; Fuss & O'Neill, Inc.; and C.S. Davidson, Inc. The report contains chapters for site history, existing conditions and character area analysis, evaluation of historic integrity, and treatment recommendations and management approach. A traffic survey for Little Round Top, completed by Fuss & O'Neill, Inc., is included in the report as an appendix. The report focused on the enormous volume of visitors to Little Round Top, the existing capacity of paths and roads at the site, and the resulting impacts to the site's natural and cultural resources. The treatment plan addressed recommendations for vehicular circulation and parking, pedestrian circulation at the summit and core area, pedestrian circulation to additional sites including the west face monuments and the 20th Maine, and gathering area configurations. The park is currently contracting for an Environmental Assessment (PEPC 50904) to study alternatives presented in the report.[34]

An updated and expanded cultural landscape report for the Gettysburg National Cemetery (PEPC 47066) is scheduled to be completed in fiscal year 2017. This will provide an update of a 1994 report prepared by Reed Engle, "Cultural Landscape Report, The Soldiers' National Cemetery," and present additional treatment recommendations. Two additional reports will be funded in the near future, one for the First Day Union 1st Corps-Harman Farm area, to be initiated in 2015, and the Culp's Hill area to be initiated in 2016.

TREATMENT FUNDING AND IMPLEMENTATION, 1998–2008

In 1998, Gettysburg National Military Park received a base increase of $1,032,000, which allowed the park to invest in additional staff, equipment, and projects to improve protection and preservation of the battlefield. That same year, the park received $364,000 of one year funds, which allowed the park to carry out numerous projects, including the rehabilitation of almost 22,000 feet of historic fences and installation of a horse trail. The park moved the existing horse trail off of its non-historic alignment due to extreme resource damage in the fields of Pickett's Charge. In these fields, the trail had eroded down to bedrock. The majority of the horse trail construction followed a new alignment and in conjunction with this project, the park rehabilitated historic lanes and installed non-historic connectors adjacent to historic fence lines.[35] In the same year, Congress released $2.95 million in appropriated funds for land acquisition for the park and friends groups acquired several key parcels in the battlefield landscape, including a farm within the First Day battlefield and the Little Round Top battle site of Company B of the famed 20th Maine.[36]

In 1999, with the GMP finalized, the park was able to carry out a number of projects, bolstered by the increased base funding of the previous year and over $400,000 of one year funds, plus another one million dollars for land acquisition. The most notable acquisition, initiated in 1999, was the Gettysburg National Tower property, which had been an intrusion on the battlefield landscape since the tower's construction in 1974. Meanwhile, the proposed removal of the Cyclorama Building prompted the park to fund a cultural landscape report for the Defense of Cemetery Hill landscape, which would include a treatment plan for the area after the removal of the building. In addition, the GMP guidance prompted the park to initiate the Codori-Trostle Demonstration Area project to ground-truth the proposed park-wide landscape rehabilitation in the years ahead. The park also repaired and rebuilt 23,000 feet of historic fences, treated 54 acres and re-treated 51 acres to eliminate non-native invasives, continued vegetation clearing on Little Round Top, seeded cleared areas with warm season grasses, and removed utility lines along Emmitsburg Road and Millerstown Road.[37]

With the final approval of the GMP in November 1999, landscape rehabilitation work implementation began in 2000. While reestablishing the historic appearance of the battle landscape, the park also developed "best management practices" to protect habitat and water quality. To aid in implementation, the Friends of the National Park at Gettysburg agreed to partner in fundraising for the effort, as well as find other partners to assist in implementation. In November 2000, the Friends launched their Remembrance Trust program, designed to raise funds for landscape rehabilitation.[38]

The first major landscape rehabilitation effort took place in the Codori-Trostle thicket area, the site of the famous countercharge of the 1st Minnesota volunteers. The site contained several key features for the landscape rehabilitation program, including non-historic trees, exotic species, a stream corridor, non-historic fences, and was being used as a cattle pasture. In the winter, three acres of non-historic trees were removed by the Gladfelter Paper Company. In June, volunteers installed 3,000 feet of historic fence, which resulted in the relocation of the cattle from the streambed corridor.[39] The project received widespread publicity because of the enhanced views of the battle landscape and for its best management practices along Plum Run and the Chesapeake Bay Watershed.

In July 2000, the park demolished the Gettysburg National Tower. In subsequent months the park removed the former gift shop, associated roads and parking areas, and began rehabilitation of the landscape to its 1863 appearance, erasing all vestiges of the tower's 26 years in the park. Also in 2000, the park partnered with the Audubon Society to create more grassland habitat in the park, as the park's objective to reestablish the open battlefield landscape meshed with the Society's objectives for the conservation of declining grassland species and habitats. The park also weighed the benefits of enrolling in the Conservation Reserve Enhancement Program (CREP), a new program funded through the US Department of Agriculture and the Pennsylvania Department of Agriculture. CREP was established to take highly erodible croplands out of production in order to improve water quality, reduce soil erosion, and improve wildlife habitat. As a result, the park identified several fields that would qualify for the CREP program.[40]

To guide rehabilitation projects, the project team used Kathy G. Harrison's 1863 period plan, GIS data, draft treatment narrative notes, and historic photographs. By 2002, the draft *Treatment Philosophy: The 1863 Landscape* also informed decisions. The project team did not base rehabilitation decisions solely on the 1863 period plan unless there was no known photographic or iconographic documentation and no likelihood that any would appear in the near future. In areas where rehabilitation was solely based on map analysis, historians visited the site to make determinations on clearing and planting and to complete an on-site visual assessment. With this field methodology involving staff from cultural and natural resources, the park performed its first "health cut" in a historic woodlot during January and February 2002, and completed health cuts in the Trostle, Herbst, and Codori-Trostle woodlots that year.[41]

Funding for the landscape rehabilitation came predominantly from Congressional earmarks and donated funds. Beginning in fiscal year 2003, the park received $300,000 a year for landscape rehabilitation work. This enabled the park to perform health cuts in the 60 acres covering Rose Woods, Rose West Woods, and Stony Hill Woods and in 60 acres on the north side of Culp's Hill (completed in

the winter of 2003–2004). Additionally, the funding supported the removal of 39 acres of non-historic trees between Warfield Ridge and Devil's Den to restore the view that General Hood's division witnessed on July 2, 1863, of Union troops posted at Devil's Den. With funding and assistance from the Friends of the National Parks at Gettysburg and the Marine Corps Command and General Staff College, the park restored 3,000 feet of historic worm fence in the field of Pickett's Charge. Volunteers constructed another 3,200 feet of fence elsewhere in the park and the park's maintenance crews also constructed yet another 3,200 feet of fence and replaced 450 feet of old deteriorated fences.[42]

Also in fiscal year 2003 the park completed the first phase of realignment of park horse trails and purchased root stock for future orchard replanting. With the assistance of the Friends of the National Parks at Gettysburg and the Conservation Fund, the park acquired and demolished the Home Sweet Home Motel, located across Emmitsburg Road from the Cyclorama Building, and rehabilitated the landscape to its 1863 appearance. The completion of the Defense of Cemetery Hill Cultural Landscape Report and Treatment Plan in 2004 laid the groundwork for removing the Cyclorama Building and rehabilitating the Zeigler's Grove area in the years ahead.[43]

In fiscal year 2004, the park once again received a $300,000 appropriation for landscape rehabilitation implementation. Work accomplished in 2004 included a 74-acre health cut on the north side of Culp's Hill; removal of 18 acres of non-historic trees, primarily in Rose Lane Gap and in the vicinity of the Slyder and Hammer/Bushman farms; 34 acres of trees planted in 1863 woodlot areas at the Wills/Winebrenner farm, Barlow's Knoll, and East Cavalry Field; four acres of stream buffer planted; and 177 acres treated and 150 acres re-treated to eradicate exotic plants. Guidance from the *Treatment Philosophy* allowed fence rehabilitation to progress rapidly. The park constructed 1,940 feet of Virginia worm fence, 1,420 feet of post and rail fence, and repaired or replaced 2,400 feet of existing historic fence.[44]

With another Congressional earmark of $300,000 in fiscal year 2005, the park made marked progress throughout the battlefield landscape. Projects included 69 acres of non-historic woods removal in the south end of the park, health cuts on 41 acres primarily on Culp's Hill, and planting of five orchards covering 12.5 acres at the Hammer/Bushman, Sherfy, Henry Spangler, Trostle, and Wentz properties. In sum by September 2005, the landscape rehabilitation work included the replanting of 18 orchards covering 42.4 acres. The park also planted six acres of trees at East Cavalry Field, for a total of 43 acres replanted to date, and planted 3.7 acres of stream buffers for erosion control, bringing the total to 8 acres. Fence construction also continued and with the assistance of volunteer groups, the park built, repaired, or replaced 53,540 linear feet (over 10 miles) of Virginia worm and post and rail fences, and removed 5,340 feet of rotten fence.[45]

The park received a Congressional earmark for fiscal year 2006 of $200,000 specifically for landscape rehabilitation, bringing the total to $1.1 million dollars for landscape rehabilitation since 2002. The funds, combined with donated and NPS funds, enabled the park to contract the last phase of non-historic vegetation removal between South Confederate Avenue and Devil's Den in summer 2006. Crews also performed health cuts in the vicinity of the McMillan House on West Confederate Avenue and removed non-historic trees in the Oak Hill area adjacent to the Eternal Light Peace Memorial. Additional accomplishments included the removal of 75 acres of non-historic woods, health cuts on 55 acres, and replanting 13 historic orchards, including Rose Lane, Rose Farm, Rose North, Rose Old, Henry Spangler, Rogers, Codori Fruit Garden, Frey South, McPherson Fruit Garden, Forney Market Orchard, Forney Fruit Garden, McClean Tenant Farm Orchard, McClean Tenant Farm Fruit Garden, Wigert Orchard, and Wigert Fruit Garden. The total orchards replanted covered 29.79 acres, for a total of 31 orchards spanning 72 acres replanted to date. The park also planted two acres of trees, treated 153 acres for exotic vegetation removal, and built one mile of historic fence, primarily through the Friends annual volunteer work day. The park also removed approximately one-half mile of non-historic fence and removed one major non-historic structure—the former Ford dealership—and rehabilitated one-quarter mile of horse trail.[46]

Due to a continuing resolution, the park lost the $200,000 earmark that had been in the Interior appropriations markup for fiscal year 2007 for landscape rehabilitation. But with funds left over from 2006 and with donated funds, the park was able to continue implementation. The park completed the last of three phases of the removal of non-historic vegetation between Warfield Ridge and Devil's Den, allowing visitors to see what General Longstreet's troops saw when they left the protective tree line at Warfield Ridge on the afternoon of July 2, 1863—Union artillery on Devil's Den trained directly upon their line of advance.[47] Also in fiscal year 2007, non-historic vegetation was removed along Long Lane, at Steven's Knoll, at Oak Hill in the vicinity of the Eternal Light Peace Memorial, and between the McMillan house and the modern housing development of Colt Park combining to a total of 36 acres of non-historic woods removal. The park planted an additional 28 acres of orchards and treated 36 acres of woody vegetation and re-treated 45 acres, plus treating 48 acres and retreating 78 acres for exotic vegetation. In the same year, 1.3 miles of historic fence were installed by Friends of Gettysburg volunteers.[48]

In April 2008, the new Museum and Visitor Center complex opened, marking a dramatic change in the visitor experience and circulation through the park landscape. Due to the delayed relocation and restoration of the Cyclorama painting, the grand opening ceremony took place in September of that year. In fiscal year 2008, the park received another $200,000 earmark from Congress for landscape rehabilitation. The park finished woods removal in the South

Confederate Avenue and Devil's Den area, which dramatically changed the appearance of the area after the removal of over 90 acres of woods over three years. In other areas, the park removed 40 acres of non-historic woods, for a total of 239 acres removed to date, and performed health cuts on 79 acres of woodland, for a total of 350 acres treated to date. Vegetation management crews followed up the woodland health cuts by treating 60 acres of historic woodlots to hold down woody vegetation and to remove exotics, resulting in 350 acres of woodlots treated to date.[49]

In fiscal year 2008, the park revisited the rehabilitation of the Sherfy Peach Orchard due to a nematode infestation. The nematodes were eradicated and the orchard was replanted in April, in time for the Friends of Gettysburg's Spring Muster. In addition, the park planted an additional 13 historic orchards, for a total of 32 historic orchards replanted to date (covering 79 acres). No planting of historic wooded areas took place in 2008 and the park's total acres of historic woods replanted was 43 acres. Likewise, no thickets or riparian buffers were established, with 8.4 acres established to date, and no historic lanes and paths rehabilitated, leaving the park's total at 5.22 miles of rehabilitated lanes and paths. Volunteers constructed almost a mile of post-and-rail fence, bringing the total length of fences rebuilt up to 11 miles.[50]

FACILITY MANAGEMENT SOFTWARE SYSTEM, 2012

The park utilizes the Facility Management Software System (FMSS) to identify, manage, and analyze maintenance operations. The park's real property is divided into many asset types, such as Roads, Trails, and Maintained Landscapes, and maintenance tasks and costs can be tracked in the system. In 2012, the park developed a detailed hierarchy for their maintained landscapes. In FMSS, the park is divided into seven Maintained Landscape locations. Each location delineates a geographic area with similar maintenance requirements. As a result, the Maintained Landscape location boundaries are defined more by maintenance and operations parameters than any specific historic, cultural resource, or natural resource boundary. The locations are listed below and shown in Figure 11.

1. First Day Battlefield
2. Second Day Battlefield (Pickett's Charge)
3. Culp's Hill
4. Second Day Battlefield South (Little Round Top and Devil's Den)
5. East Cavalry Field
6. Gettysburg National Cemetery
7. Visitor Center

ENDNOTES

1 Gettysburg National Military Park, Revised January 22, 2015, http://landsnet.nps.gov/tractsnet/documents/GETT/Segment_Maps/gettsmindex.pdf. Within the legislative boundary, 4,427 acres are fee simple and 606 acres are less than fee. This acreage includes the National Cemetery and East Cavalry Field.

2 "Gettysburg NMP Stats Report Viewer," accessed November 15, 2017, https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20(1904%20-%20Last%20Calendar%20Year)?Park=GETT. Since completion of the park's GMP in 1999, visitation has exceeded one million visitors per year.

3 For FMSS, these areas are aggregated in to seven locations. The locations delineate geographic areas with similar qualities, land use, resource types, and maintenance requirements. These include: (1) First Day Battlefield, (2) Second Day Battlefield North and Pickett's Charge, (3) Culp's Hill, (4) Second Day Battlefield South and Little Round Top and Devil's Den, (5) East Cavalry Field, (6) Gettysburg National Cemetery, (7) Visitor Center.

4 Eric Campbell, *Treatment Philosophy: The 1863 Landscape*, United States Department of the Interior, National Park Service, March 2004, 96-107; GETT CSI/QLF article.

5 Gettysburg National Military Park, Revised January 22, 2015, http://landsnet.nps.gov/tractsnet/documents/GETT/Segment_Maps/gettsmindex.pdf.

6 Supt Annual Report, FY97; Winona Peterson interview, 6/12/2013.

7 *Final General Management Plan and Environmental Impact Statement*, Vol. 1, *Final GMP/EIS*, United States Department of the Interior, National Park Service, June 1999, 34-43; GETT CSI/QLF article. The park also used 1996 orthographic photos to analyze the extent of change in the landscape.

8 *Final General Management Plan*, 31, 33, 43.

9 Ibid., 50. The GMP designates the resource area the "Soldiers' National Cemetery Resource Area." Since 1872, the name has officially been Gettysburg National Cemetery and more accurately describes the original cemetery and cemetery annex defined in the GMP for the resource area.

10 Ibid.

11 Campbell, *Treatment Philosophy*, 2; *Final General Management Plan*, 124, 276.

12 *Final General Management Plan*, 61-64, 124.

13 A cultural landscape report already existed for cemetery. In 1989 Reed Engle, Gettysburg NMP Chief of Cultural Resources and Maintenance, prepared a cultural landscape report that remained in draft until 1994, by which time many of the treatment recommendations had been implemented including closure of the cemetery to vehicles, replanting the line of Norway spruce along the cemetery wall, and the restoration of numerous landscape features. In collaboration with park staff, the Olmsted Center for Landscape Preservation assisted with an update to the report in 1999, but the document remained in draft. An updated cultural landscape report (PEPC 47066) is scheduled to be completed in fiscal year 2017.

14 Supt Annual Report, FY 1997, 5/15.

15 GETT Historian Files, Raw Data files, provided by Winona Peterson, 2/15/2013.

16 GETT Historian Files, Treatment Plan Notebook Contents, provided by Winona Peterson, 2/15/2013.

17 GETT Map Scans, provided by Winona Peterson, 2/15/2013.

18 GETT comments by Winona Peterson, 5/19/2014. Note, as detailed in later sections of this report, the maps generated as part of this Record of Treatment seek to eliminate the overlaps and gaps.

19 GETT History files provided by Winona Peterson, 2/15/2013; GETT comments by Winona Peterson, 5/19/2014.

20 Supt Annual Report, FY 2001, park files.

21 GETT History files provided by Winona Peterson, 2/15/2013.

22 Campbell, *Treatment Philosophy*, 3-6.

23 Initial National Register documentation for the Gettysburg Battlefield Historic District was submitted to the Keeper of the National Register of Historic Places in February 1974.

24 Supt Annual Report, FY97, online, and Winona Peterson interview, 6/12/2013.

25 Kathleen Georg Harrison, *National Register of Historic Places Registration Form for Gettysburg National Military Park*, Gettysburg National Military Park, January 2004, 2 and Sect 7:36-96.

26 Ibid., 5 and Sect 8:1-2.

27 Ibid., Sect 8:1-2 and Sect 8:89-90.

28 Supt Annual Report, FY 2003, park files.

29 GETT comments by Winona Peterson, 5/19/2014.

30 *Final General Management Plan*, 11.

31 Rhodeside and Harwell Inc. and Einhorn Yaffee Prescott, *Cultural Landscape Report: Defense of Cemetery Hill*, United States Department of the Interior, National Park Service, June 2004, 162.

32 PEPC 26547, The proposed parking lot configuration differs from the CLR recommendation and the need for parking is higher than anticipated. GETT comments by Winona Peterson, 5/19/2014.

33 GETT comments by Winona Peterson, 5/19/2014.

34 GETT comments by Winona Peterson, 5/19/2014.

35 GETT comments by Winona Peterson, 5/19/2014.

36 Superintendent's Annual Report, FY 1998.

37 Superintendent's Annual Report, FY 1999.

38 State of the Parks, GETT/EISE, c. October 2000 (DSC eTIC GETT files).

39 Superintendent's Annual Report, FY 2001, park files.

40 Superintendent's Annual Report, FY 2001, park files.

41 State of the Parks, GETT/EISE, c. October 2002 (DSC eTIC files).

42 State of the Parks, GETT/EISE, October 31, 2003 (DSC eTIC files); Superintendent's Annual Report, FY 2003, park files.

43 Ibid.

44 State of the Parks, GETT/EISE, November 15, 2004 (DSC eTIC files); Superintendent's Annual Report, FY 2004, online.

45 Superintendent's Annual Report, FY 2005, online.

46 Superintendent's Annual Report, FY 2006, park files.

47 Superintendent's Annual Report, FY 2007, park files.

48 Ibid.

49 Superintendent's Annual Report, FY 2007, park files.

50 Superintendent's Annual Report, FY 2007, park files.

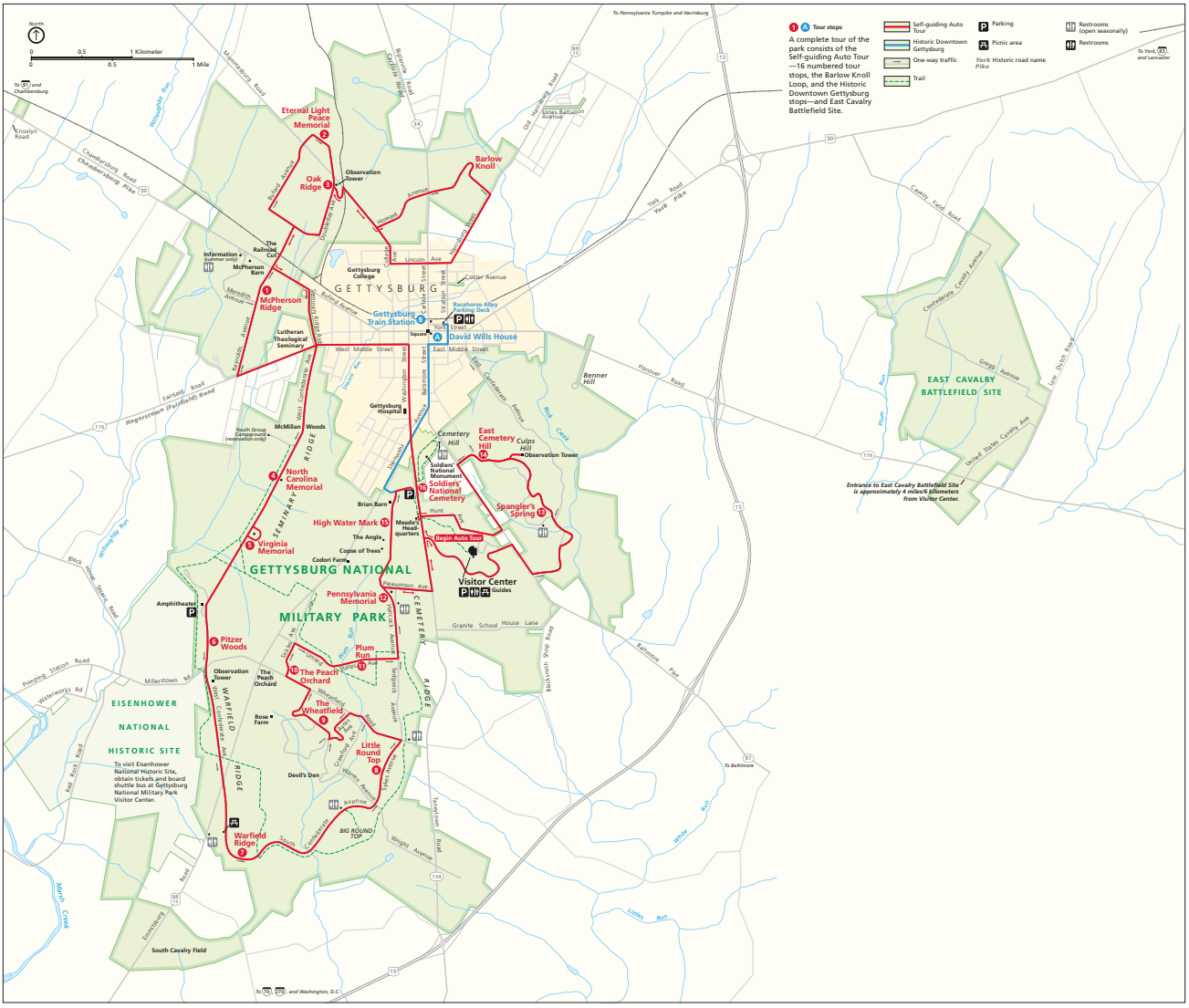


Figure 1. Gettysburg National Military Park, park brochure map (http://www.nps.gov/hfc/cfm/carto-detail.cfm?Alpha=GETT).

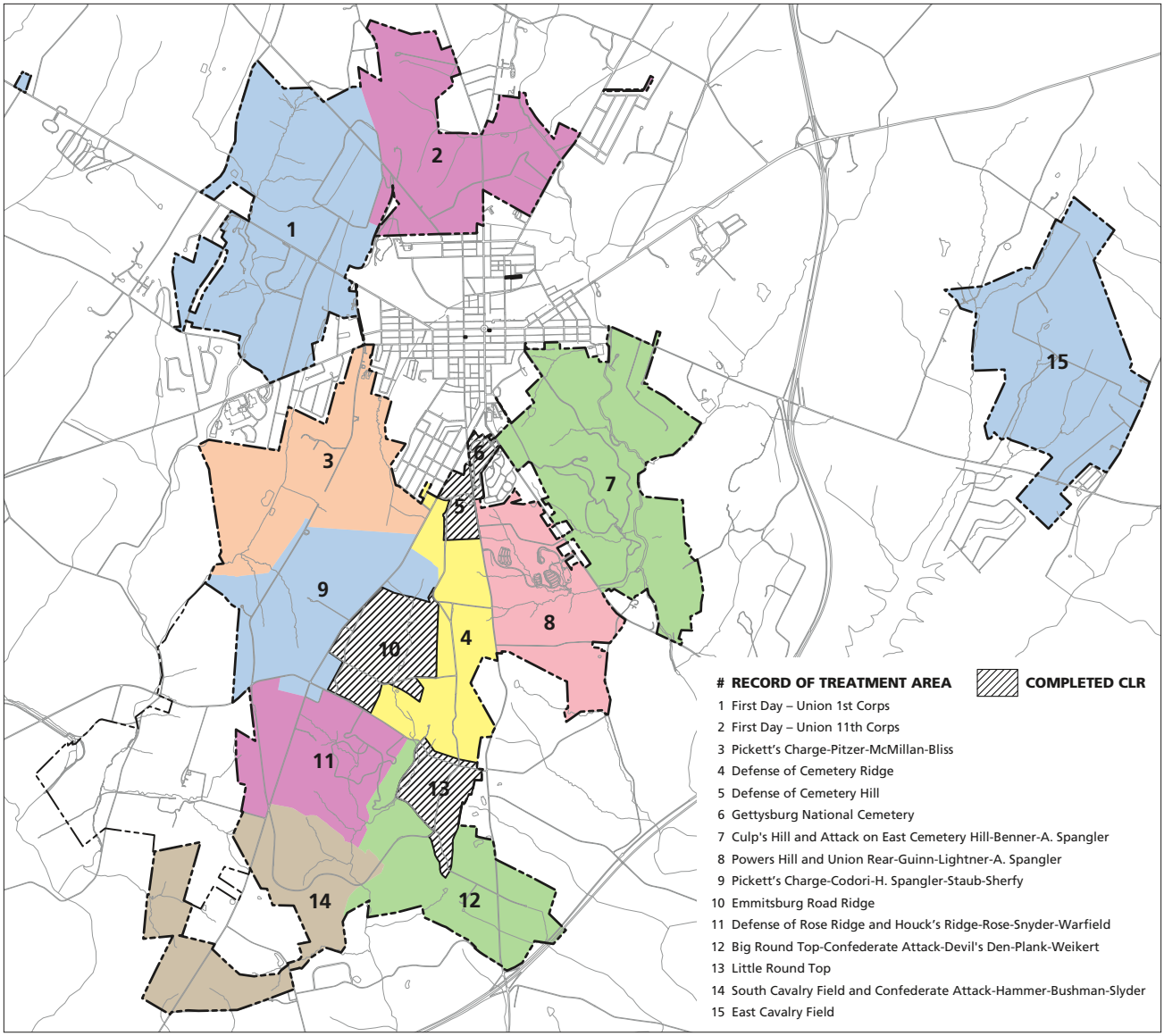
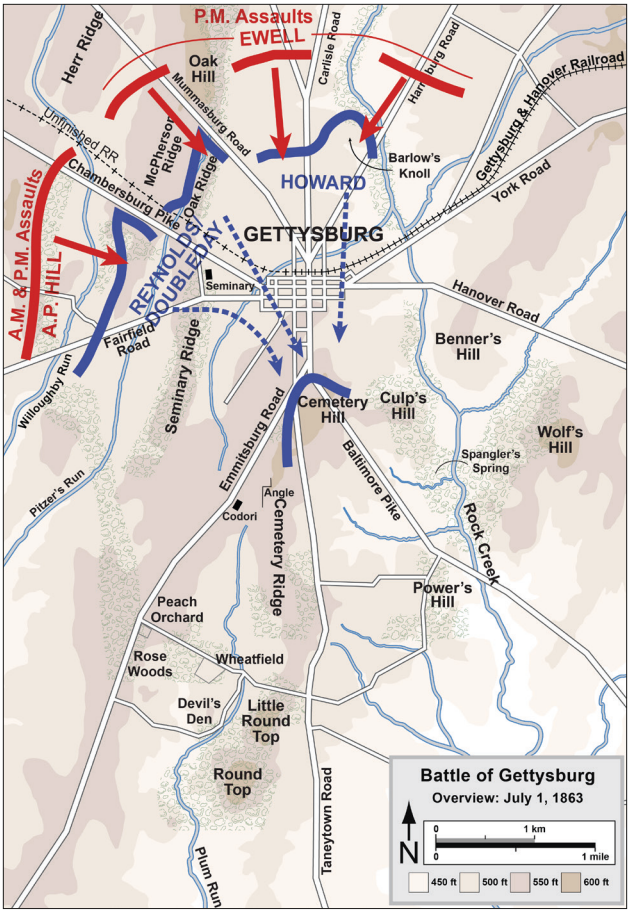
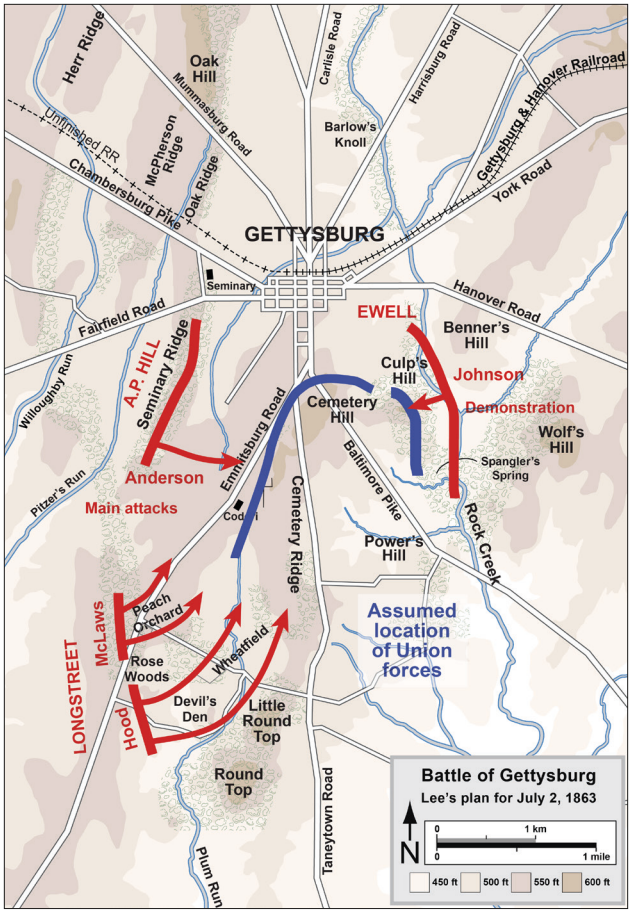


Figure 2. Record of Treatment areas. Plan view, 2013 (Olmsted Center for Landscape Preservation, hereafter, OCLP).





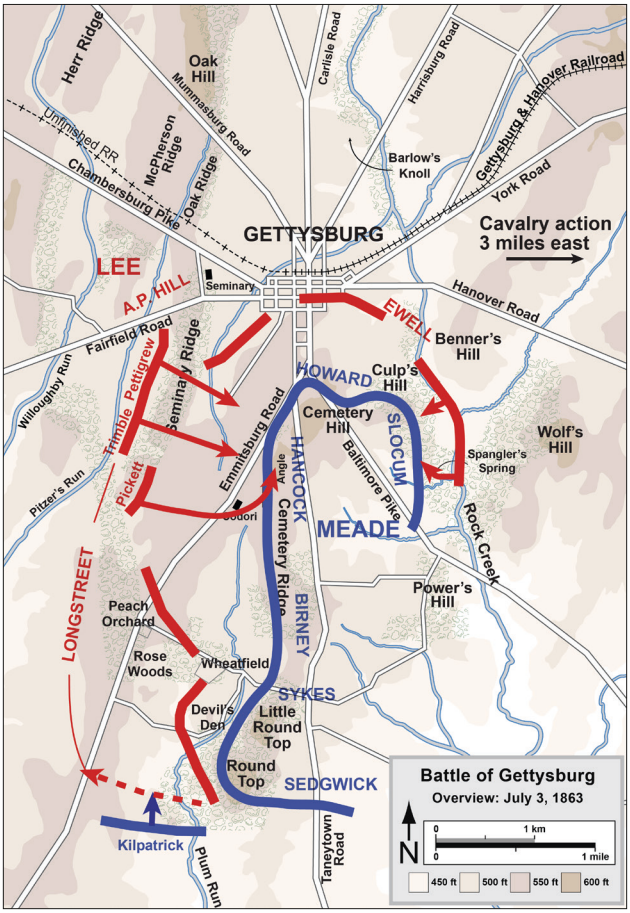


Figure 3 (top left). Battle overview of the First Day. Plan view (Hal Jespersen, www.cwmaps.com).

Figure 4 (top right). Battle overview of the Second Day. Plan view (Hal Jespersen, www.cwmaps.com).

Figure 5 (bottom left). Battle overview of the Third Day. Plan view (Hal Jespersen, www.cwmaps.com).

Figure 6. View southwest from Rose Barn, 1863 (GETT 41135, Historic Photograph Collection, 2B-2063).

Figure 7. Gettysburg National Cemetery and Baltimore Pike, view southwest from observation tower on East Cemetery Hill with reconstructed lunettes in foreground, 1878 (GETT 41136, Tipton Collection, T1838A).

Figure 8. Warren Map. Plan view, 1868 (National Archives and Records Administration, hereafter, NARA).

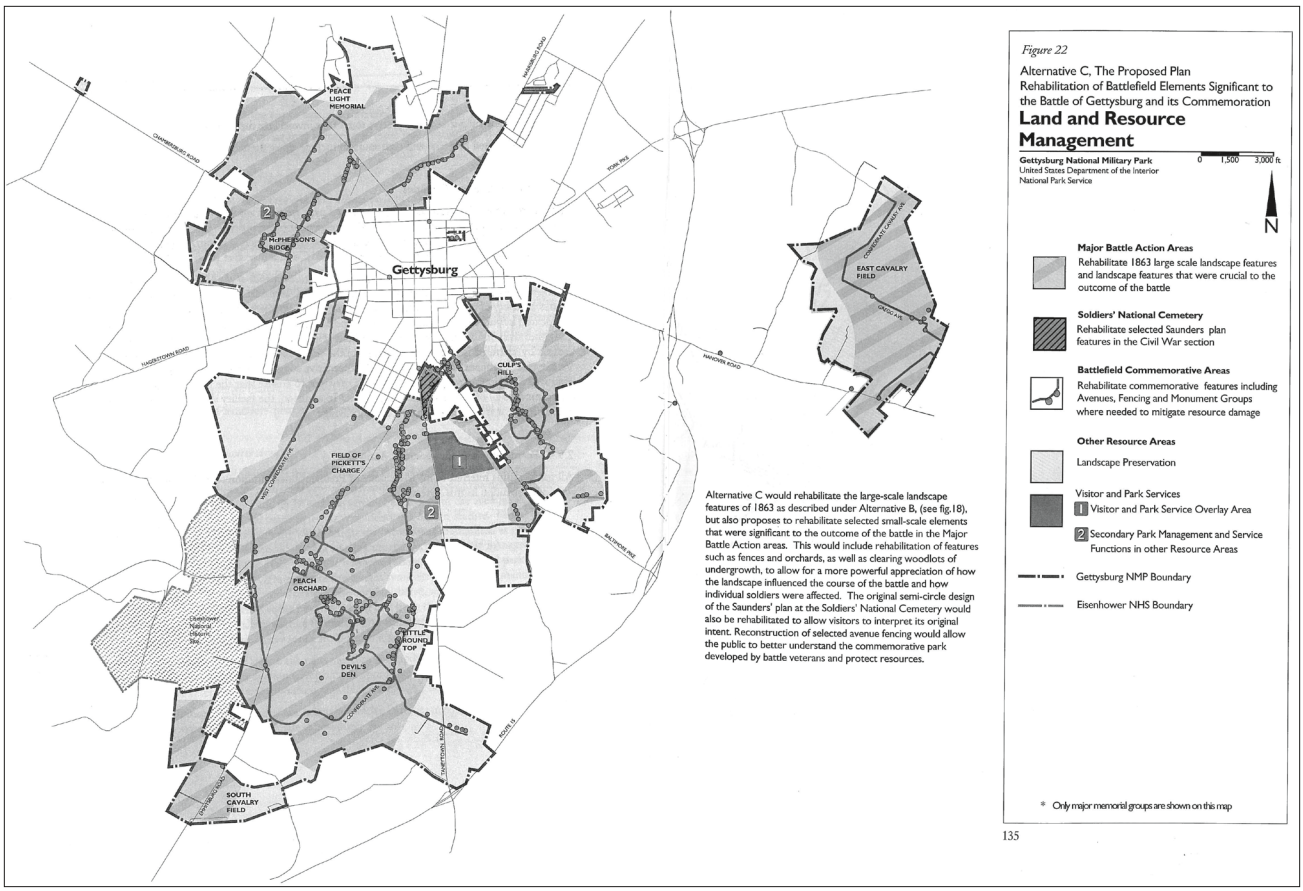


Figure 9. Park resources areas. Plan view, 1999 (GETT, *Final General Management Plan*).

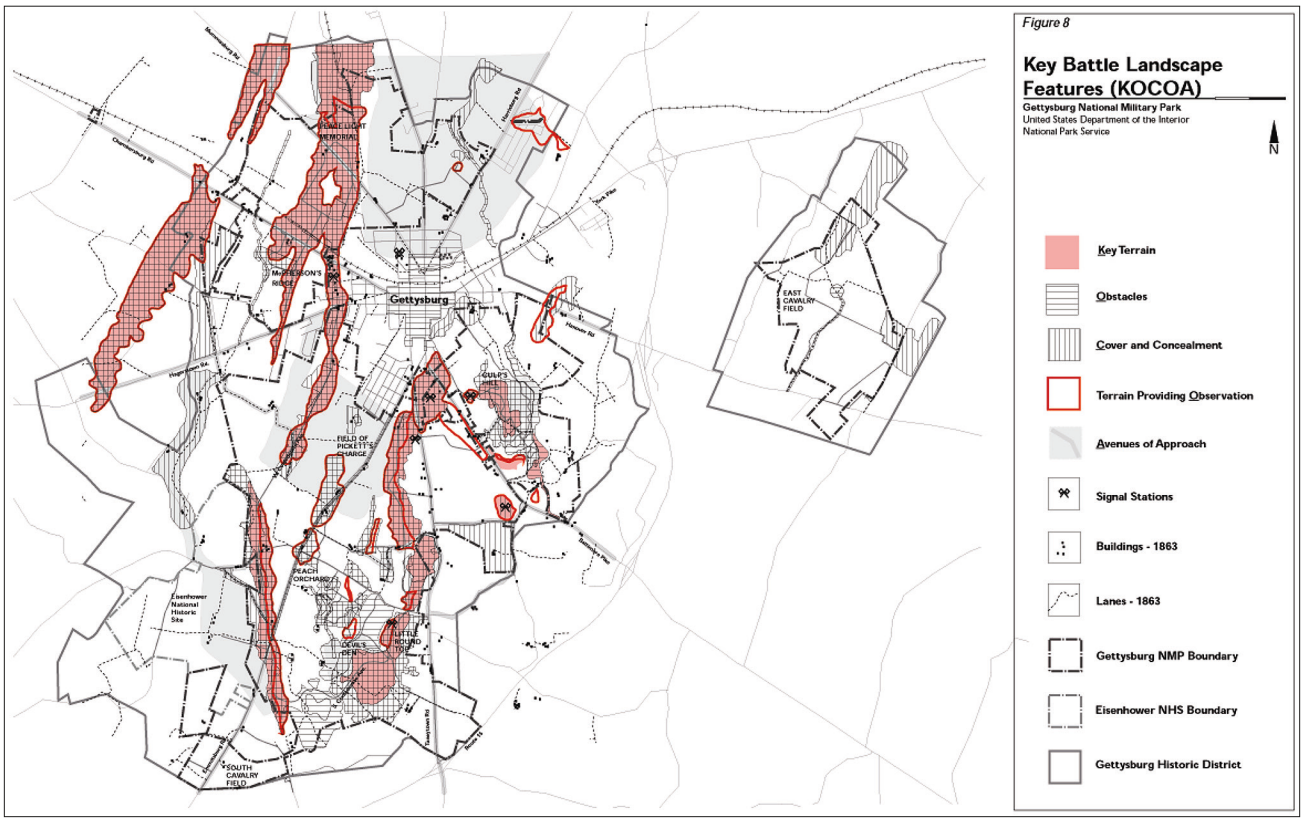


Figure 10. Key battle landscape features based on KOCOA. Plan view, 1999 (GETT, *Final General Management Plan*).

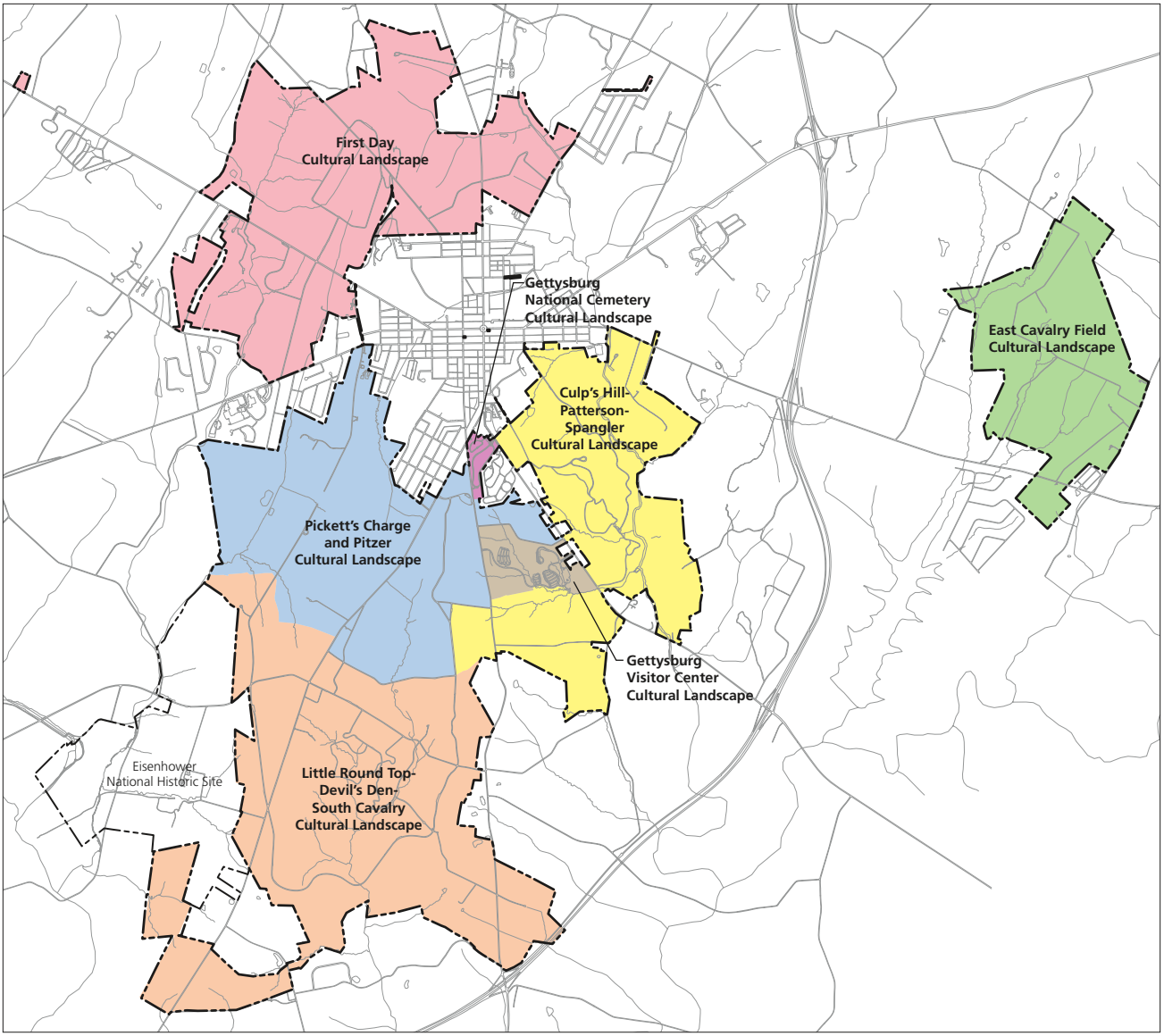


Figure 11. Facility Management Software System (FMSS) locations. Plan view, 2013 (OCLP).

BATTLEFIELD REHABILITATION FRAMEWORK

This section provides an overview of the battlefield rehabilitation framework presented in the *General Management Plan and Environmental Impact Statement* completed in 1999, research findings and rehabilitation goals and tasks included in the draft "Gettysburg Battlefield Landscape Rehabilitation Plan" in the late 1990s and early 2000s, and the park's *Treatment Philosophy: The 1863 Landscape* completed in 2004.

GENERAL MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT (1999)

The park's *General Management Plan and Environmental Impact Statement* (hereafter, GMP) sets forth a basic management philosophy and provides a framework for future decision making for the next 15 to 20 years. The plan articulates the following purposes for the Gettysburg National Military Park:

- To preserve the significant topographical, natural, and cultural features that were significant to the outcome of the Battle of Gettysburg.
- To mark the lines of battle, and to preserve the monuments and markers that commemorate the struggle.
- To provide opportunities for people to learn about the Battle of Gettysburg in the full social, political, and cultural context of the Civil War and American History.
- To preserve the objects, artifacts, and archives that document the battle, its aftermath, and commemoration.
- And, the purpose of the Gettysburg National Cemetery is to preserve and protect the Gettysburg National Cemetery as a suitable and dignified burial ground for the men and women who have been interred in it and as the site of the address delivered by Abraham Lincoln, President of the United States, at Gettysburg on November 19, 1863.[1]

The GMP also presents four mission goals that reflect the park's purpose and significance:

1. The landscape, buildings, monuments, structures, archeological sites, artifacts, and archives that are significant to the outcome and commemoration of the Battle of Gettysburg are protected, rehabilitated, and maintained in good condition.

2. The public understands and appreciates the significant events associated with the Gettysburg Campaign and its impact on the development of the nation.
3. Visitors safely enjoy high quality educational experiences accessible to all segments of the population.
4. Public and private entities understand the park's mission and act cooperatively to protect and interpret resources related to the Gettysburg Campaign and its commemoration.[2]

To accomplish its mission, the park's GMP provides guidance for the preservation, rehabilitation, and interpretation of resources that contribute to its significance. These include resources related to the battle, the commemorative features, and the resources related to the Gettysburg National Cemetery. To further define these resources, the GMP defines four resource areas, described in the previous chapter. The focus of this record of treatment is on the treatment framework and tasks carried out in the Major Battle Action Area. Within this area, the GMP included the management prescriptions summarized below:

1. Managers make decisions based upon professional studies and adequate planning.

2. Resources, including historic structures, landscapes, archeological sites, and collections that contribute to the significance of the park are stabilized, preserved, and maintained in good condition.

3. Non-historic or modern structures and intrusions are eliminated.

4. The park's agricultural program is managed to protect cultural and natural resources, and to encourage the preservation of grassland species.

5. The major features that organize the landscape—the pattern of open versus wooded land and the 1863 circulation system—are rehabilitated.

6. The features that were significant to the outcome of the battle of Gettysburg are repaired, rehabilitated, or restored.

7. The overall mass and arrangement of remaining farm complexes reflect those typical of central Pennsylvania in the nineteenth century. Missing or damaged buildings that can be adequately documented and that are significant to the outcome of the battle are rehabilitated or otherwise represented.

8. Fences, orchards, vegetation, and other documented features define the limits of 1863 house sites and other buildings that acted as obstacles, cover, or points of observation.

9. The agriculture program is reformulated to support the historic field patterns of 1863.[3]

With the guidance from the GMP, the park initiated a major rehabilitation effort. However, it was apparent that more detailed guidance was needed.

TREATMENT PHILOSOPHY: THE 1863 LANDSCAPE (2004)

To provide clearer guidance for rehabilitation of the battle landscape, the park developed a treatment philosophy to describe features that were significant parts of the battle landscape. The document provides guidance to distinguish between the characteristics that must be restored in order to interpret the battle and those features that did not need to be restored for a visitor to understand the battle outcome.

To provide treatment guidance, the *Treatment Philosophy* uses the KOCOA system, in combination with the standard cultural landscape treatment methodologies in the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The *Treatment Philosophy* states that "every feature must be documented using at least two original sources that provide accurate information about its location and characteristics." This requirement is incorporated into the Record of Treatment documentation for tasks implemented as it pertains to the rationale for the work.[4]

To set priorities for rehabilitation efforts, the *Treatment Philosophy* states that rehabilitation prioritization should not simply focus on the physical appearance of landscape features at the time of the battle, but also how these features were used during the battle. For example, a hedgerow of a particular height and density that also included a tree used by a sniper would be managed to perpetuate the hedgerow with hardwood trees within it. Similarly, small-scale features that contributed to the fate of individual combatants and units on the field would be preserved, particularly when a written account describes in detail how these features influenced the battle. In this respect, narrative accounts that describe specific fences, small topographic changes, buildings and other battlefield features would help guide rehabilitation.[5]

However, the park team that prepared the *Treatment Philosophy* also concluded that:

> If a feature can be confirmed as present, but if specific information about its use in the battle could not be located, that the feature should be replaced. This precept—to err on the side of caution—acknowledges that there may be information on a feature that was not found during the research phase, or that a feature may have had an impact upon the battle that has not yet been understood by historians. Therefore, although the rehabilitation of documented features that are not known to have KOCOA significance may have a lower priority than rehabilitation of features that are currently understood to be crucial for interpretation, they will eventually be restored.[6]

The remainder of this chapter summarizes the content of the Treatment Philosophy. Four categories are identified, cultural features, natural features, defense works, and industrial sites. For each of these four categories, several subcategories and features are identified. A description of each feature follows, including its historic appearance, how the feature influenced the outcome of battle, and recommended treatment principles. Many of the principles were subsequently translated into specific actions, implemented over the ensuing decade, and are documented in this Record of Treatment. A summary of the feature categories, features, and recommended treatment principles is presented in Table 2 at the end of this chapter.

1. CULTURAL FEATURES

The first category of landscape characteristics and features that heavily influenced the outcome of the battle is cultural features. Cultural features include circulation features, agricultural fields, farm building complexes, woodlots, groves, hedgerows, orchards, individual trees, fences, gates, wells, dams, ponds, and improved springs.

CIRCULATION

Circulation features—including railroads, major and local roads, and farm lanes—expedited troop movement to and around the battlefield.

MAJOR ROADS AND RAILROAD CORRIDORS

Ten roads, including three major turnpikes, intersected at Gettysburg, making it the economic and political center and seat of Adams County. A rail line reached Gettysburg in 1858, improving the movement of goods, but was unfinished in 1863.

How Major Roads and Railroad Corridors Influenced the Battle

Roads and rail lines became avenues of approach for both armies, and helped or hindered according to their alignment, width, grade, and materials. Sections of sunken or embanked road and railroad bed provided cover and concealment. These same cuts proved to be an obstacle for troops attempting to cross over, and especially for cavalry and artillery batteries. Similarly, cuts such as the railroad bed west of Gettysburg impeded observation of the enemy. Turnpikes were always enclosed on both sides by fencing, which also became a major obstacle during the battle.

Major Roads and Railroads Treatment Principles

Preserve, rehabilitate, and restore the 1863 circulation system to the maximum extent possible, including its alignment, width, grade, and materials. Work with the Pennsylvania Department of Transportation to restore characteristics of the Civil War era roads. Oppose changes in alignment, width, embankments, and/or drainage features that would diminish the historic road and railroad corridor character. Use visually consistent materials that support contemporary use and traffic flow. When necessary to create functional circulation routes, construct non-historic segments to connect lanes and create loops.

LOCAL ROAD NETWORK

Constructed by farmers to connect their farms to public roads, local roads typically consisted of compacted dirt with a thin layer of gravel or cobbled base. Some lanes are now overlaid by commemorative avenues and others are no longer evident.

How the Local Road Network Influenced the Battle

Local roads became avenues of approach to move troops around the battlefield. They also provided cover and concealment or were obstacles to troops crossing them. These lightly traveled roads were not capable of withstanding the heavy use of an army, thus sections through wet areas and steep grades became obstacles by hindering the movement of troops, cavalry, and artillery.

Local Road Network Treatment Principles

Restore local and internal road systems and use these corridors as pedestrian and horse trails. Use materials that are visually consistent with the landscape, yet capable of withstanding a high level of use. Add subsurface materials for long-term durability and apply surface materials that replicate the historic appearance and color of local lanes. Stabilize fords for contemporary use and incorporate bridges for creeks and watercourses to protect banks, water quality, and flora. Limited segments of non-historic corridors may be added to improve loops, connections, and improve visitor access and safety.

INTERNAL CIRCULATION LANES

How Internal Circulation Lanes Influenced the Battle

Field and wood access lanes also became avenues of approach during the battle. Their alignment, width, grade, and materials influenced their viability as routes for troop movement. Most were not conducive to rapid troop movement as they were narrow and rarely surfaced with durable materials, and became heavily rutted and eroded by heavy use during the battle.

Internal Circulation Lanes Treatment Principles

Preserve or restore local and internal road systems, including field lanes and woodlot lanes. Preserve existing field and woodlot lanes that remain as dirt tracks and are used by farmers to access fields. Where appropriate, rehabilitate lanes as pedestrian and horse trails and remove non-historic trail systems from the battlefield. Maintain as a single-cart width and use materials that are visually consistent with the landscape, yet capable of withstanding a high level of use. Add subsurface materials for long-term durability and apply surface materials that replicate the historic appearance and color of local lanes. Stabilize fords for contemporary use and incorporate bridges for creeks and watercourses to protect banks, water quality, and flora. Limited segments of non-historic corridors may be added to improve loops, connections, and improve visitor access and safety.

AGRICULTURAL LANDSCAPES

The Battle of Gettysburg unfolded across a well-established community, made up of subsistence farms with farm building complexes; agricultural fields; managed vegetation such as orchards, woodlots, and hedgerows; constructed water features; circulation features (described above); and small-scale features. The resulting patchwork of open areas and woods, bounded by fences, influenced troop movement and tactics.

SPATIAL ORGANIZATION

How Spatial Organization Influenced the Battle

The three-dimensional organization and patterns of spaces in the landscape influenced troop movements—open farm lanes, fields, and upland parcels became avenues of approach, points of observation, and key terrain. Closed or wooded land and building complexes provided cover and concealment or became an obstacle.

Spatial Organization Treatment Principles

Reestablish and maintain the spatial organization of the Major Battle Action Area, which was an agricultural patchwork of subsistence farms, with building complexes and a diversity of crop fields, pastures, grains, and woodlots. This baseline action recommendation ensures that the size, configuration, proportion, and relationship of the open versus closed areas is retained, and that the component landscape features convey the setting and feeling of the battle landscape.

Preserve extant farm complexes and in some cases reconstruct buildings to preserve the general cluster arrangement of farm complexes. Where farm complexes are no longer extant, rehabilitate or restore other features such as fencing, orchards, vegetation, and other documented features to provide an understanding of the role of the agricultural landscape during the battle.

FARM FIELDS

Most farm fields surrounding Gettysburg were less than 15 acres and owned by local subsistence farmers or leased to tenant farmers. Each farmer subdivided their land for production, including pasture for farm animals, grains for animal feed, crops for food or sale, woodlots, etc. Poor soils and natural features, such as rock outcrops, thickets, and wetlands also impacted use.

How Farm Fields Influenced the Battle

The historic limits of each field (since fencing bordered nearly all fields) and the type, height, and density of vegetation influenced the battle. Depending on their characteristics, farm fields could affect observation from, into, or over them; provide cover and concealment; become obstacles to troops because of fencing; or offered avenues of approach across larger fields. In addition, farm fields and the type of cover crop contributed to the value of certain topographical features as key terrain. For example, the open fields with low crops on Cemetery Hill allowed for excellent observation from this Union stronghold.

Farm Fields Treatment Principles

Reestablish and maintain farm fields, meadows, and pastures so that visitors can understand their size and open character at the time of the battle. Preserve or restore field boundaries using historic fences, vegetation patterns, hedgerows, and other mechanisms. Reduce soil erosion and impacts to the Chesapeake Bay by maintaining grassland species as meadow or pasture in fields that historically held cultivated crops. Also maintain a thirty-five foot buffer of woody vegetation along creeks to limit soil erosion.

When feasible, reestablish cool season hay in fields that were cool season hay in 1863. For crop fields, use warm season grasses, which are green in the growing season. Maintain meadow and pasture fields as a mix of grasses, wildflowers, and other forbs to create the patchwork appearance of crop, pasture, and hay fields present in 1863. Consider the height of crops based on 1863 battle accounts and July 1863 photographs. Restrict cattle grazing from fields with runs or creeks to minimize erosion and impact to water quality.

Where it is possible to maintain fields through the agricultural leasing program, leases will be modified to ensure protection of cultural and natural resources, and

to encourage preservation of grassland species. Recommended actions include use of low or no till farming, limited use of pesticides and herbicides, prohibition of installation of new field drains, and adjustments to mowing schedules to protect nesting habitats for upland and open land species. Retain woody vegetation along runs and creeks to protect riparian corridors, but control the height to ensure that lines of site and avenues of approach are maintained and can be understood by visitors.

FARMSTEAD CLUSTERS

Farmstead clusters usually included the main farm house and a barn, and some or all of the following: a wagon shed, corn crib, pig pen, chicken coop, smokehouse, blacksmith shop, spring house, summer kitchen, wood shed, privy, dooryard fencing, barnyard fencing, ornamental and shade trees, orchards, and gardens.

How Farmstead Clusters Influenced the Battle

Clusters of buildings, structures, and associated small-scale features impacted the battle as obstacles and by providing cover and concealment. A few individual buildings also offered limited observation for individual soldiers or small bodies of men. The historic limits and cluster arrangement of a complex determined how and to what degree a farm building complex impacted the battle. The larger the historic limits of a farm complex, the more of an obstacle it became to movement, especially to infantry moving in line of battle. At the same time, more buildings within a farmstead offered greater opportunities for cover and concealment.

Farmstead Clusters Treatment Principles

Preserve, maintain, and rehabilitate the Civil War era structures and later historic buildings that are sited on the locations of Civil War buildings and that contribute to the general cluster arrangement of farm complexes. Preserve the overall mass and arrangement of remaining farm complexes to reflect those typical of central Pennsylvania in the nineteenth century as they appeared during the battle. Missing structures that were significant to the battle should be reconstructed, when such work can be carried out with minimal conjecture. Prohibit the addition of modern and incompatible uses.

Preserve or restore the small-scale features associated with farm complexes, such as dooryard and barnyard fencing, gardens, orchards, and ornamental and shade trees. These features contributed to the cluster arrangement of a farm complex and also often defined its historic limits.

When farm buildings have been lost, restore fencing, orchards, vegetation and other documented features that define the limits of missing 1863 house site and other buildings that acted as obstacles, cover, or points of observation.

MANAGED VEGETATION

The 1860s subsistence farms that surrounded Gettysburg included managed vegetation, such as woodlots, groves, hedgerows, orchards, nurseries, and individual ornamental and shade trees. These features provided raw materials, food, and cash reserves. These features were actively managed by farmers, unlike natural vegetation features such as woodlands and thickets.

WOODLOTS AND GROVES

How Woodlots and Groves Influenced the Battle

Woodlots and groves provided a source of raw materials for fencing, firewood, housing, general carpentry, and were used for cover and concealment during the battle, became obstacles, or impacted observation. Characteristics that influenced the battle included historic limits, species distribution, age distribution, density, height, and health. The historic limits determined how much cover and concealment could be gained by the troops. Most woodlots consisted of deciduous species. The age distribution and density impacted how hard it was for troops to retain their battle alignment while advancing through the wooded area. The height of the trees impacted observation.

Woodlots and Groves Treatment Principles

Preserve and rehabilitate woodlots and groves (smaller woodlots) that were a critical part of an 1860s subsistence farm, which were typically located on the poorest land with rocky, thin, or steeply sloped soil. Reestablish missing woodlots and groves using maps, surveys, photographs, and written reports. Maintain historical appearance of evenly spaced trees, cleared of underbrush, shrubs, deadwood, and undesirable trees. Preserve a density that would allow of the passage of a team of horses and wagon. Maintain tree health to ensure that woodlots and groves are preserved in perpetuity.

Where the 1863 boundaries of a historic woodlot or grove area have expanded, remove all non-historic trees and shrubs and treat and remove non-native invasives and prevent sedimentation and erosion. In locations where the height of a woodlot or grove is crucial to interpretation, remove selected taller trees but protect witness trees, even if their height now exceeds that at the time of the battle. To protect riparian corridors, preserve trees within 35 feet of streams and if necessary maintain woody vegetation at a height of generally less than 15 feet, so as to not interrupt key lines of sight and observation that was important at the time of the battle.

HEDGEROWS

Hedgerows were occasionally planted and maintained by farmers as "living fences." Most hedgerows, however, were the result of natural and unmanaged growth of woody vegetation along fence lines or areas of poor rocky soil or boulder outcroppings. Hedges were commonly made up of various tree species, shrubs, and briars.

How Hedgerows Influenced the Battle

Hedgerows provided cover and concealment, affected observation, and were obstacles. The historic limits of a particular hedgerow—its length, width, and height—dictated the amount of cover and concealment that could be gained by troops positioned along or behind the hedgerow. The age distribution, species distribution, and density impacted the degree to which the hedgerow was an obstacle to troops moving through it, whether it provided cover, and the observation of troops firing into or through the hedgerow. The farmer's management practices also impacted hedgerow character—a higher level of maintenance resulted in better, tighter barriers and healthier plants with greater longevity. The higher density impacted cover and concealment, created a greater obstacle, and limited observation.

Hedgerow Treatment Principles

Rehabilitate 1863 hedgerows, maintain their length, width, height, density, species composition, and density. Eliminate modern hedgerows that were not present during the battle, unless they fall within a wetland corridor.

ORCHARDS AND NURSERIES

Many orchards dotted the 1863 landscape because tree fruits provided a valuable food source for subsistence farmers and for livestock.

How Orchards Influenced the Battle

Orchards provided cover and concealment, impacted observation, were used as avenues of approach, and became obstacles. Some orchards, present within the Major Action Battle Area, played little or no role in the battle. The historic limits, age, and height of an orchard determined how much cover and concealment could be gained by troops. Older orchards offered higher trees, broader canopies, and higher browse lines to conceal troops and artillery batteries, while also allowing opportunities for observation and fields of fire.

In instances where major battle action occurred near or within an orchard, its age and internal arrangement determined how and to what extent the orchard became

an obstacle to troops moving through while under fire. Orchards with older, larger trees inhibited the orderly passage of troops, but provided more cover and concealment. The species of orchard trees had no impact upon the fighting, because most fruit trees have similar characteristics (tree size, foliage, and cover).

Orchards and Nurseries Treatment Principles

Preserve or replant standard sized trees, use disease and pest resistant rootstock, and a mix of pest and disease-resistant varieties. Prune trees using nineteenth-century pruning practices, to achieve the general appearance, size, and height of a nineteenth-century orchard. Plant trees 40 feet on center, with the exception of the Sherfy Peach Orchard, where trees are 20 feet on center.

If the orchard was immature at the time of the battle and consisted of young trees, semi-dwarf trees may be planted, particularly if the low tree height limited cover and concealment at the time of the battle. Limit the use of pesticides and herbicides, and manage orchards for their general appearance rather than for fruit production.

INDIVIDUAL TREES

Individual trees dotted the 1863 Gettysburg battlefield, many of which were located in dooryards, in fields near rock outcroppings, along fence lines, and along boundary lines. In some cases, the size and species of an individual tree was important during the battle, and the tree subsequently became a commemorative feature.

How Individual Trees Influenced the Battle

The location and age of individual trees, along with the battle movements and action that occurred around them, determined the impact they had upon the battle. Some individual trees provided cover and concealment for both individual and small groups of soldiers, provided observation to sharpshooters, served as easily identifiable landmarks, provided shade, or completed the spatial organization of the mid-nineteenth-century agricultural landscape. Photographs, official records, participant accounts, memoirs, etc., document the importance of these individual trees.

Individual Tree Treatment Principles

Preserve witness trees that were present during the battle, many of which are now considered commemorative features. For these aged trees, move deadwood, install lightning protection, and monitor for tree health and visitor safety.[7] Replant dead witness trees in-kind and in the same location. Also preserve trees that were

present at the time of the battle, as small trees, but are now mature, such as the trees in the Codori-Trostle thicket. However, if a potential witness tree hinders the interpretation of the KOCOA impact of a particular feature, such as observation viewsheds, the tree should be replaced with a younger tree.

SMALL-SCALE FEATURES

Small-scale features add to the spatial organization and feeling of the nineteenth-century agricultural setting. Key features include fences, stone walls, and gates, all of which heavily influenced the battle.

FENCING

Critical to the upkeep and order of any farm operation, fences set property lines, confined livestock, protected crops and orchards, and divided fields. Mandated by law, the Fence Law of 1700 stated that all crop fields be enclosed to keep out wandering livestock and that all fences should be, "at least five feet high, of sufficient rail or logs, and close at the bottom."[8] The fences of the 1863 Gettysburg landscape were mostly wood or wood and stone, and predominantly black locust and American chestnut.

The farmers to the north of Gettysburg were generally wealthier, owned larger farms, and could afford fences made entirely of wood, including mortised rail and board. The farmers to the south of Gettysburg generally owned smaller farms on rougher and rockier ground. Thus their fences were made of wood and stone, or entirely of stone. Stones were readily available, more economical, and required less maintenance, but were more labor-intensive to build.

Eight types or styles of fences were present in the 1863 Gettysburg landscape, each with distinguishable materials, construction methods, strength, tightness, height, and mass.

How Fencing Influenced the Battle

No single man-made feature impacted the battle more than fencing and different styles presented different problems to the troops. Fences proved to be a major obstacle that slowed the movement of troops in battle, because they needed to be either dismantled or climbed. Fences also provided cover and concealment, some styles providing more cover than others. Some fences were torn down to construct breastworks or entrenchments.

Fencing Treatment Principles

In 1999, the park's GMP estimated that 39 miles of 1863 fences had been lost to modern agricultural practices within the preserved battlefield landscape. The fences that remained did not reflect the height, mass, and tightness of the 1863 fences. The GMP recommended the restoration of all fences within the Major Battle Action Area, because of their impact on the battle.

The park will restore all fences to reflect the styles built at the time of the battle. Wood will be durable, but sourced from machine-produced stock. Height, mass, and tightness will replicate 1863 appearances, as depicted in historic photographs. When no documentation is available, but historic maps note the presence of a fence, the park will install a simple fence, such as three-rail post and rail, to indicate the presence of a fence.

In battle areas where troops dismantled fences prior to or during combat, some sections of fence line will retain gaps, conveying their appearance before and during the battle.

GATES AND GATEWAYS

A gate is a physical barrier that closed an opening in a fence or wall. A gateway is a gap in a fence or wall. Gates and gateways provided ready-made access for farmers through fences and/or stone walls. Many of these openings were accessed from public roads or lanes while others were internal to a farm property. Their location, width, and style was dependent upon the needs of the individual farmer and farming operations.

Two styles of gates, hinged and removable rails, were prevalent. Hinged gates were ideal for continual use, but more expensive and time consuming to build. Removable rails were two posts augured with two rows of holes to accommodate four or five rails. When a farmer needed to pass through the fence or wall, the rails were removed to create an access. A gate that led to a pasture from a public road would probably be constructed using a more durable style than a gate that provided internal access within a farm.

How Gates and Gateways Influenced the Battle

Depending on their width and style, gates and gateways served as avenues of approach if they enabled the movement of troops, or were obstacles if they were narrow in width and restricted the rapid advance or retreat of troops.

Gates and Gateways Treatment Principles

Rehabilitate or rebuild gates as they appeared in 1863 as part of the treatment of historic fence lines. If the style of the gate is unknown, install a compatible wooden gate. In the rare instance that a field or pasture requires a non-historic gate, a modern metal gate will be installed.

CONSTRUCTED WATER FEATURES

Water features were a central part of all nineteenth-century subsistence farms. These included wells, springs, ponds, dams, and fords.

WELLS

Every farm needed a steady supply of water for sustenance and for livestock. Most farms had at least one well, which was hand-dug and lined with stone. Key factors were its location, duration or reliability, and its improvements or functionality.

How Wells Influenced the Battle

The presence of a well determined the location of headquarters, hospitals, aid stations, and was a benefit to artillerymen on the battle line, who needed water to cool the cannon barrels between rounds. Wells with a duration of flow were more useful—a well with a hand pump system could deliver a steady flow of water compared to those that required a bucket to draw water. Related to its duration, were the well's improvements, such a hand-cranked rope and bucket delivery system or a wooden pump.

Well Treatment Principles

Preserve or rehabilitate wells to reflect the spatial organization and an essential feature of a farmstead cluster. Preserve the location and the type of well(s) that was present within the farmstead.

IMPROVED SPRINGS

Springs were located throughout the battle landscape, some in their natural condition and others improved by farmers. Improvements included construction of stone, brick, or timberwork at the spring's mouth to protect it from erosion, or the construction of a springhouse for food storage.

How Springs Influenced the Battle

The presence of a spring determined the location of headquarters, hospitals, aid stations, and was a benefit to artillerymen on the battle line, who needed water to cool the cannon barrels between rounds. Springs with improvements were more visible and springhouses were emptied of their stored food. The spring's location and duration influenced is utility, as springs with a steady flow and in close proximity were ideal.

Spring Treatment Principles

Preserve and maintain existing springs, rehabilitate springs as needed to reflect their historic appearance. Proposed construction and improvements in the vicinity should be studied and monitored to ensure that water flow is not altered.

PONDS AND DAMS

Two ponds lay within the battlefield, McPherson Pond, located within the First Day battle area, and a large pond at the John Biesecker Farm, which was later moved by President Dwight D. Eisenhower as part of his farm operations. Only two known dams were constructed to provide water power for grist and saw mills in the area. Both were located on Rock Creek, north of the Baltimore Pike and part of the McAllister Mill complex. Additional impoundments may have existed on Guinn Run and Blocher's Run.

How Ponds and Dams Influenced the Battle

McPherson pond disrupted the battle line of the Union troops on the first day of battle, creating an obstacle. The dams associated with the McAllister Mill complex on Rock Creek disrupted another Union battle line during the second day.

Pond and Dam Treatment Principles

Preserve McPherson pond and protect the remains of the dams and spillways associated with the McAllister Mill complex.

FORDS

Fords were located at stream crossings associated with local and internal roads, including county roads, lanes that connected farms to main roads, and internal field and wood access lanes. A ford's approaches, depth, width, and current determined its usefulness.

How Fords Influenced the Battle

Fords were avenues of approach for troops. The ease with which troops could cross a ford was influenced by its width, the durability of treadway, approach grade and surface treatment, and the water depth and velocity.

Ford Treatment Principles

Preserve and maintain approach routes and width of fords.

2. NATURAL FEATURES

Like cultural features, natural features were crucial to the outcome of the battle, including woodlands, thickets, streams, wetlands, and natural springs.

NATURAL VEGETATION FEATURES

In 1863, woodlands and thickets covered marginal lands that could not be farmed, used for pasture, or maintained as woodlots. These unmanaged areas spanned bottomlands and streams and had a cluttered and dense character, with wetland trees and shrub species, plus vines and other undergrowth. Thickets were typically located in areas where woodlots had been recently harvested and were naturally regenerating, or where rock outcroppings or other natural features encouraged shrubby growth.

WOODLANDS

Defining characteristics included the historic limits of the unmanaged woods, the species distribution, age distribution, density, and health of the parcel, and the density and height of the woods growth.

How Woodlands Influenced the Battle

Woodlands could be used for cover and concealment, become obstacles to rapid movement of troops, and could hinder observation. In situations where woodlands became battle sites, dense vegetation also impacted observation.

Woodlands Treatment Principles

Maintain in perpetuity the patterns of open versus closed land present in 1863. Reestablish and maintain 1863 woodlands within their historic boundaries, maintain historic height where observation is critical to the battle interpretation, and maintain health and sustainability over time.

THICKETS

While thickets share many of the same characteristics of woodlands, the main difference between the features is their height. Because thickets consisted of younger vegetation, they were not as tall as woodlands or woodlots.

How Thickets Influenced the Battle

Because thickets have many of the same characteristics as woodlands, they influenced the battle in much the same way, by providing cover and concealment, becoming obstacles, and affecting observation. Generally thickets grew to about ten feet in height. Characteristics to consider in the treatment of thickets include their historic limits, species distribution, age distribution, density, height, and health.

Thicket Treatment Principles

Establish and maintain thickets within their historic boundaries and height limitations. Maintain to ensure their health and stability over time. Select shrub species based upon the environmental conditions present in the thicket location.

NATURAL WATER FEATURES

Natural water sources, including streams, wetlands, and springs, are dispersed across the battlefield landscape.

STREAMS

Streams or "runs" crossed the 1863 Gettysburg landscape and influenced settlement patterns, the pre-battle history of the area, and the battle itself.

How Streams Influenced the Battle

Some streams became key terrain, when they provided a natural barrier on which to anchor the army's vulnerable flank. Most streams were obstacles to fighting, especially for troops advancing or retreating under fire. Stream depth, width, and the stream's course determined the extent to which a stream became an obstacle or key terrain.

Stream Treatment Principles

Preserve and protect the depth, width, and course of streams, and prohibit alterations that impair streams. Reverse and mitigate streams that have been dammed or suffer from erosion, soil loss, increased temperature, or turbidity. Ensure protection of vegetation in the stream corridor as described under woodlands and thickets.

WETLANDS

Many wetlands lay in low areas in the 1863 Gettysburg landscape. These marshy areas, unsuitable for farming, were mostly used as pastureland.

How Wetlands Influenced the Battle

Key characteristics include the wetland's historic limits and duration—whether it was seasonal or year round—which was dictated by rainfall, temperature, and other natural factors. The limits and duration of wetlands determined to what extent they became an obstacle during the battle. The larger the historic limits, the more difficult it was for troops to cross wetlands.

Wetland Treatment Principles

Rehabilitate and restore historic wetlands whenever feasible. Prohibit new tile drain installation, remove extant tile drains, and restore 1863 topography. Plant only native species in wetland areas.

NATURAL SPRINGS

Located throughout the battlefield area, natural springs influenced the location of farmsteads and provided an essential source of potable water. Springs with good duration of flow and located near fertile cropland were ideal.

How Natural Springs Influenced the Battle

Springs provided water for 170,000 soldiers plus thousands of animals. The tremendous need for potable water continued after the battle for the thousands of soldiers in temporary hospitals. During the battle itself, artillerymen used water to cool their cannons between rounds.

Natural Springs Treatment Principles

Preserve and maintain natural springs and, if necessary, rehabilitate their historic appearance. Restore springs that have been lost since 1863 due to agricultural practices, tile drains, or topographic changes.

TOPOGRAPHY

Topography was the most important natural feature that influenced the 1863 battle. The Gettysburg sill, a diabase bedrock formation that underlays the area, is responsible for the rocky terrain of Little Round Top, Devil's Den, Cemetery Ridge, and Culp's Hill. The resulting landform and rock outcrops influenced the strategy and tactics of the opposing armies.

HILLS AND RIDGES

The geological and weathering factors influenced the character of the hills and ridges surrounding Gettysburg. Soils on the hills and ridges were generally rocky and unsuitable for farming. Many of the hills on the battlefield were partially or completely covered by woodlots.

How Hills and Ridges Influenced the Battle

Hills and ridges served as key terrain, became obstacles, provided cover and concealment, and provided observation and fields of fire. The historic limits of a hill, along with its height and grade determined its value as key terrain. Larger, taller, and steeper hills or ridges were easier to defend and became major obstacles for troops attempting an uphill assault. The historic limits of a hill or ridge, along with its height determined how much cover and concealment it provided, and its value as an observation point and field of fire. Boulder outcroppings became an obstacle to troop movement, but also provided cover and concealment.

Hills and Ridges Treatment Principles

Preserve and protect the historic limits, height, and grade of the hills and ridges within the park. Do not remove boulder outcroppings or other natural feature, and avoid changing the topography of hills and ridges for roads, farm fields, or other actions. Reverse changes to hills and ridges.

SWALES AND RAVINES

Swales and ravines were formed by streams or natural drainage areas and were scattered across the Gettysburg battlefield.

How Swales and Ravines Influenced the Battle

The historic limits, depth, and grade of swales and ravines influenced troop movements and became obstacles or offered cover and concealment. Similarly, swales and ravines that contained boulder outcroppings became obstacles to the movement of infantry, artillery, and cavalry. At times these boulders also provided cover and concealment.

Swales and Ravines Treatment Principles

Preserve and protect the historic limits, depth, and grade of swales and ravines within the park. Do not undertake activities that would alter the historic limits, depth, or grade of a swale or ravine. And, do not remove a boulder outcrop or other natural feature that contributes to the setting of the swale or ravine.

PLAINS

The Gettysburg landscape consists of rolling terrain with ridges and hills, but few plains. However, the existing plains became the site of intense fighting during the battle. Characterized by fertile soils and typically found along water corridors and between ridgelines, plains offered relatively flat ground, kept open and under cultivation for various crops, and were generally devoid of rock outcrops.

How Plains Influenced the Battle

Plains served as avenues of approach and provided excellent observation and fields of fire from, into, and over them. The historic limits of a plain determined its usefulness as an avenue of approach, as a wide plain allowed troops to advance rapidly across a level grade. At the same time, this openness allowed for observation and fields of fire from adjacent higher terrain. The lack of intervening vegetation and rock outcrops allowed for movement, but intervening fences provided obstacles.

Plains Treatment Principles

Preserve the historic limits, grade, and open character of plains. Restrict activities that would substantially alter the topography of plains, such as contour farming, regrading for drainage, or other similar activities. Reverse changes that detract from the public's ability to understand the historic events that occurred in open plains.

STREAM BANKS

Several streams that passed through the battlefield cut gouges at various locations, creating steep banks at the streams edge. These banks influenced the location of crossing points for roads, lanes, and fords.

How Stream Banks Influenced the Battle

Stream banks provided cover and concealment, became obstacles to troops attempting to pass through them or impacted observation from them. Characteristics that affected how streams were crossed included the stream bank length, depth, and grade.

Stream Banks Treatment Principles

Preserve the historic length, depth, and grade of stream banks. Prevent access by cattle to stream banks and restrict new stream crossings for farming and livestock, and other agricultural and maintenance activities that alter the depth or grade of a stream bank.

3. DEFENSE WORKS

Both armies constructed defense works from stones, fence rails, trees, and earth.

STONE WALL DEFENSE WORKS

Located predominantly in the vicinity of Little Round Top, Big Round Top, and Devil's Den, soldiers built stone wall defense works to either strengthen their defensive line or consolidate a position that had been gained through offensive action. Each work varied in height—typically two to three feet—and mass, but none were constructed for permanence.

How Stone Wall Defense Works Influenced the Battle

Stone defense works provided cover and concealment and became obstacles to troop movement.

Stone Wall Defense Works Treatment Principles

Protect and preserve stone wall defense works that remain. If necessary, reconstruct or restack sections using historic photographs for guidance. Stones in remnant defense works should not be relocated or repurposed. Routine maintenance is required to ensure that stones remain stacked.

EARTHEN WORKS AND LUNETTES

Earthen defense works for soldiers and lunettes for guns typically consisted of a variety of materials, including rails, timber, rocks, earth, and personal equipment. Methods of construction varied. The height and mass of each work depended on its location, the availability of materials and entrenching tools, and the direction given by officers. Due to their rapid construction, most were no higher than three feet. In a few areas such as Culp's Hill, elaborate defense works consisted of log cribs filled with stone and earth, built to five feet in height.

How Earthen Defense Works Influenced the Battle

Earthen defense works provided cover and concealment and became obstacles to troop movement.

Earthen Defense Works Treatment Principles

Protect and preserve earthen defense works that remain, including those that were not altered during the commemorative era and those that were rebuilt during the commemorative era.[9]

4. INDUSTRIAL SITES

Only a few industrial sites existed in the Major Battle Action Area, including the McAllister grist and saw mills, the Blocher cooper, wheelwright, and blacksmith shops, and the Warfield blacksmith shops. Quarries, brickyards, and tileyards also operated in the area and impacted the battle action. These industrial sites are now managed as archeological resources.

QUARRIES

Quarries belonging to Lightner, Power, Menchy and McPherson extracted granite and shale for building purposes and clay for the manufacture of bricks and tile.

How Quarries Influenced the Battle

Quarries were both a hindrance and an opportunity for troops. They offered cover and concealment and offered opportunities for observation and fields of fire. Quarries also became obstacles by disrupting formations as soldiers moved by and around them.

Quarry Treatment Principles

Preserve remnants of 1863 quarries. Remove post-1863 dumpsite debris. If necessary, reestablish grass cover to prevent additional erosion.

BRICK AND TILE YARDS

Several brick and tile yards were present in the 1863 battlefield landscape. Each site contained a variety of buildings and features including kilns, temporary ovens, clay pits, and enclosure fences.

How Brick and Tile Yards Influenced the Battle

The historic limits and spatial organization determined the extent to which each brick and tile yard became an obstacle, provided cover and concealment, or provided opportunities for observation. The number of small-scale features impacted the degree to which the site offered cover and concealment or was an obstacle. Most notably, the John Kuhn brickyard provided cover for Confederate troops during skirmishes on July 2 and 3.

Brick and Tile Yard Treatment Principles

The John Kuhn brickyard is outside of the park boundary, thus no treatment is recommended. For sites within the park, use signs, markers, and fence sections to indicate the historic limits, spatial organization, and small-scale features of these industrial sites.

OTHER INDUSTRIAL SITES

Other industrial sites were associated were associated with coopers, wheelwrights, carriage and wagon shops, and blacksmith shops.

How Other Industrial Sites Influenced the Battle

Industrial sites were used by each army for logistical and supply purposes.

Other Industrial Sites Treatment Principles

Protect and preserve industrial sites, and mark them to interpret the impact of the military campaign on the local community.

ENDNOTES

1 *Final General Management Plan and Environmental Impact Statement*, Vol. 1, *Final GMP/EIS*, United States Department of the Interior, National Park Service, June 1999, 5.

2 Ibid., 7-8.

3 Ibid., 76-77.

4 Eric Campbell, *Treatment Philosophy: The 1863 Landscape*, United States Department of the Interior, National Park Service, March 2004, 5.

5 Ibid.

6 Ibid., 6.

7 Properly installed tree lightning protection does not eliminate the risk of lightning strikes. Maintaining effective tree lightning protection requires continual maintenance as a tree canopy grows above the air terminals installed to create a low-resistance path that grounds electrical chargers. The park should consider installing lightning protection for select witness trees that have documentation on affecting the outcome of the battle and other criteria such as elevation, isolation in a field, and proximity to other resources such as buildings.

8 *Laws of the Commonwealth of Pennsylvania, from the Fourteenth Day of October, One Thousand Seven Hundred, to the Twentieth Day of March, One Thousand Eight Hundred and Ten*, Vol. 1 (Philadelphia: John Bioren, 1810), 13.

9 The park is currently following the NPS *Sustainable Military Earthworks Management* guidance available at https://www.nps.gov/tps/how-to-preserve/currents/earthworks/index.htm for care of the earthen works and lunettes.

TABLE 2: CLASSIFICATION OF LANDSCAPE FEATURES AND REHABILITATION TASKS			
Subcategory	**Feature Type**	**Rehabilitation Tasks**	**Related Tasks**
CULTURAL FEATURES			
Circulation			
	Roads and Railroads	• *Preserve, rehabilitate, and restore the 1863 circulation system as is feasible*	• *Remove non-historic woody vegetation* • *Replant woodlots* • *Reestablish agricultural fields* • *Repair or rebuild gates* • *Construct a compatible style of gate if 1863 style is unknown*
	Local Road Network	• *Preserve or rehabilitate local roads and internal field and woodlot lanes* • *Use compatible materials to improve roadbed durability* • *Add non-historic loops to improve circulation*	
	Internal Circulation		
Agricultural Landscapes			
	Spatial Organization	• *Reestablish spatial organization of battle action area* • *Rehabilitate open versus closed (wooded) areas*	• *Remove non-native and invasive species* • *Repair or rebuild historic fencing* • *Leave gaps in fences that were dismantled during the 1863 battle*
	Agricultural Fields	• *Remove non-historic woody vegetation* • *Transition from row crops to native warm and cool season grass cover*	• *Remove non-native and invasive species* • *Protect riparian corridors*
	Farm Building Complexes	• *Preserve, rehabilitate, and maintain Civil War era buildings and structures*	• *Rehabilitate dooryard and barnyard fencing* • *Remove modern buildings that do not contribute to 1863 historic limits and cluster arrangement of a complex*
Managed Vegetation			
	Woodlots and Groves	• *Preserve historic woodlots* • *Replant historic woodlots* • *Perform health cuts in historic woodlots to maintain historical appearance of evenly spaced trees* • *Maintain historic height limitations*	• *Remove non-native and invasive species* • *Protect riparian corridors* • *Monitor for tree health and visitor safety*
	Hedgerows	• *Preserve historic hedgerows* • *Replant historic hedgerows* • *Maintain historic height limitations*	• *Remove non-native and invasive species* • *Protect riparian corridors*
	Orchards and Nurseries	• *Replant historic orchards*	• *Remove non-native and invasive species*
	Individual Trees	• *Preserve witness trees* • *Removed deadwood and install lightening protection* • *Replace in-kind and in location*	• *Remove non-native and invasive species* • *Monitor for tree health and visitor safety*

TABLE 2: CLASSIFICATION OF LANDSCAPE FEATURES AND REHABILITATION TASKS			
Subcategory	**Feature Type**	**Rehabilitation Tasks**	**Related Tasks**
Small-scale Features			
	Fencing	• *Repair or rebuild historic fencing* • *Leave gaps in fences that were dismantled during the 1863 battle*	• *Remove or cut vegetation along fence lines*
	Gates and Gateways	• *Repair or rebuild gates* • *Construct a compatible style of gate if 1863 style is unknown*	• *Remove or cut vegetation along at gates and gateways*
Constructed Water Features			
	Wells	• *Preserve and maintain historic wells* • *Rehabilitate to reflect historic appearance*	
	Improved Springs	• *Preserve and maintain historic springs* • *Rehabilitate to reflect historic appearance* • *Monitor proposed construction improvements in the vicinity to ensure water flow is not altered*	• *Reduce erosion in the vicinity with appropriate maintenance practices*
	Ponds and Dams	• *Preserve historic ponds* • *Protect remnants of associated historic dams and spillways*	• *Establish a non-historic riparian buffer habitat for water quality*
	Fords	• *Preserve and maintain approach routes and width of fords*	• *Establish a non-historic riparian buffer habitat for water quality* • *Protect streams from erosion, damming, increased temperature, and disturbance Ensure protection of vegetation in stream corridor* • *Reduce erosion with appropriate maintenance practices*
NATURAL FEATURES			
Natural Vegetation Features			
	Woodlands	• *Reestablish woodlands within their historic boundaries* • *Maintain historic height limitations*	• *Plant only native species in woodlands*
	Thickets	• *Replant historic thickets* • *Maintain historic height limitations*	• *Plant only native species in thickets*

TABLE 2: CLASSIFICATION OF LANDSCAPE FEATURES AND REHABILITATION TASKS			
Subcategory	**Feature Type**	**Rehabilitation Tasks**	**Related Tasks**
Natural Water Features			
	Streams	• *Establish a non-historic riparian buffer habitat for water quality* • *Protect streams from erosion, damming, increased temperature, and disturbance*	• *Ensure protection of vegetation in stream corridor*
	Wetlands	• *Rehabilitate and restore historic wetlands where feasible* • *Prohibit new tile drains* • *Remove extant tile drains* • *Restore 1863 topography*	• *Plant only native species in wetlands*
	Natural Springs	• *Protect, preserve, and maintain natural springs* • *Rehabilitate their historic appearance* • *Restore springs that have been lost since 1863 due to agricultural practices, tile drains, or topographic changes*	• *Reduce erosion in the vicinity with appropriate maintenance practices*
Topography			
	Hills and Ridges	• *Protect and preserve topographic features* • *Restrict activities that would alter plains such as contour farming or re-grading for drainage* • *Do not relocate boulder outcrops or other natural features*	• *Reduce erosion with appropriate maintenance practices*
	Swales and Ravines		
	Plains		
	Stream Banks	• *Protect and preserve streams and banks* • *Prevent access by cattle* • *Restrict new stream crossings for farming and livestock*	
DEFENSE WORKS			
	Stone Wall Defense Works	• *Protect and preserve remnants* • *Restack stones that have collapsed*	• *Maintenance practices are similar to stone walls*
	Earthen Works and Lunettes	• *Protect and preserve remnants*	• *Identify appropriate erosion control maintenance practices*
INDUSTRIAL SITES			
	Quarries	• *Protect and preserve remnants* • *Remove debris*	• *Reestablish grass cover to prevent erosion*
	Brickyards and Tile Yards	• *Protect and preserve remnants*	• *Use fence sections to indicate the historic limits* • *Mark with signs*
	Other Industrial Sites	• *Protect and preserve remnants*	• *Mark with signs*

Record of Treatment

Between 1999 and 2014, Gettysburg National Military Park has undertaken an ambitious landscape rehabilitation program recommended by the *General Management Plan and Environmental Impact Statement* (1999) and *Treatment Philosophy: The 1863 Landscape* (2004). This chapter documents the completed treatment work for the historical record and future reference. The present park cultural landscape is the result of multiple, coordinated efforts to preserve and enhance landscape character for three nationally significance landscapes: the site of the Battle of Gettysburg, the Gettysburg National Cemetery, and the commemorative landscape of avenues and monuments. The detailed accounting of implemented landscape treatment tasks addresses battlefield landscape rehabilitation and does not address Gettysburg National Cemetery or the commemorative landscape. Landscape treatment topics, specifically, deer management, earthworks reconstructed during the commemorative era, and circulation, are reviewed in brief, park-wide summaries. This is followed by the detailed accounting of implemented tasks organized according to fifteen Record of Treatment areas that define geographically distinct areas within the current park property.

The Record of Treatment divisions are based on 1863 property boundaries, major 1863 circulation routes, and battle action. Beginning in the northwest portion of the park, moving to the southeast, and concluding with the East Cavalry Field area located east of the US Route 15 Bypass, the fifteen areas are:

1. First Day – Union 1st Corps
2. First Day – Union 11th Corps
3. Pickett's Charge-Pitzer-McMillan-Bliss
4. Defense of Cemetery Ridge
5. Defense of Cemetery Hill
6. Gettysburg National Cemetery
7. Culp's Hill and Attack on East Cemetery Hill-Benner-A. Spangler
8. Powers Hill and Union Rear-Guinn-Lightner-A. Spangler
9. Pickett's Charge-Codori-H. Spangler-Staub-Sherfy
10. Emmitsburg Road Ridge
11. Defense of Rose Ridge and Houck's Ridge-Snyder-Warfield
12. Big Round Top-Confederate Attack-Devil's Den-Plank-Weikert
13. Little Round Top
14. South Cavalry Field and Confederate Attack-Bushman/Hammer-Slyder
15. East Cavalry Field

Within each Record of Treatment area, an introduction describes the boundaries of the geographic area and lists major 1863 property owners. A brief overview of the battle action that took place in the area is presented followed by a summary of 1863 and 1999 landscape character. The summary of 1999 landscape character includes a listing of the commemorative avenues added and notes major park structures, such as visitor centers, guide stations, and comfort stations. The summary concludes by noting non-contributing building removals, such as the Davidson Motor Company Ford Dealership in Area 2, which the park completed between 1999 and 2014. The introduction lists the implemented task types that will be presented and notes if there are any additional treatments proposed in the 1999 GMP that have not been completed. If issues emerged with feature nomenclature while preparing the task narratives, the introduction concludes by citing the discrepancies and noting the preferred name that the narratives will use.

Each Record of Treatment area next presents the implemented tasks according to the feature categories and types presented in the *Treatment Philosophy*. Within the cultural features category, feature types include agricultural fields, woodlots and groves, orchards and nurseries, fencing, and gates and gateways. Implemented task types include the removal of non-historic woody vegetation, health cuts in historic woodlots, replanting historic woodlots, replanting historic orchards, and replacement of historic fencing. Within the natural features category, feature types include thickets and streams and implemented task types include replanting historic thickets and establishment of non-historic riparian buffer habitat for water quality. A summary of all feature categories, feature types, and recommended treatment principles is presented in Table 2 at the end of the previous chapter.

Implemented tasks are titled with an 1863 property owner's name or battle name, such as Lee's Headquarters, in order to readily connect the work to the park's research files and 1863 mapping. The task titles cross list a sequentially derived GIS identification number where that number is available. Record of treatment narratives follow each task title. Each narrative contains a brief overview of historic condition during the Battle of Gettysburg, July 1–4, 1863, the intent of rehabilitation work with respect to key landscape characteristics and the battle (KOCOA), sources of information that informed the treatment action, and existing conditions prior to treatment. The narratives then describe the as-built physical work and reference existing condition photographs taken September 2013 or September 2014. The authors captured and incorporated an additional sixteen existing condition photographs from July 2016 to better convey the implemented tasks. The tasks appear in summary tables at the conclusion of each Record of Treatment area and are illustrated on Drawings 1B–25B at the conclusion of this chapter. Each drawing is presented side-by-side with sheets of the hand-drawn 1863 period plan or for the East Cavalry Field area, the 1880 Maxson Survey of the Warren Map Extension (Drawings 1A–25A).

SUMMARY OF PARK-WIDE LANDSCAPE TREATMENT

DEER MANAGEMENT

Before the park started their GMP process, an over-abundance of white-tailed deer was identified as a concern and a threat to perpetuating historic woodlots and groves, as well as replanting historic orchards. Maintaining woodlots and groves in a healthy condition over time requires trees of various ages and species and extensive deer browsing was contributing to even-aged stands with little natural regeneration.[1] To curtail deer browse on a replanted historic orchard, fencing would be required and would need to be maintained until the trees grew above the browsing height.

In 1994, the park released a draft white-tailed deer management plan and environmental impact statement (EIS). The EIS reviewed alternatives for managing the park's population of white-tailed deer and identified a preferred alternative that would combine authorized agents culling deer in the park with public hunting outside the park. The NPS approved the EIS, a Record of Decision was signed in June 1995, and the first cull was completed in the park that fall.[2]

EARTHWORKS RECONSTRUCTED DURING THE COMMEMORATIVE ERA

Earthworks are a type of Defense Work constructed by soldiers during the battle for cover and to create an obstacle against an attacking force. A specific type of earthwork, a lunette, was a semi-circular earthen berm constructed by artillery crews to protect their guns. Eight sets of earthworks presently on landscape originated during the battle, but were reconstructed or rehabilitated by either the Gettysburg Battlefield Memorial Association or the War Department. The earthworks and their commemorative-era construction dates include: Culp's Hill and Ridge Earthworks (1882), Rowley's Division Earthworks (1887), Caldwell's Division Earthworks (1891), East Cemetery Hill Lunettes (1878), Stevens Knoll Lunettes (1880–90), McGilvery's Battalion Lunettes (1891), Poague's Battalion Lunettes (1903), and Reilly's Section Stone Lunettes (1895).[3]

CIRCULATION

The *Treatment Philosophy* defines a hierarchy of battle-era circulation features that includes Roads and Railroads (e.g., Emmitsburg Road), the Local Road Network (e.g., Wigert-Trostle Lane), and Internal Circulation (e.g., field access and woodlot access lanes). Distinct from these features, but sometimes following an 1863 alignment, are the commemorative park avenue system and trails developed intentionally or inadvertently during the National Park Service's administration.

Between 1882 and 1920, the Gettysburg Battlefield Memorial Association and the War Department developed and maintained park avenues along the battle lines of the Union and Confederate armies or to connect those battle lines. The avenues were principally laid out as 60-foot wide corridors that included the roadway itself, the monumentation, formal park grounds, and enclosure fencing. The park's National Register documentation lists 41 avenues that were protected and maintained during the battlefield landscape rehabilitation projects.[4]

Park GIS files indicate over 8.5 miles of horse trails extend across the park and following completion of the GMP, 6.59 miles were realigned or reestablished. In 2012, the park completed a boardwalk repair and installation project (PEPC 42568) for a horse trail leading to the Sedgwick Monument and the following year, completed improvements to the McMillan Woods parking area (PEPC 46600) to better accommodate horse trailers for public use and permitted tour group use.

Between 1999 and 2008, the park rehabilitated a total of 5.22 miles of farm lanes and paths and presently maintains 2.17 miles of mowed paths, such as the mowed path crossing the Codori and Small fields from Seminary Ridge to The Angle.[5] Numerous social trails—unimproved routes trodden by visitors—are scattered across the park and concentrated at points of interest and self-guided tour stops such as Little Round Top and Culp's Hill. To address social trails and the trail network holistically, the park is developing a Comprehensive Trail System Study, with stakeholder input, to support a Comprehensive Trail Plan/Environmental Assessment. The overarching goal of the project is to create a conscientious plan that provides for safe pedestrian and bicycle-oriented travel within Gettysburg National Military Park and Eisenhower National Historic Site, links the two park properties, and allows visitors opportunities to experience and reflect upon the parks' landscapes and their resources without reliance on automobiles.[6]

ENDNOTES

1 Eric Campbell, *Treatment Philosophy: The 1863 Landscape*, United States Department of the Interior, National Park Service, March 2004, 41.

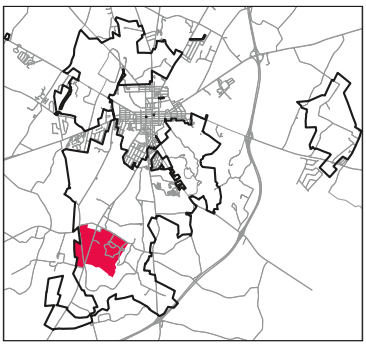
2 *Final Environmental Impact Statement: White-Tailed Deer Management Plan Gettysburg National Military Park and Eisenhower National Historic Site*, June 1995, 42; GMP, 27; Tom Dunkel, "The Second Battle of Gettysburg," *The Washington Post*, December 29, 1996, https://www.washingtonpost.com/archive/lifestyle/magazine/1996/12/29/the-second-battle-of-gettysburg/6901b255-b63e-4fd3-9cf6-ca89c8564e9e/.

3 Campbell, *Treatment Philosophy*, 114 and 126; Kathleen Georg Harrison, *National Register of Historic Places Registration Form for Gettysburg National Military Park*, Gettysburg National Military Park, January 2004, Sect 7:102-3.

4 Harrison, *National Register*, Sect 7:116-7.

5 Superintendent's Annual Report, FY 2007, park files.

6 *Gettysburg National Military Park and Eisenhower National Historic Site Comprehensive Trail System Study, Phase I*, November 2015, 6.



AREA 11 — DEFENSE OF ROSE RIDGE AND HOUCK'S RIDGE-ROSE-SNYDER-WARFIELD

The Defense of Rose Ridge and Houck's Ridge-Rose-Snyder-Warfield record of treatment area is located in the western portion of the park and is bounded on the north by the Sherfy-Rose, Wentz-Rose, and Shefferer-Warfield 1863 property lines; on the east by the Rose-Houck, George W. Weikert-Houck, and Sherfy-Houck 1863 property lines; on the south by the Snyder-Slyder and Snyder-Bushman/Hammer 1863 property lines; and on the west by the park's legislative boundary. Major 1863 property owners in this area include, John Biesecker, William Douglass, George Rose, Joseph Sherfy, Philip Snyder, James Warfield, and George W. Weikert.

On the evening of July 1 and during July 2, the right flank of the Confederate line extended south from Seminary Ridge following a second topographic ridge known as Warfield Ridge. Troops in General James Longstreet's Corps used Biesecker Woods and Douglass Woods, located west of the ridge, for cover and concealment as they prepared for an attack on the Union left flank.[1] At about 4:00 p.m. Longstreet ordered his infantry forward across the Rose and Snyder fields and Confederate units struck the Union line at Devil's Den and Little Round Top. In conjunction with this initial attack, Longstreet ordered more of his units into action, from south to north, and the fighting spread along the Union front from Devil's Den, through the Rose Wheatfield and eventually into the Sherfy Peach Orchard.

The Rose Wheatfield, relatively free from obstacles, initially served as a Union avenue of approach as troops moved to the west and also as a firing position for artillery. Around 4:30 p.m., fighting transformed the Rose Wheatfield into a chaotic scrum referenced as the Whirlpool of Battle and the Bloody Wheatfield. Over a two-and-a-half hour period, this ground changed hands six times as Confederates of Longstreet's Crops attempted to smash the thinly-held Union line. Confederate attackers came from Rose Lane Gap and Rose West Woods while Union reinforcements from the 2nd, 5th, and 12th Corps poured in from Trostle West Woods and Houck's Ridge. When the Union advance position at the Peach Orchard collapsed around 6:30 p.m., Confederates began to surround the Rose Wheatfield and Union forces fell back toward Cemetery Ridge.[2]

The 1863 character of the Defense of Rose Ridge and Houck's Ridge-Rose-Snyder-Warfield area included large fields east of Warfield Ridge transitioning to smaller fields approaching Houck's Ridge and Devil's Den. The majority of the fields were defined by worm fencing with the smaller fields near the natural rock outcroppings lined by stone walls. Several orchards associated with the Rose Farm complex interrupted continuous field patterns and woodlots occupied land immediately west of Houck's Ridge. Emmitsburg Road and Wheatfield Road,

both primarily lined by worm fencing, served as major circulation routes with Rose Farm Lane and Slyder Farm Lane extending southeast from Emmitsburg Road to their respective farm complexes. Drainages formed in low-lying areas west of Emmitsburg Road and flowed east to form Rose Run. The watercourse turned south into Rose Woods and exited the woodlot into Sherfy Thicket and then Snyder Thicket before emptying into Plum Run.

At the completion of the 1999 GMP, the Defense of Rose Ridge and Houck's Ridge-Rose-Snyder-Warfield area featured commemorative-era avenues including Ayres, Birney, Cross, DeTrobriand, Sickles, and West Confederate, and monuments marking battle lines and key positions. The Confederate Avenue Observation Tower, completed by the Gettysburg Battlefield Commission in 1896, stood on the east side of West Confederate Avenue, south of its intersection with Millerstown Road. The density of vegetation in the woodlots increased and the gap between the two Rose woodlots filled in with woody vegetation. The small fields and thickets south of Rose Woods also filled with woody vegetation and appeared forested. Orchards at the Rose Farm complex and Snyder property were not present and a majority of the battle-era fencing had been removed, including the worm fencing along Emmitsburg and Wheatfield Roads.

To enhance historic landscape character that affected the battle, the park has completed landscape treatment tasks including the removal of non-historic woody vegetation, replanting historic woodlots, replanting historic orchards, and replacement of historic fencing. Additional treatments proposed through the 1999 GMP but not yet implemented include the replanting of the Warfield Orchard. However, additional research is needed to verify the role the Warfield Orchard played in the battle and if it influenced the outcome of the battle and should be a rehabilitated landscape feature (Figure 12).

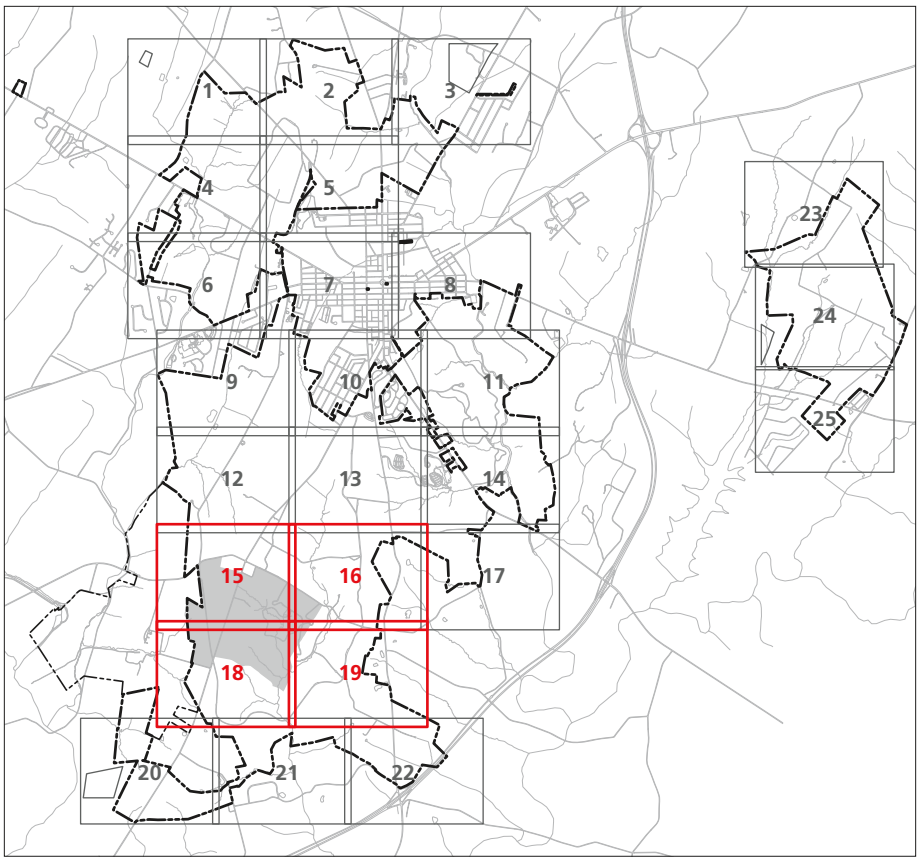


Figure 12. Map index for the Defense of Rose Ridge and Houck's Ridge-Snyder-Warfield area (OCLP).

AGRICULTURAL FIELDS

Rose Lane Gap Woods Removal

[GIS ID 28B]

Rose Lane Gap is bounded on the north by Stony Hill and Rose West Woods, on the east by Rose Wheatfield, on the south by Rose Woods, and on the west by Rose Field 7.

The following description is among the historical documentation referencing the open character of the Rose Lane Gap at the time of the battle:

> Confederate Brigadier General Joseph B. Kershaw described the view he had from his battle line as it advanced across the Emmitsburg Road to the farm buildings of George and Catharine Rose on the afternoon of July 2. "Between the stony hill and this forest [Rose Woods] was an interval of about 100 yards, which was only sparsely covered with scrubby undergrowth, through which a small road ran in the direction of the mountain [Little Round Top]. Looking down this road from the stone house, a large wheat-field was seen. In rear of the wheat-field, and between that and the mountain, was the enemy's main line of battle, posted behind a stone wall."[3]

Rose Lane Gap provided an avenue of approach and observation for both forces and is documented in the 1863 Bachelder Map, 1895 Gettysburg National Park

Commission Map, and in photographs from the park's historical collection (Figure 13).

In 1999, successional woody vegetation filled Rose Lane Gap and contractors removed the non-historic woods in 2004. The park utilized an indefinite delivery/ indefinite quantity (IDIQ) agreement, delivery order P3-031, and contracted with Pennington Tree Experts to clear a 3.33-acre area. After the clearing component was completed, the park's Resource Management division seeded the area predominately with big bluestem (*Andropogon gerardii*) purchased from Ernst Conservation Seeds, Inc. The cleared area is mowed one time a year and presently remains open (Figure 14).

Rose Field 10 Woods Removal
[GIS ID 28AN]

Rose Field 10 is bounded on the north by Rose Field 7, on the east by Rose Woods and George Weikert Field 1, on the south by Snyder Field 4, and on the west by Snyder Field 3, Rose Old Orchard, and Rose Farm Orchard. The non-historic woods removal cleared an area in the northeast corner of the field abutted by Rose Woods on the east.

The following description is among the historical documentation referencing the open character of Rose Field 10 at the time of the battle:

> A survivor of the 10th Georgia regiment in Semmes's Brigade remembered of the deadly nature of the advance to across Rose Field 10 and into Rose Woods on the afternoon of July 2. "[At] last the field is crossed, though at fearful cost and we came to the edge of the woods and foot of the hills;. . .we had not struck the infantry yet, and we all knew that the worst was yet to come."[4]

Rose Field 10 provided an avenue of approach for Confederate troops and observation for both forces. The open character of the field is documented in photographs from the Tipton Collection and the park's historical collection (Figure 15).

In 1999, successional woody vegetation filled portions of Rose Field 10 and contractors removed the non-historic woods in 2006. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order T4-068, and contracted with Pennington Tree Experts to clear a 0.86-acre area. Existing grasses present in Rose Field 10 before the contracted work began were allowed to self-seed. The cleared area is maintained as a pasture and through grazing, presently remains open (Figure 16).

Rose and Snyder Fields Woods Removal
[GIS ID 135]

Non-historic woods removal for GIS ID 135 covers portions of four agricultural fields in Record of Treatment Area 11. The fields include Rose Field 10 and Snyder Fields 4, 8, and 9. These spaces are bounded on the north by Rose Field 7 and George Weikert Field 1, on the east by Snyder Fields 5 and 10A, on the south by Slyder Lane, and on the west by Snyder Fields 3 and 7. In addition to clearing the fields, the non-historic woods removal helped to define the 1863 extents of the Snyder North Woodlot which stretched from the northwest corner of Snyder Field 4 to the northwest corner of Snyder Field 9.

The following description is among the historical documentation referencing the open character of the fields and the contrasting cover provided by the Snyder North Woodlot at the time of the battle:

> In a post-war letter, Confederate Brigadier General J. B. Robertson described the advance of the left wing of his brigade on the afternoon of July 2 across the Snyder farm and Sherfy Thicket. On "reaching & passing through the skirt of timber [Snyder North Woodlot] in the edge of which a very strong line of the enemy's skirmishers was formed and who opened a heavy fire on me, I charged through this timber & across the narrow valley (a meadow) to the main line of the enemy posted along & behind some stone fence and rock (boulders) running along my entire front; the rock rising abruptly on nearly a parallel line with the stone fence."[5]

The Rose and Snyder fields provided an avenue of approach and observation for Confederate forces. The open character of the fields is documented in the 1863 Bachelder Map, 1872 topographical survey map, 1900 Gettysburg National Park Commission Survey, a 1936 aerial photograph, and in photographs from the Tipton Collection and the park's historical collection (Figure 17).

In 1999, successional woody vegetation filled portions of the Rose and Snyder fields and contractors removed the non-historic woods in 2006. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order T5-050, and contracted with Pennington Tree Experts to clear a 3.84-acre area. The area contained Indian grass (*Sorghastrum nutans*) and other warm season grass species before the contracted work began and was allowed to self-seed after the clearing was completed. The cleared area is mowed one time a year and presently remains open (Figure 18).

Sherfy Knoll and George Weikert and Snyder Fields Woods Removal
[GIS ID 28AW]

Non-historic woods removal for GIS ID 28AW covers portions of seven open agricultural areas in Record of Treatment Area 11. The open areas include Sherfy Knoll; George Weikert Fields 1 and 2, George Weikert Yards, and George Weikert Fruit Garden; and Snyder Fields 9 and 10A. These spaces are bounded on the

north by Rose Field 10 and Rose Woods, on the east by Sherfy Thicket, on the south by Slyder Farm Lane, and on the west by Snyder Fields 5 and 8 and Rose Field 10.

The following description—specifically addressing Sherfy Knoll—is among the historical documentation referencing the open character of the agricultural areas at the time of the battle:

> A soldier in the 1st Texas regiment of Robertson's Brigade wrote of the services of his regiment on the afternoon of July 2. "As we came down a slant [Sherfy Knoll] by the side of a wood [Snyder North or West Woodlot] a shell cut off a white oak tree, which made us scatter to keep it from falling on us, but we soon closed up the gap and went forward until we were in the valley [east end of Sherfy Knoll] where we halted, loaded and fired, the front rank on their knees and the rear standing. We only remained in this a few minutes when we again went forward, when we came to the foot of the hill on which the [4th New York] battery stood. . . ."[6]

Sherfy Knoll and the George Weikert and Snyder Fields served as an avenue of approach and provided observation for Confederate troops. The open character of the spaces is documented in the 1863 Bachelder Map, 1872 topographical survey map, 1900 Gettysburg National Park Commission Survey, a 1936 aerial photograph, and in photographs from the Tipton Collection and the park's historical collection (Figure 19).

In 1999, successional woody vegetation filled Sherfy Knoll and George Weikert and Snyder Fields. Contractors removed the non-historic woods in 2006 with the park utilizing an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order T4-068, and contracting with Pennington Tree Experts to clear an 18.19-acre area. After the contracted work was completed, the park's Resource Management division seeded the area with little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and Eastern gammagrass (*Tripsacum dactyloides*) purchased from Ernst Conservation Seeds, Inc. The cleared area is mowed one time a year and presently remains open (Figure 20).

Snyder Field 10B Woods Removal
[GIS ID 28AE]

Snyder Field 10B is bounded on the north by Sherfy Thicket, on the east by Snyder Woods, on the south by Slyder Farm Lane, and on the west by Plum Run.

The following description is among the historical documentation referencing the open character of Snyder Field 10B at the time of the battle:

> A marksman in New Hampshire's Company F, 2nd United States Sharpshooters recorded his recollections of the battle of Gettysburg many years after the war. He wrote that on July 2, he was posted with his company at the Slyder farmstead and retreated to Little Round Top as General Law's

> brigade advanced. "The country that my company fell back over was first a low swampy intervale [*sic*], then up over the western slope of Big Round Top [Snyder Woods], across the gap between the two mountains, then up the side of Little Round Top to its summit."[7]

The field provided an avenue of approach for Union forces and its open character is documented in the 1863 Bachelder Map, 1872 topographical survey map, and in photographs from William A. Frassanito's *Early Photography at Gettysburg* (Figure 21).[8]

In 1999, successional woody vegetation filled Snyder Field 10B and contractors removed the non-historic woods in 2008. The park utilized an indefinite delivery/ indefinite quantity (IDIQ) agreement, delivery order T4-068, and contracted with Pennington Tree Experts to clear a 4.28-acre area. After the contracted work was completed, the park's Resource Management division seeded the area with Indian grass (*Sorghastrum nutans*) and little bluestem (*Schizachyrium scoparium*). The cleared area is mowed one time a year and presently remains open (Figure 22).

WOODLOTS AND GROVES

Biesecker and Douglass Woods Health Cuts

Biesecker Woods and Douglass Woods are adjoining features with the larger Biesecker Woods to the north and the smaller Douglass Woods to the south. The woods are bounded on the north by Samuel Pitzer Tenant Field 1 and Emanuel Pitzer Tenant Field 4, on the east by the commemorative-era Confederate Avenue, on the south by Douglass Field 5, and on the west by the park boundary with Eisenhower National Historic Site.

The following description is among the historical documentation referencing the character of the woods at the time of the battle:

> According to an early history of Kershaw's Brigade, the South Carolina regiments belonging to it finally reached position in battle line west of the Peach Orchard and Rose Farm in the early afternoon of July 2. "Kershaw took position behind a tumbled down wall to await Hood's movements on our right, and who was to open the battle by the assault on Round Top. The country on our right [Douglass and Bushman/Hammer fields]. . . . A battery of ten guns was immediately in our rear, in a grove of oaks, and drew on us a heavy fire when the artillery duel began. . . . The battery in our rear was drawing a fearful fire upon us, as we lay behind the stone fence, and all were but too anxious to be ordered forward."[9]

The woodlots provided cover and an avenue of approach for Confederate troops and is documented in the 1863 Bachelder Map, 1863 Cope Map, Gettysburg National Park Commission Maps, and in photographs from the park's historical collection (Figure 23).

In order to maintain and sustainably perpetuate the character of a woodlot involved in battle action, the park contracted for health cuts in Biesecker and Douglass Woods. Under delivery order T7-101, contractors performed health cuts in a 23.86-acre area and completed the work in 2008 (Figure 24). Specifications for health cuts are included in Appendix A.

Rose and Stony Hill Woods Health Cuts

The Rose and Stony Hill Woods health cuts cover three woodlots located in Record of Treatment Area 11. The woods include Rose Woods, Rose West Woods, and Stony Hill Woods. These features are bounded on the north by Rose Field 5, on the east by Rose Wheatfield and Houck Field, on the south by George Weikert Fields 1, 2, and 3, and Sherfy Thicket, and on the west by Rose Fields 7 and 10.

The following description—specifically addressing Rose Woods—is among the historical documentation referencing the character of the woodlots at the time of the battle:

> A veteran of the 15th Georgia regiment of Benning's Brigade, on the extreme left of the brigade line, described his position and the Union attack through Joseph Sherfy Thicket and George Weikert Field 3 ("Triangle Field"). "We were in the edge of an open woods with no undergrowth and some sixty yards back from an open field in front, and as soon as these lines broke we only had time to strengthen up our lines and get ready for the next line which we could plainly see coming in splendid style across this open field, to attack us. We stood ready, taking shelter behind rocks and trees. They…charged on our forces, and it seemed as if they were determined to run over us, but not a man moved and our fire was so destructive that they did not stay long in the woods before they fell back and made a stand—fought us for some time…. As soon as the line was disposed of another was ushered in to take their place, and on they came and charged into the woods this time. They pressed our left back and we had to give back some thirty steps to change our front a little."[10]

The three woodlots provided an avenue of approach, observation, and cover to both forces and are documented in the 1863 Bachelder Map, 1863 Cope Map, 1872 topographical survey map, and in photographs from the park's historical collection (Figure 25).

In order to maintain and sustainably perpetuate the character of a woodlot involved in battle action, the park contracted for health cuts in Rose and Stony Hill Woods. Under delivery order P3-033, contractors performed health cuts in a 58.02-acre area and completed the work in 2002 (Figure 26). Specifications for health cuts are included in Appendix A.

ORCHARDS AND NURSERIES

Rose North Orchard Replanting

Rose North Orchard is bounded on the north by Wheatfield Road, on the east by Rose Field 5, on the south by Rose Field 4, and on the west by the commemorative-era Birney Avenue.

The following description is among the historical documentation referencing the orchard at the time of the battle:

> An early history of Kershaw's South Carolina Brigade described the artillery fire that swept along the advancing line on the afternoon of July 2. "The shelling from Round Top was terrific enough to make the stoutest hearts quake, while the battery down at the base of the ridge, in the orchard, was raking Barksdale and Kershaw right and left with grape and shrapnel. . . . The battery in the orchard began grapeing Kershaw's left as soon as it came in range, the right being protected by a depression in the ground over which they marched. . . . Men fell here and there from the deadly minnie-balls, while great gaps or swaths were swept away in our ranks by shells from the batteries on the hills, or by the destructive grape and canister from the orchard."[11]

The orchard provided observation and fields of fire as well as some cover for Union forces. The orchard is documented in the 1863 Bachelder Map, 1872 topographical survey map, 1900 Gettysburg National Park Commission Survey, and in photographs from the Tipton Collection and the park's historical collection (Figure 27).[12]

In 2006, the park completed replanting of the Rose North Orchard. The replanted orchard consists of 89 apple trees arranged in ten rows. The northern three rows consist of 25 'Williams Pride' apples and the next four rows consist of 3 'Williams Pride,' 30 'Liberty,' and 3 'Redfree' apples. The final three rows consist of 28 'Redfree' apples. All 89 trees were planted on EMLA 7 semi-dwarf rootstock in a quincunx pattern at 40-foot on center spacing. In 2014, the park completed a condition assessment for the Rose North Orchard and recorded 84 trees in good condition and 5 trees missing (Figure 28).

Rose Lane Orchard Replanting

Rose Lane Orchard is bounded on the north by Rose Farm Lane, on the east by Rose Run South Headwaters and Morass, on the south by Rose Field 8, and on the west by Emmitsburg Road.

The following description is among the historical documentation referencing the orchard around the time of the battle:

> A Pennsylvania resident touring the battlefield within the week after the close of the battle noted the grave of an officer interred on the Rose farm. "On the other side of the barn and lane under a pear tree was the grave of Capt. T. J. Warren, 13th [*sic* 15th] South Carolina Vol. . . ."[13]

The Rose Lane Orchard provided cover to Confederate forces and is documented in the 1863 Bachelder Map, 1872 topographical survey map, and in photographs from the Tipton Collection and the park's historical collection (Figure 29).

In 2006, the park completed replanting of the Rose Lane Orchard. The replanted orchard consists of 104 apple trees arranged in 35 columns. Beginning on the west side of the orchard and heading east, the first nine columns consist of 31 'Enterprise' apples. The next nine columns consist of 1 'Enterprise,' 30 'Freedom,' and 1 'Liberty' apples. The final 17 columns consist of 41 'Liberty' apples. All 104 trees were planted on EMLA 7 semi-dwarf rootstock in a quincunx pattern at 40-foot on center spacing. In 2014, the park completed a condition assessment for the Rose Lane Orchard and recorded 56 trees in good condition, 8 trees in fair condition, 16 trees in poor condition, and 24 trees missing (Figure 30). In addition to the reference of a pear tree, historical documentation indicates the trees in the Rose Lane Orchard may have been peaches or a combination of pears, cherries, and plums.[14] Consistent with the recommendations of the *Treatment Philosophy*, the specific species present in an orchard are generally not important. However, the historic limits and height of an orchard that affect its qualities as cover and concealment, obstacle, or avenue of approach are the focus of the rehabilitation. As a result, apples cultivars were selected in order to keep maintenance requirements consistent among the park's replanted orchards.[15]

Rose Farm Orchard Replanting

Rose Farm Orchard is bounded on the north by Rose Run South Headwaters and Morass, on the east by Rose Field 10, on the south by Rose Field 9 and Rose Old Orchard, and on the west by Rose Field 8.

The following description is among the historical documentation referencing the orchard around the time of the battle:

> According to entries in the list of Confederate interments made by a local physician in the year following the battle, soldiers from Semmes's Brigade were buried at "Jno Roses Place orchard, near fence," meaning the orchard near the springhouse on the Rose Run South Headwaters.[16]

Semmes's Brigade of Georgia infantry advanced from Biesecker Woods across the Rose fields on July 2. The Rose Farm Orchard, located east of Rose Field 8, likely served as an avenue of approach and created an obstacle to the eastward advance.[17] The orchard is documented in the 1872 topographical survey map and in photographs from the Tipton Collection and the park's historical collection (Figure 31).

In 2006, the park completed replanting of the Rose Farm Orchard. The replanted orchard consists of 114 apple trees arranged in 12 rows. The northern four rows consist of 18 'Liberty' and 2 'Williams Pride' apples. The remaining eight rows

consist of 94 'Williams Pride' apples. All 114 trees were planted on EMLA 7 semi-dwarf rootstock in a quincunx pattern at 40-foot on center spacing. In 2014, the park completed a condition assessment for the Rose Farm Orchard and recorded 85 trees in good condition, 3 trees in fair condition, 9 trees in poor condition, and 17 trees missing (Figure 32).

Rose Old Orchard Replanting

Rose Old Orchard is bounded on the north by Rose Farm Orchard, on the east by Rose Field 10, on the south by Snyder Field 3, and on the west by Rose Field 8.

On the afternoon of July 2, Semmes's Brigade of Georgia infantry advanced from Biesecker Woods across the Rose fields. The Rose Old Orchard, located east of Rose Field 8, likely served as an avenue of approach and created an obstacle to the eastward advance.[18] The orchard is documented in photographs from William A. Frassanito's *Early Photography at Gettysburg* and the park's historical collection (Figure 33).

In 2006, the park completed replanting of the Rose Old Orchard. The replanted orchard consists of 38 apple trees loosely arranged in a grid of 15 rows and 15 columns. The northern section of the orchard consists of 11 'Freedom' apples and the middle section consists of 11 'Liberty' apples. The southern section of the orchard consists of 16 'Enterprise' apples. All 38 trees were planted on EMLA 111 standard rootstock with a minimum 40-foot on center spacing. Each column contains a maximum of 5 trees and each row contains a maximum of 4 trees. In 2014, the park completed a condition assessment for the Rose Old Orchard and recorded 25 trees in good condition, 1 tree in poor condition, and 12 trees missing (Figure 34). Since over 20 percent of the trees are missing, the Rose Old Orchard should be considered for a replanting program that maintains the orchard's sparse character at the time of the battle.

George Weikert Fruit Garden Replanting

George Weikert Fruit Garden is bounded on the north by Rose Woods, on the east by George Weikert Field 2, on the south by George Weikert Yards, and on the west by George Weikert Field 1.

On the afternoon of July 3, the 15th Georgia regiment of Benning's Brigade retreated through and sought cover in George Weikert's property. The 13th Pennsylvania Reserves of McCandless's Brigade pursued the Confederates and ultimately captured over 200 prisoners in the vicinity of George Weikert's property.[19] The orchard provided cover to both forces and is documented in the 1863 Bachelder Map and in photographs from the Tipton Collection and the park's historical collection (Figure 35).

In 2009, the park completed replanting of the George Weikert Fruit Garden. The replanted orchard consists of 9 apple trees arranged in two rows. The northern row consists of 5 'Goldrush' apples and the southern row consists of 4 'Freedom' apples. All 9 trees were planted on M 7a semi-dwarf rootstock at 40-foot on center spacing. In 2014, the park completed a condition assessment for the George Weikert Fruit Garden and recorded 7 trees in good condition and 2 trees missing (Figure 36). Since over 20 percent of the trees are missing, the George Weikert Fruit Garden should be considered for a replanting program to maintain the orchard's historic limits. The limits of an orchard and height of its trees affected cover, obstacle, and avenue of approach during the battle.

Snyder Orchard Replanting

Snyder Orchard is a triangular-shaped agricultural feature coming to a point at the intersection of Emmitsburg Road and Confederate Avenue. The orchard is bounded on the north by the Snyder House and Yards, on the east by Emmitsburg Road, and on the west by the commemorative-era Confederate Avenue.

The Snyder farmstead was incorporated into the Confederate battle line on Seminary Ridge and Confederate infantry and artillery occupied and fired from this site from July 2–4. Consequently, Union counter fire damaged the farmstead and Confederates used the buildings as emergency shelter.[20] The orchard likely provided cover for Confederate troops and is documented in the 1863 Bachelder Map, 1863 Cope Map, 1863 Elliott Map, 1872 topographical survey map, and in photographs from the park's historical collection (Figure 37).[21]

In 2007, the park completed replanting of the Snyder Orchard. The replanted orchard consists of 30 apple trees arranged in five columns. The western three columns consist of 12 'Goldrush' apples and the next column consists of 3 'Goldrush' and 6 'Freedom' apples. The final column consists of 9 'Freedom' apples. All 30 trees were planted on EMLA 111 standard rootstock in a quincunx pattern at 40-foot on center spacing. In 2014, the park completed a condition assessment for the Snyder Orchard and recorded 18 trees in good condition, 2 trees in poor condition, and 10 trees missing (Figure 38). Since over 20 percent of the trees are missing, the Snyder Orchard should be considered for a replanting program to maintain the orchard's historic limits. The limits of an orchard and height of its trees affected cover, obstacle, and avenue of approach during the battle.

FENCING

Sherfy Peach Orchard South and East Boundary and Rose North Orchard North Boundary Worm Fence Installation [GIS ID 893]

Sherfy Peach Orchard and Rose North Orchard are bounded on the north by Wheatfield Road, on the east by Rose Field 5, on the south by Rose Fields 4 and 7, and on the west by Emmitsburg Road.

The following description is among the historical documentation referencing the fence at the time of the battle:

> During the afternoon of July 2, Colonel E. L. Bailey moved the 2nd New Hampshire regiment of Burling's Brigade to the left, "behind the fence that bounded the southern side of the Peach Orchard, where it might be partly concealed and covered."[22]

This fencing type provided cover for Union troops and additionally created an obstacle to Confederate movements. The worm fencing along the boundaries of the Sherfy Peach Orchard and Rose North Orchard is documented in the 1863 Bachelder Map, 1872 topographical survey map, and in photographs from the Tipton Collection (Figure 39).

In 2006, the park completed the installation of 1,282 feet of worm fence along the south and east boundaries of Sherfy Peach Orchard and along the north boundary of Rose North Orchard (Figure 40). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Rose Field 5 North and East Boundary Worm Fence Installation [GIS IDs 894, 895]

Rose Field 5 is bounded on the north by Wheatfield Road, on the east by Rose West Woods, on the south by Stony Hill Woods and Rose Field 7, and on the west by Rose North Orchard.

The following description is among the historical documentation referencing the battle action in Rose West Woods and Rose Field 5:

> Notes taken at the time of the battle by a survivor of Company K, 140th Pennsylvania regiment recorded his impressions of the battle of July 2 in the vicinity of the Rose Wheatfield. "We. . .form line of battle and pass on south, through corner of wheat field, on edge of which Gen. Zook is mortally wounded—on through strip of timber [Rose West Woods], over or around huge boulders. It is almost six o'clock when we are in line of battle, facing south and west—Col. Roberts killed in front of Regiment—right wing in open field [Rose Field 5] under severe enfilading fire, suffer terrible losses—Lt. Col. Frazier, as soon as he realizes situation changes front of right wing to face Peach Orchard."[23]

Both Confederate and Union forces used Rose West Woods for cover and the fencing separating the woods and Rose Field 5 likely reinforced the cover.[24] The fencing is documented in the 1895 Gettysburg National Park Commission Map and in photographs from the Tipton Collection (Figure 41).

In 2006, the park completed the installation of 1,526 feet of worm fence along the north and east boundaries of Rose Field 5 (Figure 42). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Rose West Woods North Boundary Worm Fence Installation [GIS IDs 896, 897]

Rose West Woods is bounded on the north by Wheatfield Road, on the east by Rose Wheatfield, on the south by Rose Lane Gap, and on the west by Stony Hill Woods and Rose Field 5.

The following description is among the historical documentation referencing the north boundary fence at the time of the battle:

> Upon reaching the Wheatfield on the afternoon of July 2, the 118th Pennsylvania of Tilton's Brigade marched "a short distance" on the "roadway which connects the Emmetsburg turnpike with the Taneytown road," and, "removing the fences," turned to the "left into the timber [Rose West Woods], beyond and in front of the famous wheatfield. Rocks and boulders were scattered about. . . . As soon as the brigade had nearly cleared the road it was halted and faced to the front, upon the further edge of the timber."[25]

The fencing, paralleling the south edge of Wheatfield Road, proved to be an obstacle to Union forces and was removed.[26] Worm fencing along the north boundary of Rose West Woods is documented in the 1872 topographical survey map and in photographs from the Tipton Collection and the Boardman Collection (Figure 43).

In 2006, the park completed the installation of 277 feet of worm fence along the north boundary of Rose West Woods (Figure 44). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Rose Wheatfield North and West Boundary Worm Fence Installation [GIS IDs 898, 899, 900, 901]

Rose Wheatfield is bounded on the north by Wheatfield Road, on the east by Houck Field, on the south by Rose Woods, and on the west by Rose West Woods and Rose Lane Gap.

The following description is among the historical documentation referencing the fence at the time of the battle:

> A line officer in the 61st New York regiment of Cross's Brigade recorded in his post-war reminiscences that his command reached the scene of the fighting along the collapsing line of the Union 3rd Corps. On the afternoon of July 2, the brigade advanced from the Patterson fields, "…in a chunck [*sic*], until we struck a cross road. In this road we deployed by filing right and advancing until the [other] regiments were deployed, then we left faced. This undoubled us, and we stood in line of battle, officers and sergeants in front of the rear rank in front. In front of us across the road was a wheatfield, which was bounded by fence. We were ordered forward; we scaled the fence and advanced into this wheatfield in line of battle…."[27]

This fencing type provided cover to and created an obstacle for both forces. Fence lines along the north and west perimeters of the Rose Wheatfield are documented as a wooden fence in the 1863 Bachelder Map and as worm fence in the 1868 Warren Map, 1872 topographical survey map, and in photographs from the Tipton Collection, the Boardman Collection, and the park's historical collection (Figure 45).

In 2006, the park completed the installation of 2,255 feet of worm fence along the north and west boundaries of Rose Wheatfield (Figure 46). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Rose Fields 1–3 East Boundary and Snyder Field 1 East Boundary Worm Fence Installation
[GIS IDs 1401, 1402, 1403]

Rose Fields 1–3 and Snyder Field 1 are bounded on the north by Wentz Field, on the east by Emmitsburg Road, on the south by Snyder Lane, and on the west by Warfield Field and the commemorative-era Confederate Avenue.

The following description is among the historical documentation referencing the fence at the time of the battle:

> Colonel Aiken, commanding the 7th South Carolina regiment of Kershaw's Brigade, described the predicament faced by his men during their attack on the afternoon of July 2. Having advanced across Rose Field 2, the colonel recalled that, "Sharpshooters injured us while climbing the two fences that lined the pike [Emmitsburg Road]."[28]

Worm fencing along the east boundary of Rose Fields 1–3 and Snyder Field 1 created an obstacle to Confederate troop movements and is documented in the 1868 Warren Map. Photographs from the Tipton Collection, taken circa 1890, indicate that by that time, post and rail fencing marked the eastern boundary of Rose Field 1 [GIS ID 1401] (Figure 47).

In 2010, volunteers completed the installation of 2,478 feet of worm fence along the east boundary of Rose Fields 1–3 and Snyder Field 1 (Figure 48). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Rose Field 8 West Boundary Worm Fence Installation

[GIS IDs 1404, 1405]

Rose Field 8 is bounded on the north by Rose Lane Orchard, on the east by Rose Farm Orchard, Rose Old Orchard, and Rose Field 9, on the south by Snyder Field 2, and on the west by Emmitsburg Road.

The following description is among the historical documentation referencing the fence at the time of the battle:

> Colonel Aiken, commanding the 7th South Carolina regiment of Kershaw's Brigade, described the predicament faced by his men during their attack on the afternoon of July 2. Having advanced across Rose Field 2, the colonel recalled that, "Sharpshooters injured us while climbing the two fences that lined the pike [Emmitsburg Road]."[29]

Worm fencing along the west boundary of Rose Field 8 created an obstacle to Confederate forces advancing east and is documented as a wooden fence in the 1863 Bachelder Map and as a worm fence in the 1868 Warren Map and 1872 topographical survey map (Figure 49).

In 2010, volunteers completed the installation of 1,389 feet of worm fence along the west boundary of Rose Field 8 (Figure 50). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Snyder Fields 3 and 7, Rose Field 9, and Rose Orchards West Boundary Worm Fence Installation

[GIS ID 1406]

Snyder Fields 3 and 7, Rose Field 9, Rose Old Orchard, and Rose Farm Orchard are bounded on the north by Rose Farm Lane, on the east by Rose Field 10 and Snyder Fields 4 and 8, on the south by Slyder Farm Lane, and on the west by Snyder Fields 2 and 6, Rose Field 8, and Rose Land Orchard.

The following description is among the historical documentation referencing the worm fence at the time of the battle:

> On the afternoon of July 2, the 3rd Arkansas regiment of Robertson's Brigade was personally ordered by General Longstreet to advance east from their position near the Snyder farmstead. A solider recalled, "There was a rail fence in the way. He said to the men in the front line: 'Grab the bottom rail and turn it over, when you get to it.'"[30]

Based on the movements of the 3rd Arkansas, Longstreet's instructions may have referred to fences along Emmitsburg Road or the west boundaries of Snyder Fields 3 and 7. The worm fencing in both locations created an obstacle to Confederate forces and is documented as a wooden fence in the 1863 Bachelder Map and as a worm fence in the 1868 Warren Map, 1872 topographical survey

map, and in photographs from the Tipton Collection, William A. Frassanito's *Early Photography at Gettysburg*, and the park's historical collection (Figure 51).

In 2010, the park completed the installation of 2,217 feet of worm fence along the west boundary of Snyder Field 3 and 7, Rose Field 9, Rose Old Orchard, and Rose Farm Orchard (Figure 52). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Rose Yard and Garden Picket Fence and Gate Installation
[GIS IDs 355, 356, 359, 1115, 1116, 1117]

The Rose Yard and Garden is located in the southwest portion of Rose Field 7 and bounded on the south and west by Rose Farm Lane.

The following description is among the historical documentation referencing the fence at the time of the battle:

> About 4 p.m. on July 2, Kershaw's South Carolina Brigade advanced from the western edge of the Rose Farm across its fields in order to attack the Union line. "The numerous fences in the way, the stone building and barn, and the morass, and a raking fire of grape and canister, rendered it difficult to retain the line in good order. . . ."[31]

The picket fencing at the Rose Yard and Garden created an obstacle to Confederate forces and is documented in photographs from the Tipton Collection (Figure 53).[32]

In 2012, the park completed the installation of 533 feet of picket fence and one 3-foot wide gate along the perimeter of the Rose Yard and Garden (Figure 54). The southern section of fence, GIS ID 359, extends further east than depicted in the park's 1863 period plan. Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Rose Yard and Garden Modern Picket Fence Installation
[GIS IDs 360, 1198]

The Rose Yard and Garden is located in the southwest portion of Rose Field 7 and bounded on the south and west by Rose Farm Lane. The modern picket fence begins at the northeast corner of the Rose Smokehouse and proceeds east, then turns south, and finally heads west connecting with the southwest corner of the Rose Summer Kitchen.

The park's 1863 period plan does not show a picket fence enclosing an area east of the Rose Smokehouse and Summer Kitchen (Drawing 15A). In 2012, the park completed the installation of 100 feet of picket fence east of these ancillary structures (Figure 55). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

Rose Yard and Garden Modern Wire Fence Installation [GIS ID 1114]

The Rose Yard and Garden is located in the southwest portion of Rose Field 7 and bounded on the south and west by Rose Farm Lane. The modern wire fence begins at the northeast corner of the Rose Summer Kitchen and proceeds east, then turns south and connects perpendicular with the Rose Yard and Garden modern picket fence.

The park's 1863 period plan does not show a fence enclosing an area east of the Rose Summer Kitchen (Drawing 15A). In 2012, the park completed the installation of 33 feet of wire fence east of the Rose Summer Kitchen (see Figure 55). The wire fence installation was necessitated because the park rented adjacent fields for pasture through an agricultural permit program. The park should consider removing the modern wire fence if it is no longer needed for animal control or resource protection.

THICKETS

Sherfy Thicket, Snyder East Thicket, and Snyder Thicket Replanting [GIS IDs 29E, 29W]

Sherfy Thicket, Snyder East Thicket, and Snyder Thicket are bounded on the north by Rose Woods, on the east by George Weikert Field 3, Houck Field/Devil's Den, and Snyder Field 10B, on the south by Slyder Fields 3 and 4, and on the west by Snyder Field 10A, Snyder East Woodlot, Sherfy Knoll, and George Weikert Field 2.

The following description is among the historical documentation referencing the thickets at the time of the battle:

> Major J. P. Bane wrote of the services of his 4th Texas regiment of Robertson's Brigade on the afternoon of July 2. "Advancing at a double-quick, we soon met the enemy's skirmishers, who occupied a skirt of thick undergrowth about one-quarter of a mile from the base of the cliffs, upon which the enemy had a battery playing upon us with the most deadly effect."[33]

The thickets served as an avenue of approach for Confederate troops and provided observation for both forces. The character and extent of the thickets are documented in the 1863 Bachelder Map, 1900 Gettysburg National Park Commission Survey, and in photographs from the Tipton Collection (Figure 56).

In 2009, the park completed a two-phase replanting of the Sherfy Thicket, Snyder East Thicket, and Snyder Thicket. In 2006, the park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order T3-086, and contracted with Friendship Farm to replant a 10.63-acre area.[34] Three years later, under delivery order T4-068, the same contractor replanted a 4.23-acre area. For both

phases, shrubs were planted at a rate of 1,200 per acre resulting in the addition of approximately 17,832 shrubs (Figure 57). Consistent with the recommendations of the *Treatment Philosophy*, the thickets should be monitored and trees that exceed a height of ten to fifteen feet should be periodically removed as warranted to maintain historic viewsheds.[8]

STREAMS

Snyder Branch of Plum Run Non-Historic Riparian Buffer Establishment [GIS ID 28A]

The Snyder Branch of Plum Run begins draining low-lying areas of Snyder Field 3 and Rose Fields 9 and 10. The watercourse proceeds in a southeast direction passing through Snyder North Woodlot and continues flowing southeast with both Sherfy Knoll and Snyder East Woodlot northeast of its channel. The Snyder Branch joins with Plum Run in Snyder Field 10. In 1999, the Snyder Branch flowed through historic fields covered by successional vegetation. A component of the plan to remove non-historic successional vegetation necessitated planting a 35-foot buffer along the Snyder Branch to reduce erosion, sedimentation, and improve water quality of the Chesapeake Bay. In 2009, the park completed planting of the 35-foot buffer along the Snyder Branch. The planting was completed along 1,023 linear feet and added 1,884 shrubs at a rate of 1,200 shrubs per acre (Figure 58). The park should monitor the Snyder Branch of Plum Run buffer and consider selective thinning to remove woody vegetation taller than ten to fifteen feet. A monitoring and selective removal process will balance the beneficial aspects of the planted buffer with the historic character of the run, primarily devoid of woody vegetation at the time of the battle.

Rose and Plum Runs Non-Historic Riparian Buffer Establishment [GIS IDs 27, 29]

Several branches drain the Rose Farm property roughly bounded on the north by Wheatfield Road, on the east by Houck's Ridge, and on the west by Emmitsburg Road. The branches confluence in Rose Woods and Rose Run proceeds roughly south through Sherfy Thicket and joins Plum Run in Snyder Field 10. Plum Run heads roughly southwest through Snyder Field 10, turns to the south through Slyder Field 4, and continues southeast into Slyder Woods. Rose and Plum runs flow through Snyder Field 10 and in 1999, this historic field was covered by successional vegetation. A component of the plan to remove non-historic successional vegetation necessitated establishing a 35-foot buffer along Rose and Plum runs to reduce erosion, sedimentation, and improve water quality of the Chesapeake Bay. After completing the non-historic woods removal of Snyder Field 10B in 2006, the park allowed the buffer along Rose and Plum runs to

regenerate naturally. The buffer areas extend along 287 linear feet of Rose Run and 873 linear feet of Plum Run (Figure 59). The park should monitor the Rose and Plum Run buffers and consider selective thinning to remove woody vegetation taller than ten to fifteen feet. A monitoring and selective removal process will balance the beneficial aspects of the planted buffer with the historic character of the runs, primarily devoid of woody vegetation at the time of the battle.

ENDNOTES

1 Kathleen Georg Harrison, *National Register of Historic Places Registration Form for Gettysburg National Military Park*, Gettysburg National Military Park, January 2004, Sect 7:38.

2 Ibid., Sect 7:101; Gettysburg National Military Park, "Five Year Strategy: Terrain Analysis and Treatment Recommendations," unpublished manuscript, 2003, 6.

3 *Official Records*, vol. 27, part 2, 367-368.

4 L. L. Cochran, "The Tenth Georgia Regiment at Gettysburg." *The Atlanta Journal* (February 23, 1901). Copy in GETT Historians Files, Folder #519. Gettysburg National Military Park.

5 Jerome B. Robertson to John B. Bachelder (April 20, 1876), in David L. and Audrey J. Ladd, ed., *The Bachelder Papers* (Dayton: Morningside House, Inc., 1994), 477.

6 A. C. Sims, "Recollections." Confederate Research Center, Hillsboro, TX. Copy in GETT Historians Files, Folder #587. Gettysburg National Military Park.

7 Russell C. White, ed., *The Civil War Diary of Wyman S. White, First Sergeant of Company F, 2nd United States Sharpshooter Regiment, 1861–1865* (Baltimore: Butternut and Blue, 1991), 164-165.

8 No KOCOA annotation is present on the Kathy G. Harrison 1863 KOCOA maps.

9 D. Augustus Dickert, *History of Kershaw's Brigade* (Dayton: Morningside Bookshop, 1973), 236, 237.

10 William Thomas Fluker, Jr., "A Graphic Account of the Battle of Little Round Top Hill at Gettysburg," 5. Copy in GETT Historians Files, Folder #521. Gettysburg National Military Park.

11 Dickert, *History of Kershaw's Brigade*, 238.

12 No KOCOA annotation is present on the Kathy G. Harrison 1863 KOCOA maps.

13 John B. Linn, "Journal of my trip to the battlefield at Gettysburg," 8. Civil War Miscellaneous Collection, United States Army Military History Institute. Copy in GETT Historians Files, Folder #922. Gettysburg National Military Park.

14 *The Compiler* (August 6, 1866).

15 Eric Campbell, *Treatment Philosophy: The 1863 Landscape*, United States Department of the Interior, National Park Service, March 2004, 51.

16 J. W. C. O'Neal, "Ledger Book" With Confederate Interment Records, 22, 26, 29. Catalog 191, Gettysburg National Military Park Collections; Gregory A. Coco, *Gettysburg's Confederate Dead* (Gettysburg: Thomas Publications, 2003), 38, 39, 43, 55, 70, 84, 104.

17 No KOCOA annotation is present on the Kathy G. Harrison 1863 KOCOA maps.

18 No historical references found in the Kathy G. Harrison "Raw Data" files. No KOCOA annotation is present on the Kathy G. Harrison 1863 KOCOA maps.

19 No historical references found for the George Weikert Fruit Garden in the Kathy G. Harrison "Raw Data" files. References to July 3 battle action from William H. Rauch and O. R. Howard Thomson, *History of the "Bucktails"* (Philadelphia: Electric Printing Company, 1906), 266-271 *passim*; also see J. R. Sypher, *History of the Pennsylvania Reserve Corps* (Lancaster: Elias Barr & Co., 1865), 470.

20 Harrison, *National Register*, Sect 7:81.

21 No historical references found in the Kathy G. Harrison "Raw Data" files. No KOCOA annotation is present on the Kathy G. Harrison 1863 KOCOA maps.

22 Colonel E. L. Bailey, quoted in O. O. Howard, "After the Battle. Some Incidents and Observations at Gettysburg." *Philadelphia Weekly Times* (October 31, 1885). *Gettysburg Newspaper Clippings*, vol. 6, 44. GNP Commission Records, Series XXIII. Catalog 41150, Gettysburg National Military Park Archives.

23 B. F. Powelson, *History of Company K of the 140th Regiment Pennsylvania Volunteers* (Steubenville, OH: The Carnahan Printing Company, 1906), 28.

24 No KOCOA annotation is present on the Kathy G. Harrison 1863 KOCOA maps.

25 Survivors' Association 118th Regt., P.V., *History of the Corn Exchange Regiment 118th Pennsylvania Volunteers* (Philadelphia: J. L. Smith, 1888), 241-242.

26 No KOCOA annotation is present on the Kathy G. Harrison 1863 KOCOA maps.

27 Charles A. Fuller, *Personal Recollections of the War of 1861* (Hamilton NY: Edmonston Publishing, Inc., 1990), 93.

28 "An Open Letter from Col. D. Wyatt Aiken to Gen. J. B. Kershaw." *Charleston News and Courier* (June 21, 1882). Copy in GETT Historians File, Folder #578. Gettysburg National Military Park.

29 Ibid.

30 John A. Wilkerson, "Experiences of 'Seven Pines' at Gettysburg: Diary of John A. Wilkerson." Copy in GETT Historians Files, Folder #506. Gettysburg National Military Park.

31 *Official Records*, vol. 27, part 2, 368.

32 No KOCOA annotation is present on the Kathy G. Harrison 1863 KOCOA maps.

33 *Official Records*, vol. 27, part 2, 411.

34 Joe Costello served as the primary contact for the park's contracted work with Friendship Farm. Based in Latrobe, Pennsylvania, Friendship Farm presently has a sister company called FSF Conservation Contractors, LLC, which focuses on contracted work. More information is available at: http://friendshipfarms.com/about-us/conservation-contracting/.

TABLE 3: RECORD OF TREATMENT SUMMARY, AREA 11		
Task	**Date Completed**	**Notes**
Agricultural Fields		
Rose Lane Gap Woods Removal [GIS ID 28B]	2004	
Rose Field 10 Woods Removal [GIS ID 28AN]	2006	
Rose and Snyder Fields Woods Removal [GIS ID 135]	2006	
Sherfy Knoll and George Weikert and Snyder Fields Woods Removal [GIS ID 28AW]	2006	
Snyder Field 10B Woods Removal [GIS ID 28AE]	2008	
Woodlots and Groves		
Biesecker and Douglass Woods Health Cuts	2008	
Rose and Stony Hill Woods Health Cuts	2002	
Orchards and Nurseries		
Rose North Orchard Replanting	2006	
Rose Lane Orchard Replanting	2006	
Rose Farm Orchard Replanting	2006	
Rose Old Orchard Replanting	2006	Consider for a replanting program since over 20 percent of the trees are missing
George Weikert Fruit Garden Replanting	2009	Consider for a replanting program since over 20 percent of the trees are missing
Snyder Orchard Replanting	2007	Consider for a replanting program since over 20 percent of the trees are missing
Fencing		
Sherfy Peach Orchard South and East Boundary and Rose North Orchard North Boundary Worm Fence Installation [GIS ID 893]	2006	
Rose Field 5 North and East Boundary Worm Fence Installation [GIS IDs 894, 895]	2006	
Rose West Woods North Boundary Worm Fence Installation [GIS IDs 896, 897]	2006	
Rose Wheatfield North and West Boundary Worm Fence Installation [GIS IDs 898, 899, 900, 901]	2006	
Rose Fields 1–3 East Boundary and Snyder Field 1 East Boundary Worm Fence Installation [GIS IDs 1401, 1402, 1403]	2010	

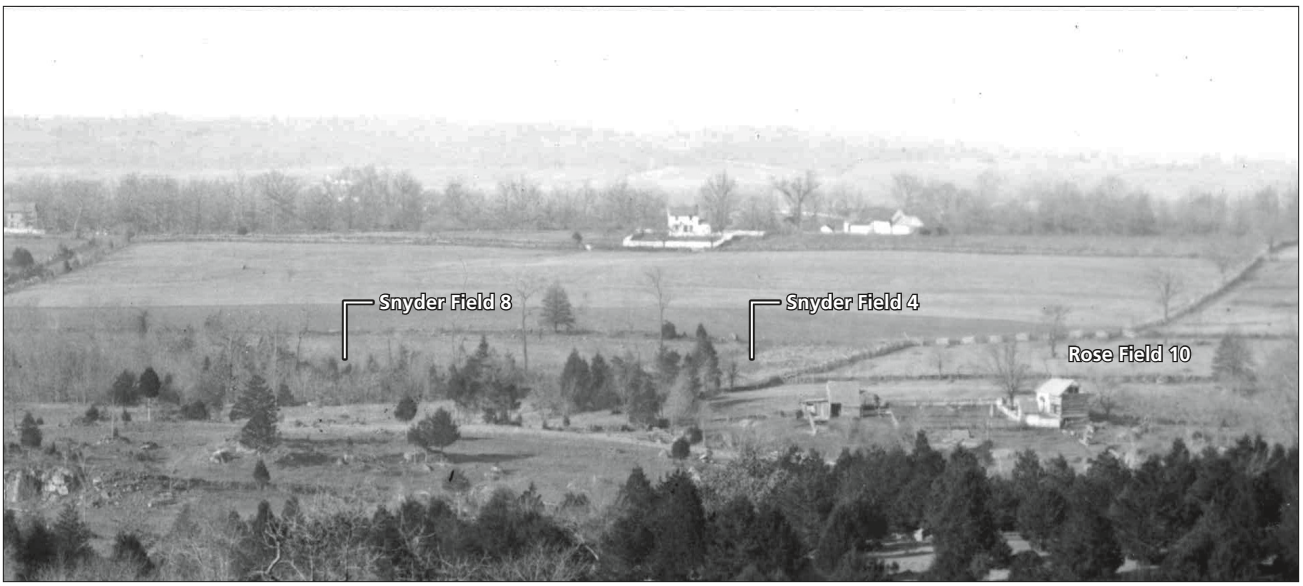
TABLE 3: RECORD OF TREATMENT SUMMARY, AREA 11		
Task	**Date Completed**	**Notes**
Rose Field 8 West Boundary Worm Fence Installation [GIS IDs 1404, 1405]	2010	
Snyder Fields 3 and 7, Rose Field 9, and Rose Orchards West Boundary Worm Fence Installation [GIS ID 1406]	2010	
Rose Yard and Garden Picket Fence and Gate Installation [GIS IDs 355, 356, 359, 1115, 1116, 1117]	2012	
Rose Yard and Garden Modern Picket Fence Installation [GIS IDs 360, 1198]	2012	
Rose Yard and Garden Modern Wire Fence Installation [GIS ID 1114]	2012	Consider removing if no longer needed for animal control or resource protection
Thickets		
Sherfy Thicket, Snyder East Thicket, and Snyder Thicket Replanting [GIS ID 29E, 29W]	2006, 2008	Monitor and consider removing trees that exceed ten to fifteen feet high as warranted to maintain historic viewsheds.
Streams		
Snyder Branch of Plum Run Non-Historic Riparian Buffer Establishment [GIS IDs 28A]	2009	Monitor and consider removing trees that exceed ten to fifteen feet high as warranted to maintain historic character.
Rose and Plum Runs Non-Historic Riparian Buffer Establishment [GIS IDs 27, 29]		Regenerating naturally Monitor and consider removing trees that exceed ten to fifteen feet high as warranted to maintain historic character.

Figure 13. Rose Lane Gap. View south from 32nd Massachusetts Infantry Monument, 1885 (Sue Boardman Collection, Misc49b).

Figure 14. Rose Lane Gap woods removal. View northwest from Rose Wheatfield, 2013 (OCLP).

Figure 15. Rose Field 10. View east, 1863 (GETT 41135, Historic Photograph Collection, 2B-2059).

Figure 16. Rose Field 10 woods removal. View east from Rose Field 9/ Rose Old Orchard, 2014 (OCLP).



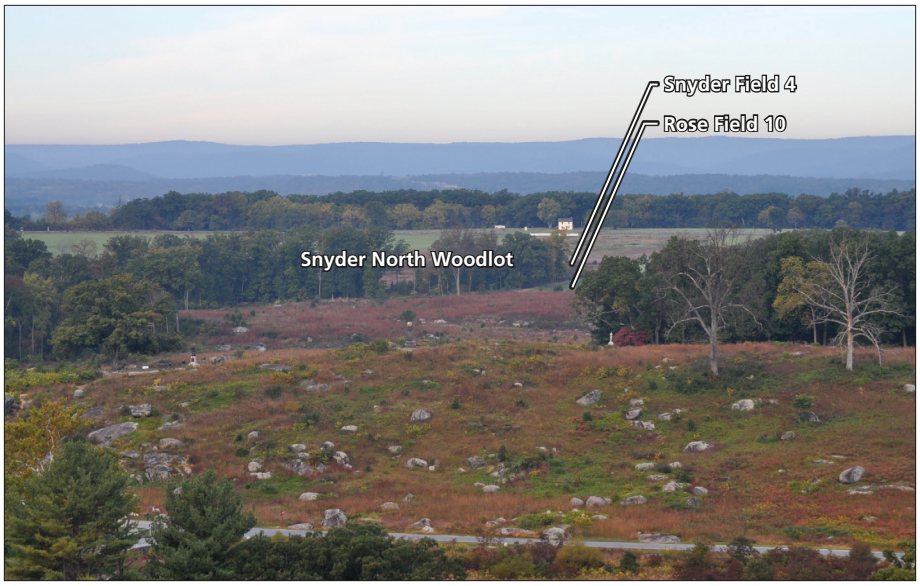


Figure 17 (top). Rose and Snyder Fields. Detail of view west from Little Round Top, 1886–88 (GETT 41136, Tipton Collection, T2450j).

Figure 18 (right). Rose and Snyder Fields woods removal. View west from Little Round Top, 2014 (OCLP).

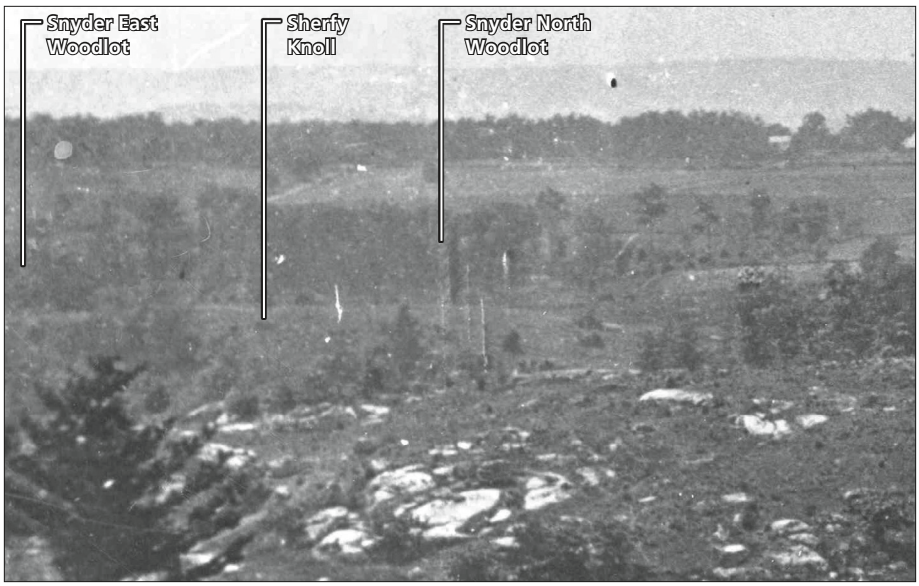


Figure 19. Sherfy Knoll and George Weikert Fields. Detail of view west from Little Round Top, 1863 (GETT 41135, Historic Photograph Collection, 2B-2090).

Figure 20. Sherfy Knoll and George Weikert Fields woods removal. View west from George Weikert Field 3, 2013 (OCLP).

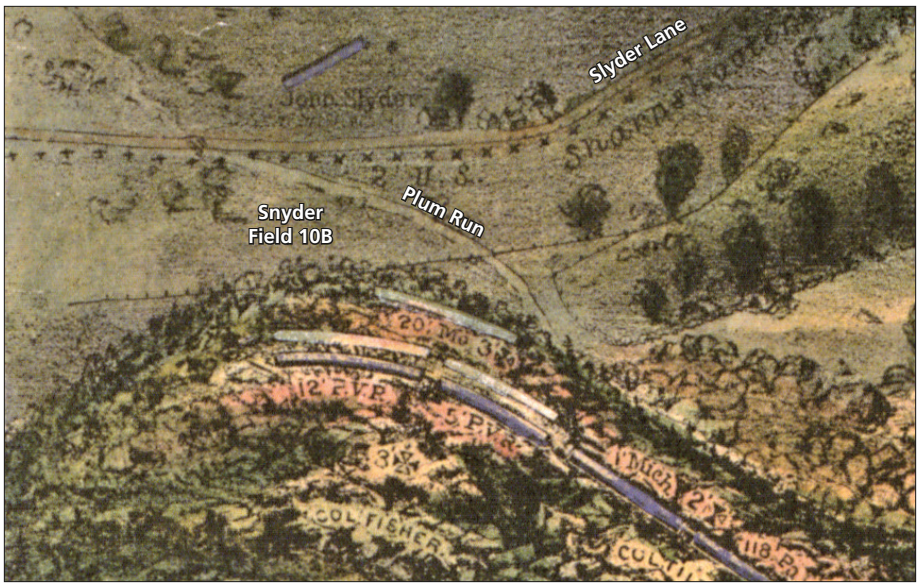


Figure 21 (right). Snyder Field 10B. Detail of Bachelder Map, 1863 (Library of Congress, Digital ID g3824g cw0322000).

Figure 22 (bottom). Snyder Field 10B woods removal. View northeast, 2014 (OCLP).

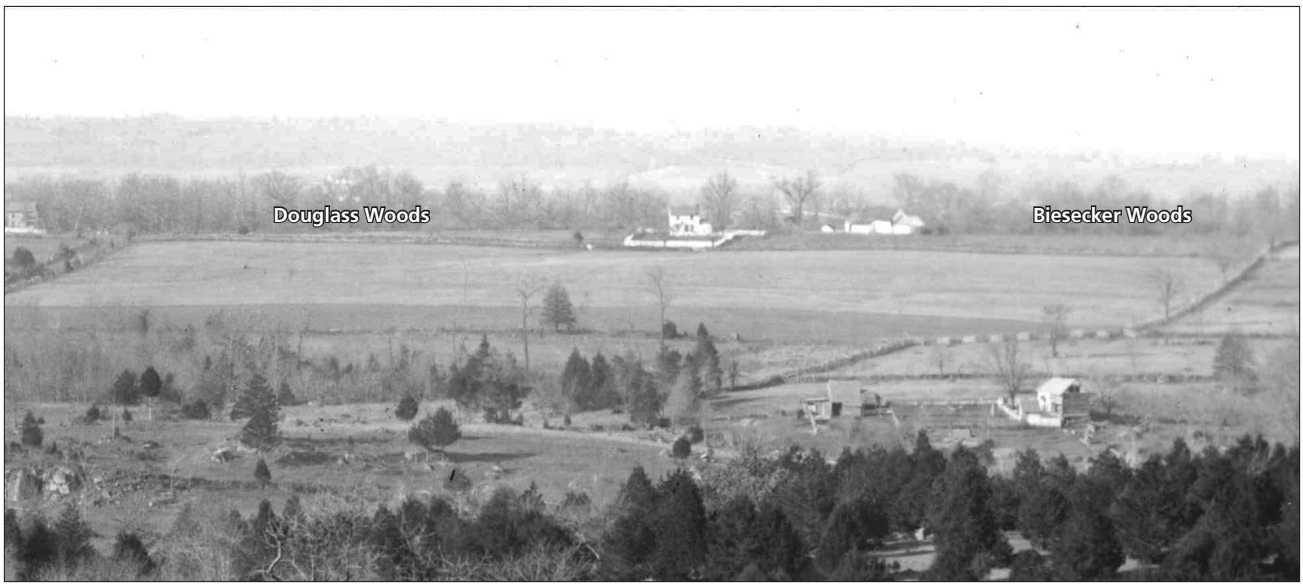


Figure 23 (top). Biesecker and Douglass Woods. Detail of view west from Little Round Top, 1886–88 (GETT 41136, Tipton Collection, T2450j).

Figure 24 (bottom). Biesecker and Douglass Woods health cuts. View west from Little Round Top, 2013 (OCLP).

Figure 25. Rose Woods. View northeast from the 66th New York Monument, circa 1896 (Sue Boardman Collection, VD13).

Figure 26. Rose Woods health cuts. View northeast from the 66th New York Monument, 2016 (OCLP).

Figure 27. Rose North Orchard. Detail of view northwest from Rose Field 10, 1863 (GETT 41135, Historic Photograph Collection, 2B-2056a).

Figure 28. Rose North Orchard replanting. View north from Rose Farm, 2014 (OCLP).

Figure 29. Rose Lane Orchard. View southwest from Rose Barn, 1863 (GETT 41135, Historic Photograph Collection, 2B-2063).

Figure 30. Rose Lane Orchard replanting. View southeast from Confederate Avenue Observation Tower, 2014 (OCLP).

Figure 31 (left). Rose Farm Orchard. View southwest from Rose Field 10, 1863 (GETT 41135, Historic Photograph Collection, 2B-2062).

Figure 32 (bottom). Rose Farm Orchard replanting. View southeast, 2014 (OCLP).

Figure 33. Rose Old Orchard. View southwest from Rose Field 10, 1863 (GETT 41135, Historic Photograph Collection, 2B-2060).

Figure 34. Rose Old Orchard replanting. View southwest, 2014 (OCLP).

Figure 35. George Weikert Fruit Garden. View west from Little Round Top, circa 1895–1900 (GETT 41136, Tipton Collection, T2429d).

Figure 36. George Weikert Fruit Garden replanting. A field team did not find fruit trees during the 2013 review. View southwest, 2013 (OCLP).

Figure 37. Snyder Orchard. View north from Emmitsburg Road, circa 1894 (GETT 41135, Historic Photograph Collection, 23S-0575a).

Figure 38. Snyder Orchard replanting. View northeast from Confederate Avenue, 2014 (OCLP).

Figure 39 (left). Sherfy Peach Orchard south and east boundary and Rose North Orchard north boundary worm fence. View southeast from Wheatfield Road, circa 1890 (GETT 41136, Tipton Collection, T2751).

Figure 40 (bottom). Sherfy Peach Orchard south and east boundary and Rose North Orchard north boundary worm fence installation [GIS ID 893]. View southeast from Birney Avenue, 2013 (OCLP).

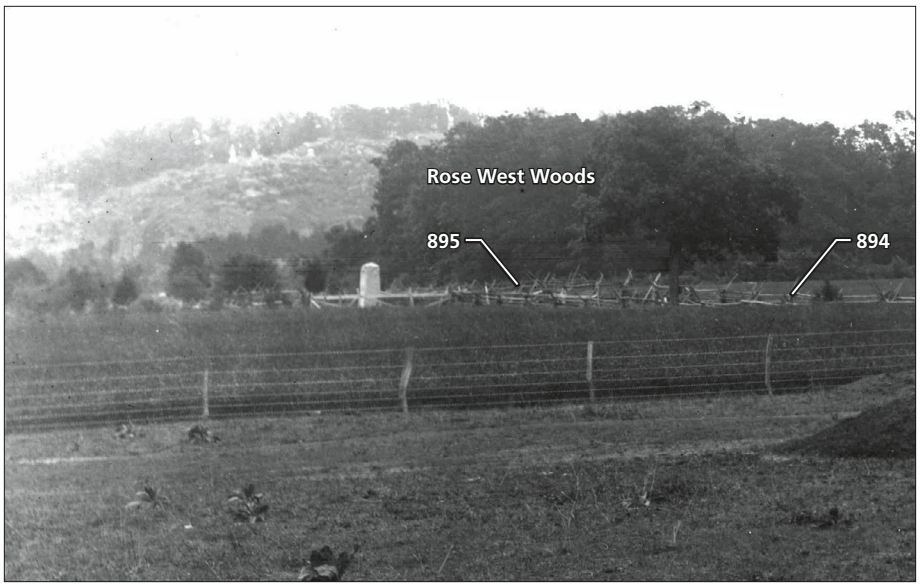


Figure 41. Rose Field 5 north and east boundary worm fence. Detail of view southeast from Trostle Field 1, circa 1889 (GETT 41136, Tipton Collection, T2455b).

Figure 42. Rose Field 5 north and east boundary worm fence installation [GIS IDs 894, 895]. View southeast from Wheatfield Road, 2013 (OCLP).

Figure 43. Rose West Woods north boundary worm fence. View northwest from Little Round Top, 1890 (GETT 41136, Tipton Collection, T2444b).

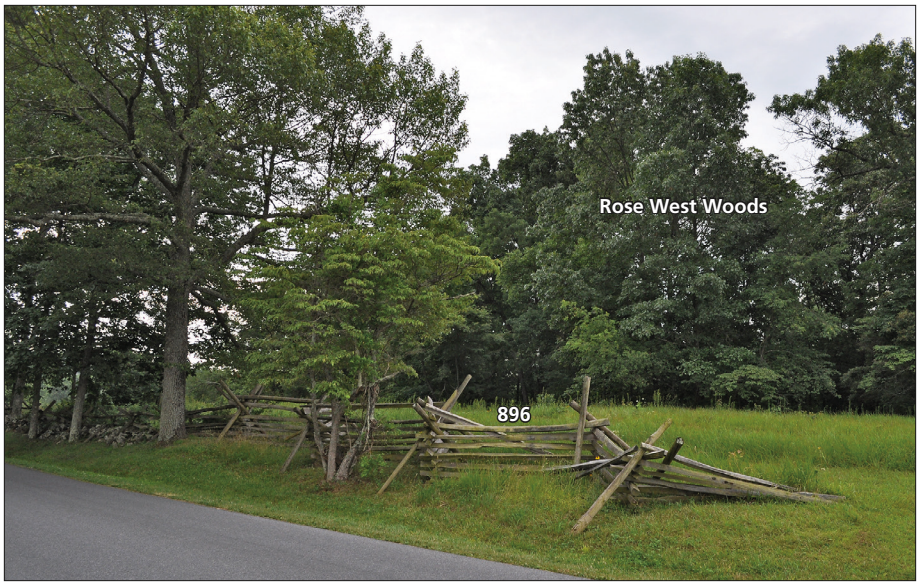


Figure 44. Rose West Woods north boundary worm fence installation [GIS IDs 896, 897]. View southeast from Wheatfield Road, 2016 (OCLP).

Figure 45. Rose Wheatfield north and west boundary worm fence. View southeast from Wheatfield Road, circa 1870s (Sue Boardman Collection, SV127a).

Figure 46. Rose Wheatfield north and west boundary worm fence installation [GIS IDs 898, 899, 900, 901]. View southeast from Wheatfield Road, 2014 (OCLP).

Figure 47. Rose Fields 1–3 east boundary and Snyder Field 1 east boundary worm fence. Detail of Warren Map, 1868 (NARA).

Figure 48. Rose Fields 1–3 east boundary and Snyder Field 1 east boundary worm fence installation [GIS IDs 1401, 1402, 1403]. View southeast from Confederate Avenue Observation Tower, 2013 (OCLP).

Figure 49. Rose Field 8 west boundary worm fence installation. Detail of Warren Map, 1868 (NARA).

Figure 50. Rose Field 8 west boundary worm fence installation [GIS IDs 1404, 1405]. View west from Little Round Top, 2013 (OCLP).

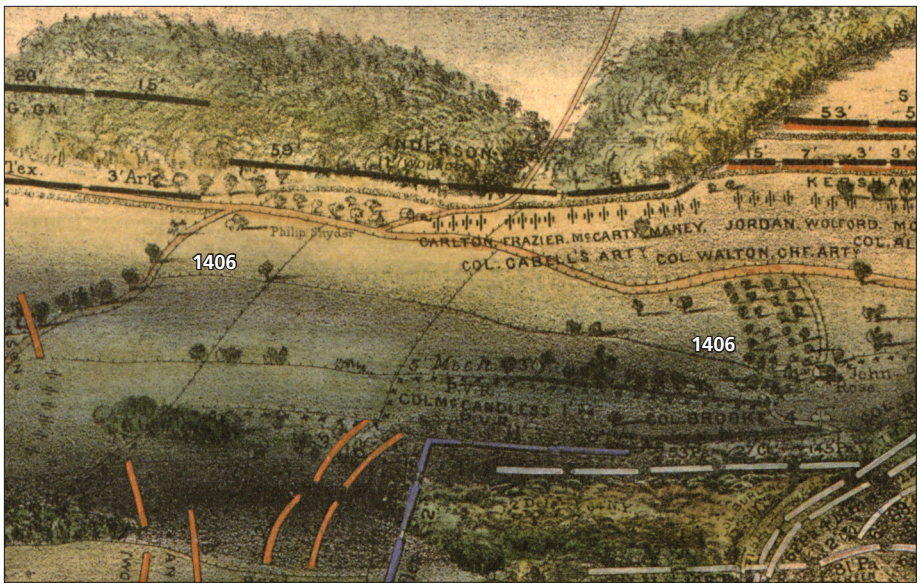


Figure 51. Snyder Fields 3 and 7, Rose Field 9, and Rose Orchards west boundary worm fence. Detail of Bachelder Map, 1863 (Library of Congress, Digital ID g3824g cw0322000).

Figure 52. Snyder Fields 3 and 7, Rose Field 9, and Rose Orchards west boundary worm fence installation [GIS ID 1406]. Woody vegetation along the fence should be removed to prolong the materials' life. View southeast from Rose Farm Lane, 2014 (OCLP).

Figure 53. Rose Yard and Garden picket fence and gate. Detail of view east from Rose Lane Orchard, 1870s (GETT 41136, Tipton Collection, T1702a).

Figure 54. Rose Yard and Garden picket fence and gate installation [GIS IDs 355, 356, 359, 1115, 1116, 1117]. View northwest, 2014 (OCLP).

Figure 55. Rose Yard and Garden modern picket fence installation [GIS IDs 360, 1198]. View south from Wheatfield Road, 2013 (OCLP).

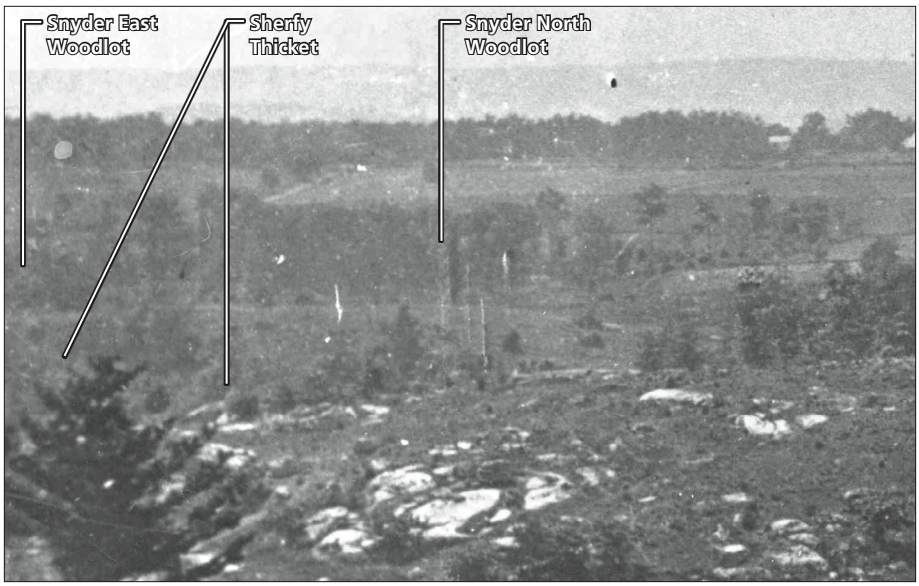
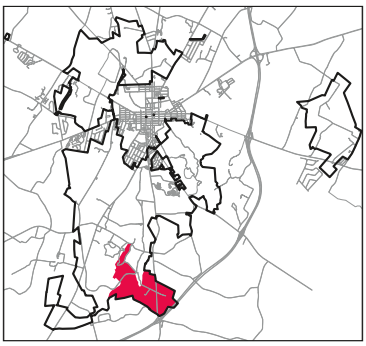


Figure 56. Sherfy Thicket. Detail of view west from Little Round Top, 1863 (GETT 41135, Historic Photograph Collection, 2B-2090).

Figure 57. Sherfy Thicket replanting. View southeast, 2013 (OCLP).

Figure 58. Snyder Branch of Plum Run non-historic riparian buffer establishment. View northeast from Slyder Farm Lane, 2014 (OCLP).

Figure 59. Rose and Plum Runs non-historic riparian buffer establishment. View northeast of Plum Run from Snyder Thicket, 2014 (OCLP).



AREA 12 — BIG ROUND TOP-CONFEDERATE ATTACK-DEVIL'S DEN-PLANK-WEIKERT

The Big Round Top-Confederate Attack-Devil's Den-Plank-Weikert record of treatment area is located in the southeast quadrant of the park and is bounded on the north by the John Weikert-Houck 1863 property line; on the east by the centerline of the commemorative-era Crawford and Warren Avenues, the Emanuel Weikert-Scott 1863 property line, and the park's legislative boundary; on the south by the park's legislative boundary; and on the west by the Rose-Houck, George W. Weikert-Houck, Sherfy-Houck, Snyder-Slyder, Scott-Slyder, Gilbert-Slyder, and Gilbert-Bushman/Hammer 1863 property lines. Major 1863 property owners in this area include John Gilbert, John Guinn, John Houck, John Keefauver, John Plank, Hugh Scott, Philip Snyder, Emanuel Weikert, and Jacob Weikert.

On the evening of July 1 and during July 2, the right flank of the Confederate line extended south from Seminary Ridge following a second topographic ridge known as Warfield Ridge. On the afternoon of July 2, an unexpected and unplanned movement by Union Major General Daniel E. Sickles directed the 3rd Corps into a line that extended from Devil's Den on the left to past the Klingel Farm, along Emmitsburg Road, on the right. The formation resulted in a salient in his line at the Sherfy Peach Orchard, a high point at the end of the Emmitsburg Road Ridge.[1] The southern end of Houck's Ridge, immediately north of the Devil's Den boulder outcropping, provided Union troops with excellent observation and fields of fire into the open ground that extended westward to Warfield Ridge. At about 4:00 p.m., Confederate Lieutenant General James Longstreet ordered approximately 14,000 men in two divisions, commanded by Major General Lafayette McLaws and Major General John B. Hood, to strike the Union army's left flank.

Advancing toward the summit of Little Round Top, Confederate forces were stymied as they tried to approach through the boulder-strewn Plum Run Gorge and repelled by reinforcements from the Union 5th Corps moving down from Little Round Top. For the remainder of July 2 and throughout July 3, Confederate sharpshooters used the cover afforded by the large boulders of Devil's Den as they directed their own deadly fire in the direction of the summit of Little Round Top. Big Round Top, located south of Little Round Top, had limited military value since its slopes were covered by a mature deciduous and partially coniferous forest, preventing observation, and its summit has a steep slope, particularly on the south and east sides.[2]

The 1863 character of the Big Round Top-Confederate Attack-Devil's Den-Plank-Weikert area was dominated by Big Round Top, reaching over 100 feet higher at the summit than Little Round Top to the northeast. The topography limited crop

production and grazing with the summit and slopes of Big Round Top utilized for woodlots. The northern slope of Big Round Top transitioned to thicket areas along the southern bank of Plum Run. Southeast of Big Round Top's base, large fields defined by worm and stone and rider fencing straddled either side of Taneytown Road. Farm lanes branched off of Taneytown Road and smaller access lanes lead from the farm building complexes to the woodlots on Big Round Top. Plum Run separated Big Round Top to the south from Houck's Ridge to the north. The north side of the run and Houck's Ridge were open from major vegetative cover, but strewn with granite rocks and boulders. The south end of Houck's Ridge was marked by a large and prominent boulder outcrop known as Devil's Den.

At the completion of the 1999 GMP, the Big Round Top-Confederate Attack-Devil's Den-Plank-Weikert area featured commemorative-era avenues including Crawford, Howe, Sickles, South Confederate, and Wright, and monuments marking battle lines and key positions. The Big Round Top Observation Tower, completed by the Gettysburg Battlefield Commission in 1896, was removed from the summit by the park in the 1960s.[3] Houck's Ridge remained relatively open; however, the south side of Plum Run grew from a thicket into forested cover. The Devil's Den Public Restroom, completed by the CCC in 1937, stood in the former thicket area south of Plum Run. Following non-historic woody vegetation removals and rehabilitation of the thicket, the park removed the restroom in 2010.

To enhance historic landscape character that affected the battle, the park has completed landscape treatment tasks including the removal of non-historic woody vegetation, replanting historic thickets, and establishment of non-historic riparian buffer habitat for water quality. No major treatments proposed through the 1999 GMP remain to be implemented. Property east of Taneytown Road lies outside the major battle action area as do the Emanuel Weikert, Jacob Weikert, and Plank parcels immediately west of Taneytown Road (Figure 60).

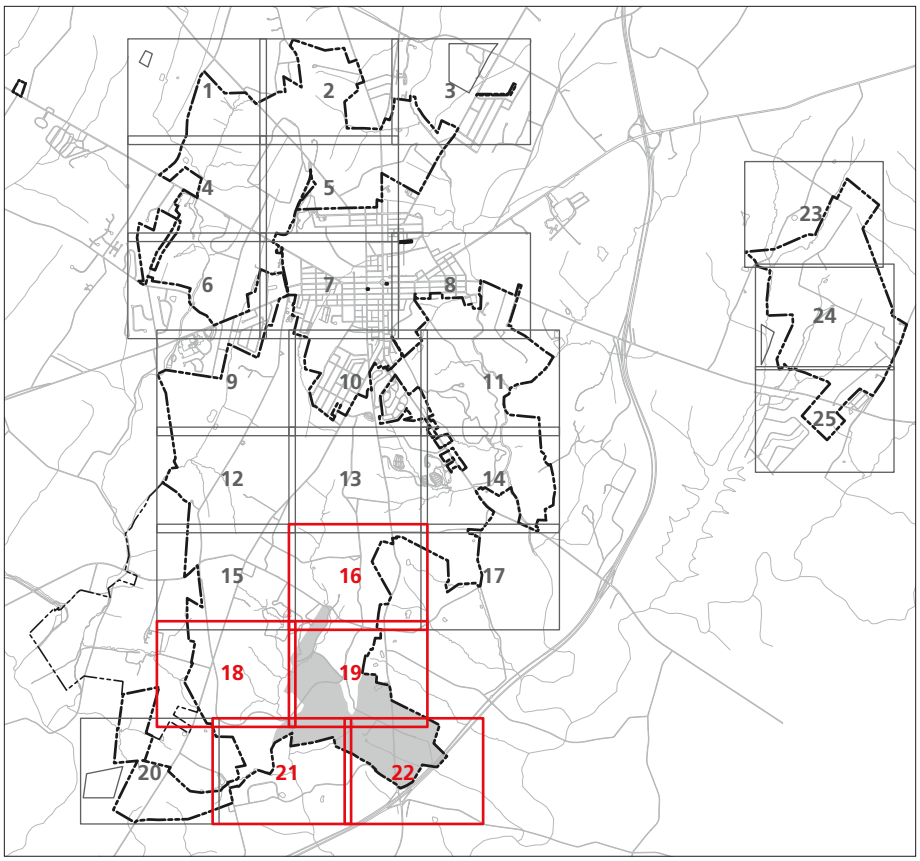


Figure 60. Map index for the Big Round Top-Confederate Attack-Devil's Den-Plank-Weikert area (OCLP).

AGRICULTURAL FIELDS

Houck's Ridge Redoubt Woods Removal

[GIS ID 27A]

Houck's Ridge Redoubt is a topographic high point located on the western edge of Houck Field and bounded on the west by Rose Woods.

The following description is among the historical documentation referencing the open character of the Houck Field at the time of the battle:

> Colonel Goode Bryan, commanding the 16th Georgia, recalled after the war that after driving the enemy through the Wheatfield on the afternoon of July 2, he and his regiment were lying down "behind a stone wall, at the foot of Round Top, on the right of some woods [Trostle West Woods]." Having advanced far enough that his left flank was exposed to fire from Union artillery and infantry in front of and on Cemetery Ridge, Bryan was fearful of advancing farther and across Houck's Ridge. "[I] was afraid to allow my men to advance and take a battery [Walcott's 3rd Massachusetts Battery] of four pieces at the foot of Round Top, from which we had driven the cannoneers, only one hundred yards in front of my position, for fear they might be captured."[4]

The contrast between the cover of Rose Woods and the Wheatfield Thicket on the west and the exposure of Houck Field on the east, reinforced by a line of stone walls and fences, created cover and an obstacle for both forces at the western edge of Houck Field.

The open character of the field is documented in the 1863 Bachelder Map, 1863 Cope Map, 1872 topographical survey map, and in photographs from the park's historical collection (Figure 61). The Cope Map depicts a Confederate redoubt on the high point at the western edge of Houck Field. The War Department built a stone wall to represent this redoubt along the general lines as they appeared on the Cope Map, under direction of the map's creator, E. B. Cope. The wall was completed during Cope's tenure as the engineer for the national military park. To date, research has not discovered narrative support of a Confederate redoubt at this location.[5]

In 1999, successional woody vegetation covered the Houck's Ridge Redoubt and contractors removed the non-historic woods in 2002. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order P3-033, and contracted with Pennington Tree Experts to clear a 0.89-acre area. After the clearing component was completed, the park's Resource Management division seeded the area with Indian grass (*Sorghastrum nutans*). The cleared area presently remains open with the majority of the area mowed one time a year. A swath, roughly 15-feet on either side of Ayres Avenue, is mowed more frequently during the growing season (Figure 62).

Devil's Den Woods Removal
[GIS ID 47]

Devil's Den, an outcropping of massive granite boulders and rocks at the southern end of Houck's Ridge, is bounded on the north by Houck Field, on the east by Plum Run, on the south by Plum Run Gorge and Sherfy Thicket, and on the west by George Weikert Field 3.

The following description is among the historical documentation referencing the character of Devil's Den at the time of the battle:

> Three months after the battle, a soldier on duty with Company F, 1st Pennsylvania Battalion at Camp Letterman, wrote, "As you pass over this rocky swamp [Plum Run Gorge] the sight is appalling. Along the middle of this swamp there is a chain of the largest rocks I ever saw…. This place is known as the 'Devil's Den.' The Rebels in passing over the rocks were shot and fell down between the rocks into the stagnant water below and strangled to death.[6]

Devil's Den created an obstacle to infantry movement and provided observation and cover to both armies. The open character of Devil's Den is documented in the 1863 Bachelder Map, 1863 Cope Map, and in photographs from the Tipton Collection, the Boardman Collection, William A. Frassanito's *Early Photography at Gettysburg*, and the park's historical collection (Figure 63).

In 1999, successional woody vegetation filled Devil's Den and contractors removed the non-historic woods in 2005. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order T4-079, and contracted with

Pennington Tree Experts to clear a 10.39-acre area. The area self-seeded after the clearing component was completed. A swath, roughly 20-feet on either side of Sickles Avenue, is mowed more frequently during the growing season. The remainder of the cleared area is scheduled to be mowed once a year; however, due to the abundance of rock outcroppings, mowing is nearly impossible. The cleared area presently remains open and the park is pursuing other management techniques to perpetuate open landscape character such as prescribed burning (Figure 64).

Sherfy Thicket and Plum Run Gorge Woods Removal [GIS ID 27]

Non-historic woods removal for GIS ID 27 covers portions of two abutting features, Sherfy Thicket and Plum Run Gorge. The features are bounded on the north by Devil's Den, on the east by John Musser Clearing and Thicket, on the south by Snyder Woods, and on the west by Sherfy Knoll. The woods removal in Sherfy Thicket is located east of Rose Run along the thicket's eastern boundary with Devil's Den. Sherfy Thicket is located within Record of Treatment Area 11; however, the removal task will be completely discussed in this section and not duplicated in the Area 11 narratives.

The following description is among the historical documentation referencing the character of the Plum Run Gorge at the time of the battle:

> "This battery [Smith's 4th New York] was situated, not on the mountain itself, but on a rugged cliff which forced the abrupt termination of a ridge that proceeded from the mountain, and ran in a direction somewhat parallel with it, leaving a valley destitute of trees and filled with immense boulders between them. This valley, not more than 300 paces in breadth, and the cliff on which their artillery was stationed, were occupied by two regiments of the enemy's infantry…. As the men emerged from the forest into the valley before mentioned, they received a deadly volley at short range, which in a few seconds killed or disabled one-fourth their number. Halting without an order from me, and availing themselves of the shelter which the rocks afforded, they returned the fire…. The men sprang over the rocks, swept the position, and took possession of the heights, capturing 40 or 50 prisoners around the battery and among the cliffs. Meanwhile the enemy had put a battery in position on a terrace of the mountain to our right [Little Round Top], which opened upon us an enfilading fire of grape and spherical case shot. A sharp fire of small-arms was also opened from the same direction. This was not destructive, however, owing to the protection afforded by the rocks."[7]

Plum Run Gorge was perceived to be an avenue of approach for Confederates advancing on Little Round Top; however, its confined and rock-ribbed nature proved an obstacle to decisive and united movement. The rocks also served as cover for these same Confederate forces.[8] Sherfy Thicket served as an avenue of approach for both forces with the thicket vegetation immature enough that soldiers within it were exposed to small arms and artillery fire. The character of the Sherfy Thicket and Plum Run Gorge is documented in the 1863 Bachelder Map and in photographs from the park's historical collection (Figure 65).

In 1999, successional woody vegetation filled Sherfy Thicket and Plum Run Gorge and contractors removed the non-historic woods in two phases. The first phase, completed in 2007, removed 0.99 acres. The second phase, completed the following year, removed 4.00 acres. The park utilized an indefinite delivery/ indefinite quantity (IDIQ) agreement, delivery order T4-068, and contracted with Pennington Tree Experts for the two-phase clearing. After each phase of clearing was completed, the park's Resource Management division seeded the eastern portion of Sherfy Thicket with Indian grass (*Sorghastrum nutans*). The park allowed the Plum Run Gorge to regenerate naturally. The eastern portion of Sherfy Thicket is mowed one time a year and presently remains open, consistent with immature thicket vegetation from the battle era. The Plum Run Gorge is not mowed and is managed as a non-historic riparian buffer. Woody vegetation within the buffer is maturing and growing taller. The park should monitor the buffer and consider selective thinning to remove woody vegetation taller than ten to fifteen feet (Figure 66).

John Musser Clearing and Thicket Woods Removal [GIS ID 25]

John Musser Clearing and Thicket is bounded on the north by the commemorative-era Sickles Avenue, on the east by the commemorative-era Warren Avenue, on the south by Guinn Woods, and on the west by Plum Run.

The following description is among the historical documentation referencing the character of the John Musser Clearing and Thicket at the time of the battle:

> The regimental history of the 44th New York regiment of Vincent's Brigade recounted the taking of prisoners along the regimental front after the successful repulse of Robertson's and Law's Brigades on the afternoon of July 2. "The first assault of the enemy was pushed to such close proximity to our lines, that when the repulse came it was extremely hazardous to retreat. When the momentum of the Confederate charge was expended, their ranks broke in confusion, some took the chances of hasty retreat, some held up their hats and handkerchiefs in token of surrender, and others took refuge behind rocks and a slight elevation of ground not far from and opposite the right of Company E. The ground further to the left was more open, affording less shelter."[9]

Both the clearing and thicket are marked by outcroppings of rock and boulders similar in character to Houck's Ridge and the Plum Run valley. The combination of vegetation and exposed rock created an obstacle and provided cover for both forces. The open character of the clearing and growth of the thicket is documented in photographs from the Tipton Collection and the park's historical collection (Figure 67).

In 1999, successional woody vegetation filled the John Musser Clearing and Thicket and contractors removed the non-historic woods in 2007. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order

T3-086, and contracted with Pennington Tree Experts to clear a 1.84-acre area. After the clearing component was completed, the park's Resource Management division seeded the area with Indian grass (*Sorghastrum nutans*). The majority of the John Musser Clearing and Thicket is not mowed and is maintained as thicket. Areas along the feature's northern and eastern edges, extending from the commemorative-era avenues, are mowed one time a year and presently remain open (Figure 68).

FENCING

Houck Field West Boundary Stone and Rider Fence Installation [GIS ID 730]

Houck Field is bounded on the north by Wheatfield Road, on the east by Plum Run, on the south by the commemorative-era Sickles Avenue, and on the west by George Weikert Field 3, Rose Woods, and the Wheatfield Thicket.

The following description is among the historical documentation referencing the stone and rider fence at the time of the battle:

> The commander of Company K, 1st Pennsylvania Reserves regiment, wrote about the advance by his unit, on the afternoon of July 2, from the north slope of Little Round Top after the repulse of the U. S. Regulars regiments in and about the Wheatfield. "We deliberately waited till the front was cleared of our retreating and vanquished troops,. . .then at the word of command, with a ringing cheer, peculiarly our own, we swept down the face of the hill, meeting the rebels as they came rushing forward, on the face of the hill. . .. Well, with a quick dash we swept down into the valley across Plum-run swamp, over the valley and up to the stone fence, across this fence and through a narrow strip of woods, (now removed,) to the eastern edge of the wheat-field, where, by orders, we halted. . .. During the night of the 2nd, and all day of the 3rd till Pickets' charge ended, we remained at the stone wall, being compelled all the while to 'lay low' on account of rebel sharp-shooters in our immediate front.[10]

This fencing type provided cover and created an obstacle for both forces at the western edge of Houck Field and its stone components are documented in the 1863 Bachelder Map and 1863 Cope Map. The 1868 Warren Map, 1872 topographical survey map, photographs from the Tipton Collection, the Adams County Historical Society Collection, and the park's historical collection show the stone wall surmounted with supported riders (Figure 69).

In 2012, the park completed the installation of 649 feet of stone and rider fence along the west boundary of Houck Field (Figure 70). Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

THICKETS

John Musser Thicket Replanting

[GIS ID 26]

John Musser Thicket is bounded on the north by Plum Run Gorge, on the east by the commemorative-era Warren Avenue, on the south by John Musser Clearing and Guinn Woods, and on the west by Plum Run Gorge.

The following description is among the historical documentation referencing the thicket at the time of the battle:

> Recounting the July 2 attack of the 2nd Georgia regiment of Benning's Brigade, Major William S. Shepherd reported, "Soon the advance was given, when the entire regiment moved forward in splendid order until it came to a deep gorge, where the nature of the ground was such that it was impossible to preserve an alignment; but notwithstanding the rocks, undergrowth, and the deadly fire of the enemy…[the men of the regiment] did not halt until they saw they were some distance in advance of their line, and beyond a rocky eminence on the left [Devil's Den], which had been previously held by the enemy."[11]

The John Musser Thicket provided cover and observation, created an obstacle, and served as an avenue of approach for both forces. The thicket is documented in photographs from the Tipton Collection and the park's historical collection (see Figure 67).

After completing the non-historic woods removal of the John Musser Thicket in 2007, the park allowed the 2.64-acre area to regenerate naturally (see Figure 68). Consistent with the recommendations of the *Treatment Philosophy*, John Musser Thicket should be monitored and trees that exceed a height of ten to fifteen feet should be periodically removed as warranted to maintain historic viewsheds.[12]

STREAMS

Plum Run Non-Historic Riparian Buffer Establishment

[GIS IDs 26, 47]

Plum Run begins draining low-lying areas of the Small and Codori fields and flows roughly south in a valley between Emmitsburg Road and Cemetery Ridge. Passing through the Trostle fields, Plum Run then turns towards the southwest and separates Houck's Ridge and Devil's Den from the Round Tops. Following the western base of Big Round Top, Plum Run continues south and about two miles beyond the park's legislative boundary, empties into Rock Creek.

In 1999, Plum Run flowed through an area covered by successional vegetation. A component of the plan to remove non-historic successional vegetation necessitated planting a 35-foot buffer along Plum Run to reduce erosion,

sedimentation, and improve water quality of the Chesapeake Bay. After completing the non-historic woods removal in 2008, the park allowed 1,997 linear feet along Plum Run to regenerate naturally (Figure 71). The park should monitor the Plum Run buffer and consider selective thinning to remove woody vegetation taller than ten to fifteen feet. A monitoring and selective removal process will balance the beneficial aspects of the planted buffer with the historic character of Plum Run, primarily devoid of woody vegetation at the time of the battle.

ENDNOTES

1 Kathleen Georg Harrison, *National Register of Historic Places Registration Form for Gettysburg National Military Park*, Gettysburg National Military Park, January 2004, Sect 8:10.

2 Harrison, *National Register*, Sect 7:38, 7:46, and 8:10; Gettysburg National Military Park, "Five Year Strategy: Terrain Analysis and Treatment Recommendations," unpublished manuscript, 2003, 5.

3 Harrison, *National Register*, Sect 8:58.

4 Lafayette McLaws, "The Battle of Gettysburg." *Addresses Delivered Before the Confederate Veterans Association of Savannah, Georgia* (Savannah: Press of George N. Nichols, 1896), 80.

5 No historical references found in the Kathy G. Harrison "Raw Data" files.

6 Frank M. Stoke to J. M. Stoke (October 26, 1863). Gettysburg College Library Collections. Copy in GETT Historians Files, Folder #131. Gettysburg National Military Park.

7 *Official Records*, vol. 27, part 2, 393-394.

8 Harrison, *National Register*, Sect 7:61.

9 Eugene Arus Nash, *A History of the Forty-fourth Regiment New York Volunteer Infantry in the Civil War, 1861-1865* (Chicago: R. R. Donnelley & Sons Company, 1911), 152-3.

10 H. N. Minnigh, *History of Company K. 1st (Inft,) Penn'a Reserves* (Duncansville PA: "Home Print" Publisher, 1891), 24-26.

11 *Official Records*, vol. 27, part 2, 420.

12 Eric Campbell, *Treatment Philosophy: The 1863 Landscape*, United States Department of the Interior, National Park Service, March 2004, 88.

TABLE 4: RECORD OF TREATMENT SUMMARY, AREA 12		
Task	**Date Completed**	**Notes**
Agricultural Fields		
Houck's Ridge Redoubt Woods Removal [GIS ID 27A]	2002	
Devil's Den Woods Removal [GIS ID 47]	2005	
Sherfy Thicket and Plum Run Gorge Woods Removal [GIS ID 27]	2008	Two phase removal starting in 2007 and completed in 2008
John Musser Clearing and Thicket Woods Removal [GIS ID 25]	2008	
Fencing		
Houck Field West Boundary Stone and Rider Fence Installation [GIS ID 730]	2012	
Thickets		
John Musser Thicket Replanting [GIS ID 26]		Regenerating naturally Monitor and consider removing trees that exceed ten to fifteen feet high as warranted to maintain historic viewsheds.
Streams		
Plum Run Non-Historic Riparian Buffer Establishment [GIS IDs 26, 47]		Regenerating naturally Monitor and consider removing trees that exceed ten to fifteen feet high as warranted to maintain historic character.

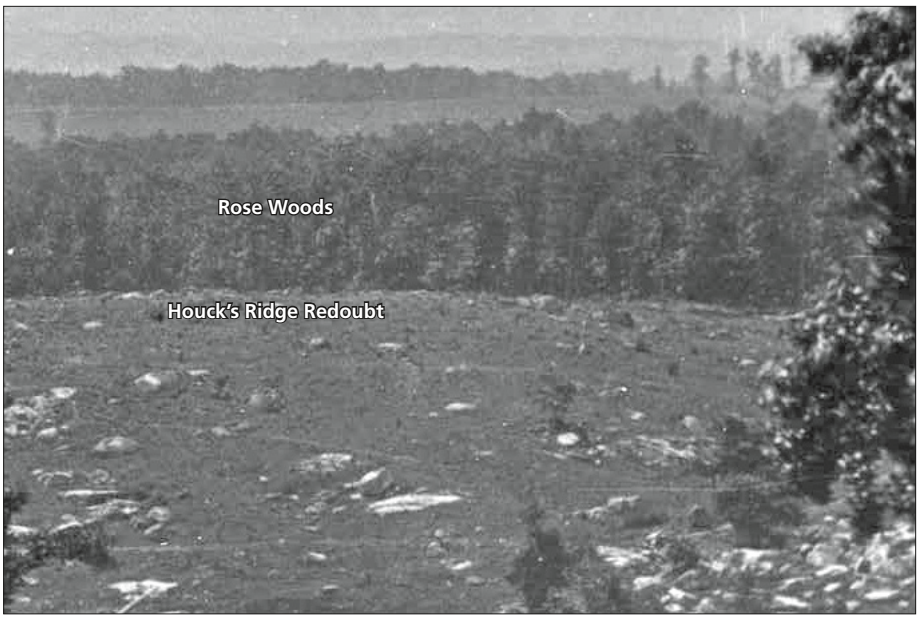


Figure 61. Houck's Ridge Redoubt. Detail of view northwest from Little Round Top, 1863 (GETT 41135, Historic Photograph Collection, 2B-2090).

Figure 62. Houck's Ridge Redoubt woods removal. View northwest from Little Round Top, 2013 (OCLP).

Figure 63. Devil's Den. View west, 1863 (Civil War Photographs Collection, United States Army Heritage and Education Center, Carlisle, PA).

Figure 64. Devil's Den woods removal. View southwest from Little Round Top, 2013 (OCLP).

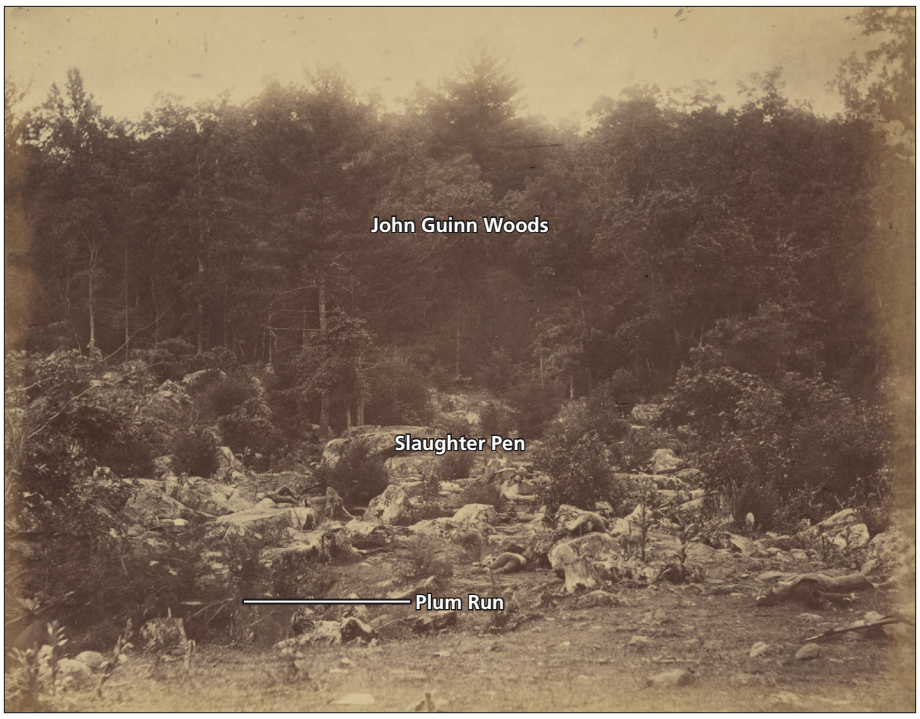


Figure 65. Plum Run Gorge and the Slaughter Pen. View southeast, 1863 (Library of Congress, Digital ID LC-DIG-ppmsca-12565).

Figure 66. Plum Run Gorge woods removal. View northeast, 2013 (OCLP).

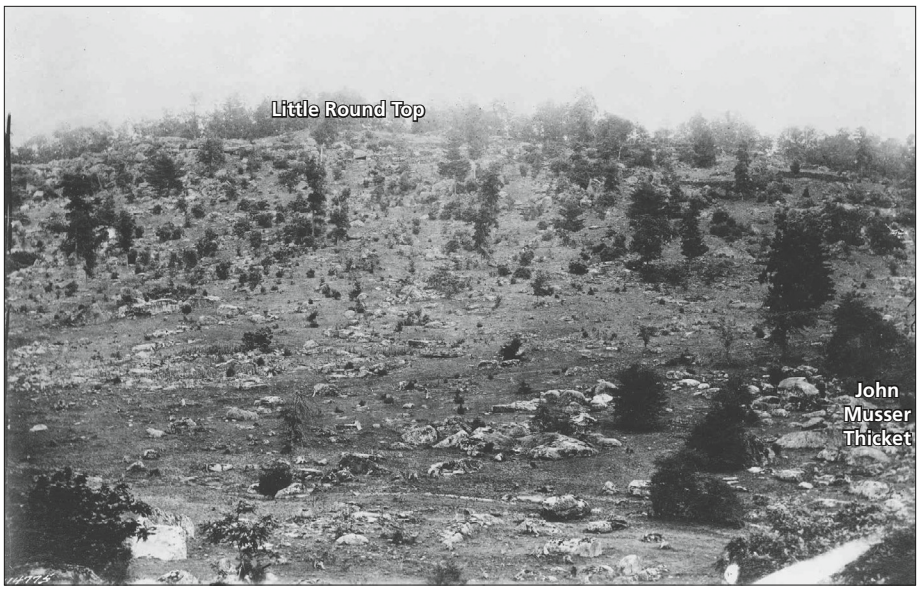


Figure 67. John Musser Clearing and Thicket. View southeast, 1863 (GETT 41135, Historic Photograph Collection, 2B-2083a).

Figure 68. John Musser Clearing and Thicket woods removal. View southwest, 2013 (OCLP).

Figure 69. Houck Field west boundary stone and rider fence. View northwest, 1886 (Adams County Historical Society, SF084c).

Figure 70. Houck Field west boundary stone and rider fence installation [GIS ID 730]. Woody vegetation along the fence should be removed to prolong the materials' life. View southeast from Wheatfield Road, 2014 (OCLP).

Figure 71. Plum Run non-historic riparian buffer establishment. View southeast from Devil's Den, 2013 (OCLP).

AREA 13 — LITTLE ROUND TOP

The Little Round Top record of treatment area was defined by the study area created for the *Little Round Top Cultural Landscape Report, Treatment & Management Plan*, completed in 2012. The area is located in the eastern portion of the park and is bounded on the north by a 200-foot offset north from the centerline of Wheatfield Road; on the east by the park's legislative boundary, the Jacob Weikert woods-fields, and the Emanuel Weikert woods-fields; on the south by the Emanuel Weikert-Plank 1863 property line; and on the west by the Emanuel Weikert-Scott 1863 property line and the centerline of the commemorative-era Crawford and Warren Avenues. Major 1863 property owners in this area include George Bushman, John Houck, John Munshower, Emanuel Weikert, Jacob Weikert, and John Weikert.

The following overview of battle action in this record of treatment area comes from the *Little Round Top Cultural Landscape Report, Treatment & Management Plan* prepared by Einhorn, Yaffee Prescott. By late afternoon on July 2, 1863, the summit of Little Round Top was a surveillance point and had become the strategic geographic anchor, the so-called loop of the "fishhook," for the left flank of the Union line. It offered the last defense of the Taneytown Road and protected the rear of the Union Army's main line.

The 3rd Corps, commanded by Major General Daniel E. Sickles, advanced from the main Union line and formed a line of battle from Devil's Den northwest to the Peach Orchard and Emmitsburg Road. By 6 p.m., Confederate divisions of Major General Lafayette McLaws and Major General John B. Hood crushed a section of the 3rd Corps' left flank and advanced toward the summit of Little Round Top. On the upper slopes of Little Round Top, the Confederates were met by the Union reinforcements, principally from Vincent's and Weed's Brigades of the 5th Corps, who rushed into position from the north and east by way of the cover provided by its eastern wooded slopes.

During this fighting, the 20th Maine and the 15th Alabama clashed on Vincent Spur (a ridge on the south slope of Little Round Top overlooking the swale between the two Round Tops), a fight that ended with Colonel Joshua Chamberlain's famous order to the 20th Maine to "refuse the line" followed by a bayonet charge that swept away the 15th Alabama.

At twilight, the Confederates withdrew to defensive positions beyond the slopes of Little Round Top among the boulders in the Devil's Den and the Slaughter Pen, the woods at the western base of Big Round Top, and the tree line west of Houck's Ridge. That night, Union forces dug in on Little Round Top strengthening the natural defenses with lines of stone wall defense works. On July 3, Little Round Top was mostly the site of random sniper fire with the Confederates choosing not to renew the assault on the Union far left and the strong defensive position on Little Round Top.[1]

The 1863 character of the Little Round Top area was marked by the topography of the summit as well as the saddle between the peaks of Big Round Top and Little Round Top. Farmers maintained woodlots on the slopes and summit of Little Round Top but the western slope had been cleared of most timber a year or more before the battle permitting excellent observation and fields of fire from the summit.[2] The open western slope transitioned to a rock-strewn corridor containing Plum Run and almost no woody vegetation. North of Little Round Top's north slope, Wheatfield Road traveled from west to east and connected with Taneytown Road. In this area, Wheatfield Road was marked from adjacent properties by stone walls and some worm fencing. In addition to agricultural stone walls constructed for the family farm properties, stone wall defense works, completed by Union troops during the course of the battle, stretched along Little Round Top's western slope, below the summit, and also southwest of the Vincent Spur ridge.

At the completion of the 1999 GMP, the Little Round Top area featured commemorative-era avenues including Crawford, Sykes, Warren, and Wright and monuments marking battle lines and key positions. The National Park Service relocated Sykes Avenue to the immediate eastern edge of the Little Round Top's summit between 1935 and 1936. The western slope remained relatively open while woodlots on the eastern slope changed in their composition and density of woody material. Thousands of linear feet of stone wall defense works were preserved, some having been restacked in the 1880s by the Gettysburg Battlefield Memorial Association, and continued along Little Round Top's western slope, below the summit, and also southwest of the Vincent Spur ridge. A NPS-designed trail system, surfaced in asphalt, led from Sykes Avenue to the summit and provides a route along the ridgeline to the major monuments and vantage points. Numerous social trails, some cutting deeply eroded paths into the ground, radiated from the asphalt trail to the parking area, to other monuments and markers, and to large rock outcroppings that capture the public's attention.

To enhance historic landscape character that affected the battle, the park has completed landscape treatment tasks including health cuts in historic woodlots and replacement of historic fencing. Based on the treatment chapter of the *Little Round Top Cultural Landscape Report, Treatment & Management Plan,* the park is advancing major landscape rehabilitation plans to improve vehicular and pedestrian circulation and universal accessibility at Little Round Top. The park is currently contracting for an Environmental Assessment (PEPC 50904) to study alternatives presented in the report[3] (Figure 72).

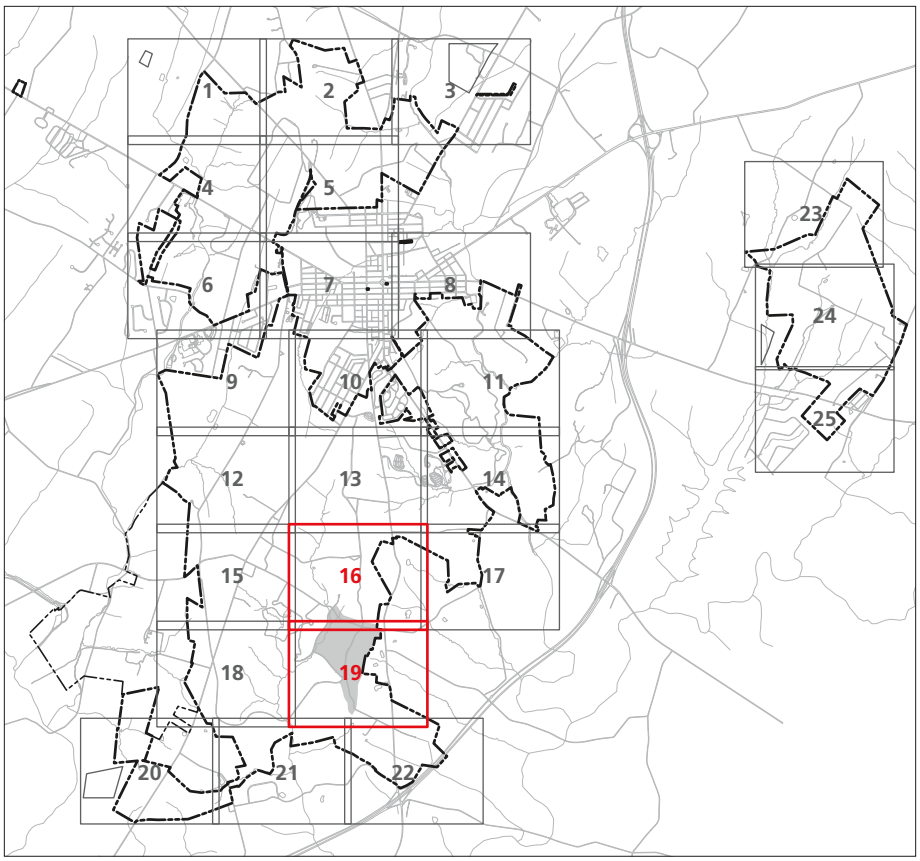


Figure 72. Map index for the Little Round Top area (OCLP).

WOODLOTS AND GROVES

Jacob and Emanuel Weikert Woods Health Cuts

The Jacob and Emanuel Weikert Woods appear as a single mass of managed vegetation but consist of two similar and adjoining features from 1863. The Jacob Weikert farm complex is located on Taneytown Road east of the valley or saddle between Big Round Top and Little Round Top. Emanuel Weikert maintained cultivated fields and a woodlot south of the Jacob Weikert property and north of John Plank's property. The Emanuel Weikert Woods are bounded on the north by the Jacob Weikert Woods, the east by Emanuel Weikert Field 1, the south by Plank Woods, and the west by Guinn Woods. The woodlot covers the saddle between the two Round Tops and portions of the east slope of Big Round Top and the southeast slope of Little Round Top. The Jacob Weikert Woods are bounded on the north by the Bushman Woods, the east by Jacob Weikert fields 1 and 2, the south by the Emanuel Weikert Woods, and the west by Guinn Woods. The woodlot covers the east slope of Little Round Top and a topographic ridge southeast from the summit of Little Round Top called Vincent Spur.

The spur received its name from Colonel Strong Vincent whose Union Brigade, including the 20th Maine regiment, repelled repeated assaults on Little Round Top from Confederate General Evander Law's Brigade. Defending Little Round Top, a description of the 20th Maine noted the regiment:

> occupied the southern and eastern slope of the hill directly fronting a valley or level space which lay between the two [Round] Tops. The slopes and the valley were covered with a forest of oak trees, for the greater part free from underbrush and open. The ground of the slopes and in the valley was strewn with large boulders. There was no protection for our men, and no time to throw up earthworks, even if that had been practicable in the rocky soil.[4]

The open character of the woodlots provided observation for Union troops and individual cover for soldiers and also facilitated advance and movement by both armies (Figure 73).

In order to maintain and sustainably perpetuate the character of a woodlot involved in battle action, the park contracted for health cuts in the Jacob and Emanuel Weikert Woods. Under delivery order T8-062, contractors performed health cuts in a 15.79-acre area and completed the work in 2012 (Figure 74). Specifications for health cuts are included in Appendix A.

FENCING

Little Round Top Modern Worm Fence [GIS ID 1464]

Immediately east of the Little Round Top summit, a parking area extends from the commemorative-era Sykes Avenue for the high number of buses and personal vehicles that drive to this popular site. West of the parking area stands a modern, three-rail worm fence. The fence follows footpaths on the north and south sides of the parking area and wraps around a scattering of mixed vegetation to the west side of Little Round Top. In 2009, the park/volunteers installed 439 feet of modern, three-rail worm fence along the parking area and footpaths to prevent visitors from cutting desire lines from the parking area to the open west slope of Little Round Top (Figure 75). Since the fence is intended for traffic control, the park should consider replacing it with contemporary traffic control devices consistent with the pending *Commemorative Landscape Treatment Philosophy*.

ENDNOTES

1 Einhorn Yaffee Prescott, Rhodeside and Harwell Inc., Hunter Research, Fuss & O'Neill, Inc., and C. S. Davidson, Inc., *Little Round Top Cultural Landscape Report, Treatment & Management Plan*, United States Department of the Interior, National Park Service, March 2012, 2-7, 11-12.

2 Kathleen Georg Harrison, *National Register of Historic Places Registration Form for Gettysburg National Military Park*, Gettysburg National Military Park, January 2004, Sect 7:50.

3 GETT comments by Winona Peterson, 5/19/2014.

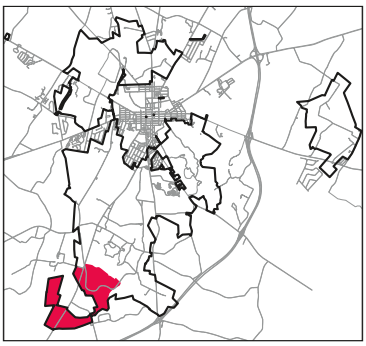
4 Maine Gettysburg Commissioners' Executive Committee, *Maine at Gettysburg* (Portland: The Lakeside Press, 1898), 277.

TABLE 5: RECORD OF TREATMENT SUMMARY, AREA 13		
Task	**Date Completed**	**Notes**
Woodlots and Groves		
Jacob and Emanuel Weikert Woods Health Cuts	2012	
Fencing		
Little Round Top Modern Worm Fence [GIS ID 1464]	2009	Appropriate to replace with contemporary traffic control devices consistent with the pending *Commemorative Landscape Treatment Philosophy*

Figure 73. Weikert Woods. Detail of view north from Big Round Top Observation Tower, circa 1896 (Sue Boardman Collection, VD100-0074).

Figure 74. Weikert Woods health cuts. The trail leads east to the 20th Maine Company B Marker. View east, 2014 (OCLP).

Figure 75. Little Round Top modern worm fencing installation [GIS ID 1464]. View northwest from visitor parking area, 2014 (OCLP).



AREA 14 — SOUTH CAVALRY FIELD AND CONFEDERATE ATTACK-HAMMER/BUSHMAN-SLYDER

The South Cavalry Field and Confederate Attack-Hammer/Bushman-Slyder record of treatment area is located in the southwest quadrant of the park and is bounded on the north by the Snyder-Slyder and Snyder-Bushman/Hammer 1863 property lines; on the east by the Snyder-Slyder, Scott-Slyder, Gilbert-Slyder, and Gilbert-Bushman/Hammer 1863 property lines; and on the south and west by the park's legislative boundary. Major 1863 property owners in this area include Michael Bushman and Sophia Hammer, William Currens, James Ewing, Joseph Myers, John Slyder, and Samuel Wintrode.

In the late morning and afternoon of July 3, skirmishing began between Union cavalry and Southern infantry along the Confederate right flank. Union Brigadier General Judson Kilpatrick ordered a series of disjointed attacks against the infantry positions of Lieutenant General James Longstreet's Corps, just west of Little Round Top. Confederate infantry and artillery fire repulsed the attacks and the Union cavalry suffered significant casualties.[1]

The 1863 character of the South Cavalry Field and Confederate Attack-Hammer/Bushman-Slyder area included medium to large fields defined by a mixture of worm and stone and rider fencing as well as stone walls. Plum Run, flowing south along the west slope of Big Round Top, separated the fields from a band of thicket and then woodlots along the peak's slope. Emmitsburg Road headed from northeast to southwest separating fields and farm complexes and was bordered by a mixture of stone walls, worm fencing, and post and rail fencing. Farm lanes extended off of the road and led to building complexes, fields, and woodlots. The Slyder Branch of Plum Run drained low-lying areas of several fields and flowed east into Plum Run. Fields abutted the west edge of Plum Run while the eastern bank was covered with thicket.

At the completion of the 1999 GMP, the South Cavalry Field and Confederate Attack-Hammer/Bushman-Slyder area featured the commemorative-era South Confederate Avenue and monuments marking battle lines and key positions. The fields south of the Bushman/Hammer farm buildings complex grew into a forested canopy and the battler-era orchard at the property was not present. The South End Guide Station, completed by the park in 1936, stood east of Emmitsburg Road and a moderate density of commercial development along the road outside the park boundary. In the early 1990s, the park replanted the Slyder Orchard and this feature was extant and representing battle-era character at the completion of the park's GMP.

To enhance historic landscape character that affected the battle, the park has completed landscape treatment tasks including the removal of non-historic woody vegetation, replanting historic woodlots, replanting historic orchards,

replacement of historic fencing, and establishment of non-historic riparian buffer habitat for water quality. Additional treatment proposed through the 1999 GMP but not yet implemented includes the removal of non-historic woody vegetation at Bushman/Hammer Field 8. The park may also consider non-historic woody vegetation removal around Wintrode Knoll, located in Wintrode Field 2. This feature is in the furthest southwest corner of the park and therefore, the work and future maintenance may not best serve visitor experience and interpretation (Figure 76).

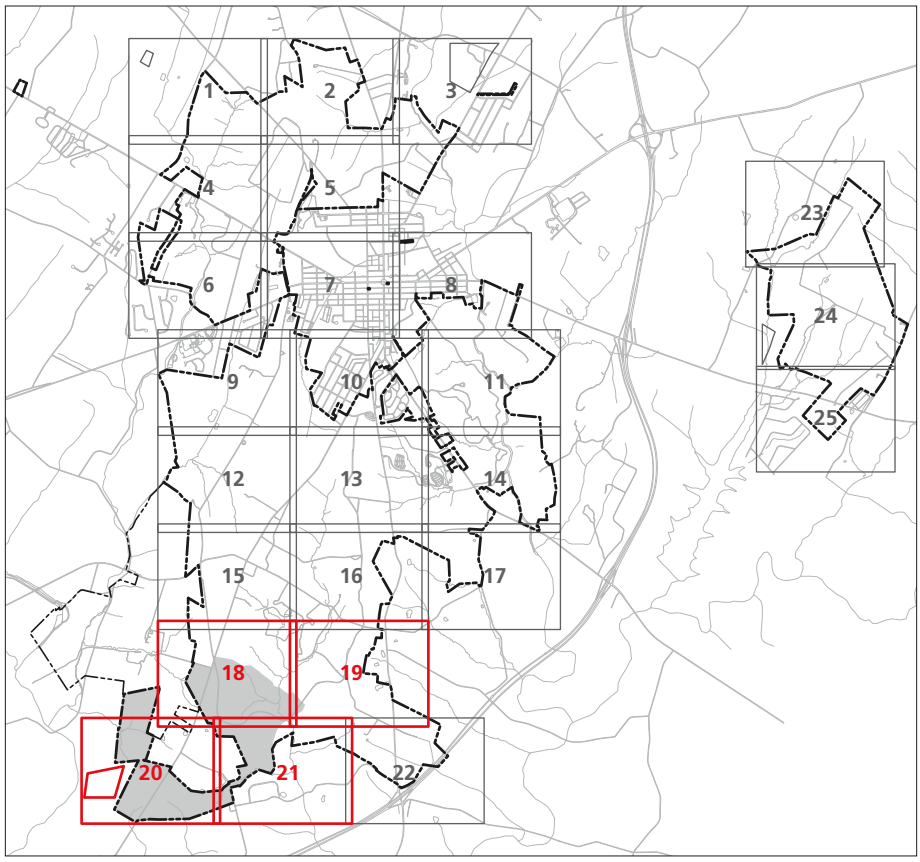


Figure 76. Map index for the South Cavalry Field and Confederate Attack-Bushman/Hammer-Slyder area (OCLP).

AGRICULTURAL FIELDS

Bushman/Hammer and Slyder Fields Woods Removal [GIS ID 2]

The Bushman/Hammer and Slyder fields are bounded on the north by the Slyder Farm Lane, on the east by woodlots occupying the west slope of Big Round Top, on the south by the park boundary, and on the west by South Confederate Avenue. The fields lay between the Confederate battle line to the west on Emmitsburg Road and the Union battle line to the east anchored on Little Round Top. Describing the Confederate attack on the Round Tops on July 2, J. Mark Smither in the 5th Texas regiment of Robertson's Brigade wrote, "We advanced through a field about half a mile before we reached the timber at the foot of the mountain, our men tumbling out of ranks at every step, knocked over by the Enemy's sharpshooters who lined the side of the mountain. On arriving within 250 yards of the timber their Batteries opened on us with grape and canister mowing down the grass all around our feet but the distance being too great they did us little damage…"[2] After the battle, Michael Bushman submitted a damage claim citing an unspecified amount of wheat, oats, corn, rye, and hay grass destroyed and John Slyder claimed damage to or destruction of 5–7 acres of wheat, 4 acres of corn, 2 acres of grass, and a ton of hay in the barn.[3] The fields provided an avenue of approach for the Confederates and their open character is confirmed in the 1863 Bachelder Map, 1863 Cope Map, 1872 topographical survey map, 1900 Gettysburg National Park Commission Map, and in photographs from the Tipton Collection (Figure 77).

In 1999, successional woody vegetation filled portions of Bushman/Hammer fields 2, 4, 6, and 7 and Slyder Fields 1, 2, 6, and 7. Contractors removed the non-historic woods in 2002. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order P3-032, and contracted with Pennington Tree Experts to clear a 31.37-acre area. Understory grasses present before the contracted work began were allowed to self-seed and thrived with the removal of the overhead canopy. In the cleared area, Slyder Branch is not mowed and is managed as a non-historic riparian buffer. The remainder of the cleared area is mowed one time a year and presently remains open (Figure 78).

Slyder Field 5/Slyder Knoll Woods Removal [GIS ID 1]

Slyder Field 5 is located on the eastern half of a topographic high point known as Slyder Knoll. The knoll rises from the western slope of Big Round Top and the open field is bounded by Snyder Woods to the north, Scott Woods to the east, Gilbert Woods to the south, and Slyder Woods to the West. During the second and third days of the battle, the open field, its elevated position, and its surrounding stone walls played a role in the Confederate attack and Union defense of the Round Tops. On the second day, Lieutenant Colonel K. Bryan of the 5th Texas

regiment in Robertson's Brigade described the Confederate attack starting from Slyder Field 5 recounting, "every man leaped the fence [stone wall], and advanced rapidly up the hill side. The enemy again fled at our approach, sheltering himself behind his fortified position on the top of the second height [Devil's Kitchen], about 200 yards distant from the first. From this position we failed to drive them."[4] On the third day, a veteran of the 1st Vermont Cavalry regiment of Farnsworth's Brigade described, "Projecting from Round Top was a hill, perhaps one hundred feet high, on the top of which was a field surrounded by high stone walls. The slopes of this hill were covered with immense granite bowlders. . ."[5] Slyder Field 5 provided an avenue of approach for the Confederates and combined with the elevation of the knoll, the feature provided observation and cover for both forces. The open character of the field is confirmed in the 1872 topographical survey map and in photographs from the Tipton Collection and the park's historical collection (Figure 79).

In 1999, successional woody vegetation filled Slyder Field 5/Slyder Knoll and contractors removed the non-historic woods in 2004. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order T3-035, and contracted with Pennington Tree Experts to clear a 4.35-acre area. In 2005, the park's Resource Management division seeded the area with Indian grass (*Sorghastrum nutans*), little bluestem (*Schizachyrium scoparium*), and big bluestem (*Andropogon gerardii*). The cleared area is mowed one time a year and presently remains open (Figure 80).

Bushman/Hammer Field 7 and Thicket Woods Removal [GIS ID 10]

Bushman/Hammer Field 7 is bounded on the north by Bushman/Hammer Field 6 and on the east, south, and west by Bushman/Hammer Woods and the park boundary. The south end of Field 7, adjacent to the woods, was historically characterized by a transitional thicket that is not presently extant.

The commemorative-era South Confederate Avenue approaches Bushman/Hammer Field 7 from the north and gently curves to the east, dividing the field into a northern and southern section. This clearing task occurred in the southern section. Describing the open character of the field, Confederate Major John Cheves Haskell, the co-commander of Henry's Artillery Battalion, wrote that on the morning of July 3, "soon after sunrise, the battalion, being in the same position as the day before [Bushman/Hammer Field 6], was moved in accordance with orders to a high hill a short distance to the right of its position of the former evening and taking position there opened fire against the enemy on Round Top Mountain."[6] Bushman/Hammer Field 7 provided Confederate observation and fields of fire and the open character is documented in photographs from the Tipton Collection (Figure 81). The position described by Haskell is presently

marked by commemorative tablets and stone lunettes reinforcing the positions of cannon.

In 1999, successional woody vegetation filled Bushman/Hammer Field 7 and contractors removed the non-historic woods in 2004. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order T3-085, and contracted with Pennington Tree Experts to clear a 4.91-acre area. In 2005, the park's Resource Management division seeded the area with Indian grass (*Sorghastrum nutans*), little bluestem (*Schizachyrium scoparium*), and big bluestem (*Andropogon gerardii*). The cleared area is mowed one time every two years and presently remains open (Figure 82). The thicket has not been reestablished and based on research notes complied for the park's 1863 period plans, the thicket did not impact the outcome of the battle.[7]

WOODLOTS AND GROVES

Bushman/Hammer West Woods
[GIS ID Bushman]

Bushman/Hammer West Woods is bounded by Bushman/Hammer Field 3 on the north and east, Bushman/Hammer Field 5 on the south, and Bushman/Hammer Field 8 on the west. The commemorative-era South Confederate Avenue follows the western perimeter of the woodlot. Describing his regiment's advance out of Bushman/Hammer West Woods, a veteran of the 15th Georgia of Benning's Brigade recalled, "We passed out of the open field [Bushman/Hammer Field 8] to the wooded crest of the hill and through the woods to an open field. As soon as we cleared the woods we were in full view of Round Top Hill some half a mile in front. We had not got out of the woods before the guns from the hill top were turned on us…"[8] The woods served as cover for Confederate artillery and infantry during the second day of the battle. The 1872 topographical survey map and photographs from the Tipton Collection and the park's historical collection document the extent and character of the Bushman/Hammer West Woods (Figure 83).

In order to maintain and sustainably perpetuate the character of a woodlot involved in battle action, the park contracted for health cuts in Bushman/Hammer West Woods. Under delivery order T6-040, contractors performed health cuts in a 2.75-acre area and completed the work in 2006 (Figure 84). Specifications for health cuts are included in Appendix A.

Bushman/Hammer, Slyder, and Gilbert Woods Health Cuts
[GIS ID Slyder - North (East)]

Bushman/Hammer, Slyder, and Gilbert woods are bounded by Snyder Woods on the north, Slyder Field 5 and Scott Woods on the east, the park boundary on the south, and the Bushman/Hammer and Slyder fields on the west. Gilbert Woods is partially located within Record of Treatment Area 12; however, the health cut task will be completely discussed in this section and not duplicated in the Area 12 narratives. The Bushman/Hammer Woods include a topographic high point known as Bushman Hill and during the third day of the battle, the hill was influential in anchoring and protecting the Union army's extreme left flank. From Bushman Hill, Union cavalry and artillery raked Confederate positions on the Bushman/Hammer and Slyder farms and the location became a launching point for a dramatic mounted cavalry attack on Confederate infantry and artillery on those farms.[9] On the second day of the battle, regiments from the Confederate brigades of Law and Robertson advanced through the boulder-strewn terrain of Slyder Woods during their attack on Little Round Top. These Confederate forces stopped west of the Big Round Top summit and the next day, Union cavalry advanced through Slyder Woods in an attack on the Confederate line.[10] The woods served as an avenue of approach and provided cover for both Union and Confederate forces. Photographs from the Tipton Collection and the park's historical collection document the extent and character of the Bushman/Hammer, Slyder, and Gilbert woods (Figure 85).

In order to maintain and sustainably perpetuate the character of a woodlot involved in battle action, the park contracted for health cuts in Bushman/Hammer, Slyder, and Gilbert woods. Under delivery order T7-101, contractors performed health cuts in a 45.41-acre area and completed the work in 2008 (Figure 86). Specifications for health cuts are included in Appendix A.

Bushman/Hammer Woods Health Cuts
[GIS ID - Slyder South (West)]

Bushman/Hammer Woods is bounded by Slyder Woods on the north, Gilbert and Keefauver woods on the east, the park boundary on the south, and Bushman/Hammer fields on the west. The woodlot provided avenues of approach and cover and concealment for both Union and Confederate troops during various phases of the battle on July 2 and 3. Part of Hood's Confederate Division crossed through these woods en route to attacking the Round Tops on July 2. On July 3, Union cavalry formed an advance line in the woods to protect their army's extreme left flank.[11] The 1872 topographical survey map and the 1900 Gettysburg National Park Commission Map document the extent and character of the Bushman/Hammer Woods (Figure 87).

In order to maintain and sustainably perpetuate the character of a woodlot involved in battle action, the park contracted for health cuts in Bushman/Hammer Woods. The park divided the single 1863 woodlot feature into two health cut areas in order for park staff to mark and manage the contracted work. The area north of and including Bushman Hill was combined with the Slyder and Gilbert woods health cuts [GIS ID Slyder - North (East)] and completed in 2008. The area south of Bushman Hill and extending to the park boundary received health cuts under delivery order T7-101 for a 32-acre area. The work was completed in 2009 (Figure 88). Specifications for health cuts are included in Appendix A.

Douglass Woods Replanting

[GIS ID 4]

The Douglass Woods are immediately south of Biesecker Woods and west of Warfield Ridge. The replanted portion of Douglass Woods compromises a triangular area immediately south of the Emmitsburg Road and South Confederate Avenue intersection. The woods are bounded on the east by South Confederate Avenue, the south by Bushman/Hammer Field 8, and the west by Emmitsburg Road.

General Meade's topographical engineer, General G. K. Warren, correctly judged that Douglass Woods could conceal enemy positions and movements recalling:

> I continued on till I reached Little Round Top. There were no troops on it, and it was used as a signal station. I saw that this was the key of the whole position, and that our troops in the woods in front of it could not see the ground in front of them, so that the enemy would come upon them before they would be aware of it. The long line of woods on the west side of the Emmitsburg road (which road was along a ridge) furnished an excellent place for the enemy to form out of sight. . . .[12]

Douglass Woods offered cover to Confederate troops during the second and third days of the battle and helped dissuade a Union counterattack on July 3 or 4. The woodlot is documented in the 1863 Cope Map, 1872 topographical survey map, and in photographs from the Tipton Collection and the park's historical collection (Figure 89).

In order to rehabilitate the full extent of a woodlot involved in battle action, the park planted 2.29 acres in 2010. Deciduous material was planted at a rate of 680 bare-root seedlings per acre resulting in approximately 1,557 seedlings planted (Figure 90).

ORCHARDS AND NURSERIES

Bushman/Hammer Orchard

The Bushman/Hammer Orchard is bounded on the north and east by the Bushman/Hammer Farm Lane and on the south and west by Bushman/Hammer Field 3. No specific reference was made to an orchard in the Bushman/Hammer application for damage compensation; however, a claim was made for five scaps of bees with patent boxes, costing $7 a piece, which had been broken and the honey taken.[13] This investment in bees supports the conclusion that the farm maintained an orchard and the feature is documented in the 1872 topographical survey map and in historic photographs from the Tipton Collection and the park's historical collection (Figure 91).

In 2005, the park completed replanting of the Bushman Orchard. The replanted orchard consists of 57 apple trees arranged in seven rows. The northern three rows consist of 26 'Liberty' apples and the next row consists of 2 'Liberty' and 7 'Williams Pride' apples. The final rows consist of 22 'Williams Pride' apples. All 57 trees were planted on EMLA 111 standard rootstock in a quincunx pattern at 40-foot on center spacing. In 2014, the park completed a condition assessment for the Bushman Orchard and recorded 30 trees in good condition, 6 trees in fair condition, 11 trees in poor condition, and 10 trees missing (Figure 92).

FENCING

Bushman/Hammer Yard Modern Picket Fence [GIS IDs 324, 326, 1111, 1112, 1113]

The Bushman/Hammer Yard modern picket fence is located northeast of the Bushman/Hammer Farm Lane and immediately southeast of the Bushman/Hammer House. The picket fence begins off the southeast facade of the Bushman/Hammer House and forms a rectangular area with the longer axis running from southwest to northeast. The Bushman/Hammer House provided attractive defensive positions for the skirmishers and snipers of the 2nd U.S. Sharpshooters in the early phases of the battle of July 2. During the Confederate attack against Little Round Top and Houck's Ridge, these sharpshooters were driven out and the house became an obstacle around which Confederate regiments in Robertson's brigade had to advance. On the night of July 2, the house was probably used as a temporary shelter by wounded Confederates before they could be evacuated to field hospitals west of Seminary Ridge.[14]

The park's 1863 period plan does not show a picket fence off the southeast facade of the Bushman/Hammer House. In the 1980s, the park installed a picket fence off of the house using 1930s photo documentation to enclose a residential garden.[15]

In 2012, the park replaced this fence and installed 265 feet of modern picket fence and one 3-foot wide gate. The same year, volunteers painted the new fence (Figure 93). Consistent with the *Treatment Philosophy*, the park should remove the modern picket fence and define a larger yard area at the Bushman/Hammer House. Following the 1863 period plan, the park should install new and extend existing picket fencing to the Bushman/Hammer Farm Lane. Enclosing the yard would be completed by installing new worm fencing on the north side of the farm lane (see Drawing 18A).[16]

Slyder Field 4 South Boundary Modern Worm Fence
[GIS ID 336]

Slyder Field 4 is bounded on the north by Slyder Farm Lane, on the east by Slyder Thicket, on the south by the commemorative-era South Confederate Avenue and on the west by Slyder fields 3, 6, and 7. The field served as on avenue of approach for the Confederate attack against Little Round Top and Houck's Ridge. The park's 1863 period plan shows a stone and rider fence marking the south boundary of the field. In 2009, the park installed 102 feet of modern, three-rail worm fence between the south edge of the field and a horse trail that parallels the north edge of South Confederate Avenue. The fence restricts horses and vehicles from leaving their designated routes and entering Slyder Field 4 (Figure 94). Since the fence is intended for traffic control, the park should consider replacing it with contemporary traffic control devices consistent with the pending *Commemorative Landscape Treatment Philosophy*.

Wells Monument Roadside Modern Worm Fence
[GIS IDs 1462, 1463]

The Wells Monument is located on the south side of the commemorative-era South Confederate Avenue, roughly 267 feet west of Plum Run, and in Slyder Woods. Major General William Wells led the 2nd Battalion of the 1st Vermont Cavalry against General Law's Brigade on the final day of the battle. In 2006, the park installed 73 feet of modern, three-rail worm fence paralleling the south edge of South Confederate Avenue to restrict vehicles from pulling off the road at the monument (Figure 95). Since the fence is intended for traffic control, the park should consider replacing it with contemporary traffic control devices consistent with the pending *Commemorative Landscape Treatment Philosophy*.

Slyder Field 5/Slyder Knoll Modern Worm Fence
[GIS ID 1383]

Slyder Field 5, located on the east side of Slyder Knoll, is bounded on the north by Snyder Woods and the east, south, and west by Slyder Woods. The commemorative-era South Confederate Avenue skirts the southern edge of the

field. The field served as an avenue of approach for the Confederate assaults on the Round Tops and provided cover for the defending Union troops. The park's 1863 period plan shows a stone wall and worm fence marking the south boundary of the field. In 2006, the park installed 71 feet of modern, three-rail worm fence paralleling the north edge of South Confederate Avenue. The fence eliminates a desire line from the horse trail and directs riders to the trail's designated route across South Confederate Avenue (Figure 96). Since the fence is intended for traffic control, the park should consider replacing it with contemporary traffic control devices consistent with the pending *Commemorative Landscape Treatment Philosophy*.

STREAMS

Slyder Branch Non-Historic Riparian Buffer Establishment [GIS ID 2]

The Slyder Branch consists of a north branch and a south branch that drain low-lying areas in the Slyder and Bushman/Hammer fields. The branches join south of the Slyder Orchard and flow east to form a confluence with Plum Run in Slyder Field 4. In 1999, the Slyder Branch flowed through historic fields covered by successional vegetation. A component of the plan to remove non-historic successional vegetation necessitated planting a 35-foot buffer along the Slyder Branch to reduce erosion, sedimentation, and improve water quality of the Chesapeake Bay. In 2005, the park completed planting of the 35-foot buffer along the Slyder Branch. The north branch planting was completed along 1,090 linear feet and the south branch planting was completed along 1,298 linear feet. The combined planting added 4,536 shrubs at a rate of 1,200 shrubs per acre (Figure 97).

ENDNOTES

1 Gettysburg National Military Park, "Five Year Strategy: Terrain Analysis and Treatment Recommendations," unpublished manuscript, 2003, 6.

2 J. Mark Smither to Mother (July 29, 1863). Copy in GETT Historians Files, Folder #589. Gettysburg National Military Park.

3 For Slyder claims, please see: Damage Claims Applications, RG 92 Records of the Quartermaster General, National Archives. For Bushman claims, please see: Damage Claims Applications, 1871–1879, Records of the Board of Claims, 1862–1890, Records of the Department of the Auditor General. Pennsylvania Historical and Museum Commission.

4 *Official Records*, vol. 27, part 2, 412.

5 H. C. Parsons, "Farnsworth's Charge and Death." In *Battles and Leaders of the Civil War*, vol. 3 (New York: The Century Co., 1888), 393.

6 Janet B. Hewett, Noah Andre Trudeau, and Bryce A. Suderow, eds., Supplement to the Official Records of the Union and Confederate Armies, vol. 5, part 1 (Wilmington, NC: Broadfoot Publishing Company, 1995), 348-349.

7 OCOKA Notes, Sheet 23 and Sheet 25, GETT Historians Files.

8 William Thomas Fluker, Jr., "A Graphic Account of the Battle of Little Round Top Hill at Gettysburg," 3-4. Copy in GETT Historians Files, Folder #521. Gettysburg National Military Park.

9 Kathleen Georg Harrison, *National Register of Historic Places Registration Form for Gettysburg National Military Park*, Gettysburg National Military Park, January 2004, Sect 7:41.

10 Ibid., Sect 7:68-69.

11 Ibid., Sect 7:41.

12 Henry J. Hunt, "The Second Day at Gettysburg." In *Battles and Leaders of the Civil War*, vol. 3 (New York: The Century Co., 1888), 307 fn.

13 Damage Claims Applications, 1871–1879, Records of the Board of Claims, 1862–1890, Records of the Department of the Auditor General. Pennsylvania Historical and Museum Commission.

14 Harrison, *National Register*, Sect 7:3.

15 Kathy G. Harrison to Olmsted Center, July 16, 2015.

16 Eric Campbell, *Treatment Philosophy: The 1863 Landscape*, United States Department of the Interior, National Park Service, March 2004, 35.

TABLE 6: RECORD OF TREATMENT SUMMARY, AREA 14		
Task	**Date Completed**	**Notes**
Agricultural Fields		
Bushman/Hammer and Slyder Fields Woods Removal [GIS ID 2]	2002	
Slyder Field 5/Slyder Knoll Woods Removal [GIS ID 1]	2004	
Bushman/Hammer Field 7 and Thicket Woods Removal [GIS ID 10]	2004	
Woodlots and Groves		
Bushman/Hammer West Woods Health Cuts	2006	
Slyder Woods and Gilbert Woods Health Cuts	2008	
Bushman/Hammer Woods Health Cuts	2009	
Douglass Woods Replanting [GIS ID 4]	2010	
Orchards and Nurseries		
Bushman/Hammer Orchard Replanting	2005	
Fencing		
Bushman/Hammer Yard Modern Picket Fence [GIS IDs 324, 326, 1111, 1112]	2012	Remove modern picket fence and define a larger yard area following the 1863 period plan
Slyder Field 4 South Boundary Modern Worm Fence [GIS ID 336]	2009	Appropriate to replace with contemporary traffic control devices consistent with the pending *Commemorative Landscape Treatment Philosophy*
Wells Monument Roadside Modern Worm Fence [GIS IDs 1462, 1463]	2006	Appropriate to replace with contemporary traffic control devices consistent with the pending *Commemorative Landscape Treatment Philosophy*
Slyder Field 5/Slyder Knoll Modern Worm Fence [GIS ID 1383]	2006	Appropriate to replace with contemporary traffic control devices consistent with the pending *Commemorative Landscape Treatment Philosophy*
Streams		
Slyder Branch Non-Historic Riparian Buffer Establishment [GIS ID 2]	2005	Monitor and consider removing trees that exceed ten to fifteen feet high as warranted to maintain historic character.

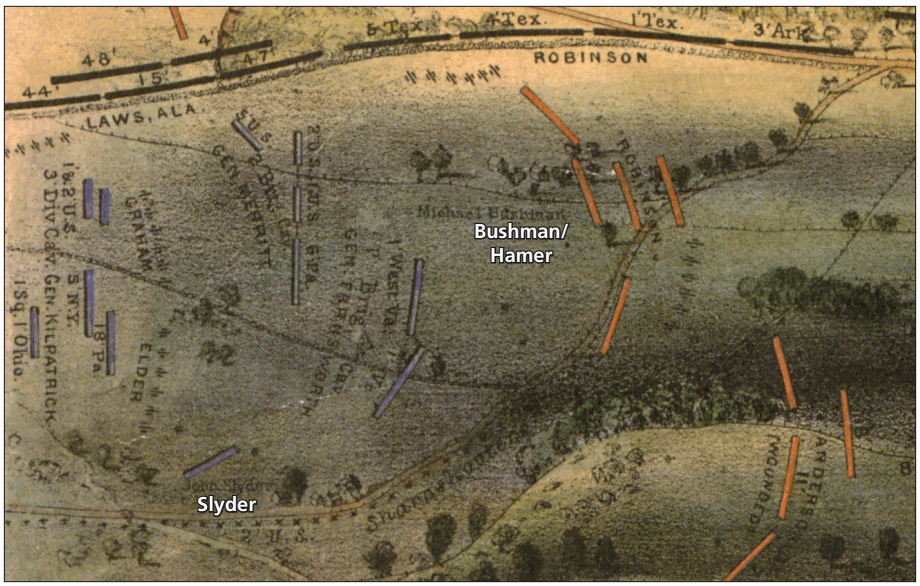


Figure 77. Bushman/Hammer and Slyder fields. Detail of Bachelder Map, 1863 (Library of Congress, Digital ID g3824g cw0322000).

Figure 78. Bushman/Hammer and Slyder fields woods removal. View northeast, 2014 (OCLP).

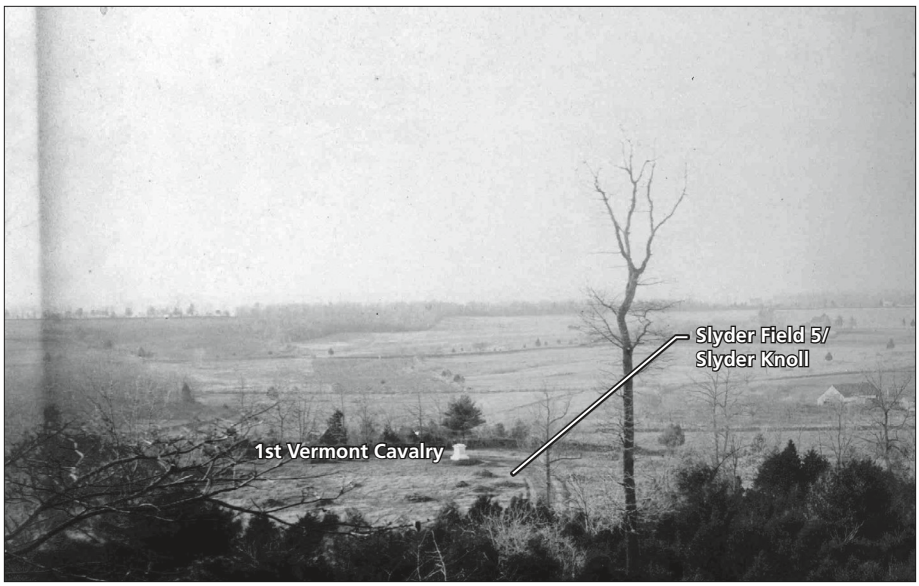


Figure 79. Slyder Field 5/Slyder Knoll. View southwest, 1880s (GETT 41135, Historic Photograph Collection, OS2B-2190a).

Figure 80. Slyder Field 5/Slyder Knoll woods removal. View northwest, 2013 (OCLP).

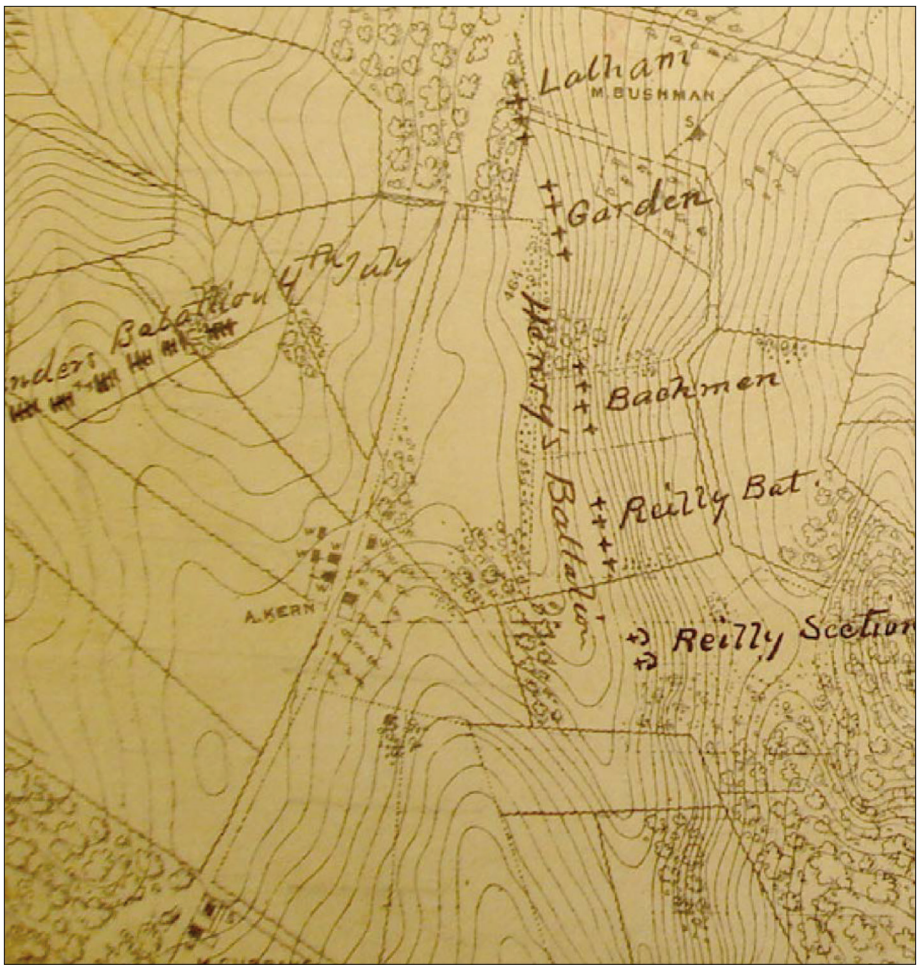


Figure 81. Bushman/Hammer Field 7 and Thicket located under "Reilly" in the "Reilly Section" label. Plan of Henry's Artillery Battalion, no date (GETT 41147, Records of the GNPC, Engineer's Department Bound Blueprints and Drawings, 1863-1922; Scan 41147c in Historian Files, Treatment Plan Scans).

Figure 82. Bushman/Hammer Field 7 and Thicket woods removal. View east, 2014 (OCLP).

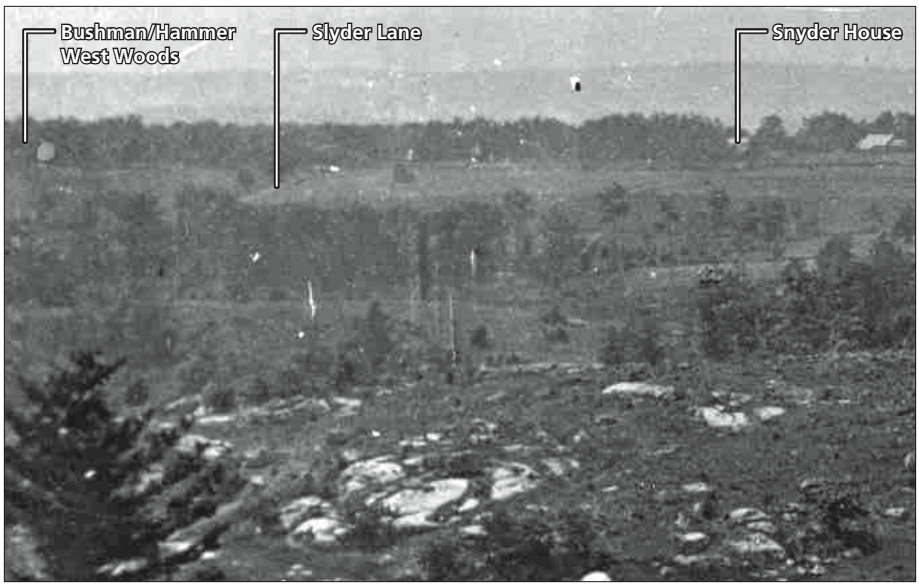


Figure 83. Bushman/Hammer West Woods. Detail of view southwest from Little Round Top, 1863 (GETT 41135, Historic Photograph Collection, 2B-2090).

Figure 84. Bushman/Hammer West Woods health cuts. View southwest from Slyder Farm Lane, 2014 (OCLP).

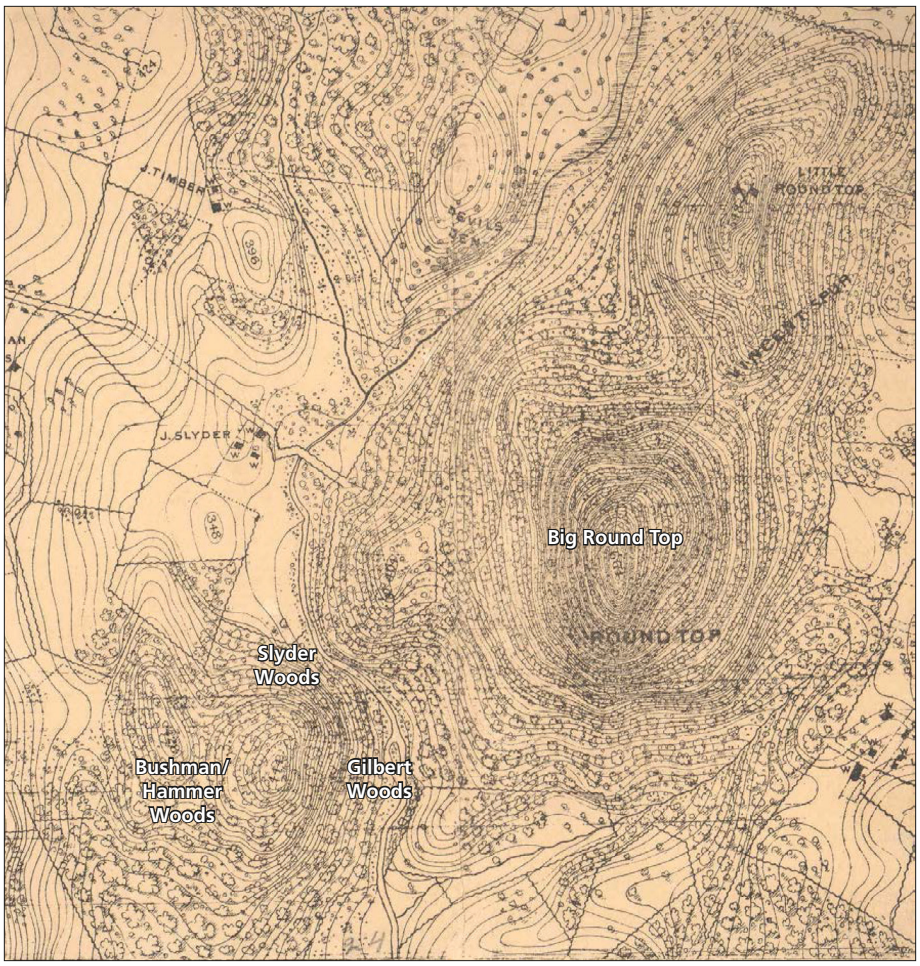


Figure 85. Bushman/Hammer, Slyder, and Gilbert woods. Detail of the 1872 topographical survey map, 1872 (GETT, Sheet E3).

Figure 86. Bushman/Hammer, Slyder, and Gilbert woods health cuts. View southeast, 2013 (OCLP).

Figure 87 (left). Bushman/Hammer Woods. View south, circa 1900 (GETT 41140, Records of the GNPC, Monument, Markers, and Tablets Photograph Albums, 1898-1911, pg. 28).

Figure 88 (bottom). Bushman/ Hammer Woods health cuts. View south, 2014 (OCLP).

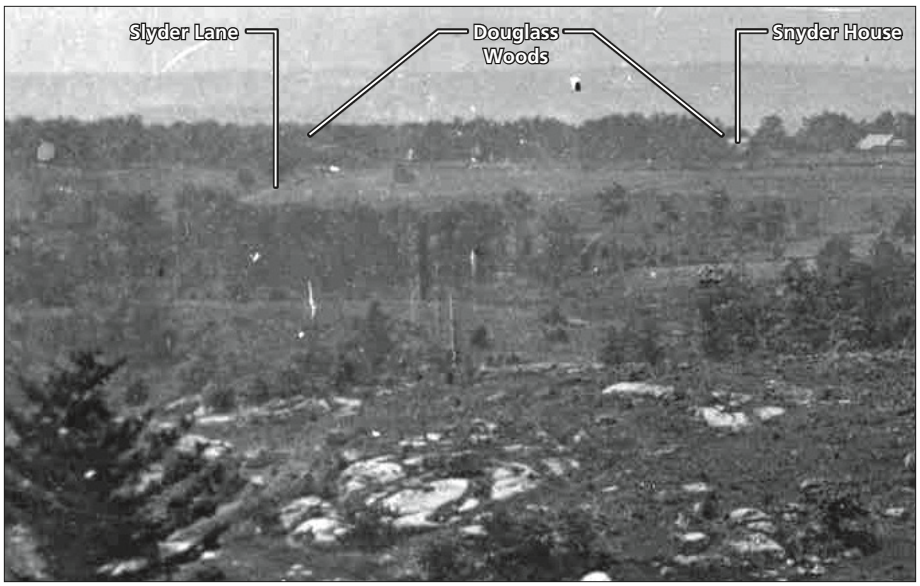


Figure 89. Douglass Woods. Detail of view southwest from Little Round Top, 1863 (GETT 41135, Historic Photograph Collection, 2B-2090).

Figure 90. Douglass Woods replanting. View northwest from South Confederate Avenue, 2014 (OCLP).

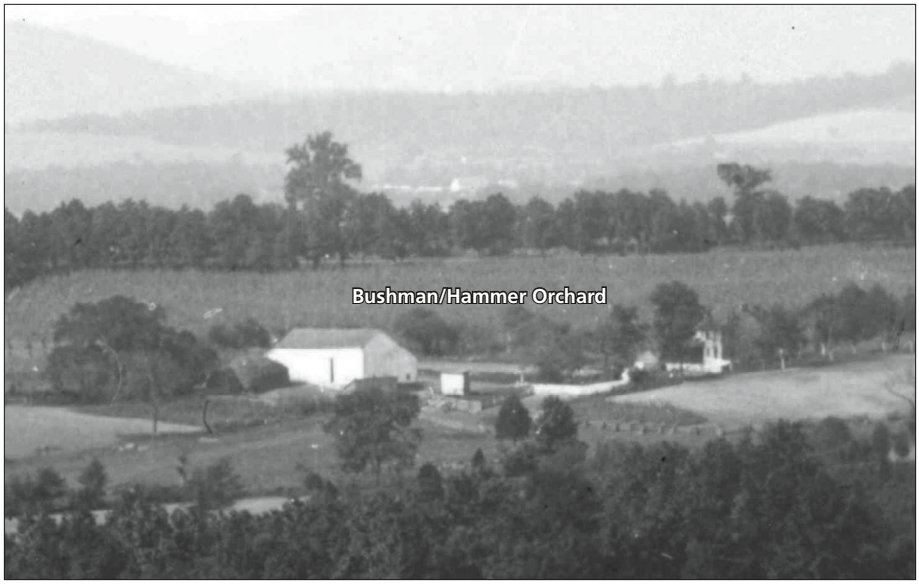


Figure 91. Bushman/Hammer Orchard. View southwest from Little Round Top, circa 1895–1900 (GETT 41136, Tipton Collection, T2429c).

Figure 92. Bushman/Hammer Orchard replanting. View east from South Confederate Avenue, 2013 (OCLP).

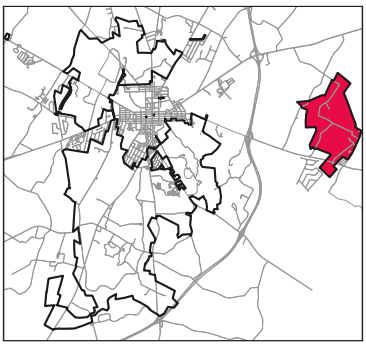
Figure 93. Bushman/Hammer Yard modern picket fence installation [GIS IDs 324, 326, 1111, 1112]. View east from South Confederate Avenue, 2013 (OCLP).

Figure 94. Slyder Field 4 south boundary modern worm fence installation [GIS ID 336]. The park installed these non-historic fences for traffic control. View northwest from South Confederate Avenue, 2014 (OCLP).

Figure 95. Wells Monument roadside modern worm fence installation [GIS IDs 1462, 1463]. View southeast from South Confederate Avenue, 2014 (OCLP).

Figure 96. Slyder Field 5/ Slyder Knoll modern worm fence installation [GIS ID 1383]. View west from South Confederate Avenue, 2016 (OCLP).

Figure 97. Slyder Branch non-historic riparian buffer establishment. View north from South Confederate Avenue, 2014 (OCLP).



AREA 15 — EAST CAVALRY FIELD

The East Cavalry Field record of treatment area is located roughly three miles east from the center of the Borough of Gettysburg and is discontiguous from the majority of the park property. The record of treatment area is identical to the park's legislative boundary for the East Cavalry Field. Major 1863 property owners in this area include Jacob Lott, John Rummel, Joseph Spangler, and George Trostle.

Preparing for a major assault on the third day, Lee believed an early morning infantry attack on the Union right and left, preceded by an artillery cannonade, would dislodge the Union army and force it to retreat headlong down Baltimore Pike. In order to cut off this projected retreat, Lee planned to move his cavalry to the pike by ordering it around the right flank of the Federal army. Roughly three miles east of the main Union line, Union Brigadier General David M. Gregg's Second Cavalry Division held the critical intersection of the Hanover and Low Dutch Roads. Low Dutch Road provided a direct avenue of approach to the Baltimore Pike.

On the afternoon of July 3, Confederate cavalry commanded by Major General J.E.B. Stuart arrived and established a line across a topographic ridge (Cress Ridge) north of the Rummel farm buildings. Early skirmishing near these buildings escalated to mounted cavalry attacks as Confederate cavalry tried in vain to break through the Union defenses. Counterattacks by mounted Union cavalry and by determined artillerymen drove the Confederates from the field.[1]

The park has been using the 1880 Maxson Survey of the Warren Map Extension as the base map and reference for 1863 landscape character in East Cavalry Field. Based on this documentation, the 1863 character of the East Cavalry Field area included large fields predominantly defined by worm fencing. The field pattern was interrupted by woodlots maintained along topographic ridges and orchards that extended from the farm buildings complexes. Hanover Road extended southeast from the center of town and intersected Low Dutch Road southeast of the Joseph Spangler Farm. From this intersection, Low Dutch Road continued south and connected with Baltimore Pike about 3.5 miles southeast of Cemetery Hill. Two topographic ridges, Cress Ridge to the north and Lott Ridge to the south, extended nearly parallel across the landscape and directed the placement of the Confederate and Union forces respectively.

At the completion of the 1999 GMP, the East Cavalry Field area featured commemorative-era avenues including United States Cavalry, Confederate Cavalry, and Gregg and monuments marking battle lines and key positions. The majority of the landscape retained its open, battle-era character; however, woodlots and orchards were missing and woodlots that remained changed in their composition and density of woody material. Pockets of successional woody

vegetation grew and fence lines defining battle-era internal field divisions were not present.

To enhance historic landscape character that affected the battle, the park has completed landscape treatment tasks including the removal of non-historic woody vegetation, health cuts in historic woodlots, replanting historic woodlots, replanting historic orchards, and replacement of historic fencing. Additional landscape treatment in East Cavalry Field needs to be supported by research into 1863 features and character (Figure 98). Almost half of the land within the park's legislative boundary for the East Cavalry Field is in private ownership. The park has secured easements on roughly half of the private land and is pursuing additional easements in order to achieve preservation goals.

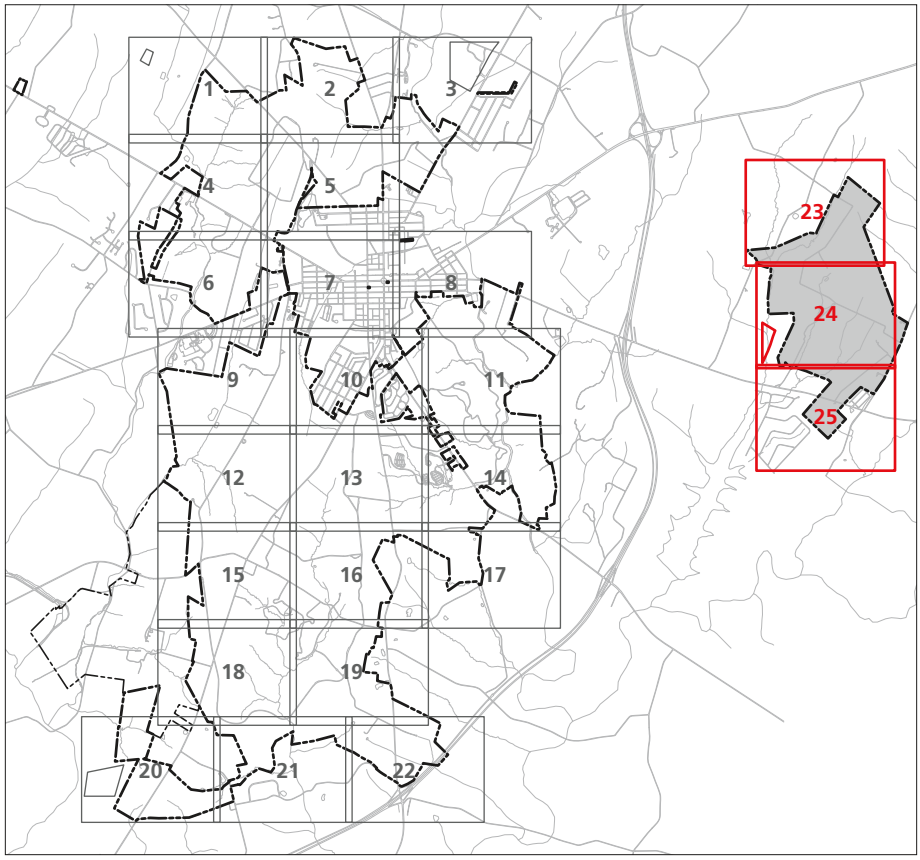


Figure 98. Map index for the East Cavalry Field area (OCLP).

AGRICULTURAL FIELDS

Joseph Spangler Fields and Fruit Garden Woods Removal [GIS ID 67]

The Joseph Spangler Fields are located to the west and south of the Joseph Spangler Barn and are bounded on the north by Hanover Road and on the east, south, and west by the park boundary. The Joseph Spangler Fruit Garden is located east of the Joseph Spangler Barn and is bounded on the north by Hanover Road, on the east by the park boundary, and on the south by the Joseph Spangler Fields. The Joseph Spangler Fields and Fruit Garden likely provided observation and cover for the 1st, 6th, and 7th Michigan Calvary. The open character of the fields is documented in the 1880 Bachelder/Maxson Map (Drawing 25A).

In 1999, successional woody vegetation filled Joseph Spangler Fields and Fruit Garden and contractors removed the non-historic woods in 2008. The park utilized an indefinite delivery/indefinite quantity (IDIQ) agreement, delivery order T7-100, and contracted with Pennington Tree Experts to clear a 4.79-acre area. After the clearing component was completed, the park's Resource Management division seeded the area with the American Eagle turf seed mix, a proprietary mix of perennial ryegrasses, Kentucky bluegrass, and fine fescues produced by the American Seed Company.[2] The park selected the mix due to the planned replanting of the battle-era fruit garden. Existing grasses self-seeded the remainder of the cleared area. Portions of the cleared area that comprise the Joseph Spangler Fruit Garden, including turf under the trees, are maintained by the park's Resources Management division. The remainder of the cleared area is mowed one time a year by park Facilities and Maintenance and presently remains open (Figure 99).

WOODLOTS AND GROVES

Rummel Woods Health Cuts

Rummel Woods is bounded on the north by Cavalry Field Road, on the east by the commemorative-era Confederate Cavalry Avenue, on the south by successional woods in one of the Rummel fields, and on the west by the park boundary. Confederate Cavalry Avenue follows the line of a topographic feature called Cress Ridge and Rummel Woods occupies the western slope from the ridge. On the third day of the battle, Confederate Major General Stuart used the deciduous woodlot for cover and concealment in order to bring his cavalry into position to launch attacks against Union cavalry located to the south and east.[3] The woodlot is documented in the 1880 Bachelder/Maxson Map and in photographs from the Boardman Collection (Figure 100 and Drawing 23A).

In order to maintain and sustainably perpetuate the character of a woodlot involved in battle action, the park contracted for health cuts in Rummel Woods. Under delivery order T8-062, contractors performed health cuts in a 27.07-acre area and completed the work in 2013 (Figure 101). Specifications for health cuts are included in Appendix A.

Rummel Woods Replanting

[GIS IDs 43, 43A]

Rummel Woods is bounded on the north by Cavalry Field Road, on the east by the commemorative-era Confederate Cavalry Avenue, on the south by successional woods in one of the Rummel fields, and on the west by the park boundary. On the third day of the battle, Confederate Major General Stuart used the deciduous woodlot for cover and concealment in order to bring his cavalry into position to launch attacks against Union cavalry located to the south and east.[4] The woodlot is documented in the 1880 Bachelder/Maxson Map and in photographs from the Boardman Collection (Drawing 23A). By 1999, in the southeast section of the woodlot a swath between roughly 50 and 60 feet, paralleling Confederate Cavalry Avenue, had been cleared.

In order to rehabilitate the full extent of a woodlot involved in battle action, the park planted 0.33 acres in 2005. Deciduous material was planted at a rate of 680 bare-root seedlings per acre resulting in approximately 224 seedlings planted (Figure 102). Based on the field review conducted in September 2014, eastern red cedar seedlings (*Juniperus virginiana*) are beginning to colonize the planted area. To promote the health and vigor of the deciduous material in the replanted woodlot, the park should remove the eastern red cedars by cutting them as flush to ground level as possible. When cut below the lowest branches, eastern red cedars do not resprout and it is not necessary to treat the cut stumps with an herbicide.[5]

Lott Woods Replanting

[GIS ID 42]

Lott Woods is bounded on the north by in-holdings within the park's legislative boundary, on the east by Low Dutch Road, on the south by the commemorative-era Gregg Avenue, and on the west by Rummel or Lott Fields. The western half of the woods is interrupted by a roughly 45-foot wide mown path that leads to Gregg's Division monument and other commemorative markers. The path extends perpendicular from Gregg Avenue for a distance of approximately 500 feet.

This small deciduous woodlot anchored the right end of the Union line on the East Cavalry Battlefield, and provided concealment and cover for Union troopers

who attacked the flank of Confederate cavalry during the climax of the battle in the area on July 3. The woodlot is documented in the 1880 Bachelder/Maxson Map (Drawing 24A). By 1999, more than half of the woods had been removed.[6]

In the mid- to late 1980s, the Gettysburg Battlefield Preservation Association owned a parcel in the eastern section of the woodlot fronting Gregg Avenue. During this time, the Association completed a replanting on their parcel, the details of which have not been presently discovered. In 2002, the park acquired the parcel.[7] Seeking to rehabilitate the full extent of a woodlot involved in battle action, the park planted approximately 2.60 acres of Lott Woods in 2004. Deciduous material was planted only in the western section of the woodlot at a rate of 680 bare-root seedlings per acre resulting in approximately 1,768 seedlings planted (Figure 103).

Based on the field reviews conducted in September 2013 and September 2014, the replanted western section contains a dense stand of red maples (*Acer rubrum*) and other deciduous material. In the eastern section, as Gregg Avenue turns around the Lott Farm complex, woody material is noticeably sparser and goldenrod (*Solidago* sp.) dominates a relatively open area (Figure 104). The park should consider additional replanting in the eastern section to achieve consistent woodlot character present at the time of the battle.

ORCHARDS AND NURSERIES

Lott Orchard Replanting

The Lott Orchard is located south of Gregg Avenue and stands between Lott Woods to the north and the Lott Farm complex to the south. The Union 1st Brigade, 2nd Division Cavalry Corps, under command of Colonel John B. McIntosh, likely used the Lott Orchard for cover. The orchard is documented in the 1880 Bachelder/Maxson Map and in photographs from the Tipton Collection (Figure 105 and Drawing 24A).

In 2008, the park completed replanting of the Lott Orchard. The replanted orchard consists of 48 apple trees arranged in 26 rows. The northern 12 rows consist of 24 'Liberty' apples and the remaining rows consist of 24 'Enterprise' apples. All 48 trees were planted on EMLA 111 standard rootstock in a quincunx pattern at 40-foot on center spacing. In 2014, the park completed a condition assessment for the Lott Orchard and recorded 41 trees in good condition and 7 trees missing (Figure 106).

Joseph Spangler Orchard Replanting

Joseph Spangler Orchard is bounded on the north by Joseph Spangler or George Howard Fields, on the east by the park boundary, on the south by Hanover Road, and on the west by the commemorative-era United States Cavalry Avenue. The Union Battery M 2nd U.S. Artillery, under command of Lieutenant Alexander Pennington Jr., likely used the Joseph Spangler Orchard for cover. The orchard is documented in the 1880 Bachelder/Maxson Map (Drawing 25A).

In 2008, the park completed replanting of the Joseph Spangler Orchard. The replanted orchard consists of 60 apple trees arranged in nine columns. The western three columns consist of 24 'Liberty' apples and the next column consists of 6 'Liberty' and 2 'Enterprise' apples. The remaining five columns consist of 28 'Enterprise' apples. All 60 trees were planted on EMLA 111 standard rootstock in a quincunx pattern at 40-foot on center spacing. In 2014, the park completed a condition assessment for the Joseph Spangler Orchard and recorded 40 trees in good condition and 20 trees missing (Figure 107). Since over 20 percent of the trees are missing, the Joseph Spangler Orchard should be considered for a replanting program to maintain the orchard's historic limits. The limits of an orchard and height of its trees affected cover, obstacle, and avenue of approach during the battle.

Joseph Spangler Fruit Garden Replanting

The Joseph Spangler Fruit Garden is bounded on the north by Hanover Road, on the east by the park boundary, on the south by Joseph Spangler Fields, and on the west by the Joseph Spangler House, Summer Kitchen, and Barn. The Fruit Garden likely provided observation and cover for the 1st and 7th Michigan Calvary. Based on the 1880 Bachelder/Maxson Map, it is difficult to determine if a small orchard or fruit garden was present south of Hanover Road and east of the Joseph Spangler buildings (Drawing 25A).

In 2009, the park completed replanting of the Joseph Spangler Fruit Garden. The replanted orchard consists of 18 apple trees arranged in three columns. The western column consists of 5 'Liberty' apples and the next column consists of 4 'Liberty' and 2 'Goldrush' apples. The final column consists of 7 'Goldrush' apples. All 18 trees were planted on EMLA 111 standard rootstock in a quincunx pattern at 40-foot on center spacing. In 2014, the park completed a condition assessment for the Joseph Spangler Fruit Garden and recorded 14 trees in good condition and 4 trees missing (Figure 108). Since over 20 percent of the trees are missing, the Joseph Spangler Fruit Garden should be considered for a replanting program to maintain the orchard's historic limits. The limits of an orchard and height of its trees affected cover, obstacle, and avenue of approach during the battle.

FENCING

Joseph Spangler Barn Modern Post and Rail Fence and Gate Installation [GIS IDs 1296, 1301, 1302, 1303]

The Joseph Spangler Barn is located south of Hanover Road and stands south of the Joseph Spangler House and Summer Kitchen. The Michigan Cavalry Brigade, commanded by General George Armstrong Custer, took position in the fields in front of and behind the house on the morning of July 3. It was from these positions the brigade made its dramatic mounted charges across the fields of the Spangler, Lott, and Howard farms during the afternoon hours.[8]

The 1880 Bachelder/Maxson Map shows a long fence line extending from the southwest corner of the barn but does not show any fences forming pens or enclosures off of the building (Drawing 25A). In 2008, 93 feet of post and rail fence were installed with one gate mounted east of the Joseph Spangler Barn (Figure 109). Only one segment, GIS ID 1301, was extant during a September 2014 field review. Given the poor condition of the remaining segment, it seems unlikely this fence was installed in 2008. Specifications for the type of wood, length of typical panel sections, and preservative treatments, are located in Appendix C.

ENDNOTES

1 Kathleen Georg Harrison, *National Register of Historic Places Registration Form for Gettysburg National Military Park*, Gettysburg National Military Park, January 2004, Sect 8:11 and 13.

2 Further information on the American Eagle turf seed mix may be obtained from: American Seed Company, 6051 Carlton Ave, Spring Grove PA 17362, 717-225-3730, http://www.americanseedco.com/shop/american-eagle-mix/.

3 Harrison, *National Register*, Sect 7:63-64.

4 Ibid.

5 "Best Management Practices for Problem Plants." *Missouri Prairie Journal* 1 (Spring 2013): 13.

6 Harrison, *National Register*, Sect 7:51.

7 Kathy G. Harrison to Olmsted Center, July 16, 2015 and http://landsnet.nps.gov/tractsnet/documents/GETT/Deeds/gett289.pdf.

8 Harrison, *National Register*, Sect 7:10.

TABLE 7: RECORD OF TREATMENT SUMMARY, AREA 15		
Task	**Date Completed**	**Notes**
Agricultural Fields		
Joseph Spangler Fields and Fruit Garden Woods Removal [GIS ID 67]	2008	
Woodlots and Groves		
Rummel Woods Health Cuts	2013	
Rummel Woods Replanting [GIS IDs 43, 43A]	2005	Remove young and emerging eastern red cedars to promote health and vigor of replanted deciduous material
Lott Woods Replanting [GIS ID 42]	2004	Consider additional replanting in eastern section to achieve consistent woodlot character
Orchards and Nurseries		
Lott Orchard Replanting	2008	
Joseph Spangler Orchard Replanting	2008	Consider for a replanting program since over 20 percent of the trees are missing
Joseph Spangler Fruit Garden Replanting	2009	Difficult to determine if this orchard is documented on the 1880 Bachelder/Maxson Map Consider for a replanting program since over 20 percent of the trees are missing
Fencing		
Joseph Spangler Barn Modern Post and Rail Fence and Gate Installation [GIS IDs 1296, 1301, 1302, 1303]	2008	GIS ID 1301 was only segment extant during September 2014 field review. Due to poor condition of remaining segment, unlikely fence was installed in 2008

Figure 99 (right). Joseph Spangler Fields woods removal. View southwest from Joseph Spangler Barn, 2013 (OCLP).

Figure 100 (middle). Rummel Woods. View northwest from Lott Fields, 1910s (Sue Boardman Collection, Misc75).

Figure 101. Rummel Woods health cuts. View northwest at intersection of Cavalry Field Road and Confederate Cavalry Avenue, 2013 (OCLP).

Figure 102 (left). Rummel Woods replanting. Note the eastern red cedars colonizing the replanted area. View northwest from Confederate Cavalry Avenue, 2014 (OCLP).

Figure 103 (middle). Lott Woods replanting, western portion from Gregg's Division monument. Note the density of young deciduous trees west of the monument. View northwest from Gregg Avenue, 2013 (OCLP).

Figure 104 (bottom). Lott Woods replanting, eastern portion from Gregg's Division monument. Note sparse planting east of the monument and abundance of goldenrod. View northwest from Gregg Avenue, 2013 (OCLP).

Figure 105 (right). Lott Orchard. View southwest from First Brigade tablet, circa 1912 (GETT 41136, Tipton Collection, T2255).

Figure 106 (middle). Lott Orchard replanting. View southeast from Gregg Avenue, 2013 (OCLP).

Figure 107 (bottom). Joseph Spangler Orchard replanting. View northeast from Hanover Road, 2014 (OCLP).

Figure 108. Joseph Spangler Fruit Garden replanting. View west, 2014 (OCLP).

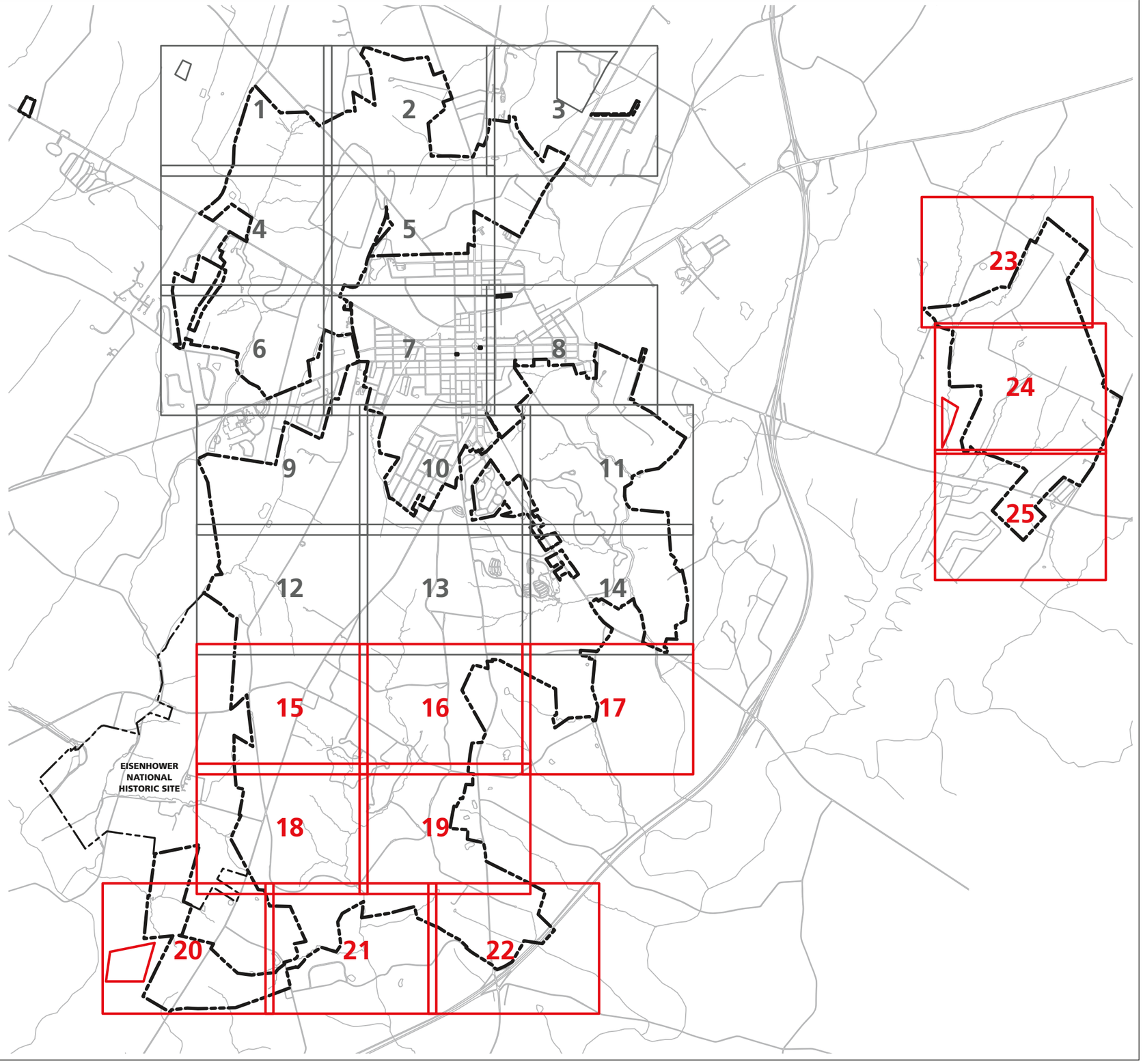
Figure 109. Joseph Spangler Barn modern post and rail fence installation [GIS IDs 1296, 1301, 1302, 1303]. View northeast, 2014 (OCLP).

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Mapping Index



National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

Park Legislative Boundary

15 Volume II Maps

1 Volume I Maps

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet

0 ~0.35 ~0.7 ~1.4 miles

Index

Record of Treatment

Gettysburg National Military Park
Gettysburg, Pennsylvania

K. G. Harrison
1863 Period Plan
Sheet 15

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. GETT GIS Files

DRAWN BY

Kathy G. Harrison

LEGEND

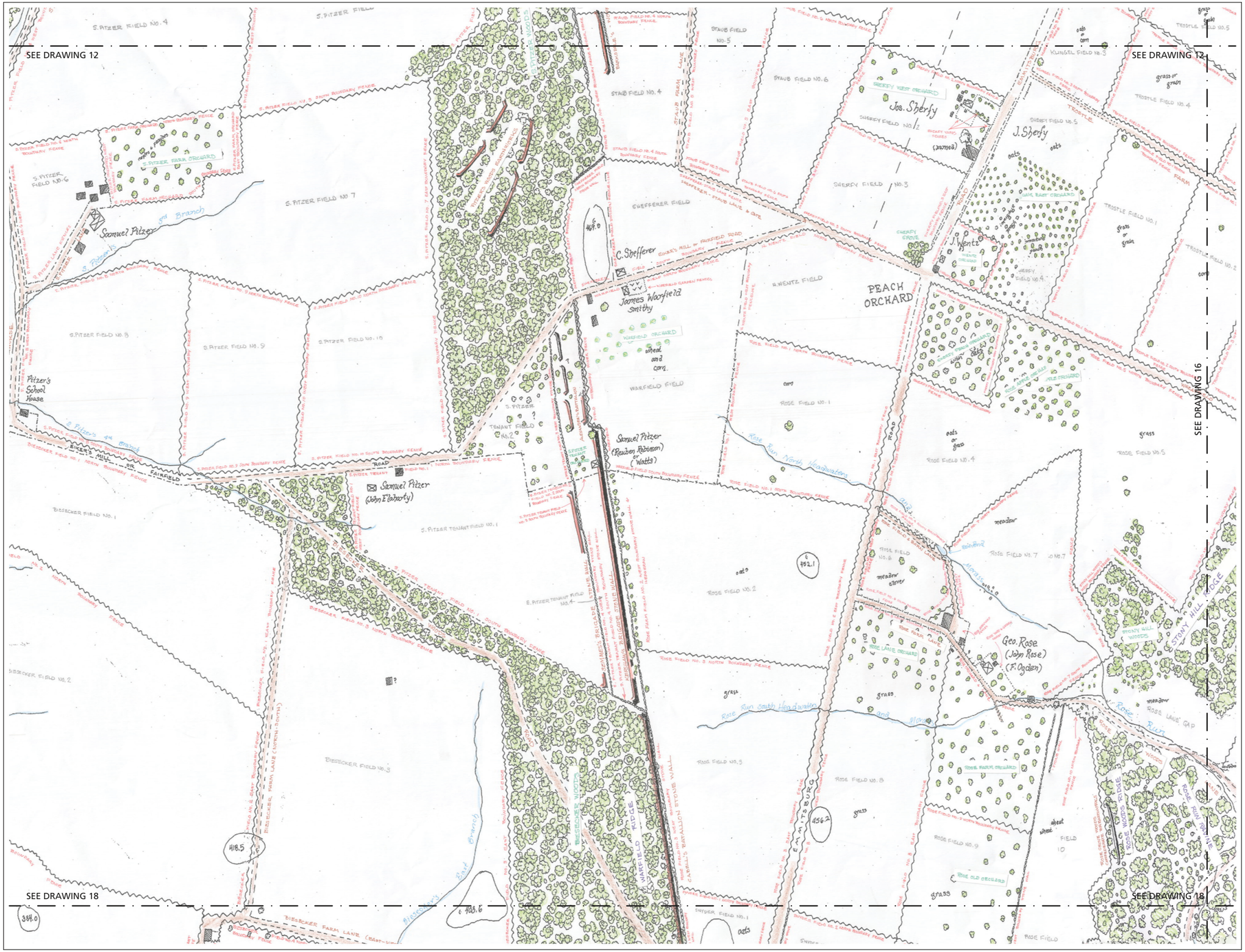
- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0' 100' 200' 400'

Drawing 15A


SEE DRAWING 12
SEE DRAWING 12
SEE DRAWING 16
SEE DRAWING 18
SEE DRAWING 18
PEACH ORCHARD
S. PITZER FIELD No. 4
S. PITZER FIELD No. 6
S. PITZER FIELD No. 7
S. PITZER FIELD No. 8
S. PITZER FIELD No. 9
S. PITZER FIELD No. 10
S. PITZER FARM ORCHARD
Samuel Pitzer 3rd Branch
Pitzer's School House
Pitzer's 4th Branch
BIESECKER FIELD No. 1
BIESECKER FIELD No. 2
BIESECKER FIELD No. 3
BIESECKER FARM LANE (NORTH-SOUTH)
Biesecker's East Branch
S. PITZER TENANT FIELD No. 1
S. PITZER TENANT FIELD No. 2
Samuel Pitzer (John E'laherty)
Samuel Pitzer (Reuben Robinson or Watts)
STAUB FIELD No. 4
STAUB FIELD No. 5
STAUB FIELD No. 6
SHERRY WEST ORCHARD
Jos. Sherry
SHERRY FIELD No. 1
SHERRY FIELD No. 2
SHERRY FIELD No. 3
SHERRY FIELD No. 4
SHERRY FIELD No. 5
J. Sherry
SHERRY GROVE
SHERRY ORCHARD
SHERRY EAST ORCHARD
KLINGEL FIELD No. 3
TROSTLE FIELD No. 1
TROSTLE FIELD No. 2
TROSTLE FIELD No. 4
TROSTLE FIELD No. 5
SHERRY FIELD No. 6
SHERRY FIELD No. 7
SHERRY FIELD No. 8
SHERRY FIELD No. 9
SHERRY FIELD No. 10
SHERRY FIELD No. 11
SHERRY FIELD No. 12
SHERRY FIELD No. 13
SHERRY FIELD No. 14
SHERRY FIELD No.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 15

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5′-0″
3. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 15B

Record of Treatment

Gettysburg National Military Park
Gettysburg, Pennsylvania

K. G. Harrison
1863 Period Plan
Sheet 16

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES
1. GETT GIS Files

DRAWN BY
Kathy G. Harrison

LEGEND
- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 16A

Record of Treatment

Gettysburg National Military Park
Gettysburg, Pennsylvania

2014 Existing Conditions
Sheet 16

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5’-0”
3. All features shown in approximate scale and location

0’ 100’ 200’ 400’

Drawing 16B

Record of Treatment

Gettysburg National Military Park
Gettysburg, Pennsylvania

K. G. Harrison
1863 Period Plan
Sheet 17

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. GETT GIS Files

DRAWN BY

Kathy G. Harrison

LEGEND

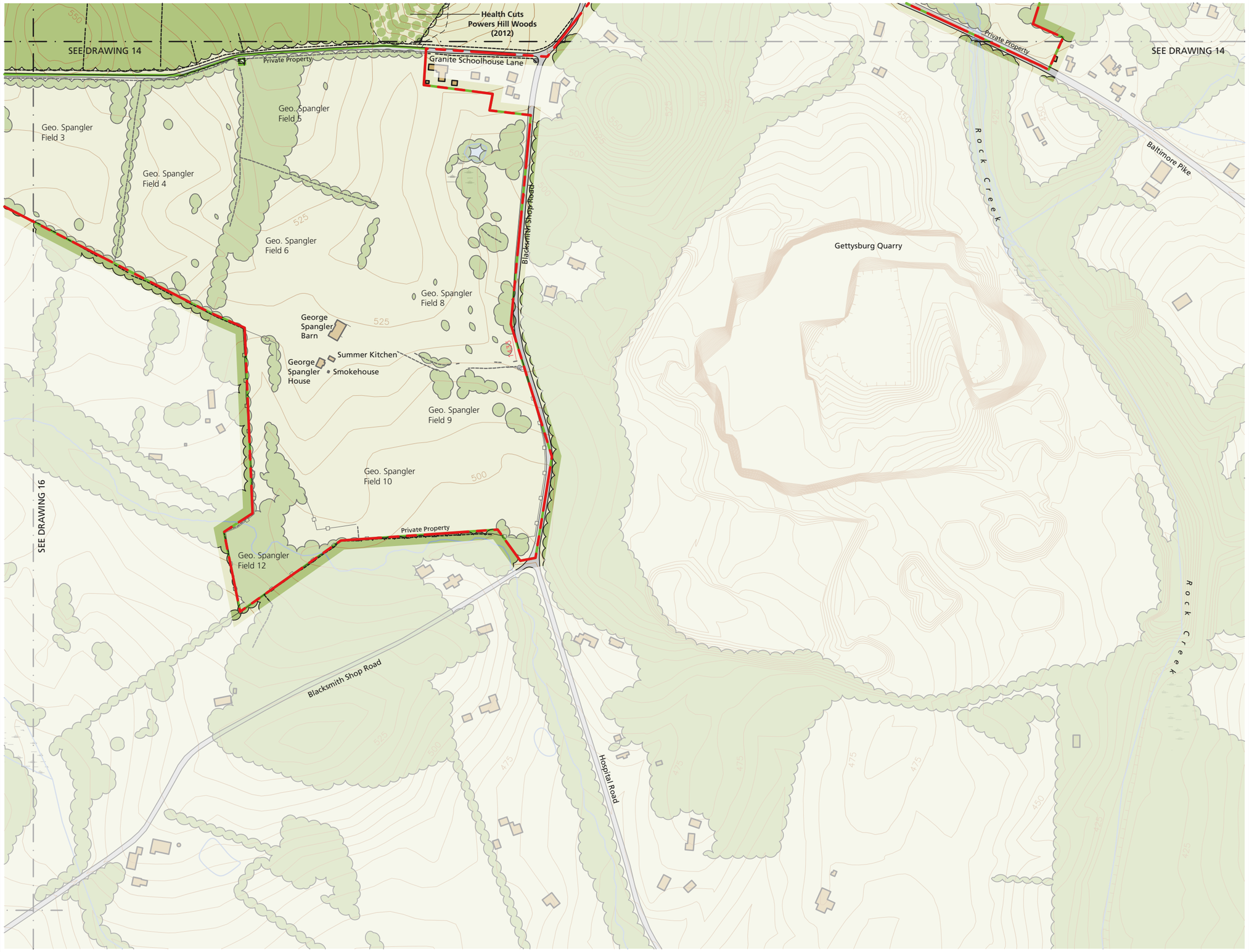
- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 17A



Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions
Sheet 17

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5'-0"
3. All features shown in approximate scale and location

0' 100' 200' 400'

Drawing 17B

Record of Treatment

Gettysburg National Military Park
Gettysburg, Pennsylvania

K. G. Harrison
1863 Period Plan
Sheet 18

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES
1. GETT GIS Files

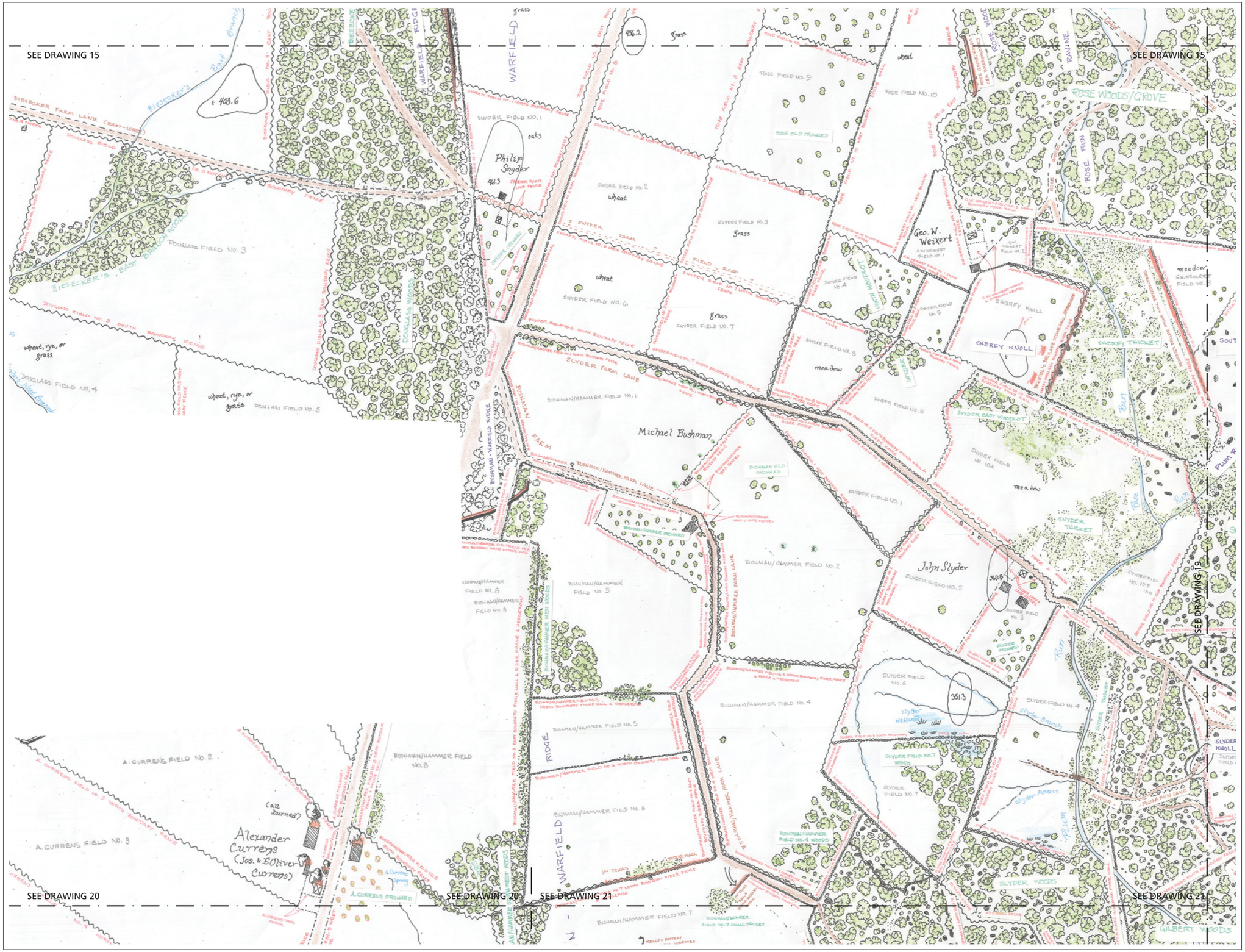
DRAWN BY
Kathy G. Harrison

LEGEND
- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0' 100' 200' 400'

Drawing 18A



Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 18

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5'-0"
3. All features shown in approximate scale and location

0' 100' 200' 400'

Drawing 18B

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

K. G. Harrison
1863 Period Plan
Sheet 19

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. GETT GIS Files

DRAWN BY

Kathy G. Harrison

LEGEND

- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0’ 100’ 200’ 400’

Drawing 19A

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 19

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5’-0”
3. All features shown in approximate scale and location

0’ 100’ 200’ 400’

Drawing 19B

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

K. G. Harrison
1863 Period Plan
Sheet 20

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. GETT GIS Files

DRAWN BY

Kathy G. Harrison

LEGEND

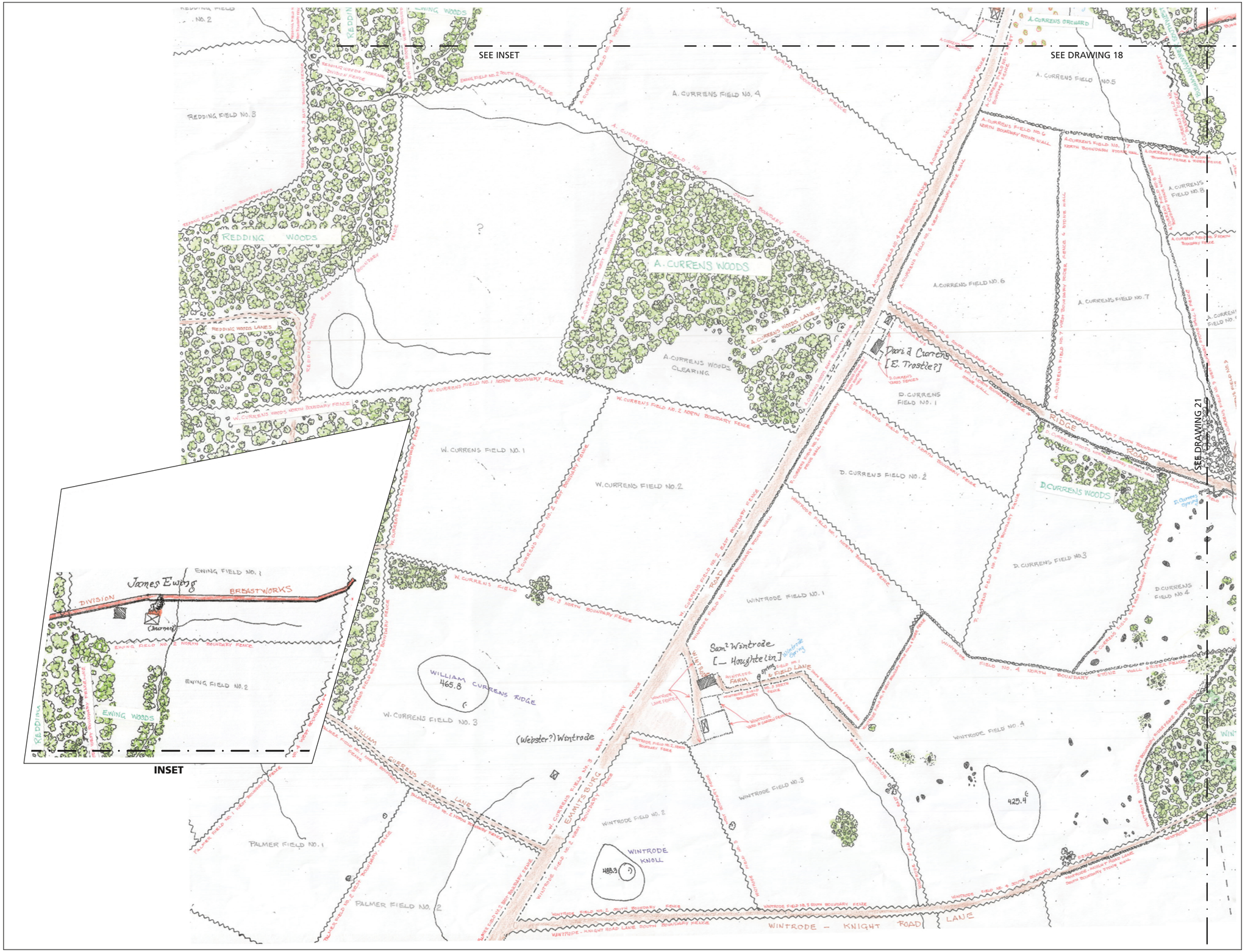
- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 20A



SEE INSET

SEE DRAWING 18

SEE DRAWING 21

EISENHOWER
NATIONAL
HISTORIC SITE

Redding
Woods

A. Currens
Woods

D. Currens
Woods

Gettysburg Battlefield
Resort Campground

Emmitsburg Road

Ridge Road

Private Property

W. Currens Field 1

W. Currens Field 2

W. Currens Field 3

Ewing Field 1

Ewing Field 2

Wintrode Field 1

Wintrode Field 2

Wintrode Field 3

Wintrode Field 4

Palmer Field 2

5th United States Cavalry

475

500

525

550

575

INSET

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 20

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5’-0”
3. All features shown in approximate scale and location

0’ 100’ 200’ 400’

Drawing 20B

Record of Treatment

Gettysburg National Military Park
Gettysburg, Pennsylvania

K. G. Harrison
1863 Period Plan
Sheet 21

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. GETT GIS Files

DRAWN BY

Kathy G. Harrison

LEGEND

- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0′ 100′ 200′ 400′

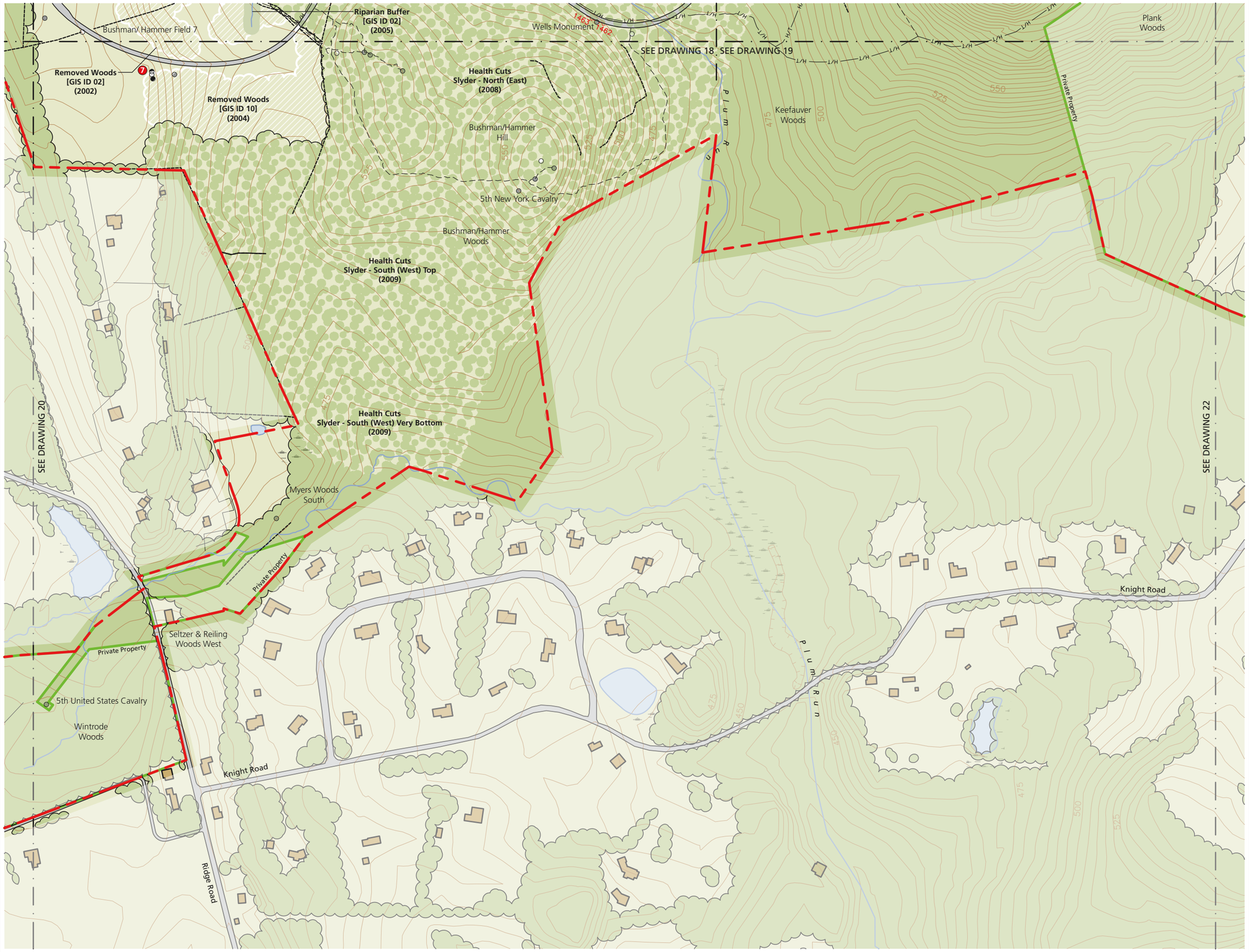
Drawing 21A

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 21



National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5′-0″
3. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 21B

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

K. G. Harrison
1863 Period Plan
Sheet 22

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. GETT GIS Files

DRAWN BY

Kathy G. Harrison

LEGEND

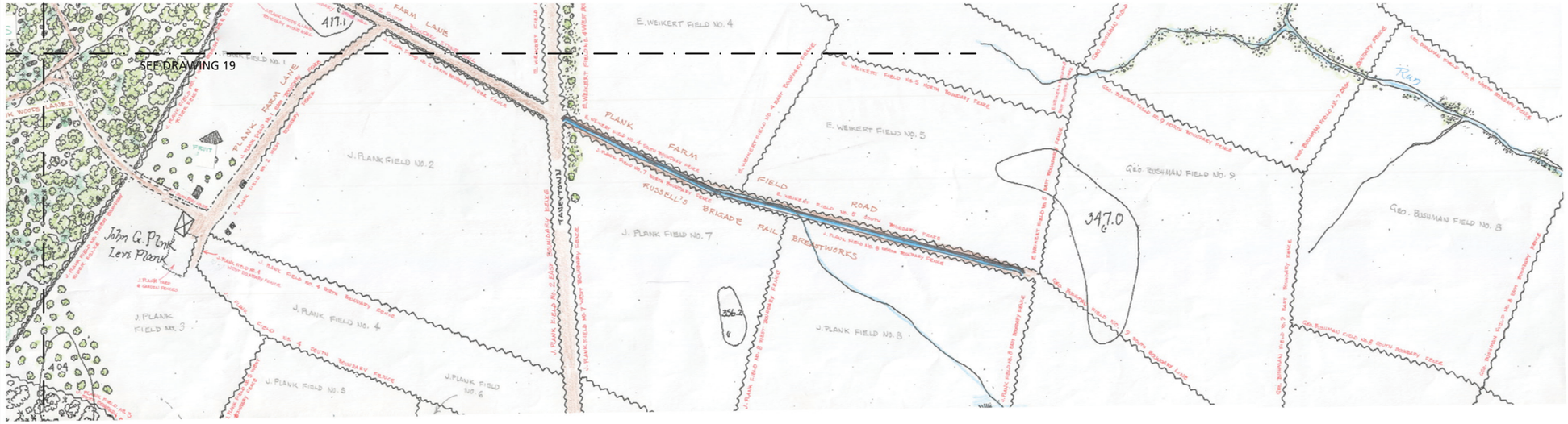
- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 22A



SEE DRAWING 19

SEE DRAWING 21

J. Plank Field 1

J. Plank Field 2

J. Plank Field 3

J. Plank Field 4

J. Plank Field 5

J. Plank Field 6

J. Plank Field 7

J. Plank Field 8

E. Weikert Field 4

E. Weikert Field 5

Wright Avenue

Howe Avenue

Taneytown Road

U.S. Route 15 Bypass

Private Property

Private Property

Round Top Campground

Solomon Road

525

500

475

450

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 22

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5′-0″
3. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 22B

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

1863 Period Plan
Sheet 23

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Bachelder/Maxson Map, 1880

DRAWN BY

Frank O. Maxson, C.E.

LEGEND

- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 23A

Cavalry Field Road
Hoffman Road
Cavalry Field Road
Confederate Cavalry Avenue
Private Property
Rummel Woods
Health Cuts
(2013)
Rummel Woods
Replanting
[GIS ID 43]
(2005)
Private Property
George Trostle
Farm Complex
Hoffman Road
Private Property
Private Property
Rummel Farm
Complex
600
575
SEE DRAWING 24
SEE DRAWING 24

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 23

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5′-0″
3. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 23B

Record of Treatment

Gettysburg National Military Park
Gettysburg, Pennsylvania

1863 Period Plan
Sheet 24

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Bachelder/Maxson Map, 1880

DRAWN BY

Frank O. Maxson, C.E.

LEGEND

- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 24A

SEE DRAWING 23

SEE DRAWING 23

Rummel Farm Complex

Private Property

Private Property

Private Property

Private Property

550

575

550

550

525

Gregg Avenue

Gregg's Division

Custer's Brigade

Lott Woods Replanting [GIS ID 42] (2004)

Lott Orchard Replanting (2008)

Lott Farm Complex

Private Property

Private Property

Low Dutch Rd

SEE INSET

SEE DRAWING 25

SEE DRAWING 25

Private Property

Lott Woods Replanting [GIS ID 42] (2004)

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 24

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5'-0"
3. All features shown in approximate scale and location

0' 100' 200' 400'

Drawing 24B

Record of Treatment

Gettysburg National Military Park
Gettysburg, Pennsylvania

1863 Period Plan
Sheet 25

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Bachelder/Maxson Map, 1880

DRAWN BY

Frank O. Maxson, C.E.

LEGEND

- 5-Rail Post and Rail Fence
- Sawn or Slab Board Fence
- Painted Sawn or Slab Board Fence
- Virginia Worm Fence
- Stacked Rail Fence
- Paling or Picket Fence
- Vertical Board Fence
- Stone and Rider Fence
- Low Stone Wall with Sawn or Slab Board Fence
- Low Stone Wall with Post and Rail Fence
- Fenceline, Undetermined Type
- Gate
- Stone Wall
- Breastworks
- Lanes
- Pedestrian Paths
- Dwelling
- Barn, Outbuilding, Other
- Scrub, Thickets
- Orchards
- Domestic Garden
- Swamp, Wet Area
- Boulders

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features shown in approximate scale and location

0′ 100′ 200′ 400′

Drawing 25A

SEE DRAWING 24

SEE DRAWING 24

Private Property

Private Property

United States Cavalry Avenue

Private Property

Private Property

Hanover Road

Joseph Spangler Orchard (2008)

Joseph Spangler Farm

Joseph Spangler Fruit Garden (2009)

Joseph Spangler Fields and Fruit Garden Woods Removal [GIS ID 67] (2008)

Low Dutch Road

Henry Schneider Farm Complex

John Rudisel Farm Complex

Ephraim Tawney Farm Complex

Low Dutch Road

500

525

550

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

2014 Existing Conditions Sheet 25

National Park Service

Olmsted Center for Landscape Preservation

www.nps.gov/oclp

SOURCES

1. GETT GIS Files
2. Ortho Imagery, 2014
3. Field Review, September 2013 and September 2014

DRAWN BY

Tim Layton and Daisy Chinburg
AutoCAD and Illustrator CS6, 2014

LEGEND

- Park Legislative Boundary
- Private — Inholding Boundary
- AREA 4 / AREA 10 — Record of Treatment Area Boundary
- Building / Structure
- Forested Canopy
- Woodlot
- Replanted Woodlot
- Replanted Orchard
- Replanted Thicket
- Woods Removal
- Wetland
- Paved Area
- Farm Lane / Sidewalk
- H/T — Horse Trail
- Footpath / Social Trail
- 12 — Park Auto Tour Stop
- Cannon
- Monument / Marker
- Tablet
- Rebuilt Worm Fence (1999–2014)
- Rebuilt Post & Rail Fence (1999–2014)
- Rebuilt Wire Fence (1999–2014)
- Rebuilt Picket Fence (1999–2014)
- Rebuilt Brick Wall, Iron Fence, or Gate (1999–2014)
- Rebuilt Stone Wall (1999–2014) freestanding, breastwork, rider

NOTES

1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. Contour Interval = 5’-0”
3. All features shown in approximate scale and location

0’ 100’ 200’ 400’

Drawing 25B

Lessons Learned: An Informal Assessment of Landscape Treatments, 1999–2014

Between 1999 and 2014, Gettysburg National Military Park completed an unprecedented effort to rehabilitate battlefield landscape character. Guided by the *General Management Plan and Environmental Impact Statement* (1999) and *Treatment Philosophy: The 1863 Landscape* (2004), the park completed tasks that included:

- Removing 325 acres of non-historic woody vegetation
- Health cutting 497 acres of woodlots
- Replanting 49 acres of woodlots
- Replanting 112 acres of historic orchards
- Replanting 28 acres of thickets
- Establishing 18 acres of riparian buffer habitat
- Rebuilding 17 miles of historic fences

This chapter provides a park-wide status of these seven task types and captures reflective lessons from the planning and implementation of the battlefield landscape rehabilitation. The Olmsted Center for Landscape Preservation and park staff meet on April 24, 2018, to discuss the task types and engage in a dialog about lessons learned from the process. In addition to the specific task types, park staff identified the need for on-going record keeping as an important lesson from the battlefield landscape rehabilitation. The park continues to implement projects to preserve and enhance the 1863 battlefield landscape, for example, replanting the eastern portion of David Ziegler's Grove. To assist in documenting future completed work for the historical record, Record of Treatment Forms are available in Appendix D.

REMOVAL OF NON-HISTORIC WOODY VEGETATION

Current Status of Effort

Between 1999 and 2014, the park successfully completed the removal of 325 acres of non-historic woods. This effort represents 56 percent of the 576 acres identified in the GMP for non-historic woods removal.[1] The cleared area is roughly five percent of the park's total legislative area and comparable to the area of Thomas Stone National Historic Site in Port Tobacco, Maryland, or Fort Monroe National Monument in Hampton Roads, Virginia.[2]

As a component of this 15-year effort, the park's Natural Resource Management division monitored and treated the cleared areas with herbicides for two years to control emerging woody vegetation. After the two-year period, park Facilities and Maintenance added the rehabilitated fields in their regular mowing cycles (Figure 110). There are presently no fields in the two-year monitoring program and the park has no plans to continue removing non-historic woody vegetation.

Two-year Program for Emerging Woody Vegetation and Invasives

The park was aware of the commitment needed to successfully remove non-historic woody vegetation and implemented a two-year regimen for monitoring and treating emerging woody vegetation, including exotic invasive vegetation.

Controlling New Invasive Vegetation

New exotic invasives emerged in the newly cleared fields and needed treating, sometimes involving volunteers and hand-pulling.

Planning for Potential Agricultural Leasing

The park's contracted work involved cutting trees as flush to ground as possible, but did not require stump removal or grinding. Since stumps remained in place, establishing an agricultural lease of the newly cleared fields would be difficult, if not impossible.

Planning for Vegetative Buffers for Visual Screening

Non-historic woods removal should contemplated keeping vegetative buffers as part of the task with an awareness of what desired and unintended elements of the landscape will be revealed.

HEALTH CUTS IN HISTORIC WOODLOTS

Current Status of Effort

Between 1999 and 2014, the park completed health cuts in 497 acres of historic woodlots. This effort represents 179 percent of the 278 acres identified in the GMP.[3] Historic woodlots not identified in the GMP and health cuts covering a greater area than identified in the GMP account for the acreage difference. First, the park completed health cuts in 193 acres of historic woodlots not identified in the GMP with features that include McAllister Woods Knoll, Henry Spangler Woods, and Shultz Woods.[4] Second, the park completed health cuts in 26 acres that represent an increase in area compared to the GMP at Culp's Hill, Samuel Pitzer Woods and Sherfy Woodlot, and Slyder Woods and Gilbert Woods.

Presently, the park has no definitive plans to conduct health cuts in new areas or to conduct additional health cuts in the woodlots completed between 1999 and 2014.

Balancing Sustainable Forest Management and Historic Character

The challenge the park faced in rehabilitating the battle-era character of a woodlot from a late-twentieth-century woods was to balance sustainable forest management versus the open character seen in historic imagery. The park opted for sustainable forest management in order to maintain the woodlot areas as wooded. If too many trees were removed and a strong storm event hit the park, a rehabilitated woodlot representing battle era character could lose all its trees and require a large and costly replanting project. With a mixture of trees and less open character, the historic woodlots have been treated to remain wooded without undertaking major future projects and intensive routine maintenance (Figures 111 and 112).

Emphasizing Historic Character for Interpretation

The park identified three important areas where more open woodlot character, as documented in historic imagery, is deemed important to interpretation. The three areas are: (1) Herbst Woods particularly the eastern section near the commemorative-era Reynolds Avenue; (2) Vincent Spur on southeast side of Little Round Top in the Jacob Weikert Woods; (3) Henry Culp Woods on Culp's Hill.

Single Health Cut Versus Multiple Health Cuts

The original plan for health cuts consisted of two to three rounds of cutting. The first health cut would remove 15 percent of material in woodlots and then a second or third round of cuts would be conducted to get to 30 percent removed. Contractors opened the canopy the first 15 percent and the park determined that a second or third round was not needed with the first health cuts being sufficient for understory and regenerative growth.

Marketable Timber from Health Cuts

The contracted health cut work involved cutting, chipping smaller material, and laying flat larger material in the woodlots. During discussions, questions arose about the potential for marketable timber in the woodlots and if some of the costs of the work could have been offset by selling timber.

Woodlot Heights and Impacts to Views

Historically, farmers would have harvested timber at a frequency where the trees would unlikely reach the heights observed presently at the park. In addition health cuts for sustainable forest management, specific and limited clearing may be needed to achieve visitor experience and interpretive goals. A primary example is Culp's Hill and the views from the commemorative-era observation tower (Figure 113).

REPLANTING HISTORIC WOODLOTS

Current Status of Effort

Between 1999 and 2014, the park replanted 49 acres of historic woodlots. This effort represents 43 percent of the 115 acres identified in the GMP to be replanted.[5] The difference between the GMP-identified acreage and the completed acreage is due to property ownership, prioritizing management zones, and features at the periphery of the park. For example, a portion of Rummel Woods is within the park's legislative boundary but located on private land. The Guinn Run Woods is located outside of the major battle action area management zone and in the South Cavalry Field area, Redding Woods, Ewing Woods, and Currens Woods were not replanted likely due to the limited visitation of this area. Presently, the park has no definitive plans to replant additional woodlot acreage identified in the GMP.

Planning for Thinning or Infill Planting

In the East Cavalry Field area, on-going maintenance for the replanted Lott Woods now requires thinning, especially east of Gregg's Division Monument (Figure 114). In the Culp's Hill area, Abraham Spangler's Grove and Woods Above Spangler's Spring are specific areas needing infill planting.

Replanting Individual Trees Present During the Battle

In preparation for and during the rehabilitation work, the park contemplated, but did not pursue, a project that would have included replanting individual trees documented in historic sources. While replanting individual trees would add to battle-era landscape character, especially in domestic yards around homes, the rehabilitation of agricultural fields, woodlots, groves, and orchards was a priority to convene how open (fields) or closed (woods) landscape character influenced the outcome of the battle.

REPLANTING HISTORIC ORCHARDS

Current Status of Effort

Between 1999 and 2014, the park completed the replanting of 112 acres of historic orchards. This effort represents 70 percent of the 160 acres identified in the GMP for historic orchard replanting.[6] The difference between the GMP-identified acreage and the completed acreage is due to non-NPS ownership of property in the park's legislative boundary (Pitzer Orchard) and historic orchards lying outside of the major battle action area management zone (Henry Culp Orchard). Presently, the park has no definitive plans to replant additional orchards identified in the GMP.

For all replanted orchards, the treatment task narratives in the *Record of Treatment* capture 2014 condition assessments completed by the park and presents thresholds for action, specifically:

- Orchards missing greater than 40 percent of their trees are a priority for replanting
- Orchards missing greater than 20 percent of their trees are a secondary priority and planning should be initiated for replanting

Based on a review of these thresholds with the park, the new recommended levels for action are to replant when an orchard is missing greater than 20 percent of its trees and to plan for replanting when an orchard is missing greater than 10 percent of its trees.[7] As the park continues an adaptive management strategy to maintain battlefield landscape character, these thresholds should be revisited and potentially modified to achieve the historic size and spatial configuration of these features (Figure 115).

Establishment Process

Randy Krichten, Biological Science Technician in the park's Natural Resource Management division, led the efforts to maintain the replanted orchards. He shared his assessment that soils and drainage played a greater role in tree health, or failure, than tree cultivar selection. He also shared that voles were a problem in establishing newly planted trees. Benefitting from tall grass cover, voles girdled the base of numerous trees. To protect against voles, the park regularly mows the orchards and emphasizes the completion of a late summer mowing in each orchard. In addition, an herbaceous herbicide treatment around the base of each tree, and installing a gravel ring around each tree, are additional measures to protect against vole damage.

Sustaining Orchards

Following the completion of replanting historic orchards, a friends group formed called Seedlings to Cider that is presently helping to maintain the four Rose orchards. The group's enthusiastic involvement includes completing infill planting for dead or missing trees and harvesting apples for cider production. Ten percent of the cider sales go to the park to pay for new apple trees. With cider production, the criteria for cultivar selection is beginning to focus on the taste and quality of the fruit in cider making versus the park's initial focus on disease resistance. The park's orchard replanting included contemporary apple cultivars, such as Liberty and Enterprise, with fruit bearing and fruit quality not factoring into the selection process.

REPLANTING HISTORIC THICKETS

Current Status of Effort

Between 1999 and 2014, the park successfully replanted, or allowed to naturally regenerate, 28 acres of historic thickets. This effort represents 43 percent of the 65 acres of thickets identified in the GMP.[8] The park prioritized thickets within the major battle action area management zone. Consequently, thickets outside this zone, for example, McClean Thicket, Guinn Run Thicket, and Jacob Weikert Thicket, were not replanted and account for the difference between the GMP-identified acreage and the completed acreage. Presently, the park has no definitive plans to replant additional thickets identified in the GMP.

For all replanted historic thickets, the treatment task narratives in the *Record of Treatment* consistently note the need for on-going monitoring and potential maintenance. Based on recommendations in the park's *Treatment Philosophy*, the task narratives advise monitoring and removing trees that exceed ten to fifteen feet high as warranted to maintain historic viewsheds[9] (Figure 116). The park deemed these thresholds were a good starting point for the management and maintenance of thickets.[10]

Planning for On-going Maintenance

The key to retaining a successfully replanted historic thicket is the on-going maintenance of the thicket and the periodic removal of vegetation that has grown too tall. Presently the park's Natural Resource Management division, as well as volunteers from the American Battlefield Trust, have completed selected removals in thickets.

ESTABLISHMENT OF NON-HISTORIC RIPARIAN BUFFER HABITAT FOR WATER QUALITY

Current Status of Effort

Between 1999 and 2014, the park established 18 acres of non-historic riparian buffer habitat. The GMP did not specify acreage of non-historic riparian buffer habitat to be established since this is a contemporary treatment to protect and improve water quality. The GMP included an Environmental Impact Statement (EIS) for the proposed actions and noted for non-historic woody vegetation removals that "the potential for significant sediment delivery exists since clearing of forest is proposed along many of the streams where sediment would be trapped. To mitigate this potential condition, buffer zones of vegetation would be maintained along streams to trap sediment."[11] All of the established riparian buffer habitat lies along water courses that flowed through areas of non-historic woody vegetation removal. Presently, the park has no definitive plans to establish new non-historic riparian buffer habitats.

For all riparian buffer habitat plantings, the treatment task narratives in the *Record of Treatment* consistently note the need for on-going monitoring and potential maintenance. The task narratives, based on the park's *Treatment Philosophy* guidance for thickets, advise the monitoring of buffers and removal of trees that exceed ten to fifteen feet high as warranted to maintain historic character[12] (Figure 117).

Planning for On-going Maintenance

Planning for the on-going maintenance of the buffers and the periodic removal of vegetation that has grown too tall is the central concern for non-historic riparian buffer habitat.

REPLACEMENT OF HISTORIC FENCING

Current Status of Effort

Between 1999 and 2014, the park successfully completed the rebuilding of 17 miles of fencing. This effort represents 43 percent of the 39.1 miles of fencing identified in the GMP to be rebuilt.[13] During the 15-year rebuilding effort, the park prioritized fence lines that impacted the outcome of the battle. If troops moved from east to west, then fencing running north-south would be an obstacle to coordinated movement. Therefore in this example, the park identified the north-south fence lines as a priority for rebuilding while the east-west fence lines, not directly impacting the battle, were not as critical to be rebuilt. This prioritization accounts for some of the difference between the GMP-proposed amount and the actual constructed amount.

Rebuilding historic fencing continues at the park today and is a popular volunteer group activity (Figure 118). A prudent future strategy would prioritize repairing or replacing fence lines rebuilt between 1999 and 2014 and would reduce or avoid the addition of new fence lines.

Consistency Among Construction Efforts

Rebuilding historic fencing occurred throughout the 1999–2014 timeframe and continues at the park today. Different construction efforts, at different times, in different locations, and with different labor sources resulted in a lack of consistency in the finished fences and in details, such as rounded, milled poles, that deviated from historic imagery. To aid the consistency of current and future efforts, a series of drawings that include plan, elevation, and section views is available in the appendices of the *Record of Treatment*.

Adaptive Management in Rebuilding and Maintaining Fences

Options available to utilize different wood species for lumber and incorporate different preservation treatments reiterates the need for adaptive management and making changes, for example, an epoxy treatment for posts versus a borate treatment for posts, as conditions at the park, experience, and new information may direct.

Interpretative Technique for Removed Fences

At Codori Field 8 and Trostle Fields 4–6, continuous fence lines were rebuilt with one freestanding panel, a gap, another freestanding panel, and so on, to indicate a fence that was removed during the course of the battle. This "dashed technique" was deemed successful for interpretation.

Battle-era Height of Stone Walls

Prior to rebuilding current and missing stone walls, research should explore possible soldier accounts and descriptions of a wall's height in order to guide the rebuilding effort.

Preserving Collapsed Stone Walls in Place

The future treatment of collapsed stone walls could involve either restacking the wall or preserving the wall in place and identifying it as a deteriorating feature.

ENDNOTES

1 *Final General Management Plan and Environmental Impact Statement*, Vol. 1, *Final GMP/EIS*, United States Department of the Interior, National Park Service, June 1999, 124.

2 *The National Parks: Index 2012–2016*, United States Department of the Interior, National Park Service, 2016, 62 and 105.

3 *Final General Management Plan*, 128.

4 Ibid., 43, see Figure 7.

5 Ibid, 124.

6 Ibid, 128.

7 Park Meeting, April 24, 2018.

8 *Final General Management Plan*, 128.

9 Eric Campbell, *Treatment Philosophy: The 1863 Landscape*, United States Department of the Interior, National Park Service, March 2004, 88.

10 Park Meeting, April 24, 2018.

11 *Final General Management Plan*, 278-79.

12 Please see Campbell, *Treatment Philosophy*, 88, for guidance on thickets.

13 *Final General Management Plan*, 124.

Figure 110 (right). Powers Hill Field 1. The brown leaves indicate where a woody herbicide has been applied as part of a two-year monitoring program following non-historic woody vegetation removal. View west, 2014 (OCLP).

Figure 111 (middle). McAllister Woods Knoll. View southeast during Colgrove Avenue construction, no date (Sue Boardman Collection, Misc80c+d).

Figure 112 (bottom). McAllister Woods Knoll health cuts. The park opted for sustainable forest management versus reestablishing open woodlot character. View southeast from Colgrove Avenue, 2016 (OCLP).

Figure 113 (top). Culp's Hill Observation Tower views. In addition to health cuts for sustainable forest management, specific and limited clearing may be needed to achieve visitor experience and interpretive goals. View northwest, 2016 (OCLP).

Figure 114 (middle). Lott Woods, western portion from Gregg's Division monument. Successfully replanted in 2004, Lott Woods now requires thinning. View northwest from Gregg Avenue, 2013 (OCLP).

Figure 115 (top right). Bushman/ Hammer Orchard. The park identified new recommended levels for action that would replant when an orchard is missing greater than 20 percent of its trees and would plan for replanting when an orchard is missing greater than 10 percent of its trees. View east from South Confederate Avenue, 2013 (OCLP).

Figure 116 (middle). Codori Thicket. Based on recommendations in the park's *Treatment Philosophy*, replanted thickets should be monitored and trees removed that exceed ten to fifteen feet high as warranted to maintain historic viewsheds. View southeast from Pennsylvania Monument deck, 2013 (OCLP).

Figure 117. Plum Run non-historic riparian buffer. Based on the park's *Treatment Philosophy* guidance for thickets, all riparian buffer habitat plantings should be montiored and trees removed that exceed ten to fifteen feet high as warranted to maintain historic character. View northeast from Snyder Thicket, 2014 (OCLP).

Figure 118. Slyder Field 1 north boundary stone and rider fence. Rebuilding historic fencing continues at the park and is a popular volunteer group activity. A prudent future strategy would prioritize repairing or replacing fence lines rebuilt between 1999 and 2014. View southeast, 2013 (GETT, Randy Hill Files).

SELECTED BIBLIOGRAPHY

PUBLISHED BOOKS AND REPORTS

Campbell, Eric. *Treatment Philosophy: The 1863 Landscape*. United States Department of the Interior, National Park Service, March 2004.

Einhorn Yaffee Prescott, Rhodeside and Harwell Inc., Hunter Research, Fuss & O'Neill, Inc., and C. S. Davidson, Inc. *Little Round Top Cultural Landscape Report, Treatment & Management Plan*. United States Department of the Interior, National Park Service, March 2012.

Final General Management Plan and Environmental Impact Statement. Vol. 1, *Final GMP/EIS*. United States Department of the Interior, National Park Service, June 1999.

Gettysburg National Military Park and Olmsted Center for Landscape Preservation. *Cultural Landscape Report Emmitsburg Road Ridge*, Volume 2, Part 2. United States Department of the Interior, National Park Service, January 2002.

Harrison, Kathleen Georg. *National Register of Historic Places Registration Form for Gettysburg National Military Park*. Gettysburg National Military Park, January 2004.

Rhodeside and Harwell Inc. and Einhorn Yaffee Prescott. *Cultural Landscape Report: Defense of Cemetery Hill*. United States Department of the Interior, National Park Service, June 2004.

PERIODICALS, ARTICLES, UNPUBLISHED REPORTS, AND WEB SITES

Gettysburg National Military Park, "Five Year Strategy: Terrain Analysis and Treatment Recommendations" (unpublished manuscript, 2003).

Appendix A: Non-historic Woods Removal and Health Cuts

This appendix provides additional infomarion for the battlefield landscape rehabilitation tasks addressing removal of non-historic woods and health cuts in historic woodlots. Based on interviews and correspondence with Randy Krichten, from park's Natural Resource Management division, this section includes a brief description of seeding and initial maintenance for the newly cleared areas. This is followed by seed mix lists and finally, specifications captured from the park's Administrative Officer (AO) records for the battlefield landscape rehabilitation. The specifications detail tree removal and health cut work and conclude with an addendum approximating tree quantity, size, and species for a typical one-acre removal and health cut area.

SYNOPSIS OF SEEDING AND INITIAL MAINTENANCE

The park contracted for removing areas of non-historic woody vegetation, but completed the seeding and initial maintenance of the cleared areas through the park's Natural Resource Management division. Led by the efforts of Randy Krichten, Biological Science Technician, seeding was accomplished during the winter months after completion of the contract. This timing allowed freeze/thaw cycles to embed the seeds into the soil instead of requiring additional soil disturbance. In some cases, noted in the individual record of treatment task descriptions, a cleared area self-seeded.

The park's Natural Resource Management division then monitored and treated the cleared areas with herbicides for two years to check emerging woody vegetation. After the two-year period, park Facilities and Maintenance picked up the fields in their regular mowing cycles.

SEED MIXES

Primary Mix Used in Most Areas

Indian Grass, *Sorghastrum nutans*
Little Bluestem, *Schizachyrium scoparium*
Big Bluestem, *Andropogon gerardii*

Isolated Use in Undocumented Locations

Broom Sedge, *Andropogon virginicus*

Munshower Field

Eastern Gammagrass, *Tripsacum dactyloides*

Little Round Top Record of Treatment Area and Bottomland along Willoughby Run

Sedges (*Carex* spp.) and rushes (*Junus* spp.) harvested from the base of Little Round Top
Ironweed, *Vernonia fasciculate*
Sneezeweed, *Helenium autumnale*
Cardinal Flower, *Lobelia cardinalis*

NATIONAL PARK SERVICE
SPECIFICATIONS - STANDARD TREE MAINTENANCE PRACTICES

PART 1: SCOPE

A. The Contractor shall furnish all equipment and sufficient personnel for selected tree removal, related maintenance items (ie: limb lopping, chipping, removal, and stump grinding) and all related incidental work as in accordance with the bid schedule and specifications stated herein. Therefore, any items not specifically noted, but necessary for performance in accordance with accepted industry standards, shall be furnished under this contract. All work will include installation of erosion control measures, obtaining all required local, state and federal permits, and seeding and mulching of all disturbed areas.

B. All trees and vegetation are located within the boundaries of the Gettysburg National Military Park (GNMP), Gettysburg, Pennsylvania or Eisenhower National Historic Site, Gettysburg, Pennsylvania at specific sites and/or areas identified on the attached maps.

C. This contract is intended to augment the in-house work forces at Gettysburg National Military Park and Eisenhower National Historic Site. Instances where the contractor may be called upon include performing tree maintenance and removal tasks beyond the capabilities of the in-house work forces. This is a requirements-type contract. The quantities of work shown on the bid schedule are strictly estimates. The quantity of work will depend upon the vagaries of weather, visitor use and/or construction impacts, in-house capabilities, and insect and disease infestations. This contract will be effective for a period commencing 15 July 2003 through 30 September 2008.

D. All work will be performed under a single contract. The contractor shall not subcontract any work required by this contract without the express written approval of the Contracting Officer (CO). If the CO approves the Contractor to subcontract any part of the work required under this contract, a copy of any such subcontract shall be provided to the CO.

PART 2: GENERAL PROVISIONS

2.01 Quality Assurance:

201.1 Professional Qualifications:

A. All tree removal work for special attention trees work shall be under the direction and general supervision of an Arborist(s) certified by the International Society of Arboriculture (ISA) who possesses verifiable experience and technical competence in tree physiology, identification, diagnosis of disorders, and current tree care and safety practices in accordance with accepted industry standards. The Arborist shall be the primary contact with the Government's technical representative and shall be responsible for controlling the quality of work and inspecting all completed work to

ensure that contract performance requirements are met.

All tree removal and tree felling work shall be conducted under the direction and supervision of a professional logger who process verifiable and technical competence in tree felling, lopping, skidding and processing, and tree removal safety practices in accordance with best management practices and industry standards. The logger shall be the primary contact with the Government's technical representative and shall be responsible for controlling the quality of work and inspecting all completed work to ensure that contract performance requirements are met.

B. An experienced Crew Supervisor(s) shall be present at all times work is being performed. Said experienced supervisors(s) must have verifiable work experience as a full time direct supervisor of shade tree maintenance and climbing work crews.

C. All work around power lines shall be performed by Certified Line Clearance Tree Trimmers in accordance with OSHA 229 CF 1910.269, 1910.331 and ANSI Z133.1-1994.

D. All tree workers shall, through related training and on the job experience, be familiar with the technical aspects and hazards of tree maintenance work and equipment used in such operations. All tree workers shall abide by any code of ethics or professional conduct established by the National Arborist Association and the International Society of Arboriculture.

E. A list of all crew supervisors and tree workers anticipated as part of the work crews as well as their positions (i.e.: certified line clearance tree trimmers, qualified tree trimmers, tree trimmer trainees, and ground personnel not responsible for trimming trees), affiliation with the company, and related training and on the job experience shall be submitted. If so directed by the COR a separate list of personnel to be used on a given job shall be submitted for each delivery order.

F. The contractor shall ensure that each of his/her employees meet the qualifications including:

1. Employees are physically qualified to perform their assigned duties in a safe manner.
2. Prohibiting employees from work if their ability or alertness is impaired because of drugs, fatigue, illness, intoxication, or other conditions that may expose them or others to injury.
3. Ensuring that operators of vehicles, mobile equipment, hoisting equipment, and hazardous plant equipment shall be able to understand signs, signals, and operating instructions, and be capable of operating such equipment. Provide operating instructions for all equipment. Newly hired operators shall be individually tested by an experienced operator or supervisor to determine if he/she is capable of safely operating equipment.

2.01.2 EQUIPMENT REQUIREMENTS:

A. All equipment must meet all federal OSHA, state and local safety requirements and must be properly licensed. This includes equipment such as bucket trucks, aerial lifts, bucket trucks, cable skidders, chainsaws, chippers, chip trucks, feller bunchers, feller forwards, forwarders, grapple skidders, log trailers, log truck, processors/harvesters, stump grinders, wood trucks, etc. which may be needed to correctly perform tree pruning and removal in accordance with the specifications stated herein.

B. A list of the equipment anticipated for use shall be submitted and include the make and model, year manufactured, tag # if applicable, and date of last inspection. If so requested by the COR, a list of the equipment to be used shall be submitted for each delivery order. Listed equipment must be on the job site when necessary during the execution of the delivery order.

C. Load restrictions on all Park roads are the same as adjacent state roads. The contractor shall be familiar with and abide by local and state road load restrictions

2.01.3 MONETARY ADJUSTMENT FOR INADEQUATE PERFORMANCE:

It is mutually agreed that failure to satisfactorily accomplish work in accordance with the specifications and provisions stated herein when due to the fault of the contractor, shall constitute a deficiency under this contract. All work will be regularly inspected by the COR and any deficiencies will be reported in writing to the contractor. Corrective action by the contractor shall be taken promptly and the work satisfactorily accomplished. Deficiencies in daily tasks shall be completed within the day the deficiency is noted. Irreversible damage to the tree(s) will be subject to liquidated damages in accordance with the *Guide for Plant Appraisal* (9th edition, 2000) authored by the Council of Tree and Landscape Appraisers and the Mid-Atlantic Tree Species Rating Guide developed by the Mid-Atlantic Chapter of International Society of Arboriculture.

2.01.4 REPORTS:

When dealing with "Special Attention" trees as described later, the contractor shall note and report to the COR in writing the presence of any structural weakness, girdling roots, disease conditions, decayed trunk or branches, and split crotches or branches or any other hazardous condition that has potential for damage to property or personal injury that can not be corrected within the scope of work described herein.

2.02 SCHEDULING AND COORDINATION:

A. Before submitting bids for the work, it is strongly recommended that each bidder examine the contract specifications and the site(s) where the work will occur. This review should satisfy the contractor as to the existing conditions under which he/she will be pledged to operate or that, in any manner, will affect work under this contract.

B. Bids should be prepared to indicate by each projected year of effort the costs of the

various subsets of the effort required. Estimates should be provided on a per Acre basis for accomplishing the various tasks outline. Separate per Acre costs estimates should be prepared for the cost of Total Tree Removal, Health cut efforts with the limbs lopped and allowed to lie, and Health cut efforts where the limbs to be lopped and chipped/removed. The only exception to per Acre estimates should be the costs to remove Special Attention trees. A definition of each type of efforts is provided in Section 2.10 Definitions.

C. Quantities and scope of work to be performed and time frame(s) for completion will be identified on individual delivery orders which will be subject to the terms and conditions under this contract.

D. All affected trees will be identified with Paint indicators or clearly identifiable ribbons by the NPS prior to the contractor commencing work. Trees will be marked as follows:

1. Trees that were present during the time of the battle, i.e., "Witness" trees, within these boundaries will be marked with pink flagging and black lettering "Do Not Cut" and should be left untouched.

2. All shrubs within the riparian corridor (35 feet along each side of the stream) will be marked with pink flagging and black lettering "Do not cut". These shrubs will remain and be undisturbed as much as possible.

3. Complete tree and vegetation removal areas - The outermost boundaries of the general area will be marked by an orange spot painted upon the trees. All trees, shrubs, and their parts within the defined area including the boundary trees marked with orange paint, are to be cleared. All trees, shrubs, and their parts within the area will be cleared unless directed otherwise by the government COR.

4. Health cut areas - The outermost boundaries of the general area will be marked with pink flagging. Trees marked with pink flagging will not be cut. Individual trees within this area will be marked to indicate how the once felled trees are to be handled.

   a. Trees marked with White paint are to be removed in their entirety after felling.

   b. Trees marked with Red paint can be cut and lopped and let lie by either chainsaw or other manual methods and remain where felled. All red paint marked stems and branches shall be lopped to be within two (2) feet of the ground. Locations of these trees are indicated in attached map.

   c. Trees marked with Blue paint are to be cut and lopped by either chainsaw or other manual methods and the limbs chipped. All trees with a stump diameter of 5 inches or less shall be cut, chipped and chips blown over the area. All blue paint trees that

are greater than five (5) inches in stump diameter shall be cut, limbed and trunks will remain where felled. All limbs will be chipped. No piles of chips greater than 6 inches high will be allowed.

5. Special Attention Removals – Trees marked with Yellow paint require special attention and consideration during their removal. These trees are in close proximity to monuments, fences or other structures of cultural significance and great care must be taken not to disturb these items.

* (see Execution Sections for specific requirements)

E. Before commencement of the effort, the Contracting Officer (CO) will arrange an onsite meeting with the Contractor. The meeting agenda will include the following:

A. Minimum Agenda:

1. Correspondence procedures.
2. Designation of responsible personnel.
3. Labor standards provisions.
4. Payroll reports.
5. Changes.
6. Payments to the Contractor.
7. Subcontractors.
8. National Park Service regulations.
9. Accident prevention program (including name of responsible supervisor).
10. Accident reporting.
11. Documents required under the contract.
12. Park rules and regulations.
13. Park Best Management Practices
14. Saturday, Sunday, holiday, and night work.
15 Safety program (compliance with the "Accident Prevention" clause).
16. Tentative work schedule.

F. PROGRESS MEETING: The COR will schedule weekly meetings with the Contractor and subcontractors. Subcontractors will not be allowed to work until they have attended a meeting. Additional meetings will be held as needed or for new subcontractors.

A. Minimum Agenda:

1. Approval of minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identifications of problems that impede planned progress.
5. Review of SUBMITTALS schedule and status of SUBMITTALS.

6. Review of offsite fabrication and delivery of schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain project schedules.
9. Planned progress during succeeding work period.
10. Coordination of project progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to work.
14. Review Tree Cutting/Removal Inspection and Completion Report

G. Prior to commencing work the contractor is responsible for inspecting all affected trees to ensure that the prescribed work is in accordance with the scope of the specifications stated herein and unit prices of the contract bid schedule.

H. Prior to commencing the work the contractor will prepare and submit a detailed work plan for the accomplishment of the prescribed work to the COR. The COR will review and approve the plan. Any required revisions will be discussed and approved prior to the final approval of the plan. Any deviations from the agreed upon plan will be approved in writing by the COR prior to their initiation.

I. The Contracting Officer's Representative will be responsible for acting on behalf of the Contracting Officer on all matters of work within the scope of the contract. The COR may make changes in the specifications only within the general scope of work as awarded. Such changes are understood to mean that changes are deemed necessary to adjust to field conditions, the size of the project, or that are otherwise considered necessary to expedite within such scope. Approval of work beyond the scope of the contract (i.e., cabling and bracing, wound treatment, technical removals requiring the use of a crane etc.) is reserved for the Contracting Officer. The contractor is responsible for notifying the COR in writing all work that is beyond the scope of the contract and include a proposal for performing the prescribed work that includes a breakdown with unit prices for labor, materials, and equipment required to ensure that the tree can be safely removed and/or the hazards corrected. The COR will evaluate the proposal and if valid will seek approval from the Contracting Officer. Failure of the contractor to obtain the approval of the Contracting Officer for work beyond the scope of the contract will release the government from any obligation to pay for services claimed.

J. The contractor shall commence work within 14 days of receiving a delivery order. The contractor shall notify the COR 48 hours prior to beginning any work on a delivery order. The COR will set the physical limits for the work in the field. The contractor must adhere to those limits. Work shall be performed between the hours of 7:00 a.m. and 4:30 p.m., Monday through Friday, Federal holidays excluded, unless authorized in writing by the COR. Work may be performed on weekends as authorized by the COR.

K All work under this contract will receive regular inspections by the Contracting Officer's Representative (COR). The contractor shall facilitate and cooperate in all such inspections. In all questions relating to the interpretation of these specifications, the decision of the Contracting Officer will be final. The contractor will keep a set of contract documents on site at all times. The contractor will review the contract with all employees working at the site.

L. Work shall be scheduled and arranged so as not to interfere with the normal activities of the park. Advanced notice will be given to the contractor if a conflict is expected. Any plant debris, personnel or equipment that would interfere with an activity or event shall be removed prior to the activity.

M. During large scale tree removal efforts, landing and skid areas may be required. All landing, skidding trails, and access routes to all areas shall be agreed upon prior to start of removal operations and should be included in the development of the work plan. No deviation from agreed upon locations is permitted without the written approval of the Park. If the contractor wishes to propose alternative landings, skidding trails or access routes, he/she must consider the following conditions in there recommended alternatives:

1. Design and layout skid roads and trails to minimize damage by avoiding residual trees and protect them from skidding damage.
2. Design roads/skid trails to shed surface water quickly.
3. Design roads and landings to prevent or divert surface water flow.
4. Avoid locating roads and landings on seasonally wet soils
5. Consider slope and soil type when laying out roads and landings.
6. Do not skid through watercourses or spring seeps.
7. Retire the road/skid trail properly at the completion of the operations, including the regrading and seeding of the landing areas landings, using native grasses when the job is complete.
8. Minimize soil compaction and rutting by cutting only when the ground is dry or frozen; use fabric mats or pads to minimize disturbance.

N. The park will develop erosion and sedimentation plan and the successful contractor will have to abide by and implement the plan. Failure to do so or to create unapproved landing sites could result in termination of the contract.

O. Once work begins the contractor is expected to be on the job site each day in which weather conditions are favorable as determined by the COR or designated park representative.

P. The trees and vegetation to be removed are all located in areas of cultural and natural significance. Therefore, it will be extremely important to commence work in these areas when conditions are favorable and construction would have the least amount of negative impact. The COR will be responsible for determining these critical times. The Contractor must respond within two (2) days of being notified of favorable conditions and commence work. Favorable

conditions will include, but not limited to, frozen or dry ground, and when disturbing natural processes is not a factor. Contractor will be notified by phone with a follow up letter notifying him/her of favorable conditions.

Q. The tree cutting season at Gettysburg NMP and Eisenhower NHS runs from approximately 1 August through 15 February. The exact dates will be determined by Park personnel depending upon the moisture condition of the soils as well as nesting bird patterns. Because these period encompasses multiple seasons of the year, the contractor must recognize the impact of weather conditions and the limitations they may place upon the work efforts.

1. During periods of rain, no work shall commence for 24 hours following a rain accumulation of one quarter (¼) of an inch or more during a proceeding 24-hour period unless approved by Park personnel.

2. During periods of snow accumulation, actual cutting of trees may continue as long as contractor personnel can access the location of the trees to be removed. Skidding and loading of felled trees can continue as long as the ground is frozen or supports the weight of the removal equipment.

3. During periods of thawing, actual cutting of trees may continue as long as the cutting is performed by hand and does not require the use of equipment which would sink and disturb the unfrozen ground. The use of equipment for the skidding and loading of felled trees may only continue as long as there is no sinking into or disruption of the ground beyond normal operations.

4. The COR will evaluate the conditions during periods of rain, snow or thawing grounds and will determine when the conditions are favorable for the continuation of the removal/cutting efforts.

5. If during the course of a work-day, conditions deteriorate from favorable to unfavorable, the COR may direct that work be suspended until the conditions improve. Failure to comply with COR's directions could result in termination of the contract.

R. Cutting may begin when all required paperwork is completed (contract starting date). Cutting must be completed as directed by the park. A contract extension may be granted on a written request based on reasons beyond the control of the contractor. Cutting will only be allowed at specific times when conditions are favorable and there will be minimum impact.

S. The contractor agrees to mulch and seed the landings and specified skid trials with seed, fertilizer, lime and mulch described in the erosion and sedimentation plan.

T. If unusual or unanticipated conditions are found that prevent performance of the work in accordance with specifications, stop work immediately and call these

conditions to the attention of the COR. Written instructions will be issued by the COR and the contractor shall then resume work. This requirement shall not relieve the contractor of his/her responsibility to perform the work specified in the contract.

U. If, at any time, the COR determines that the work is unsatisfactory or being conducted in an unsafe manner, the contractor will be notified and shall immediately cease all work activities.

2.03 SAFETY:

2.03.1 General

A. In case of conflicts between Federal, state, and local safety and health requirements, the most stringent shall apply. Equipment or tools not meeting OSHA requirements will not be allowed on the project sites. Failure to comply with the requirements of this section and related sections may result in suspension of work.

B. The contractor shall ensure that personal protective equipment meets the requirements of NIOSH and OSHA where applicable, as well as ANSI. Additionally, the contractor will:

1. Require all those working on or visiting the site to wear hard hats and other necessary personal protective equipment at all times.

2. Inspect personal protective equipment daily and maintain in a serviceable condition. Clean, sanitize and repair, as appropriate, personal items before issuing them to another individual.

3. Inspect and maintain other protective equipment and devices before use and on a periodic basis to ensure safe operation.

C. All tree removal for special attention tree operations shall be conducted in accordance with ANSI Z133.1-2000 Safety Requirements for Pruning, Trimming, Repairing, Maintaining and Removing Trees and Cutting Brush and all federal OSHA, state and local safety requirements.

All tree removal and tree felling work shall be conducted under the direction and supervision of a professional logger who possesses verifiable and technical competence in tree felling, lopping, skidding and processing, and tree removal safety practices in accordance with best management practices and industry standards.

D. Employees shall wear reflective, bright orange vests while conducting operations in or adjacent to roadways.

E. No one except the operator shall be within 6 feet of a power saw.

F. All gasoline and diesel powered equipment, including chain saws, shall be equipped with spark arrestors when and where there is a potential wildfire hazard as determined by the COR.

G. The contractor shall train and instruct each employee exposed to hazardous material in safe and approved methods of handling and storage. Hazardous materials are defines as explosive, flammable, poisonous, corrosive, oxidizing, irritating or otherwise harmful substances that could cause death of injury

H. The contractor will provide adequate first aid facilities for the number of employees and the type of efforts being performed at the site and Provide adequate training to ensure prompt and efficient first aid.

I. The contractor will be required to provide portable sanitary facilities at all locations.

2.03.2 Accident Prevention

A. Before on-site work begins, the contractor shall submit for approval an accident prevention program. The COR will review the proposed program for compliance with OSHA and project requirements. If the program requires any revisions or corrections, the Contractor shall resubmit the program within 10 days. No progress payments will be processed until the program is approved. The program shall include:

1. Name of responsible supervisor to carry out the program.

2. Weekly and monthly safety meetings.

3. First aid procedures.

4. Outline of each phase of the work, the hazards associated with each major phase, and the methods proposed to ensure property protection and safety of the public, National Park Service personnel, and Contractor's employees. Identify the work included under each phase by reference to specification section or division numbers.

5. Training, both initial and continuing.

6. Planning for possible emergency situations, such as floods, fire, cave-ins, slides, explosions, power outages, and wind storms. Such planning shall take into consideration the nature of construction, site conditions, and degree of exposure of persons and property.

B. Certificates: Provide certificates from a mechanic that all mechanical equipment has been inspected and meets OSHA requirements.

C. Submit a copy of test reports, as required by OSHA, for personnel working with hazardous materials.

D. Submits a report of safety meetings and of inspections

E. Upon request, submit proof of employee qualifications to perform assigned duties in a safe manner.

2.03.3 Safety Meetings

A. As a minimum, the contractor will conduct weekly 15-minute "tool box" safety meetings. These meetings shall be conducted by a foreman and attended by all construction personnel at the work site.

B. The contractor will conduct monthly safety meetings for all levels of supervision, notifying the COR so that he/she may attend. These meetings shall be used to review the effectiveness of the Contractor's safety effort, to resolve current health and safety problems, to provide a forum for planning safe construction activities, and for updating the accident prevention program. The COR will enter the results of the meetings into his log.

2.03.4 Accident Reporting

A. Reportable Accidents: A reportable accident is defined as death, occupations disease, traumatic injury to employees or the public, property damage by accident in excess of $100, and fires. Within seven (7) days of a reportable accident, fill out and forward to the CO the appropriate form(s), which may be obtained from the CO or COR.

B. All Other Accidents: The Contractor shall report all other accidents to the COR as soon as possible and assist the COR and other officials as required in the investigation of the accident.

2.04 WARNING SIGNS AND BARRICADES

A. The immediate work area will be closed to the public during the effort. Where appropriate and designated by the COR, the contractor will be responsible for erecting signs and/or barricades to keep the public from accidentally entering the area.

B. All roadways and trails shall remain open to the public unless approved by the by the COR. The public ways shall not be encumbered or any unusual traffic situations created by reason of operations under this contract without approval of the COR.

C. The contractor shall provide, erect and maintain all necessary signs, barricades, traffic cones, warning and danger signals and signs, or flagmen to insure the safe flow of traffic, protection of the work area and the safety of the public.

2.05 WORK AREA:

Contractor shall confine his work, the storage of materials and equipment, the parking of

vehicles, and all other operations in connection with this contract to the specified hours and work areas approved by the COR. The Contractor shall not permit heavy equipment or vehicles or the stock piling of heavy materials off hard surface roads without the expressed permission of the COR. Limited activity may take place within the root protection area with the expressed permission of the COR in areas determined to be safe from excessive damage. The root protection area is defined as an area equal to a radius of 1.5 feet for each inch of diameter at breast height (dbh) (ie: a 10 inch dbh tree will have a root protection area equal to 15 feet from the main trunk in all directions). All damage resulting from such operations shall be repaired to its original condition or to the satisfaction of the COR at no additional cost to the Government.

2.06 RESPONSIBILITY REGARDING EXISTING STRUCTURES, UTILITIES, EXISTING PLANT MATERIAL AND OTHER LANDSCAPE FEATURES:

A. The contractor will be held responsible for any damages to, and for maintenance and protection of existing structures. Contractor should be especially cognizant of the monuments, fences and structures located at Gettysburg National Military Park and that they are responsible for assuring that these structures are to be protected at all times. If the pre-established conditions for their safekeeping cannot be met, the contractor should notify the COR immediately. Boulders and rock outcrops must be protected and maintained. Felled trees on boulders and rock outcropping must be removed so the tree lays flat on the ground. All fences must be protected, if they are removed or breached must be replaced in kind. COR must be notified before fences are removed or breached. All fences removed or breached must be replaced in kind.

B. The operator can refuse to cut any marked tree that he considers to be unsafe to cut or that would cause damage to historic fences, monuments, rock walls, roads or trails. However, the operator must inform the Park of the location of the tree and reason for not cutting the tree. Cost to repair damage to historic fences, rock walls, or monuments will be at the contractor's expense under Gettysburg National Military Park supervision to original condition without any cost to the Government and to the satisfaction of the COR. Materials and methods shall conform to the current standards for the area damaged, match existing on-site materials, shall meet the approval of all cognizant officials and the COR. All damaged areas shall make smooth, satisfactory, and imperceptible transitions to existing adjacent work, and shall be performed without additional expense to the NPS.

C. The contractor will be held responsible for any damages to, and for maintenance and protection of existing utilities. Should any existing utility line, despite protective efforts by the contractor, be damaged, contractor will repair same under Gettysburg National Military Park supervision to original condition without any cost to the Government and to the satisfaction of the COR. The existence and location of underground utilities shall be investigated and verified in the field by the contractor before starting work. To locate utilities in the field, Contact PA One-call in advance of commencement of the work.

D. The contractor shall preserve and protect all existing vegetation such as trees, shrubs, and grass areas on or adjacent to trees being pruned or removed which do not reasonably interfere with work. When first examining the work area, the contractor will focus his/her attention on the protection of trees in the designated area that are not to be removed. After clearly identifying the trees to be retained, then the contractor will concentrate on identification of the trees to be removed. The contractor shall be responsible for all unauthorized cutting or damage to trees and shrubs, including damage due to careless operation of equipment, stockpiling of materials or tracking of grass and other surfaced areas by equipment. Such damaged areas or materials shall be restored, repaired or replaced by the contractor, as directed by the COR, at no additional cost to the Government. Unauthorized cutting or damage to trees will be subject to liquidated damages in accordance with the *Guide for Plant Appraisal* (9th edition, 2000) authored by the Council of Tree and Landscape Appraisers and the Mid-Atlantic Tree Species Rating Guide developed by the Mid-Atlantic Chapter of International Society of Arboriculture.

E. Metal fence may be attached to or imbedded in the trees. The operator should be alert for the possibility of metal fence material in trees designated to be cut or on the ground. The operator can refuse to cut any marked tree that he considers to contain metal. However, the operator must inform the Park of the location of the tree.

2.07 CLEANUP AND RESTORATION:

The contractor will be required to furnish all labor, materials, and equipment for daily cleanup and restoration of all disturbed areas or features, which have been damaged during the course of this contract. If so directed by the COR, the contractor shall be prepared to sweep and wash paved surfaces daily or as needed. Upon completion of the contract work, the contractor shall clean the site(s) of all equipment, material, and debris to the satisfaction of the COR.

2.08 AIR AND WATER POLLUTION CONTROL:

A. The Contractor shall take all necessary and reasonable measures to prevent air and water pollution by any material and/or equipment used during the application. The Contractor shall keep the site clean and free of trash and debris including, but not limited to, plastic labels, bags, etc. Trash may be placed in approved containers. All debris shall be disposed of, outside of park boundaries, at the end of each day unless otherwise directed by the COR.

B. Special care should be given so as to not disturb the various streams (intermittent and permanent) across the Park landscape. Accordingly the following conditions should be considered:

1. If forest operations necessitate taking equipment into wetlands conduct those operations, whenever possible, during the driest periods or when the area is solidly frozen.

2. Bridges and culverts or steel plates are the preferred methods of crossing intermittent and perennial streams. Running of equipment through streams or stream beds is prohibited.

3. The contractor will not contaminate water bodies and soil with forest management chemicals and petroleum products.

4. Remove daily, any trees or debris that falls across or in a stream channel.

5. Keep mud off public roads and out of streams.

2.09 APPROVALS: All approvals shall be in writing

2.10 DEFINITIONS:

A. Shall - As used in these specifications denotes a mandatory requirement

B. Should - As used in these specifications denotes an advisory recommendation.

C. Diameter at Breast Height (DBH) - The DBH shall be the trunk diameter measured at a point 4.5 feet above the average ground level. Where the trunk divides into several smaller trunks at a point lower than 4.5 feet from the ground, the tree size shall be the diameter measured at the highest point on the single trunk. If a tree falls between sizes as listed in the bid schedule the tree shall be placed in the next larger size (ie: a 17 1/2 inch diameter tree shall be placed in the 18-23 inch size).

C. Diameter of Crown - The diameter of the crown shall be determined by taking the average of two diameter measurements of the drip line at right angles.

D. Diameter of Cut Stump - The stump size shall be the diameter of the cut wood surface as measured across the narrowest portion. Stumps shall include all visible surface roots attached to the stump measured from the average ground level.

E. Tracing - Shaping a wound by removing loose bark from in and around a wound.

F. Girdling Roots - Roots located above or below ground whose circular growth around the base of a tree trunk or over individual roots applies pressure to the bark area, ultimately restricting the sap flow and trunk/root growth, frequently resulting in reduced vitality or stability of the tree.

G. Branch - A secondary shoot or stem arising from one of the main axes (ie:trunk or leader) of a tree.

H. Crotch - The angle formed at the attachment between a branch and another branch, leader, or trunk of a tree.

I. Crown - The upper portion of a tree from the lowest branch on the trunk to the top.

J. Lateral - A branch or twig growing from a parent branch or stem.

K. Leader - A dominant upright stem, usually the main trunk.

L. Parent Branch or Stem - The tree trunk; or a large limb from which lateral branches grow.

M. Scaffold - A limb that is or will be part of the permanent branch structure.

N. Tree Caliper Measurement: The caliper measurement will be determined by taking the average of two trunk caliper measurements at right angles 6 inches above the ground up to and including 4-inch caliper size, and 12 inches above the ground for larger sizes.

O. Tree Height Measurement: The tree height shall be measured from the ground line to where the main part of the plant ends, not to the tip of a thin shoot.

P. Shrub Height measurement: The height of each shrub shall be determined by taking the height above the "root crown" to the average growth on the main part of the plant top.

Q. Shrub Width Measurement: The spread of each shrub shall be determined by taking the average of two diameter measurements of the drip line at right angles.

R. Total Tree Removal - The felling of the tree plus the removal of all stems and associated limbs. Chipping of limbs may be appropriate depending upon size.

S. Health Cuts - The action of cutting trees within a given area to remove diseased or damaged trees, removal of invasive species not present at time of the battle or act of removing trees to open-up the forest canopy to spur development of other plant species.

T. Special attention Removal – The removal of trees which over time have encroached upon historic structures, such as monuments and which if left could potentially damage the structure in the future.

PART 3: EXECUTION

3.01 TREE REMOVALS – Total

3.01.1 Scope

All tree removal and tree felling work shall be conducted under the direction and supervision of a professional logger who prosses verifiable and technical competence in tree felling, lopping, skidding and processing, and tree removal safety practices in accordance with best management practices and industry standards. The logger shall be the primary contact with the Government's technical representative and shall be responsible for controlling the quality of work and inspecting all completed work to ensure that contract

performance requirements are met.

3.01.2 General Requirements

A. In these areas designated on the provided maps and except for "Do Not Cut" trees, all live and dead trees, including limbs and branches, brush, and vegetation are to be cleared and removed from the park.

B Any "Special Attention" trees in this area will be marked with yellow paint. All wood, chips and debris to be shall removed by the contractor, on the same day the tree is removed. Chip all material less than 6 inches in diameter and remove all remaining wood and debris from the park and dispose of legally off site, unless approved otherwise by the COR. Removal from the park and disposal is the responsibility of the contractor. There shall be no sale of wood on government property. If so directed by the COR, chips shall be delivered and unloaded to a specified location in the park and/or blown into adjacent natural areas.

C. For groups of trees marked for removal with all wood, chips and debris to be removed, the contractor shall, in accordance with the agreed upon work plan: chip all material less than 6 inches in diameter and remove all remaining wood and debris from the park and dispose of legally off site, unless approved otherwise by the COR. Removal from the park and disposal is the responsibility of the contractor. There shall be no sale of wood on government property. If so directed by the COR, chips shall be delivered and unloaded to a specified location in the park and/or blown into adjacent natural areas.

E. Climbing hooks shall only be worn for tree removals.

F. The Contractor shall take all reasonable precautions to avoid damaging surrounding vegetation or lawn areas and prevent gouging and erosion of soils as a result of tree removal operations (ie: removal of stubs that might dig in and blanketing the area with brush and/or logs to cushion the fall).

3.01.3 Execution

A. Trees to be removed will be felled either mechanically (feller buncher, feller forwarder or processor/harvester) or manually (chainsaw or other manual methods) and skidded to a landing with a cable or grappler skidder. Trees shall be felled only when there is an adequate felling area at least equal in radius to the height of the tree. Whenever possible trees should be felled on as level ground as possible avoiding stumps, rocks etc. which may cause the tree to roll when it falls.

B. All designated trees must be cut under the control of a mechanized feller by directional cutting techniques so as to minimize damage to historic fences, lanes, monuments, roads, rock walls, trails and trees to remain within and outside the specific cutting area. All trees must be directionally felled away from or parallel to historic fences, roads/lanes, or monuments. Trees that can not be felled due to proximity of the roadways, buildings, structures, utilities, monuments and/or lack of an adequate felling area shall be topped and/or sectioned.

C. When topping and/or sectioning is required, the lower limbs shall be removed first working toward the top until the tree is stripped and sections shall be small enough to be safely handled by the worker on a rope. Sectioning shall continue until the tree is low enough for felling.

D. Pull ropes shall be used on all trees that have potential for damage to property or existing vegetation should they fall in any direction other than that intended. Pull ropes shall be installed before any cutting is done at the base.

E. Stake holdfasts and men pulling the rope shall be outside the striking distance of the tree. If conditions make this impossible, the tree shall be topped and/or sectioned.

F. Felling Leaning, Split, Twin, or Hollow Trees: The Contractor is responsible for taking all precautions including, but not limited to, chaining, roping, corner cutting and the use of felling wedges and securely anchored tackle blocks to ensure that the tree will fall where desired and prevent twisting and/or premature splitting or separation of the trunk. If a tree can not be felled safely in one piece, the tree shall be topped and/or sectioned.

G. Felling Lodged Trees: Under no circumstances shall an attempt be made to manually fell the tree supporting the lodged tree or climbing up the inclined trunk of the lodged tree to shake it loose. If the butt of the tree is free of stump, a 1" rope or winch cable long enough to place all men and equipment outside of the falling or kickback radius should be fastened to the tree butt. The rope or cable should be pulled as nearly directly back from the direction of fall as possible. If the tree is too firmly lodged to be pulled out the adjacent tree may be climbed and limbs from the lodged tree carefully removed. The pulling operation should then be resumed. Cutting off sections of the butt of the lodged tree should be avoided.

H. All hung trees must be placed on the ground. The operator agrees to remove created hazards such as broken or badly scarred trees, broken limbs, broken tops, bent-over trees, leaners and root-sprung trees at the request of the park.

I. Notch: A Standard Notch should be used in the majority of cases. The notch shall be at right angles to the direction of pull. Make two cuts, one parallel or horizontal to the ground, the other at an angle of 45 degrees. The depth should be from 1/4 to 1/3 the diameter of the tree.

J. Backcut: The backcut should be horizontal and about two inches above the horizontal cut of the notch. Bring the backcut in evenly until there is approximately two inches of holding wood left.

K. Felling: Before sawing into the two inches of holding wood the power saw operator shall have an adequate and clear escape route to one side of, and away from, the direction of the fall and ensure that all is in readiness for the tree to fall safely. Once this is done the tree can be felled.

L. All stumps shall be cut to grade unless directed otherwise by the COR. Do not leave sharp points on stumps and stems. All cuts will be flat and parallel with surface.

M. All lanes, roads, streams and trails must be left clear of cut stems and branches. If landings are used, all accumulated debris must be scattered into the contract woodlot. Dead trees can be felled if they represent a hazard.

N. Seeding: All disturbed areas shall be seeded with an approved conservation seed mix of either native warm-season or native cool-season grasses as approved by appropriate park personnel. Contractor will be required to scarify all disturbed areas prior to seeding.

O. With the exception of stump removal, all specified removals at any one location shall be completed, including removal of logs and debris, before initiating work in another location unless approved otherwise by the COR.

3.02 TREE FELLING – Health Cut Areas (Lop & Chip)

3.02.1 Scope

All tree removal and tree felling work shall be conducted under the direction and supervision of a professional logger who possesses verifiable and technical competence in tree felling, lopping, skidding and processing, and tree removal safety practices in accordance with best management practices and industry standards. The logger shall be the primary contact with the Government's technical representative and shall be responsible for controlling the quality of work and inspecting all completed work to ensure that contract performance requirements are met.

3.02.2 General Requirements

A. All trees shall be flattened to the ground on the same day the tree is cut. Cut all trees with a stump diameter of 5 inches or less, chip and blow chips over the area. All trees that are greater than five (5) inches in stump diameter shall be cut, limbed and trunks will remain where felled. All limbs will be chipped. No piles of chips greater than 6 inches high will be allowed. Flatten all wood to the ground. Disperse all trunks and limbs so as not to create stacked piles that could create potential fire hazards in the future. If so directed by the COR, chips shall be blown into adjacent natural areas.

B. Climbing hooks shall only be worn on trees that will be removed.

C. The Contractor shall take all reasonable precautions to avoid damaging surrounding vegetation or lawn areas and prevent gouging and erosion of soils as a result of tree removal operations (ie: removal of stubs that might dig in and blanketing the area with brush and/or logs to cushion the fall).

3.02.3 Execution

A. All trees must be felled manually. Trees shall be felled only when there is an adequate felling area at least equal in radius to the height of the tree. Whenever possible trees should be felled on as level ground as possible avoiding stumps, rocks etc. which may cause the tree to roll when it falls.

B. Trees to be cut will be felled in such a way as necessary to protect trees and underbrush that are to remain. All designated trees must be cut by directional cutting techniques so as to minimize damage to historic fences, lanes, monuments, roads, rock walls, trails and trees to remain within and outside the specific cutting area. All trees must be directionally felled away from or parallel to historic fences, roads/lanes, or monuments. Trees that cannot be felled due to proximity of the features listed above shall be topped and/or sectioned.

C. When topping and/or sectioning is required, the lower limbs shall be removed first working toward the top until the tree is stripped and sections shall be small enough to be safely handled by the worker on a rope. Sectioning shall continue until the tree is low enough for felling.

D. Pull ropes shall be used on all trees that have potential for damage to property or existing vegetation should they fall in any direction other than that intended. Pull ropes shall be installed before any cutting is done at the base.

E. Stake holdfasts and men pulling the rope shall be outside the striking distance of the tree. If conditions make this impossible, the tree shall be topped and/or sectioned.

F. All trees shall be flattened to the ground on the same day the tree is cut. Cut all trees with a stump diameter of 5 inches or less, chip and blow chips over the area. All trees that are greater than five (5) inches in stump diameter shall be cut, limbed and trunks will remain where felled. All limbs will be chipped. No piles of chips greater than 6 inches high will be allowed. Flatten all wood to the ground. Disperse all trunks and limbs so as not to create stacked piles that could create potential fire hazards in the future. If so directed by the COR, chips shall be blown into adjacent natural areas.

G. Felling Leaning, Split, Twin, or Hollow Trees: The Contractor is responsible for taking all precautions including, but not limited to, chaining, roping, corner cutting and the use of felling wedges and securely anchored tackle blocks to ensure that the tree will fall where desired and prevent twisting and/or premature splitting or separation of the trunk. If a tree can not be felled safely in one piece, the tree shall be topped and/or sectioned.

H. Felling Lodged Trees: Under no circumstances shall an attempt be made to fell the tree supporting the lodged tree or climbing up the inclined trunk of the lodged tree to shake it loose. If the butt of the tree is free of stump, a 1" rope or winch cable long enough to place all men and equipment outside of the falling or kickback radius should be fastened to the tree butt. The rope or cable should be pulled as nearly directly back from the direction of fall as possible. If the tree is too firmly lodged to be pulled out the adjacent tree may be climbed and limbs from the lodged

tree carefully removed. The pulling operation should then be resumed. Cutting off sections of the butt of the lodged tree should be avoided.

H. Notch: A Standard Notch should be used in the majority of cases. The notch shall be at right angles to the direction of pull. Make two cuts, one parallel or horizontal to the ground, the other at an angle of 45 degrees. The depth should be from 1/4 to 1/3 the diameter of the tree.

I. Backcut: The backcut should be horizontal and about two inches above the horizontal cut of the notch. Bring the backcut in evenly until there is approximately two inches of holding wood left.

J. Felling: Before sawing into the two inches of holding wood the power saw operator shall have an adequate and clear escape route to one side of, and away from, the direction of the fall and ensure that all is in readiness for the tree to fall safely. Once this is done the tree can be felled.

K. All stumps shall be cut to a height not to exceed 2" from grade unless directed otherwise by the COR.

L. With the exception of stump removal, all specified removals at any one location shall be completed, including removal of logs and debris, before initiating work in another location unless approved otherwise by the COR.

3.03 TREE FELLING – Health Cut Areas (Lop & Limb)

3.03.1 Scope

All tree removal and tree felling work shall be conducted under the direction and supervision of a professional logger who possesses verifiable and technical competence in tree felling, lopping, skidding and processing, and tree removal safety practices in accordance with best management practices and industry standards. The logger shall be the primary contact with the Government's technical representative and shall be responsible for controlling the quality of work and inspecting all completed work to ensure that contract performance requirements are met.

3.03.2 General Requirements

A. For individual trees marked for cutting all trees are to be cut and lopped and let lie by either chainsaw or other manual methods and remain where felled. Stems and branches shall be lopped to be within two feet of the ground and stems shall be flattened to the ground. Disperse all trunks and limbs so as not to create stacked piles that could create potential fire hazards in the future.

B. For groups of trees marked for cutting all trees are to be cut and lopped and let lie by either chainsaw or other manual methods and remain where felled. Stems and branches shall be lopped to be within two feet of the ground and stems shall be flattened to the ground. Disperse all trunks and limbs so as not to create stacked piles that could create potential fire hazards in the future.

C. For trees specified to be flattened to the ground, the contractor shall in accordance with the agreed upon work plan, lop all limbs and ensure that they are less than 24 inches from the ground.

D. Climbing hooks shall only be worn on trees that will be removed.

E. The Contractor shall take all reasonable precautions to avoid damaging surrounding vegetation or lawn areas and prevent gouging and erosion of soils as a result of tree removal operations (ie: removal of stubs that might dig in and blanketing the area with brush and/or logs to cushion the fall).

3.03.3 Execution

A. All trees are to felled manually. Trees shall be felled only when there is an adequate felling area at least equal in radius to the height of the tree. Whenever possible trees should be felled on as level ground as possible avoiding stumps, rocks etc. which may cause the tree to roll when it falls.

B. Trees to be removed will be felled in such a way as necessary to protect trees and underbrush that are to remain. All designated trees must be cut by directional cutting techniques so as to minimize damage to historic fences, lanes, monuments, roads, rock walls, trails and trees to remain within and outside the specific cutting area. All trees must be directionally felled away from or parallel to historic fences, roads/lanes, or monuments. Trees that cannot be felled due to proximity of the features listed above shall be topped and/or sectioned.

C. When topping and/or sectioning is required, the lower limbs shall be removed first working toward the top until the tree is stripped and sections shall be small enough to be safely handled by the worker on a rope. Sectioning shall continue until the tree is low enough for felling.

D. Pull ropes shall be used on all trees that have potential for damage to property or existing vegetation should they fall in any direction other than that intended. Pull ropes shall be installed before any cutting is done at the base.

E. Stake holdfasts and men pulling the rope shall be outside the striking distance of the tree. If conditions make this impossible, the tree shall be topped and/or sectioned.

F. Trunks shall be cut and lopped and let lie by either chainsaw or other manual methods and remain where felled. Limbs should be left on the ground and reduced so that no limb exceeds two (2) feet in height. Disperse all trunks and limbs so as not to create stacked piles that could create potential fire hazards in the future.

G. Felling Leaning, Split, Twin, or Hollow Trees: The Contractor is responsible for taking all precautions including, but not limited to, chaining, roping, corner cutting and the use of felling wedges and securely anchored tackle blocks to ensure that the tree will fall where desired and prevent twisting and/or premature splitting or

separation of the trunk. If a tree can not be felled safely in one piece, the tree shall be topped and/or sectioned.

G. Felling Lodged Trees: Under no circumstances shall an attempt be made to fell the tree supporting the lodged tree or climbing up the inclined trunk of the lodged tree to shake it loose. If the butt of the tree is free of stump, a 1" rope or winch cable long enough to place all men and equipment outside of the falling or kickback radius should be fastened to the tree butt. The rope or cable should be pulled as nearly directly back from the direction of fall as possible. If the tree is too firmly lodged to be pulled out the adjacent tree may be climbed and limbs from the lodged tree carefully removed. The pulling operation should then be resumed. Cutting off sections of the butt of the lodged tree should be avoided.

H. Notch: A Standard Notch should be used in the majority of cases. The notch shall be at right angles to the direction of pull. Make two cuts, one parallel or horizontal to the ground, the other at an angle of 45 degrees. The depth should be from 1/4 to 1/3 the diameter of the tree.

I. Backcut: The backcut should be horizontal and about two inches above the horizontal cut of the notch. Bring the backcut in evenly until there is approximately two inches of holding wood left.

J. Felling: Before sawing into the two inches of holding wood the power saw operator shall have an adequate and clear escape route to one side of, and away from, the direction of the fall and ensure that all is in readiness for the tree to fall safely. Once this is done the tree can be felled.

K. All stumps shall be cut to a height not to exceed 2" from grade unless directed otherwise by the COR.

L. With the exception of stump removal, all specified removals at any one location shall be completed, including removal of logs and debris, before initiating work in another location unless approved otherwise by the COR.

3.04 TREE Removal – Special Attention

3.04.1 Scope

The work to be performed under this section shall include removing trees in accordance with the American National Standard for Arboricultural Operations - Pruning, Repairing, Maintaining and Removing Trees and Cutting Brush - Safety Requirements - ANSI Z133.1-2000. A certified Arborist will and plan supervise the removal of any special attention trees. Any trees to be removed will be marked with yellow paint and indicated on specific sites and/or areas maps provided at the issuance of each delivery order ar to be considered "Special Attention" trees. Individual trees or groups of trees to be removed within these areas will be identified according to the parameters described in Section 2.02B. The trees to be removed will be in close proximity historic fences, lanes, monuments, roads, rock walls, trails and other features of cultural or natural significance.

3.04.2 General Requirements

A. For groups of trees marked for removal with all wood, chips and debris to be removed, the contractor shall, in accordance with the agreed upon work plan: chip all material less than 6 inches in diameter and remove all remaining wood and debris from the park and dispose of legally off site, unless approved otherwise by the COR. Removal from the park and disposal is the responsibility of the contractor. There shall be no sale of wood on government property. If so directed by the COR, chips shall be delivered and unloaded to a specified location in the park and/or blown into adjacent natural areas.

B. Because these trees are in close proximity to items of cultural of natural significance, all designated trees must be cut by directional cutting techniques so as to minimize damage to historic fences, lanes, monuments, roads, rock walls, trails and trees to remain within and outside the specific cutting area. Whenever possible trees should be felled on as level ground as possible, avoiding stumps, rocks, etc. that may cause the tree to roll when it falls. All trees must be directionally felled away from or parallel to historic fences, roads/lanes, or monuments. Trees that cannot be felled due to proximity of the features listed above shall be topped and/or sectioned.

C. Climbing hooks shall only be worn for tree removals.

D. The Contractor shall take all reasonable precautions to avoid damaging surrounding vegetation or lawn areas and prevent gouging and erosion of soils as a result of tree removal operations (ie: removal of stubs that might dig in and blanketing the area with brush and/or logs to cushion the fall).

3.04.3 Execution

A. Trees shall be felled only when there is an adequate felling area at least equal in radius to the height of the tree. Whenever possible trees should be felled on as level ground as possible avoiding stumps, rocks etc. which may cause the tree to roll when it falls.

B. Trees that can not be felled due to proximity of the roadways, buildings, structures, utilities, and/or lack of an adequate felling area shall be topped and/or sectioned.

C. When topping and/or sectioning is required, the lower limbs shall be removed first working toward the top until the tree is stripped and sections shall be small enough to be safely handled by the worker on a rope. Sectioning shall continue until the tree is low enough for felling.

D. Pull ropes shall be used on all trees that have potential for damage to monuments, buildings, historic fences, other historic features or existing vegetation should they fall in any direction other than that intended. Pull ropes shall be installed before any cutting is done at the base.

E. Stake holdfasts and men pulling the rope shall be outside the striking distance of the

tree. If conditions make this impossible, the tree shall be topped and/or sectioned.

F. Felling Leaning, Split, Twin, or Hollow Trees: The Contractor is responsible for taking all precautions including, but not limited to, chaining, roping, corner cutting and the use of felling wedges and securely anchored tackle blocks to ensure that the tree will fall where desired and prevent twisting and/or premature splitting or separation of the trunk. If a tree can not be felled safely in one piece, the tree shall be topped and/or sectioned.

G. Felling Lodged Trees: Under no circumstances shall an attempt be made to fell the tree supporting the lodged tree or climbing up the inclined trunk of the lodged tree to shake it loose. If the butt of the tree is free of stump, a 1" rope or winch cable long enough to place all men and equipment outside of the falling or kickback radius should be fastened to the tree butt. The rope or cable should be pulled as nearly directly back from the direction of fall as possible. If the tree is too firmly lodged to be pulled out the adjacent tree may be climbed and limbs from the lodged tree carefully removed. The pulling operation should then be resumed. Cutting off sections of the butt of the lodged tree should be avoided.

H. All hung trees must be placed on the ground. The operator agrees to remove created hazards such as broken or badly scarred trees, broken limbs, broken tops, bent-over trees, leaners and root-sprung trees at the request of the park.

I. Notch: A Standard Notch should be used in the majority of cases. The notch shall be at right angles to the direction of pull. Make two cuts, one parallel or horizontal to the ground, the other at an angle of 45 degrees. The depth should be from 1/4 to 1/3 the diameter of the tree.

J. Backcut: The backcut should be horizontal and about two inches above the horizontal cut of the notch. Bring the backcut in evenly until there is approximately two inches of holding wood left.

K. Felling: Before sawing into the two inches of holding wood the power saw operator shall have an adequate and clear escape route to one side of, and away from, the direction of the fall and ensure that all is in readiness for the tree to fall safely. Once this is done the tree can be felled.

L. All lanes, roads, streams and trails must be left clear of cut stems and branches. If landings are used, all accumulated debris must be scattered into the contract woodlot. Dead trees can be felled if they represent a hazard.

M. Seeding: All disturbed areas shall be seeded with an approved conservation seed mix of either native warm-season or native cool-season grasses. Contractor will be required to scarify all disturbed areas prior to seeding.

N. All stumps shall be cut to a height not to grade unless directed otherwise by the COR.

O. With the exception of stump removal, all specified removals at any one location shall be completed, including removal of logs and debris, before initiating work in another location unless approved otherwise by the COR.

3.05 STUMP REMOVAL

A. Unless otherwise directed, stumps of all removed trees in specified areas shall be ground to grade to permit brush hogging the areas in the future years.

B. In areas where it will be permissible, as determined by the COR, to leave stumps, they will be cut not to exceed two (2) inches in height.

PART 4: PAYMENT

4.01 Payment

A. The amount to be paid will be based on the actual bid items completed and accepted. Quantities so measured will be paid for at the specified item bid price.

B. The National Park Service reserves the right to conduct any testing or inspection it may deem advisable prior to payment to assure that all work conforms to the specifications herein.

Tree Removal Addendum

The following information is provided regarding the planned tree removal efforts at Gettysburg NMP:

Historic Sizing Information -

Tree Removal Details:

Based upon past experience at Gettysburg NMP, a 1 Acre area similar to that marked for total trees removed has consisted of approximately 250 trees. The following information described the general composition of trees in these areas:

Type of Trees: (per Acre)

	No.	%
White Oak	7	3
Pin Oak	17	7
Red Oak	7	3
Hickory	19	8
Other	200	80

Size:

D.B.H	No.	%
1 to 4 Inches	123	49
5 to 12 Inches	100	40
13 to 20 Inches	23	9
21 or greater	4	2

Health Cuts Areas:

Based upon past experience at Gettysburg NMP, in a 1 Acre area marked for health cuts there will be approximately 250 trees. During the health cut, 30% or approximately 75 trees will be cut. The following information described the general composition of trees in these areas that will be cut:

Type of Trees: (per Acre)

	No.	%
White Oak	5	6
Pin Oak	1	1
Red Oak	2	3
Hickory	16	21
Other	51	69

Size:

D.B.H	No.	%
1 to 4 Inches	42	56
5 to 12 Inches	28	37
13 to 20 Inches	5	7
21 or greater	0	0

Chipped Areas of Health Cut

In any given area of a health cut, approximately 80% of the trees cut will need to be lopped and chipped. Based upon the standard composition of the area, the breakdown of the trees to be chipped is estimated as:

Type of Trees: (per Acre)

	No.	%
White Oak	4	7
Pin Oak	1	1
Red Oak	2	3
Hickory	13	22
Other	40	67

Size:

D.B.H	No.	%
1 to 4 Inches	34	56
5 to 12 Inches	22	37
13 to 20 Inches	4	7
21 or greater	0	0

Note: In previous Health Cuts, we didn't not remove any trees greater than 21 Inches DBH. For the planned cuts, it is possible that a tree greater than 21 inches may be marked for removal.

Lie Areas of Health Cut

In any given area of a health cut, the remaining approximately 20% of the trees cut will need to be lopped and allowed to lie in the area in accordance with the contract details.

Special Handling Trees

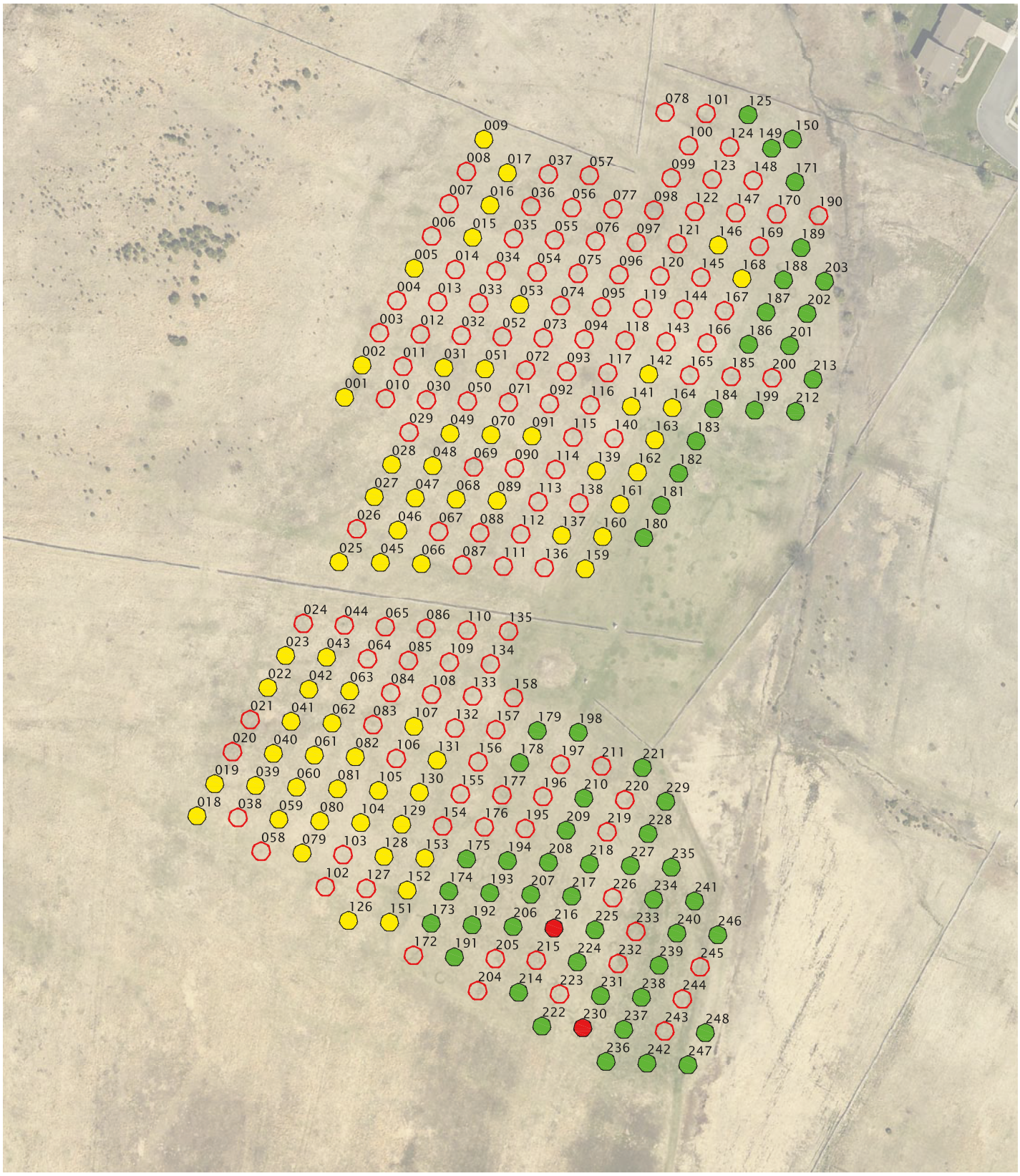
For estimating purposes, based upon approximately 2.5 trees should be estimated for each acre shown in the task orders. This anticipates that 1% of the trees in an average sized acreage (250 trees) will require special handling/removal.

Appendix B: Orchards

As part of the battlefield rehabilitation effort directed by the park's 1999 *General Management Plan*, the park replanted battle-era orchard on the cultural landscape. Between 2005 and 2014, the park planted 3,027 trees in 40 orchard locations. On the 1863 battlefield, almost every farm had an orchard or fruit garden. Fruit harvested from orchards could be eaten fresh at harvest, or dried and canned for use in winter. Much of the apple crop was used to produce cider and other drinks and both apples and peaches were commonly used as livestock feed. Farmers could also sell surplus fruit to generate cash revenue. During the Battle of Gettysburg, orchards provided cover and concealment, impacted observation, and became obstacles to moving troops. Since the reestablishment of orchards throughout the park, visitors are better able to understand how this managed vegetation feature influenced battle action.

In a collaborative effort to provide accurate orchard existing conditions information for the *Record of Treatment* document, Randy Krichten and Charlie Brown, in the park's Resource Management division, conducted a condition assessment of the 40 replanted orchard locations in late autumn 2014. The pair worked with the park's GIS Specialist, Curt Musselman, to incorporate the assessment data into GIS. The Olmsted Center for Landscape Preservation reviewed the assessments and GIS and revised orchard names to match 1863 feature names used in the landscape rehabilitation research and period plan mapping. In the GIS tabular data, each of the 40 orchards is assigned a unique four-letter code, for example, the Rose North Orchard is coded RONO. Each tree within an orchard is assigned a unique three-digit number from 001 to 999. Combining the orchard code and tree number creates a tree identification, for example, RONO-001, that is distinct among all the inventoried trees.

The Olmsted Center created 34 maps on 8.5x11-inch sheets to communicate the 2014 orchard condition assessments. The maps are at a scale of 1 inch equals 50 feet, 1 inch equals 100 feet, or 1 inch equals 150 feet depending on the geographic extent of the orchard and use the park's 2014 ortho imagery as a base. Randy Krichten and Charlie Brown assessed orchard tree conditions as either: Good, Fair, Poor, or Missing. These condition values are symbolized on the maps with a green fill representing good, a yellow fill representing fair, a red fill representing poor, and a red outline representing missing. Based on the late autumn 2014 condition assessment, 61.4 percent of the replanted trees are good, 5.3 percent are fair, 6.5 percent are poor, and 26.8 percent are missing.



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Bliss Orchard
2014 Condition Assessment

0′ 37.5′ 75′ 150′

Drawing 1

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

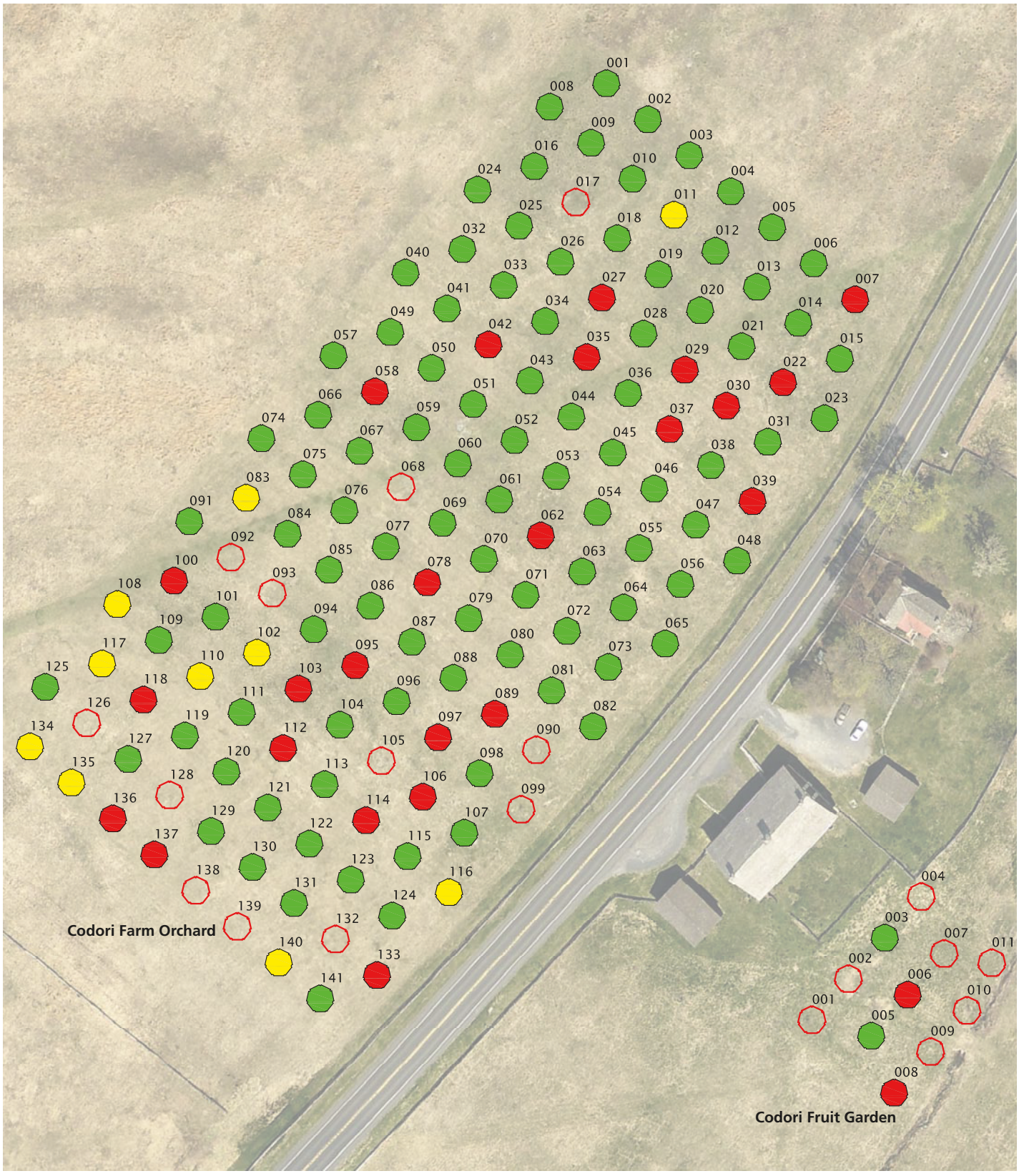
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Bushman Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 2



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Codori Orchards
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 3

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Fisher Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 4

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Forney Orchards
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 5

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

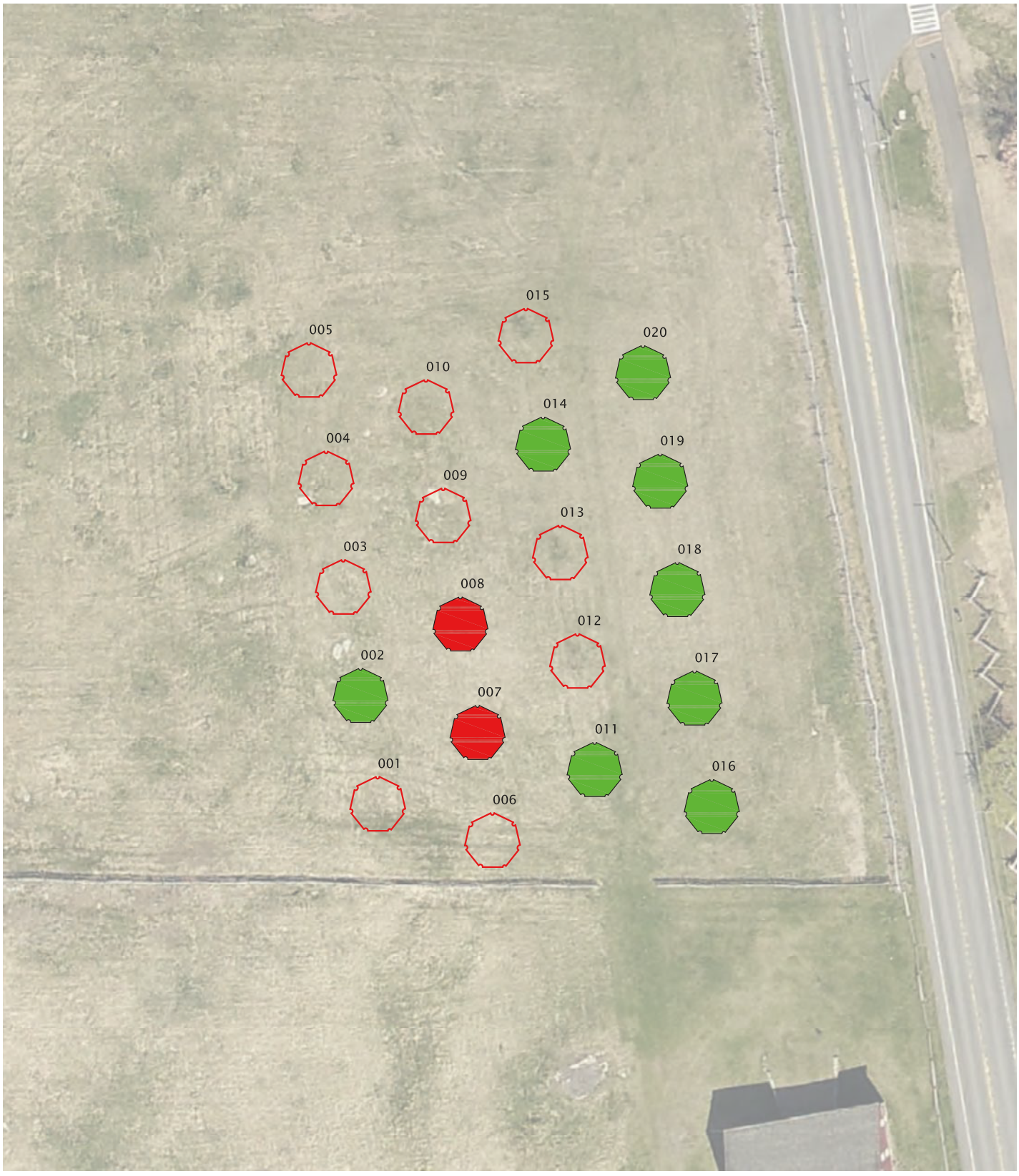
National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

Record of Treatment
Gettysburg National Military Park

Frey North Orchard
2014 Condition Assessment

0' 12.5' 25' 50'

Drawing 6



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Frey South Orchard
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 7

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

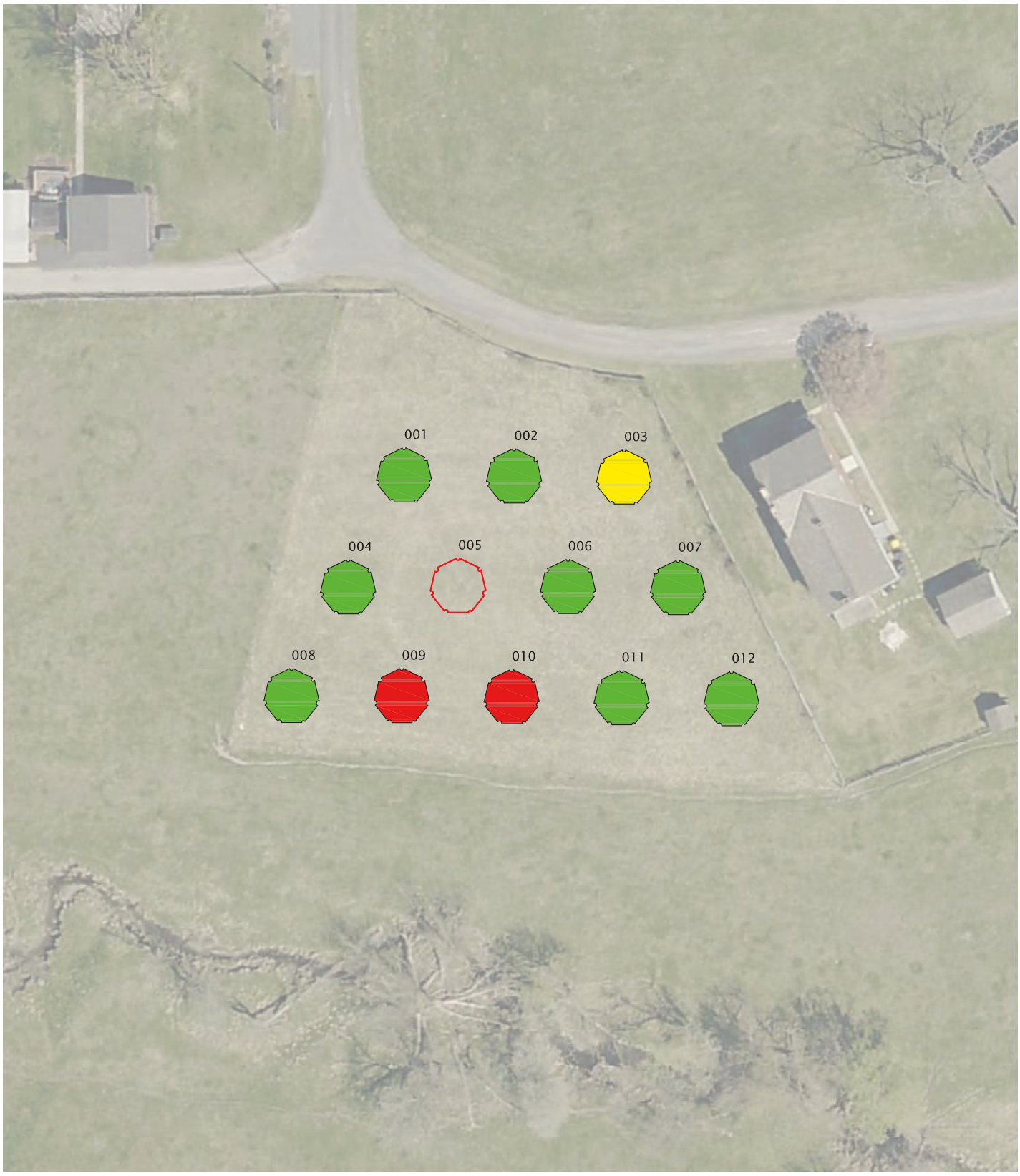
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Gilbert Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 8



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Henry Culp Fruit Garden
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 9

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Herbst Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 10

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Henry Spangler Orchard
2014 Condition Assessment

0′ 37.5′ 75′ 150′

Drawing 11

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Hummelbaugh Orchard
2014 Condition Assessment

0' 12.5' 25' 50'

Drawing 12

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Joseph Spangler Orchards 2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 13

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

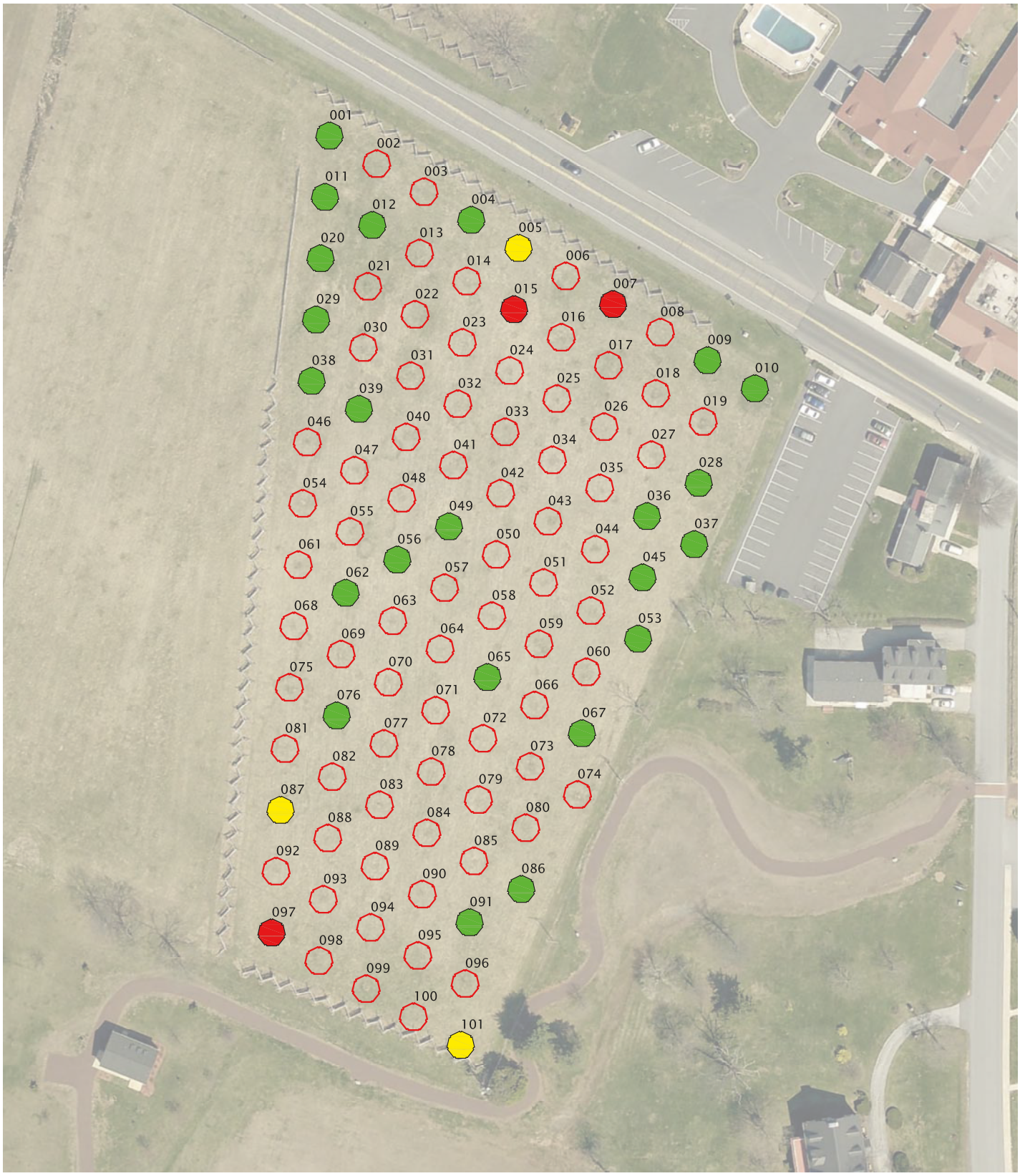
National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

Record of Treatment
Gettysburg National Military Park

Klingel Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 14



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Lee's Headquarters Orchard 2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 15

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Lott Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 16

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

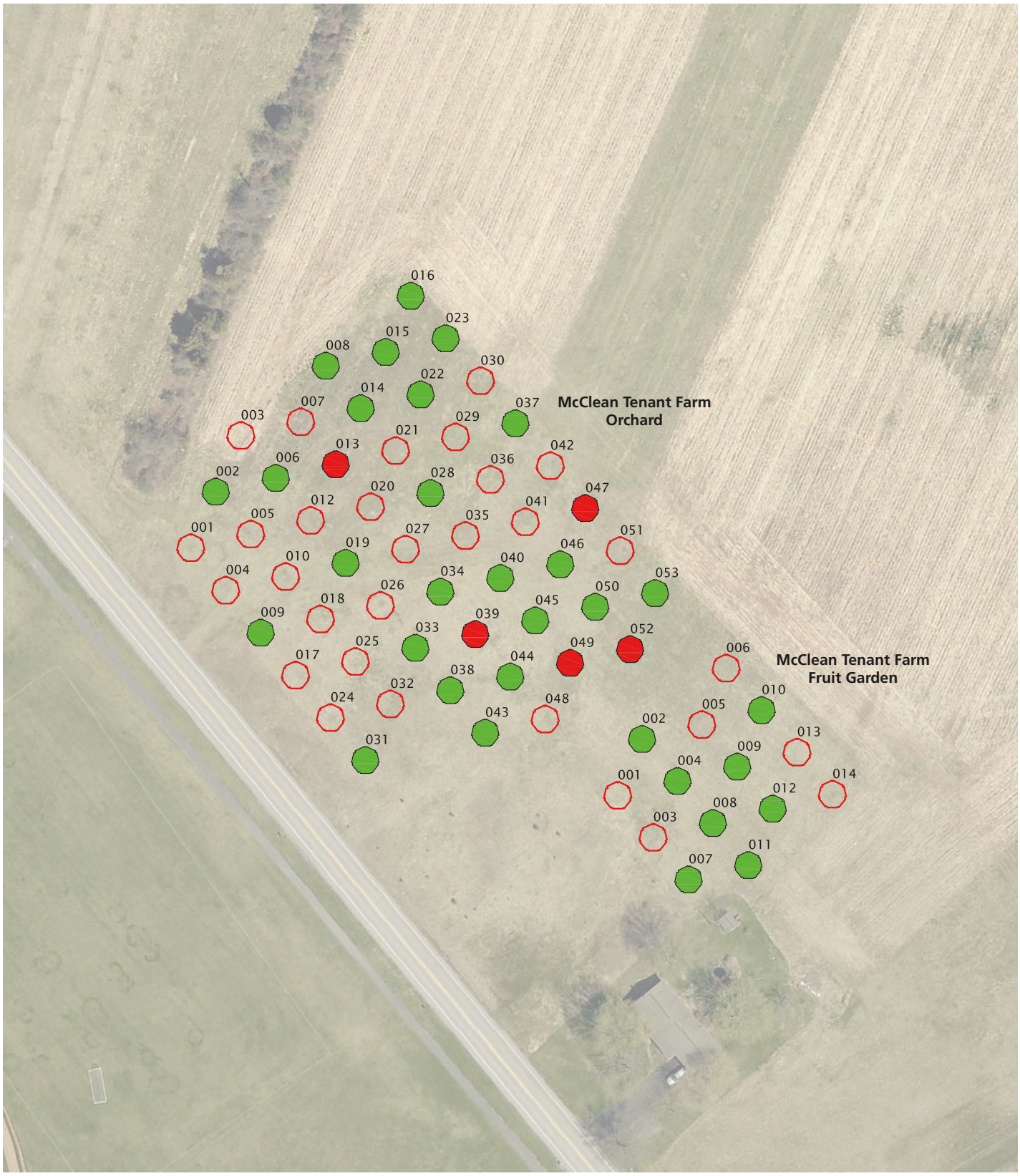
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

McClean Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 17



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

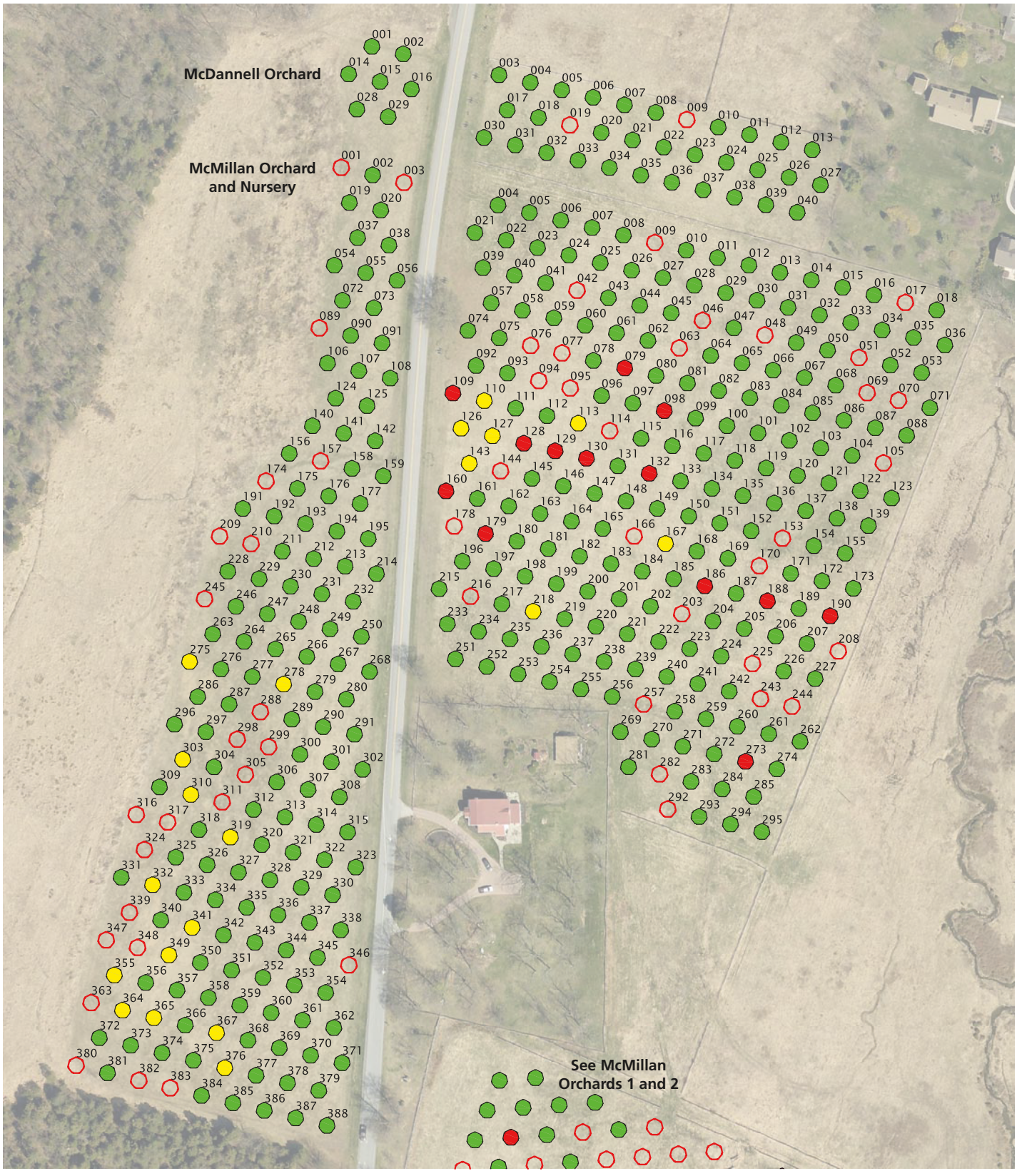
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

McClean Tenant Farm Orchards 2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 18



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

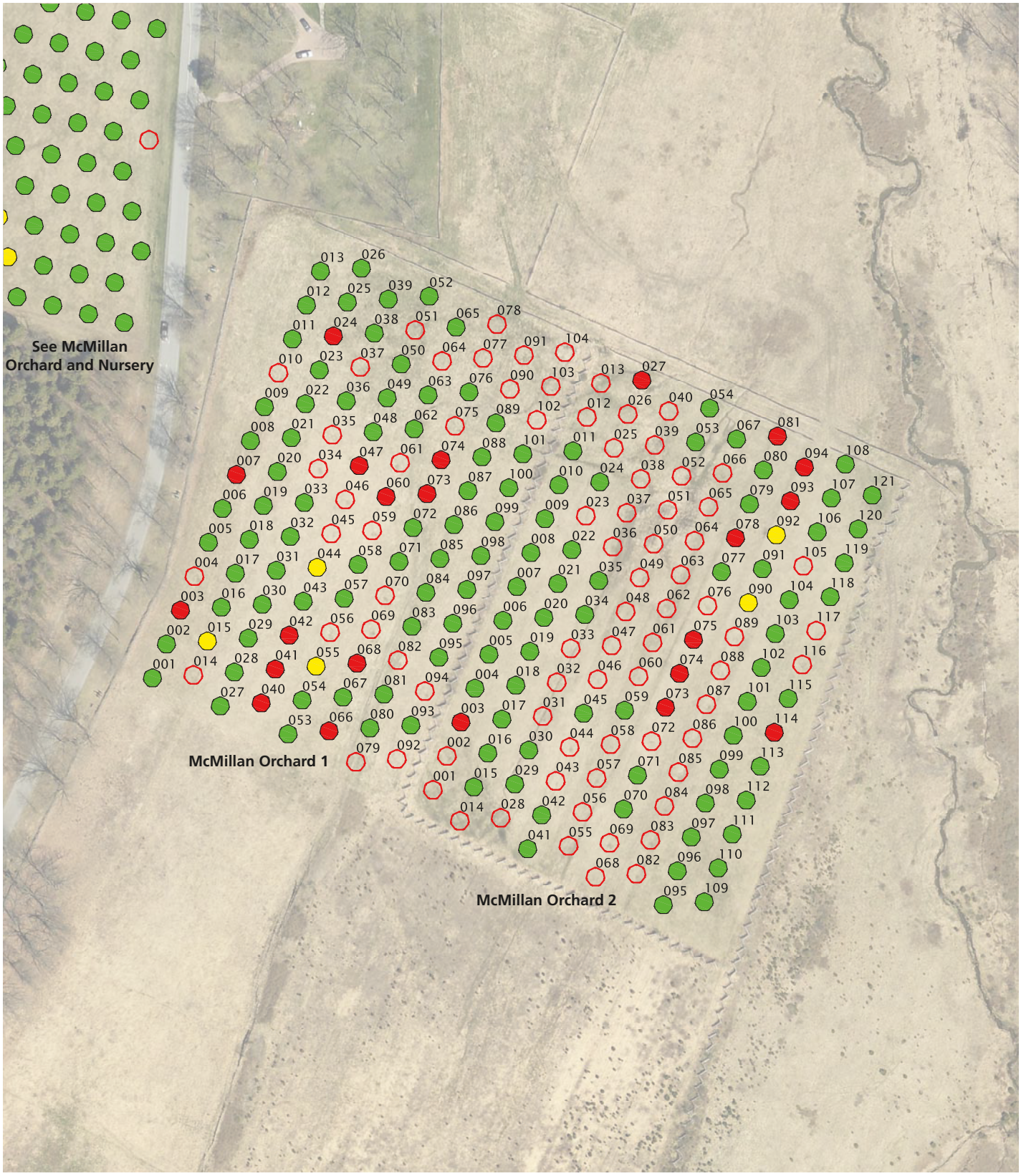
LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

McDannell Orchard and McMillan Orchard & Nursery 2014 Condition Assessment

0′ 42.5′ 85′ 170′

Drawing 19



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

McMillan Orchards 1 and 2
2014 Condition Assessment

0′ 37.5′ 75′ 150′

Drawing 20

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

McPherson Fruit Garden
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 21

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

LEGEND
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

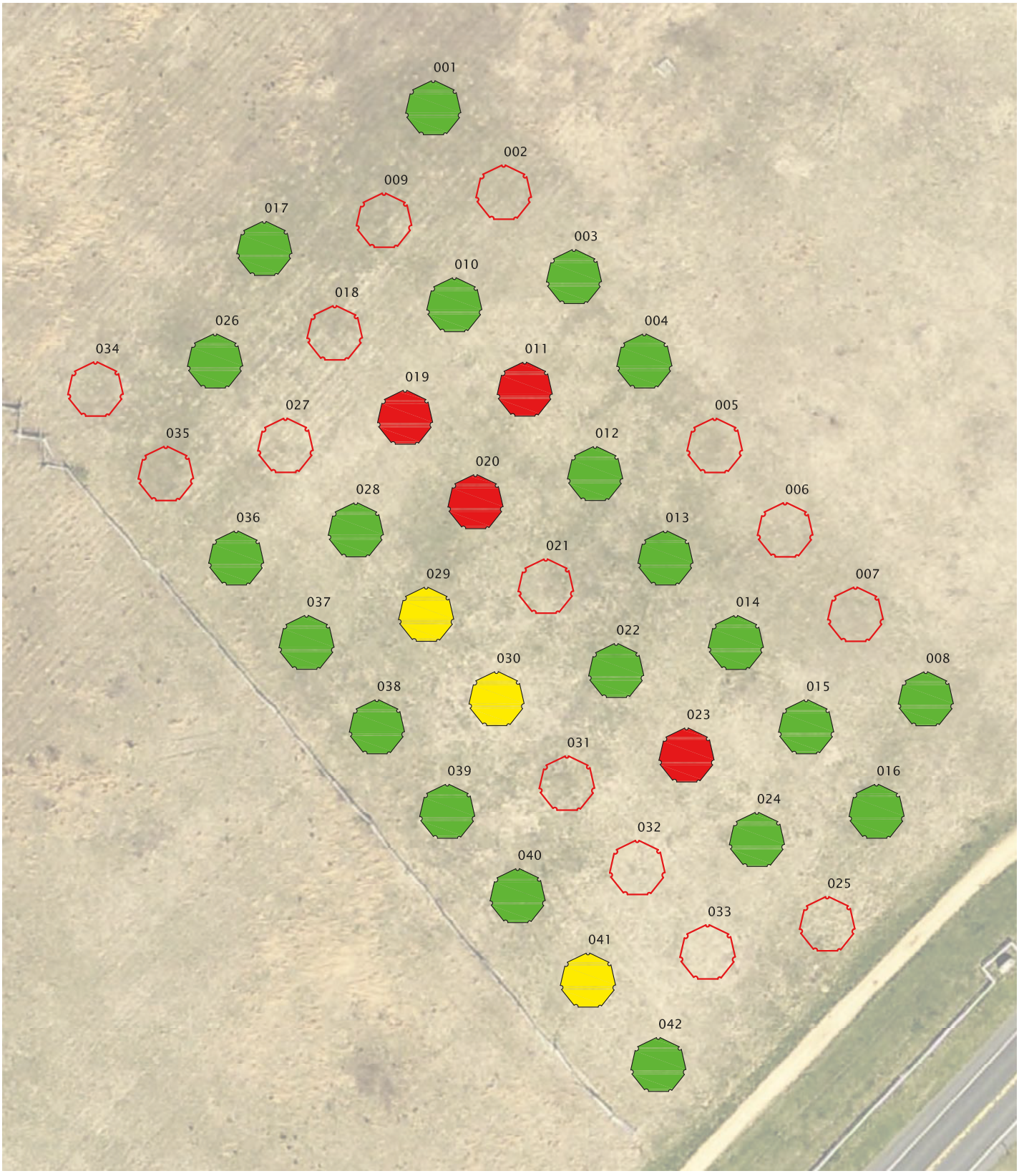
National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

Record of Treatment
Gettysburg National Military Park

William Patterson Orchard
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 22



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

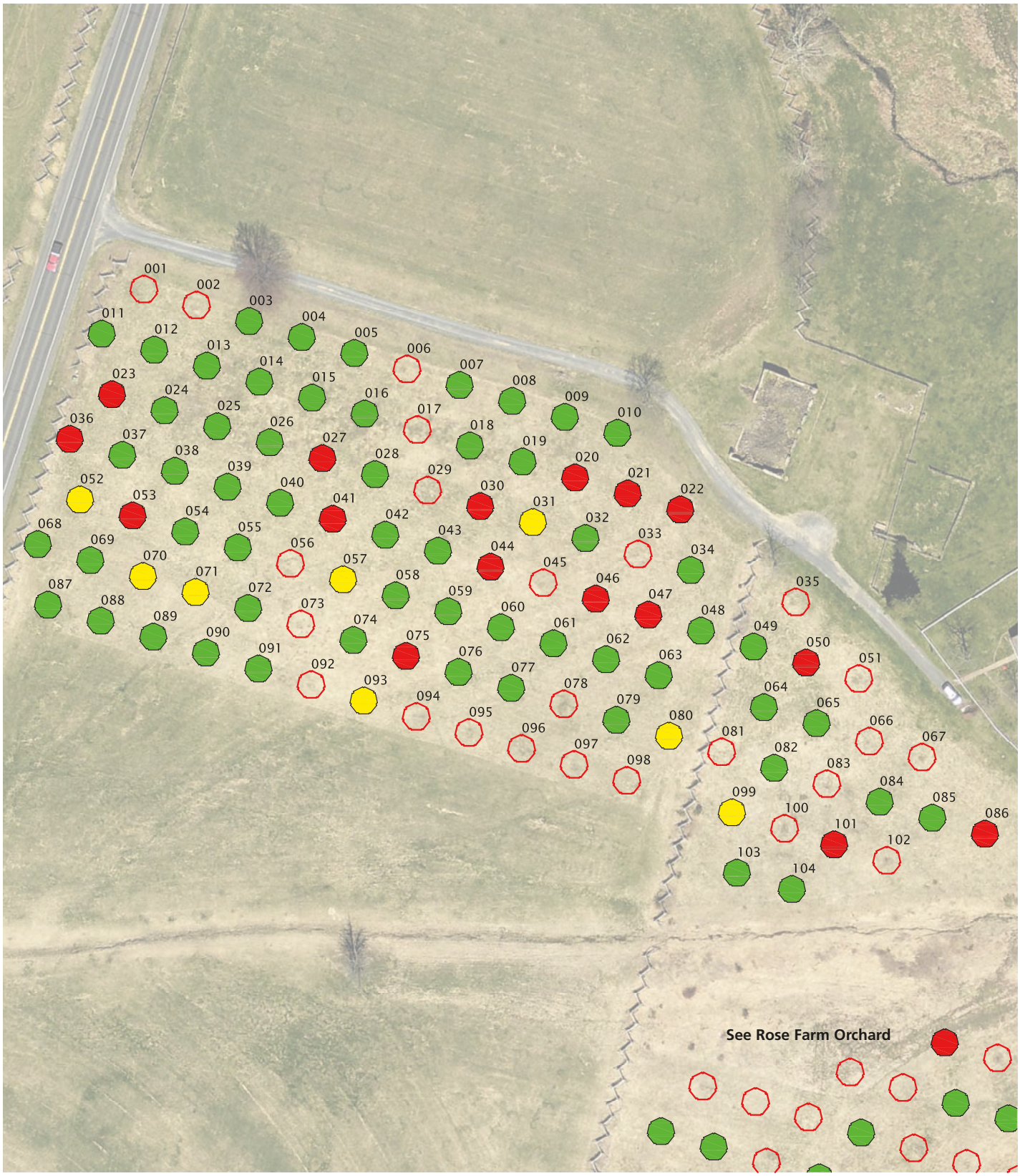
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Rogers Orchard
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 23



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

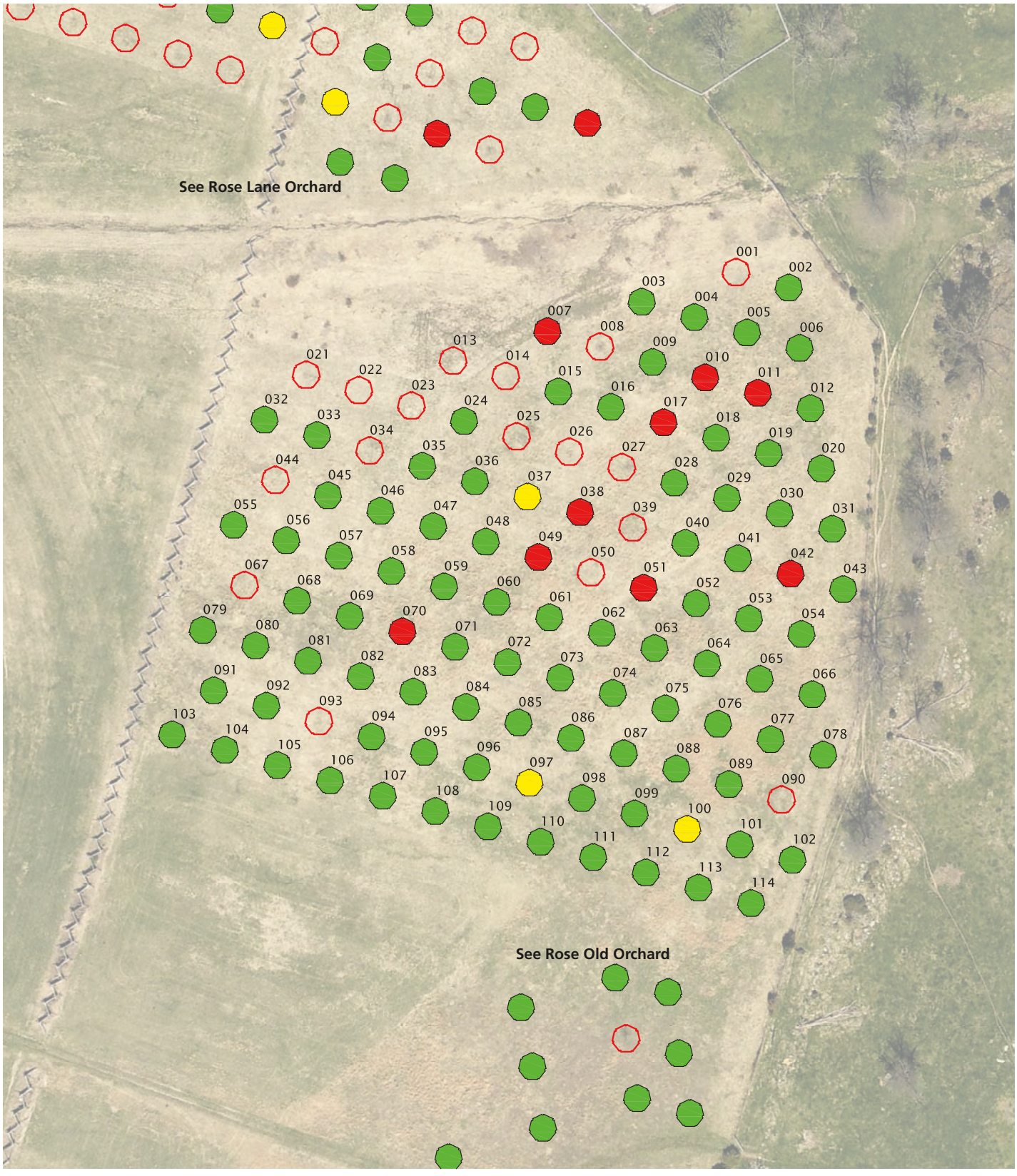
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Rose Lane Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 24



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

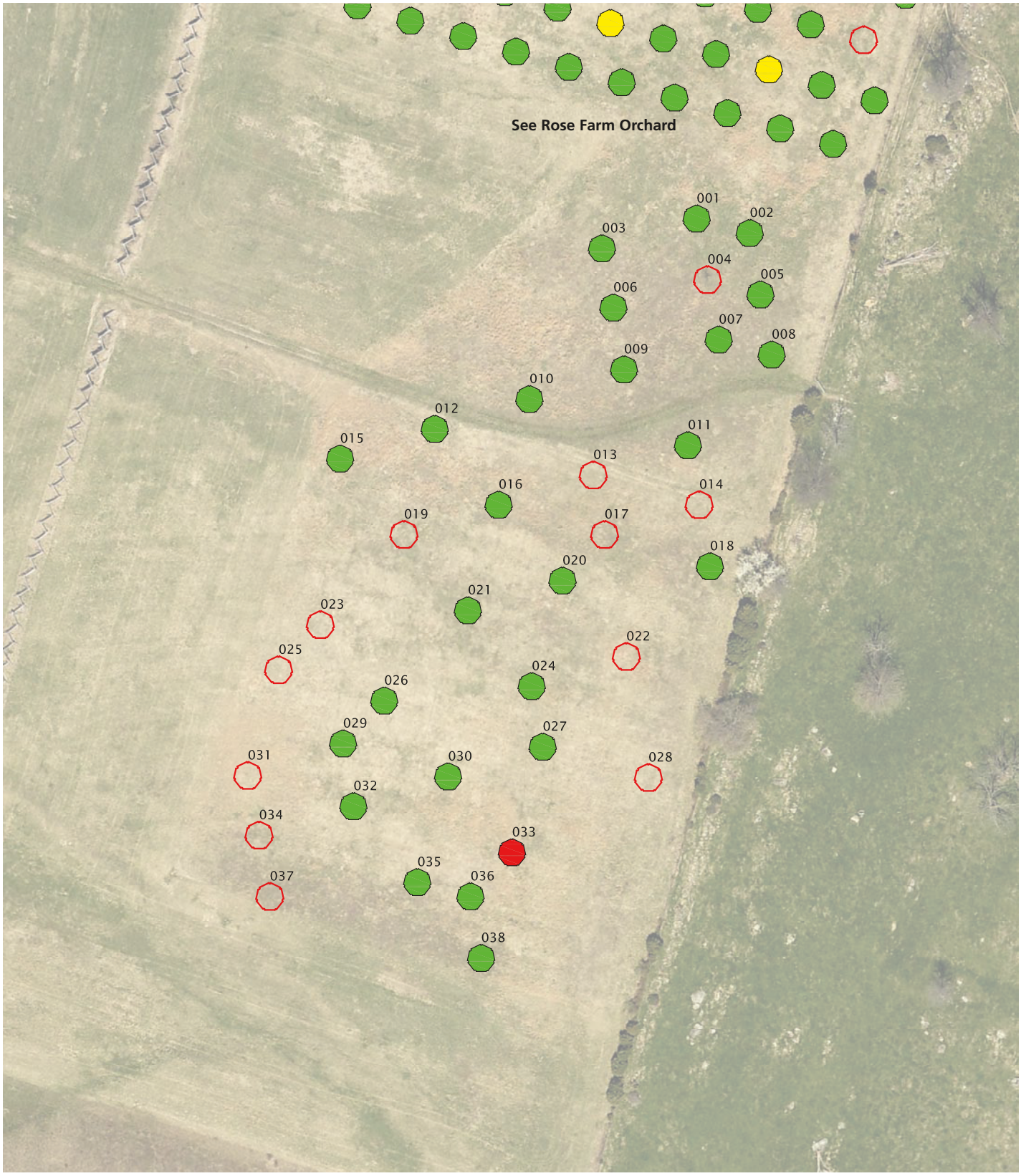
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Rose Farm Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 25



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Rose Old Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 26

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Rose North Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 27

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

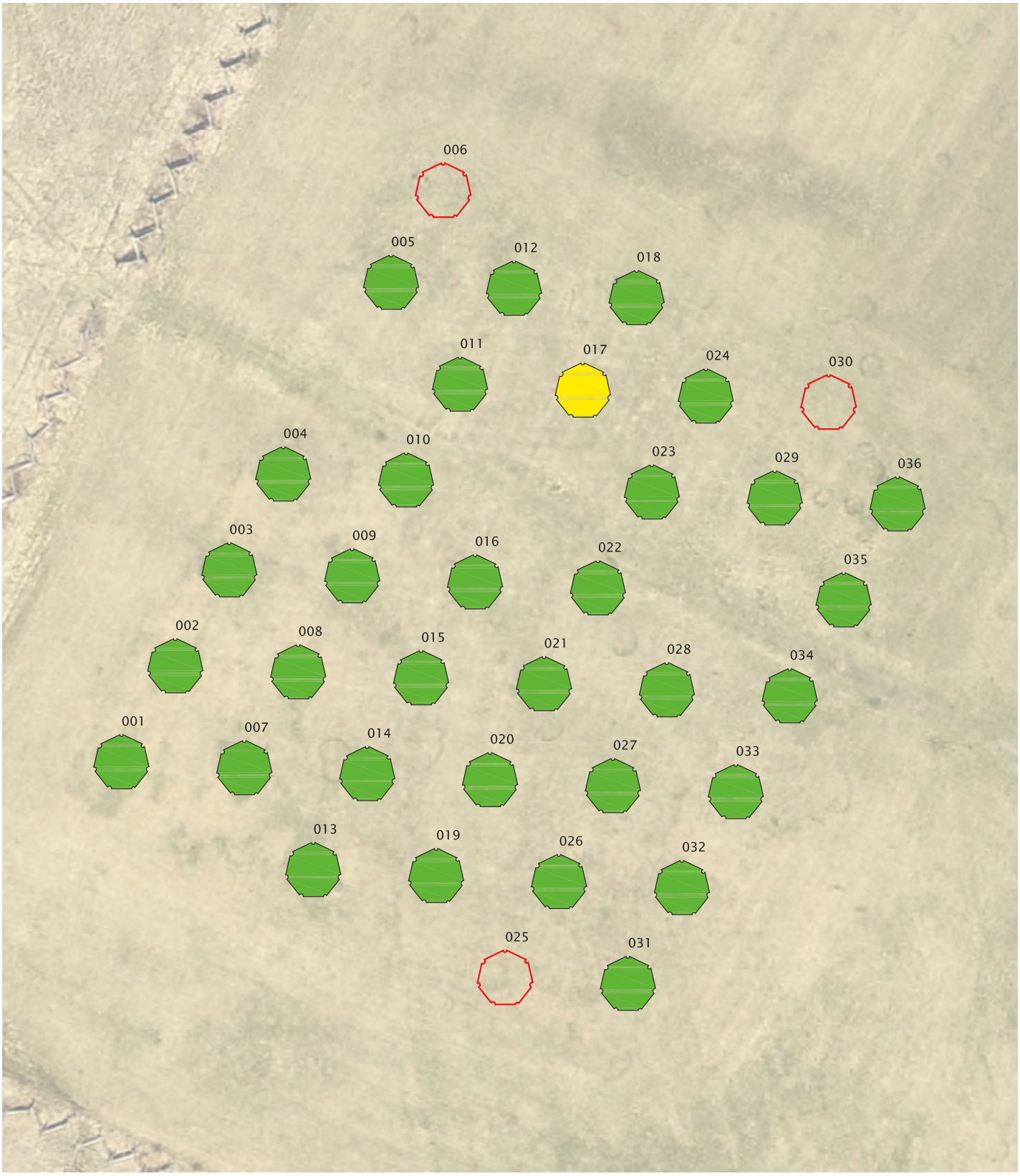
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Sherfy Peach Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 28



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

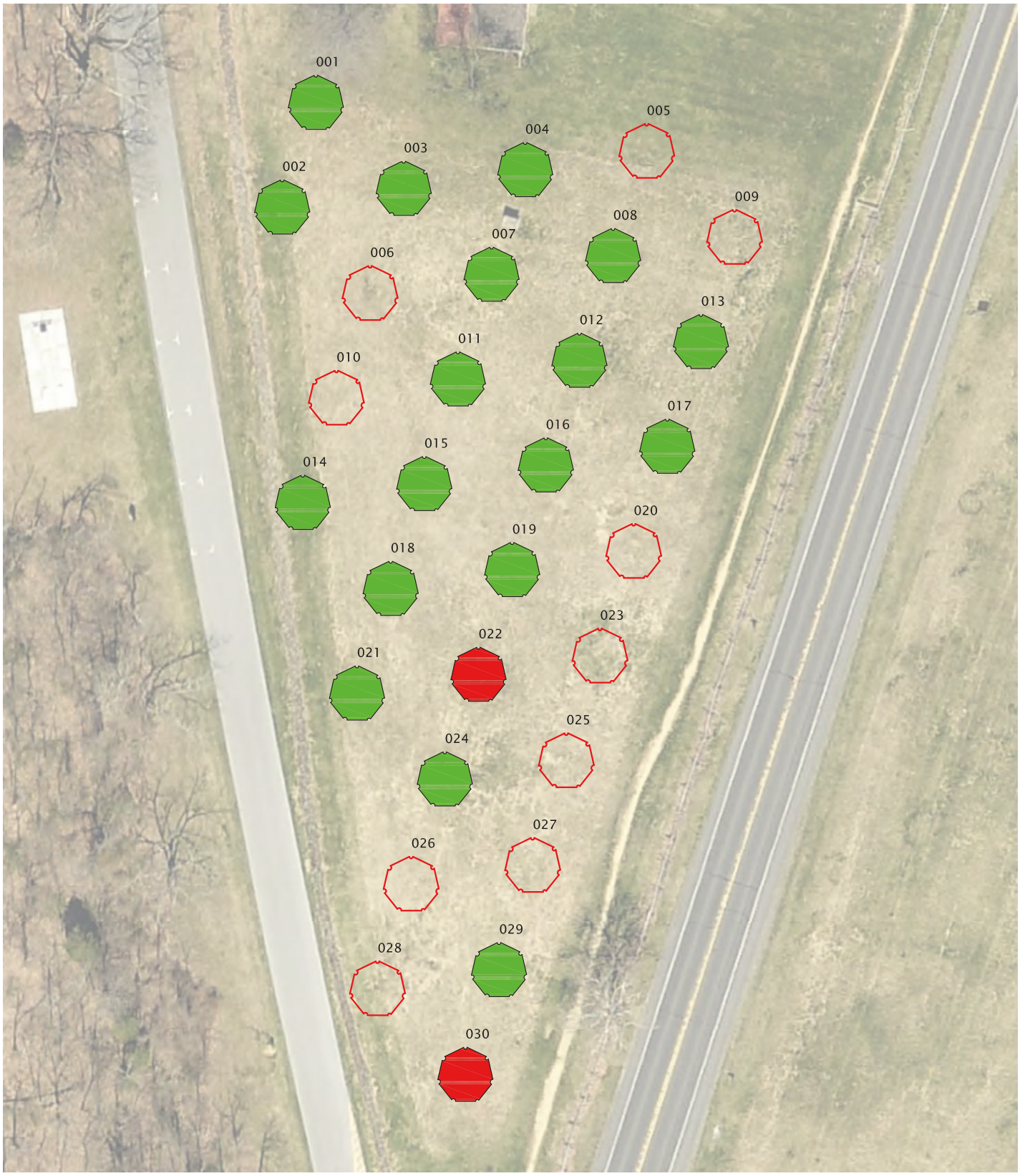
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Sherfy West Orchard
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 29



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Snyder Orchard
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 30

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

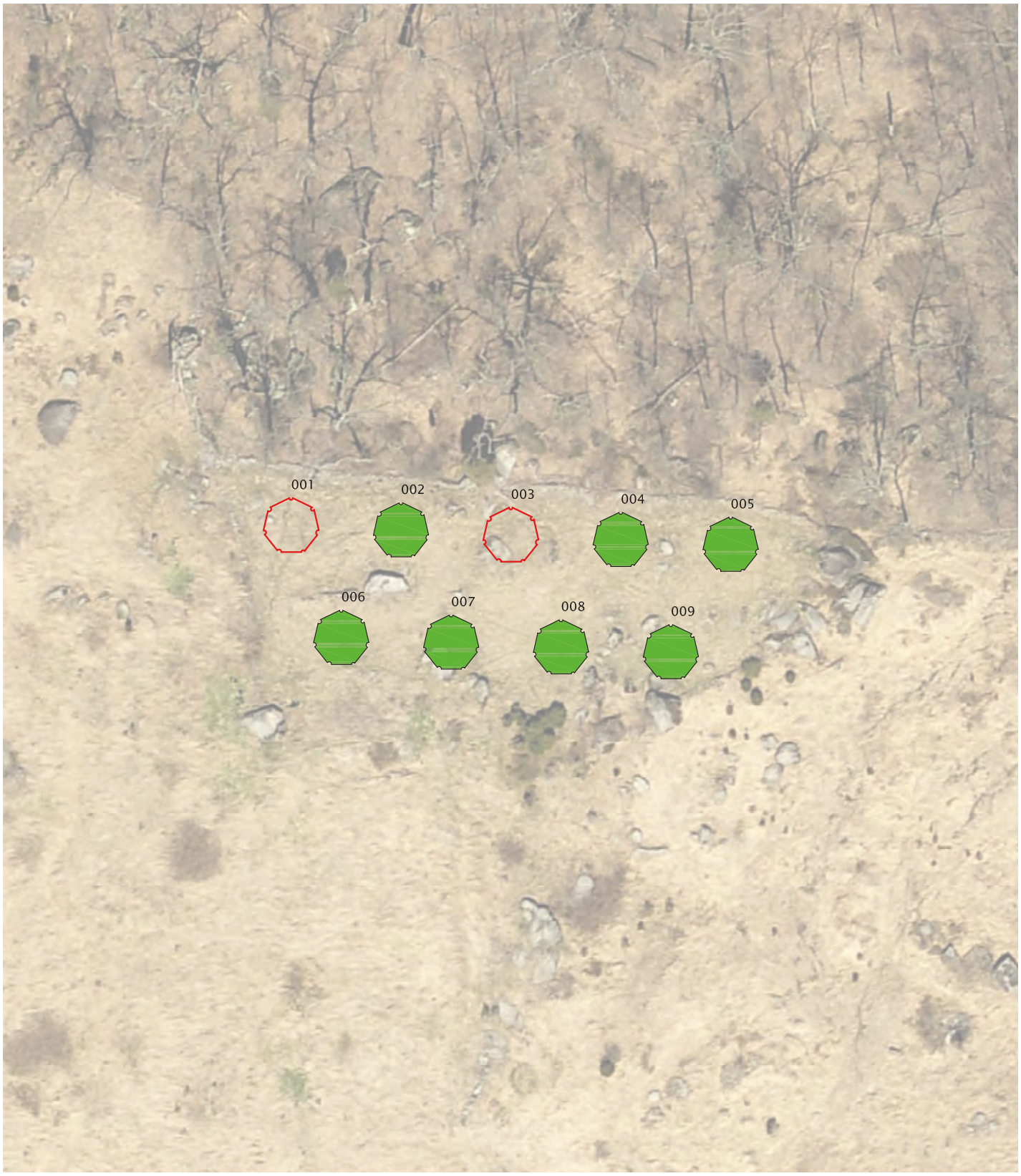
- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Trostle Orchard
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 31



DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Weikert Timbers Orchard
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 32

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Wentz Orchard
2014 Condition Assessment

0′ 12.5′ 25′ 50′

Drawing 33

DRAWN BY
Tim Layton, OCLP, 2014
AutoCAD and Illustrator CS6

NOTES
1. Projection: Pennsylvania State Plane, South Zone, NAD 27, Feet
2. All features are shown in approximate scale and location

SOURCES
1. GETT GIS Files
2. Ortho Imagery, 2014

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

LEGEND

- Good Tree
- Fair Tree
- Poor Tree
- Missing Tree

Record of Treatment
Gettysburg National Military Park

Wigert Orchards
2014 Condition Assessment

0′ 25′ 50′ 100′

Drawing 34

APPENDIX C: FENCES AND WALLS

As stated in the park's *Treatment Philosophy*, completed in 2004, no single man-made feature impacted the battle more than fencing. Through this document and the *Final General Management Plan*, the park identified fencing as a major component of battlefield rehabilitation. In fact, nearly half of the treatment tasks detailed in the *Record of Treatment* pertain to fencing rebuilt between 1999 and 2014. As part of the battlefield rehabilitation, the height, mass, tightness, and other aspects that characterized a type or style of fence determined its impacted on the battle. This appendix to the *Record of Treatment* aims to capture fence and stone wall design details and specifications for the historical record to aid in future installation and maintenance.

The appendix begins with a brief narrative description of fence and wall character on the 1863 battlefield and how these cultural features influenced the battle. A discussion of management goals and maintenance objectives is presented followed by separate sections detailing nine styles of fence. The separate sections include eight styles that were present on the 1863 battlefield and one that is a non-historic, contemporary introduction for traffic control. Each section concludes with an 11x17-inch sheet showing the fence or stone wall drawn in plan, elevation, and section.

FENCE AND WALL CHARACTER

A colonial era fence law dictated the ultimate character of the Gettysburg agricultural landscape as it appeared at the time of the Civil War. The Fence Law of 1700 stated that all crop fields be enclosed to keep out wandering livestock and that all fences should be, "at least five feet high, of sufficient rail or logs, and close at the bottom."[1] Fences defined property lines, confined livestock, protected crops and orchards, divided fields, and surrounded the domestic core of each farm. The fences of the 1863 Gettysburg landscape were mostly wood or wood and stone, and predominantly American chestnut and black locust. The farmers to the north of Gettysburg were generally wealthier, owned larger farms, and could afford fences made entirely of wood, including mortised posts with rails or boards. The farmers to the south of Gettysburg generally owned smaller farms on rougher and rockier ground. Thus their fences were made of wood and stone, or entirely of stone. Stones were readily available and had to be moved for field cultivation. Stone walls were more labor-intensive to build but more economical in terms of materials and required less maintenance.

HOW FENCING INFLUENCED THE BATTLE

No single man-made feature impacted the battle more than fencing, and different styles presented different problems to the troops. Fences proved to be a major obstacle that slowed the movement of troops in battle, because fences needed to be either dismantled or climbed. Fences also provided cover and concealment, and some styles provided more cover than others. Both armies tore down fences to construct defense works and entrenchments and dismantled wooden fences for firewood.

MANAGEMENT GOALS FOR FENCES AND WALLS

The park's 1999 General Management Plan 'Preferred Alternative C' recommends the rehabilitation of small-scale features such as fences, woodlots, and orchards within the Major Battle Action Area because of their impact on the battle outcome. The plan states, "This would allow visitors to develop a more powerful appreciation of how the 1863 landscape influenced the course of the battle and affected individual units and soldiers."[2] At the time of the General Management Plan, the park estimated that the park area contained 43 linear miles of fences in 1993, compared with 160 linear miles in 1863.[3] Furthermore, fences that stood in 1993 did not fully reflect the height, mass, and tightness of the 1863 fences. As part of the landscape rehabilitation, the park identified 39.1 linear miles of missing fencing/field boundaries that either influenced the outcome of the battle or defined the limits of missing house sites and other buildings that acted as obstacles, cover, or points of observation.[4] Upon approval of the General Management Plan, the park began rebuilding all fences to reflect the styles built at the time of the battle with durable wood, but using machine-produced stock. The height, mass, and tightness were intended to replicate 1863 appearances, as noted on maps, depicted in historic photographs, and recorded by some artists.[5] In battle areas where troops dismantled fences prior to or during combat, the park constructed some panels of fence along the historic fence line, but left gaps to convey their appearance both before and during the battle.[6]

MAINTENANCE OBJECTIVES

The park focuses on extending fence life as long as possible and utilizes techniques that would have been familiar to battle-era farmers. Maintenance practices associated with fences include:

- Trimming vegetation along the fencelines
- Restacking collapsed fence sections, especially in high visitor use areas
- Restacking collapsed or heaved stone wall sections
- Adding metal posts to sister leaning posts
- Replacing rotted fence sections in kind
- Painting some fences

Ongoing maintenance challenges include the cost of fencing stock, the staff hours needed to maintain vegetation along fencelines, and determining the most accurate and durable fence construction techniques for each segment of fence.

Restacking Collapsed Fence Sections

Fences in high use areas require frequent monitoring, restacking, and replacement. Visitors climb over and on fences, sit on them for photographs, dislodge rails, and collapse cross braces. Strategies for reducing maintenance include using ACQ treated lumber which resists rot and insect damage (retaining its strength for longer), setting cross braces in the ground 6 to 8 inches in depth, and lashing together the cross braces with 12-gauge galvanized wire.

Extending Fence Life

In less visited areas, many fences are extensively rotted but still standing. Decayed fences can be left in low use areas, where they are less likely to be climbed on. Partially rotted material can also be salvaged. Historic photographs of Virginia worm fences indicate that partially rotten, warped, and broken fence rails were reused as cross braces. Post and rail fences can be extended by adding sister steel posts on the inside of the fence post or by adding wooden braces/props to shore up a leaning fence.

Reducing Fence Replacement Labor

In addition to salvaging fence materials, fence labor can be reduced by using the same stacking stones in the same location for the lowest rail of the Virginia worm fence and setting posts in the same holes for post and rail fences.

Materials Cost

While black locust was historically used for much of the Gettysburg fencing, it is expensive and difficult to purchase in large quantities. Locust posts cost $24 each in 2014 in comparison to $7 a decade earlier. Other species, such as poplar and red pine cost about $11 or $12 a post in 2014.

Equipment

Removal of decayed fence material can be streamlined with the use of a power chipper to process rotted and broken fence posts and rails. The power chipper should be capable of handling eight inch diameter material. The park may also consider acquiring a post hole auger to expedite installation and a log splitter for making boards and palings.

Prioritization for Fence Replacement

Based on the guidance from the General Management and the goals outlined in the selected alternative, the following are criteria for prioritizing the replacement of a fence.

- Fence improves visitor safety or protects significant cultural or natural resource
- Fence is within Major Battle Action Area
- Fence is described or pictured in historical documentation and influenced the events and outcome of the battle. Note: higher prioritization for fences with additional sources beyond the Warren Map.
- Fence influenced a critical event within the battle.
- Fence is adjacent to a visitor facility or wayside and is in fair to poor condition (and potentially climbed upon)
- Fence is visible from visitor tour and interpretation route

Fences installed as part of the commemorative landscape, for example, decorative iron fences installed around monuments, as well as fences in Gettysburg National Cemetery, should be addressed as distinct National Register contributing landscape features with different goals for rehabilitation.

FENCE TYPES

Eight types or styles of farm fences were present in the 1863 Gettysburg landscape, each with distinguishable materials, construction methods, strength, tightness, height, and mass. Additional fence types now present in the park include low Virginia worm-style fence for traffic control, wire fence for livestock management, and pipe rail fencing introduced by the War Department. In addition, some monuments include decorative fences. The next section details the specifications for the eight fence types, the low Virginia worm-style fence, and options for in-ground post treatments. All types of metal, commemorative, and decorative fences are not included in this document due to their association with commemorative designed landscape or the National Cemetery landscape.

1. VIRGINIA WORM FENCE

FENCE COMPONENTS

- Rails: Horizontal fence elements that are of similar size and proportion to the vertical components. Rails are typically split, debarked, alkaline copper quaternary (ACQ) pressure treated yellow or red pine, or untreated black locust, oak, or poplar, and 11 feet in length. The rails are sector (pie-slice) shape in cross section. The girth (circumference) shall range from 13 inches minimum to 16 inches maximum.
- Stack of Rails: Usually consists of 5 rails per panel. In comparison with the rider, the stacked rails should be the smallest and the same size on both ends to prevent creating gaps between the rails. Each successive rail along the fence line is laid on top of the end of the previous rail, hence one end is over and the other end is under the adjacent rail in each stack layer.
- Lock Rail: The lock rail is set above the top stacked rail at one end and rests on the cross brace at the other end, laying at an angle and closing the gap between the stack and rider. The maximum gap between the stack and rider is 12 inches.
- Rider: The rider is the top-most rail of the fence. It is generally the heaviest rail in each panel to weigh down the fence, preventing the rails from breaking or collapsing if climbed upon.
- Cross Brace (also referred to as the rider post): The vertical elements of the fence, usually 11 feet in length. Braces should be debarked, equal in length and size to the rails, and should not be milled, shortened, or rounded. Braces may be irregular in width, with the narrower end up. Generally, the girth (circumference) shall range from 13 inches minimum to 16 inches maximum. This element secures the stack of rails in place and provides support for the rider and angled rail. Cross braces should be set firmly on the ground about 2 feet from the fence panel and crossed at the lock joint. In high use areas, the braces may be anchored by an auger dug hole of 6 to 8 inch depth and/or the brace secured with ties.
- Lock Joint: The lock joint occurs between the stack and riders where the cross braces intersect. The cross braces are angled so they rest on the stack of rails and are then weighed down by the angled rail and riders above, creating a lock.
- Foundation Stone: The lowest rail is set on a foundation stone, which ranges in dimension from 12 x 12 inches to 16 x 16 inches and 6 inches high or greater if partially buried. The stone ensures that the lowest rail is 6 inches off of the ground.[7]

FENCE CONSTRUCTION AND MAINTENANCE

The Virginia worm fence is the most common type of fence found within the park. Usually one panel consists of 7 rails (5 stacked rails, 1 lock rail, 1 top rail or rider) and 2 cross braces of equal measure and stands about 5 feet high. The fence bed is generally 6 feet wide with a 14 foot span between two panels measured in a direct line. The fence can be built without digging holes or use of any equipment and needs no hardware to hold it together. It can easily be built, taken down, and repaired, although it requires a significant amount of material per linear foot. In the past, the park has ordered "Butlers rubble field stone" at $4.15 per stone, delivered, for worm fencing foundation stones.

Components of this fence are used in the building of stacked rail (Tennessee) fence and stone and rider fence. Historic photographs depict variability in the quality, length, and width of the cross braces. Where horse trails run alongside a Virginia worm fence, the cross braces may be shortened or the path widened to ensure a safe distance between the protruding braces and the horses and riders.[8]

AGRICULTURAL FUNCTION

A well-built Virginia worm fence was high and tight and served the general purpose of holding livestock and marking property boundaries, so it was important to keep gaps between rails minimal. The angled rail and rider reinforced the top portion of the fence to keep cattle or horses from putting their heads between the stack and the rider, which could dislodge the rider and weaken the fence.

BATTLE OUTCOME

The Virginia worm fence was an obstacle in the battle because soldiers either had to climb over it or disassemble it to pass. The stack of rails also provided good cover. Commanding officers documented the location of fences as obstacles on the battlefield, and the tall cross braces of the Virginia worm fence provided a visual clue to advancing troops that the fence could be easily dismantled. The height of the cross braces enabled officers to see the fencing even when the fence lay in a dip or low land.

When rebuilding Virginia worm fences, height and rail spacing are key elements. Those fences built too low are easily crossed over, and those built with large gaps between the stack of rails and the rider can be climbed through. The angled rail should close the gap, making it impossible to crawl through.[9]

Figure 119. Virginia worm fence alongside Merwin and Chapman markers at Stony Hill Ridge along Wheatfield Road, circa 1880. Note the sector (pie-shaped) rails and their equal spacing. Cross braces are irregular in width and partially decayed at ends (GETT 41136, Tipton Collection, T1872).

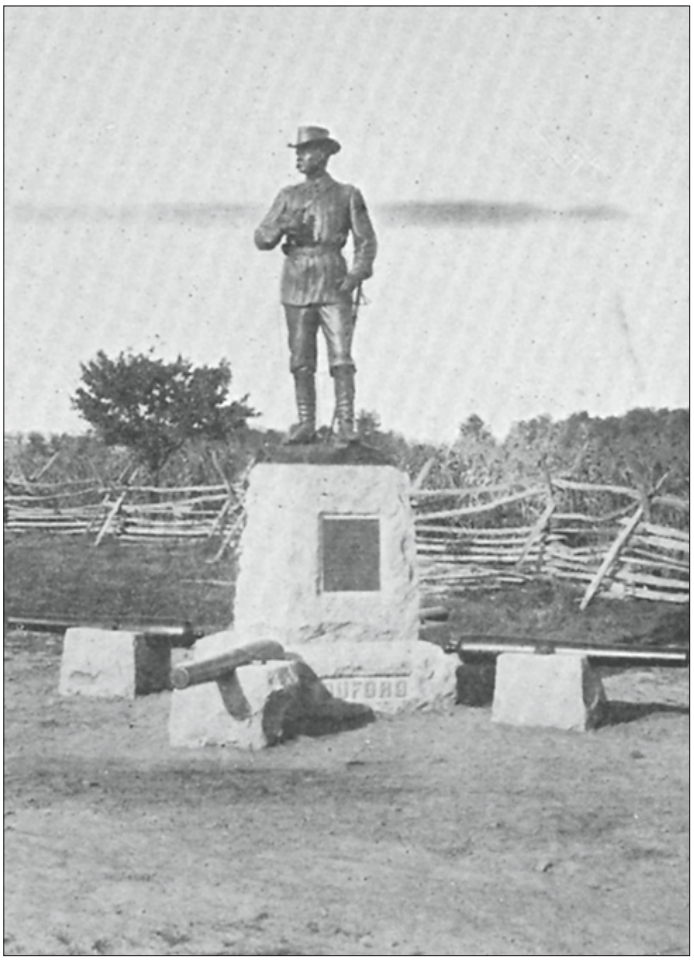


Figure 120. Virginia worm fence at the west boundary of McPherson Field 8. View northeast, circa 1895 (GETT 43147k).

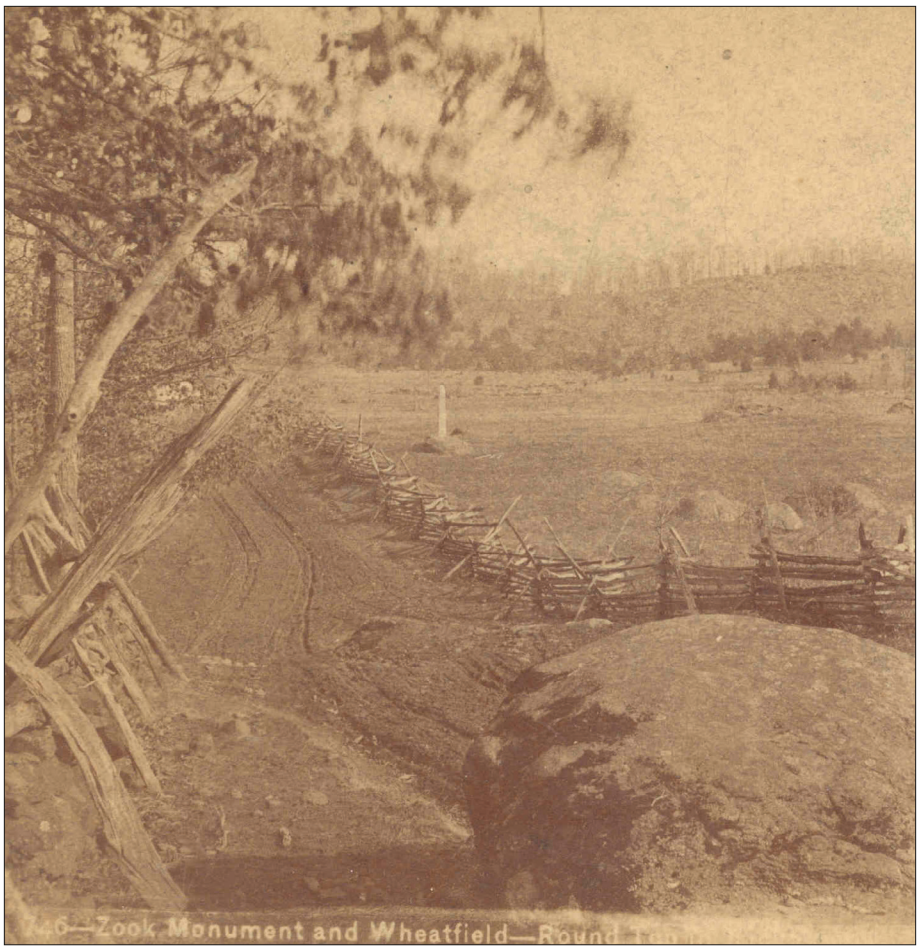
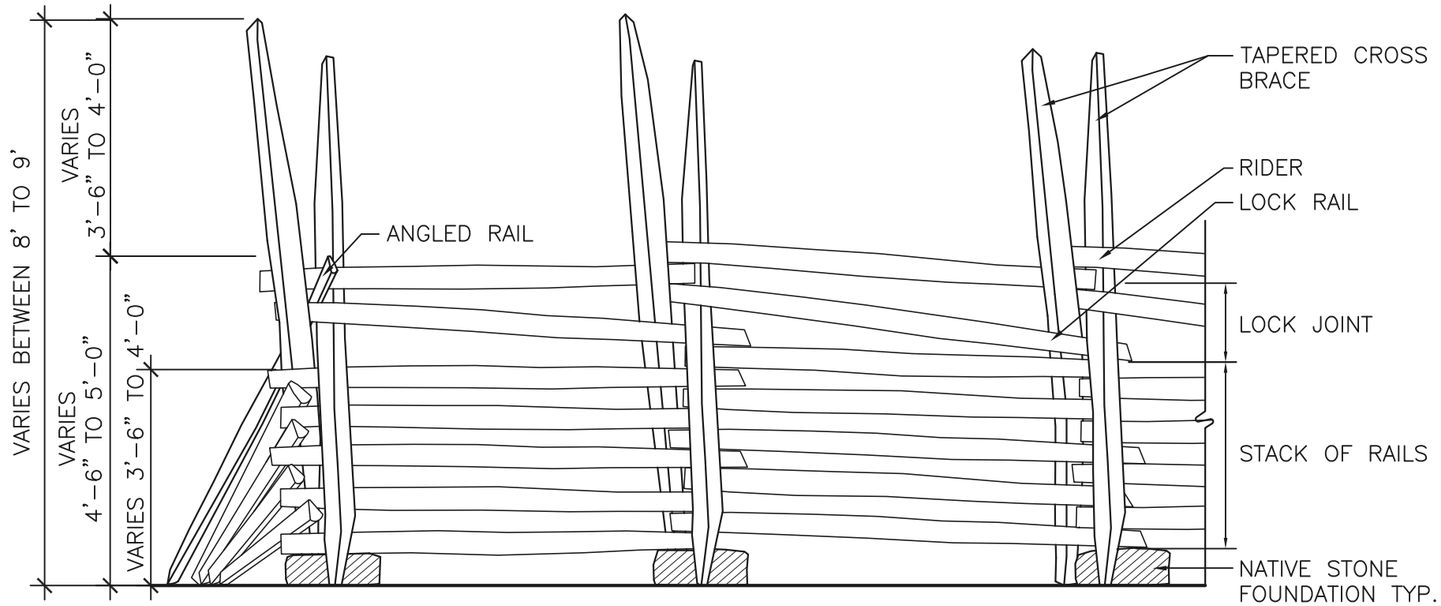
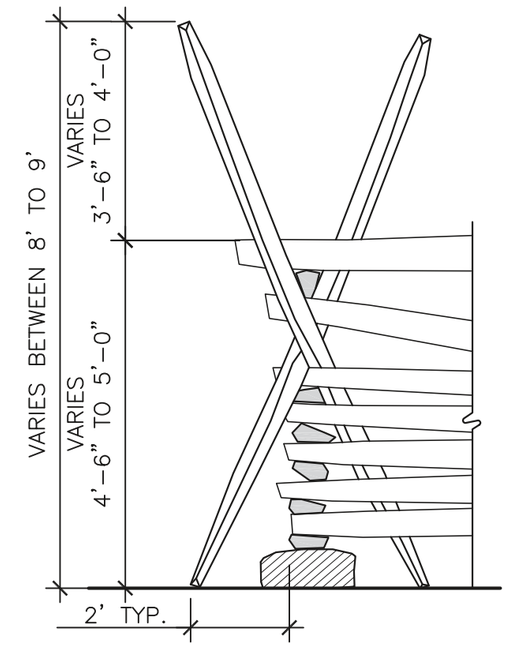


Figure 121. Virginia worm fence along Wheatfield Road, 1870s. (Sue Boardman Collection, SV127a).

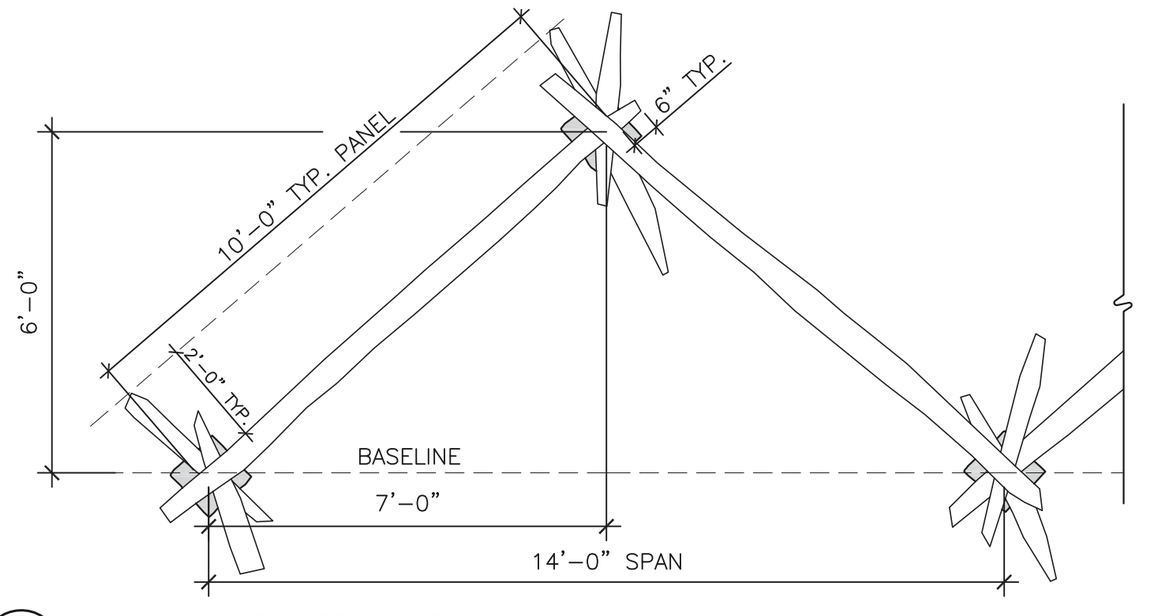
Figure 122. Virginia worm fence along Wheatfield Road. The base of the cross braces can be placed at a slightly steeper angle, closer to the rails, which will facilitate maintenance. The existing riders should be replaced with heavier rails. The fenceline has been moved south into the field and behind the monument (partially concealed by cedar) to accommodate the wider tour road. View looking east, September 2014. (OCLP 5592).



1 VIRGINIA WORM FENCE SECTION–ELEVATION
SCALE: 3/8"=1'–0"



2 SECTION AT CROSS BRACE
SCALE: 3/8"=1'–0"



3 VIRGINIA WORM FENCE PLAN
SCALE: 3/8"=1'–0"

GENERAL NOTES

1. RAILS AND CROSS BRACES SHALL BE ALKALINE COPPER QUATERNARY (ACQ) PRESSURE TREATED SOUTHERN YELLOW PINE, RED PINE, OR UNTREATED BLACK LOCUST SPECIES. ALL LUMBER SHALL BE SPLIT, WITHOUT BARK AND 11' IN LENGTH.
2. THE STACK OF RAILS SHALL BE THE SMALLEST RAILS IN CROSS SECTION TO PREVENT MAKING THE SPACES BETWEEN RAILS TOO LARGE AND RAILS SHALL BE NEARLY EVEN SIZES AT BOTH ENDS.
3. THE TOP ONE OR TWO RAILS OF THE STACK SHALL BE HEAVIER THAN THE LOWER RAILS.
4. THE ANGLED RAIL BETWEEN THE STACK AND RIDER SHALL BE HEAVIER THAN THE STACK RAILS AND CREATE A GAP NO GREATER THAN 1' IN HEIGHT.
5. THE RIDER SHALL BE BE THE HEAVIEST RAIL TO WEIGH DOWN THE LOCK JOINT.
6. CROSS BRACES SHALL BE SET FIRMLY ON THE GROUND ABOUT 2' FROM THE PANEL AND CROSSED AT THE LOCK JOINT.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Virginia Worm Fence

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Fences, Gates, and Bridges, George A. Martin, 1900, reprinted 1999.
4. Memorandum from Kathy Harrison to Chief, Resource Planning Division, January 2002.
5. Virginia Worm Fence Detail, drawn by Marcus Pratt, GETT Maintenance Division, 2002.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #1

2. LOW VIRGINIA WORM-STYLE FENCE, NON-HISTORIC

FENCE COMPONENTS

- Rails: Rails are generally split, debarked, alkaline copper quaternary (ACQ) pressure treated yellow or red pine, or untreated black locust, oak, or poplar, and 11 feet in length. The rails are sector (pie-slice) shape in cross section. The girth (circumference) shall range from 13 inches minimum to 16 inches maximum. The low Virginia worm-style fence does not include vertical elements.
- Stack of Rails: Usually consists of 3 rails per panel. Each successive rail along the fence line is laid on top of the end of the previous rail, hence one end is over and the other end is under the adjacent rails in each stack layer.
- Foundation Stone: The lowest rail is set on a foundation stone, which ranges in dimension from 12 x 12 inches to 16 x 16 inches wide by 6 inches high or greater if partially buried. The stone ensures that the lowest rail is 6 inches off of the ground.

FENCE CONSTRUCTION AND MAINTENANCE

The low Virginia worm-style fence is uncommon and used in the park to delineate parking pull offs and to confine vehicle parking near monuments and wetlands. The fence bed is generally 6 feet wide with a 14 foot span for every two panels if measured in a direct line, and about 2 ½ to 3 feet high. The fence can be built without digging holes or use of equipment and needs no hardware to hold it together. It can easily be built, taken down, and repaired. In the past, the park has ordered “Butlers rubble field stone” at $4.15 per stone, delivered, for worm fencing foundation stones.

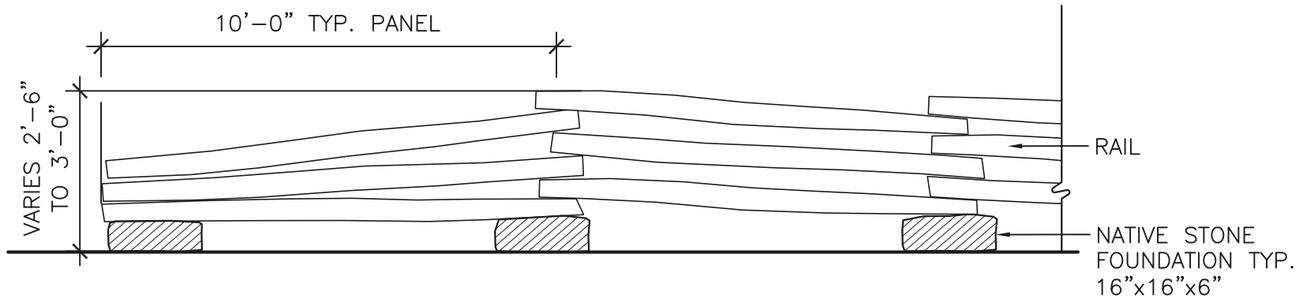
The fence may require restacking if components are dislodged. Since the fence occupies a 6 foot to 8 foot band of land, it commonly harbors weeds. The triangles created by the zig zag alignment are maintained with gas powered string trimmers. Virginia worm fence along roadsides is trimmed three times a year.

Fence rails are replaced every 7 to 10 years for untreated wood and every 15 to 20 years for treated wood. A decayed panel takes about 5 to 10 minutes to dismantle and load into a truck, plus additional time for unloading and disposal. Alternatively, a panel can be removed and processed in a gas-powered wood chipper, saving many hours of labor. The time required to rebuild a low Virginia worm-style fence panel is about 10 minutes with one person.

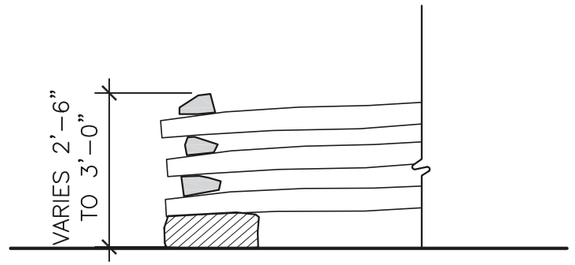
Figure 123. Low Virginia worm-style fence along Stone-Meredith Avenue prevents vehicles from driving into a shallow pond. View southeast, September 2013 (OCLP FD100).

Figure 124. Low Virginia worm-style fence at the south boundary of Slyder Field 4. View northwest from South Confederate Avenue, September 2014 (OCLP 5912).

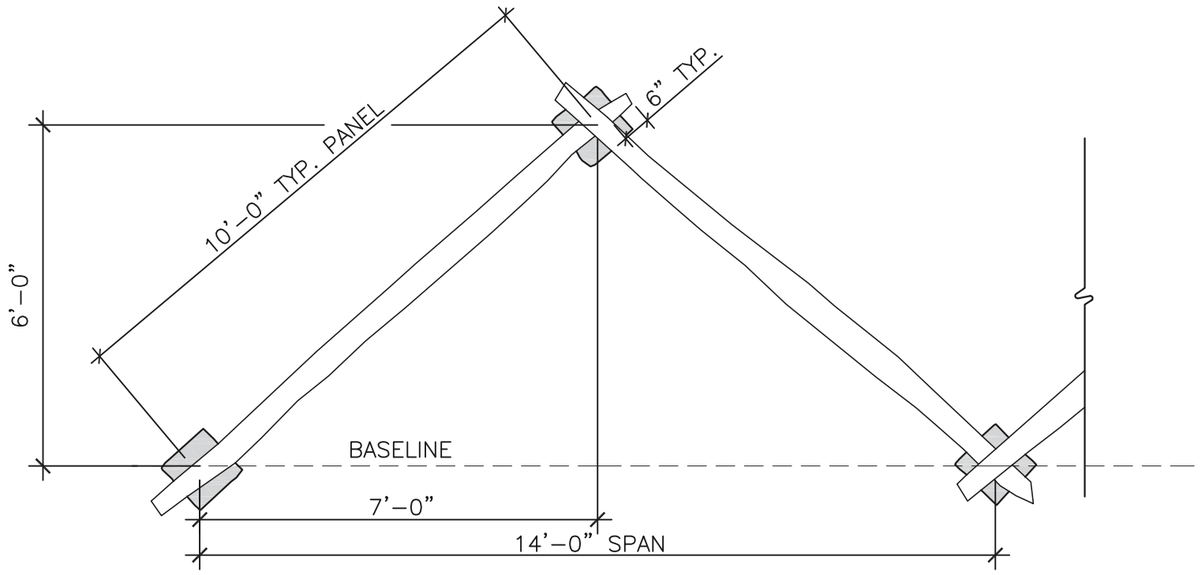
Figure 125. Low Virginia worm-style fence near the Wells Monument. View southeast from South Confederate Avenue, September 2014 (OCLP 5090).



1 LOW VIRGINIA WORM–STYLE FENCE SECTION–ELEVATION
SCALE: 3/8”=1’–0”



2 SECTION AT PANEL INTERSECTION
SCALE: 3/8”=1’–0”



3 LOW VIRGINIA WORM–STYLE FENCE PLAN
SCALE: 3/8”=1’–0”

GENERAL NOTES

1. RAILS SHALL BE ALKALINE COPPER QUATERNARY (ACQ) PRESSURE TREATED SOUTHERN YELLOW PINE, RED PINE, OR UNTREATED BLACK LOCUST SPECIES. ALL LUMBER SHALL BE SPLIT, WITHOUT BARK AND 11’ IN LENGTH.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Low Virginia Worm-style Fence (Non-historic)

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Fence Construction Standards Gettysburg National Military Park, 1980.
2. Virginia Worm Fence Detail, drawn by Marcus Pratt, GETT Maintenance Division, 2002.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #2

3. STACKED RAIL OR 'TENNESSEE' FENCE

FENCE COMPONENTS

- Rails: Horizontal elements of the fence, generally 11 feet in length. Rails are typically split, debarked, alkaline copper quaternary (ACQ) pressure treated yellow or red pine, or untreated black locust, oak, or poplar. The rails are sector (pie-slice) shape in cross section. The girth (circumference) shall range from 13 inches minimum to 16 inches maximum.
- Stack of Rails: The lower section of each fence panel, usually consisting of 4 rails. The stacked rails should be the smallest and the same size on both ends to prevent creating gaps between the rails. Each successive rail along the fence line is laid on top of the end of the previous rail, hence one end is over and the other end is under the adjacent rail in each stack layer. At the end of a fence line, the stack of rails rests on alternating rails laid on the ground or on wood scraps nailed into the posts.
- Rider: Generally the heaviest rail in each panel that weighs down the fence, typically set at 5 feet high.
- Posts: The first vertical element of the fence usually 7 feet in length, with 4 feet above ground and 3 feet set in the ground. Pairs of posts secure the stack of rails in place.
- Cross Braces: The second vertical element of the fence, usually 7 feet in length. The girth (circumference) shall range from 13 inches minimum to 16 inches maximum. Cross braces should not be milled or rounded. Pairs of cross braces provide support for the rider. Each pair should be set firmly on the ground about 2.5 feet from the fence panel and crossed at the lock joint.
- Lock Joint: Occurs between the stack and riders where the cross braces intersect. The cross braces are angled so they rest on the stack of rails and are then weighted down by the riders above, creating a lock.

FENCE CONSTRUCTION AND MAINTENANCE

The stacked rail or Tennessee fence is uncommon and only found at the Rogers Field north boundary and Codori Field 4 north boundary. This fence served as a less expensive variation of post and rail fence because it lacked mortised post holes. The rails are either stacked between the two posts or supported by slats nailed between the two posts. Generally the fence is 5 feet wide by 5 to 5.5 feet high and occupies a wider swath of land than post and rail because of the cross braces. As a result, stacked rail fence requires greater weed control than post and rail.[10]

Usually one panel consists of 5 rails (4 stacked rails, 1 rider) 2 posts, and 2 cross braces. Each panel of the fence is held upright by 2 cross braces and 2 posts that

support the rails. The typical panel is 5 feet wide, 10 feet in length between sets of posts, and varies from 5 to 5.5 feet high. Post holes must be dug, making this fence more difficult to construct or remove than the Virginia worm.

AGRICULTURAL FUNCTION

The stack of rails served the general purpose of keeping animals within fence boundaries, so it was important to keep gaps between rails minimal.

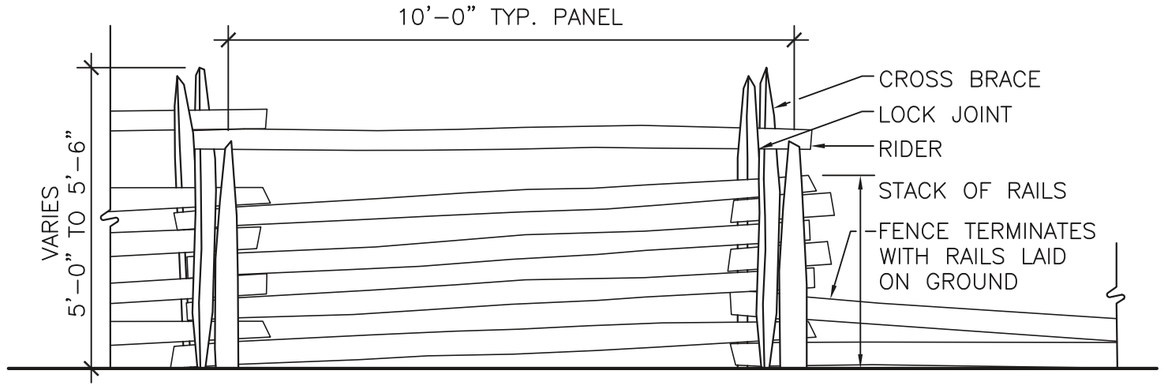
BATTLE OUTCOME

Due to its posts, this fence was more difficult to dismantle during the battle than Virginia worm fence and became an obstacle, as soldiers had to cross over while under fire. The stack of rails on the lower portion of the fence provided cover for troops.

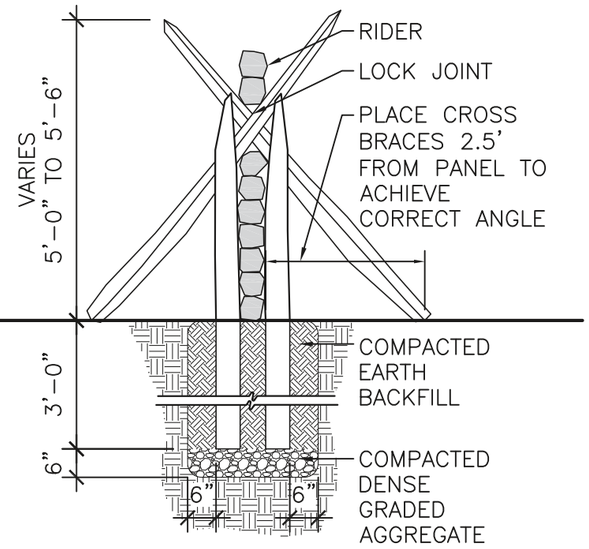
Figure 126. Detail of stacked rail fence located along Mummasburg Road at the Forney farm, circa 1896 (GETT 41135, Historic Photograph Collection, T27009b).

Figure 127. Detail of stacked rail fence located at the Warfield farm, circa 1900 (GETT 41135, Historic Photograph Collection, OS2B-2185b).

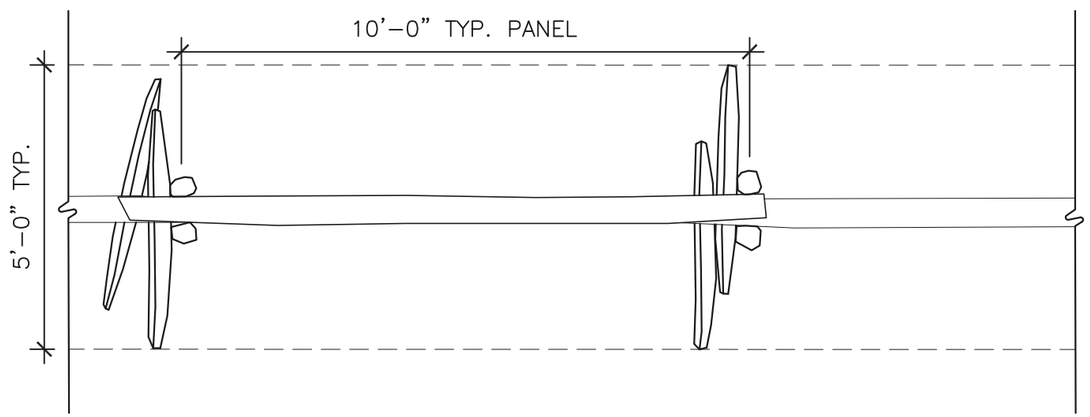
Figure 128. Stacked rail fence located along the Roders Field and Codori Field 4 boundary, September 2014. Note that the stack of rails is too low to restrict livestock movement and the top rail is not seen in historic imagery (OCLP 6078).



1 STACKED RAIL (TENNESSEE) FENCE ELEVATION
SCALE: 3/8"=1'–0"



2 POST INSTALLATION
SCALE: 3/8"=1'–0"



3 STACKED RAIL (TENNESSEE) FENCE PLAN
SCALE: 3/8"=1'–0"

GENERAL NOTES

1. RAILS AND CROSS BRACES SHALL BE ALKALINE COPPER QUATERNARY (ACQ) PRESSURE TREATED SOUTHERN YELLOW PINE, RED PINE, OR UNTREATED BLACK LOCUST SPECIES. ALL LUMBER SHALL BE SPLIT AND WITHOUT BARK. RAILS SHALL BE 11' IN LENGTH AND CROSS BRACES SHALL BE 7' IN LENGTH.
2. POSTS SHALL BE BLACK LOCUST SPECIES, WITHOUT BARK, AND SHALL BE 7' IN HEIGHT AND SET 3' IN THE GROUND.
3. STACK OF RAILS SHALL BE THE SMALLEST RAILS IN CROSS SECTION AND SHALL BE NEARLY EVEN SIZES AT BOTH ENDS.
4. RIDER SHALL BE BE THE HEAVIEST RAIL TO WEIGH DOWN LOCK JOINT.
5. CROSS BRACES SHALL BE SET FIRMLY ON THE GROUND ABOUT 2.5' FROM THE PANEL AND CROSSED AT THE LOCK JOINT.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Stacked Rail Fence (Tennessee Fence)

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #3

4. STONE WALL

WALL COMPONENTS

- Face: The visible side of the wall. The character of the wall face will vary greatly depending on size and shape of the stones and how tightly they are set.
- Batter: The relationship of rise to run in the face of a retaining wall or the angle that the wall inclines back; a 3:1 batter should be used for walls the carry a lot of running, freezing, and thawing water; a 1:1 batter should be used in drier areas.
- Headers: Stones laid with their lengths perpendicular to the direction of the wall.
- Tie rocks: Headers that span the entire width of the wall.
- Chink stone: A small stone placed below a larger one to make it match the height of the adjacent course.
- Capstones: Heavy flat stones that top the wall, closely fit to diminish the flow of water and ice into the core of the wall, and improve wall longevity.
- Surface rock foundation: Existing surface rock will be retained as a base for rebuilt or new stone walls.
- Excavation and foundation: If building a new stone wall, full archeology compliance shall be completed for a 1 foot deep foundation, and a compacted aggregate base shall be laid to minimize settling and frost heave. Place aggregate in 4 lifts. Each lift shall be a loose 4 inch depth and compacted to 3 inches.
- Stone sources: If rebuilding an existing stone wall, restack existing stone and match the existing alignment and appearance of stone sizes, shapes, colors, and patterning. If building a new stone wall, select stone from an external source that is contemporary but compatible with the stone sizes, shapes, colors, and patterning in the landscape. If rebuilding an existing stone wall that lacks enough existing stone to achieve the design height, rebuild the lower portion using existing stone and the upper portion using stone from an external source. Match the existing alignment and appearance of stone sizes, shapes, colors, and patterning.

WALL CONSTRUCTION AND MAINTENANCE

Stone walls are very common throughout the park. Typically, stone walls are between 3 to 4 feet wide by 3 to 4.5 feet high. Stones used in walls were typically unearthed by farmers in adjacent fields. Stone wall repairs should match local size, shape, color, and patterning. Stone walls are integral to the stone and rider fence and the stone and rail fence.[11]

Walls require restacking every few years to reset stones that have rolled off or been pushed out of the wall by ice or visitors. Discourage visitors from climbing over and along stone walls and direct visitors to gaps in the walls to pass from one side of the wall to the other.

AGRICULTURAL FUNCTION

Though labor intensive to construct, many farmers favored stone walls to wooden fences not only because they were permanent and durable, but because removal of stones from fields cleared for cultivation provided a ready source for the material. In many cases stone walls were used to mark property boundaries.

BATTLE OUTCOME

During battle, soldiers used stone walls originally constructed for agricultural purposes and also constructed stone wall defense works. Both provided cover from enemy fire and created obstacles that soldiers had to climb over while under fire. The pre-battle farm stone walls were built for permanence and livestock control while the stone wall defense works were hastily stacked for an expedient purpose with no thought for long-term strength or stability. Many stone wall defense works were constructed during lulls in battle. Soldiers restacked stones in areas such as Little Round Top and Big Round Top to strengthen defensive lines or to hold a position that had been gained through offensive action.

Figure 129. Stone wall along east side of Brickyard Lane. Detail of view southeast from East Cemetery Hill, 1863 (GETT 41135, Historic Photograph Collection, 2B2B-2038u).

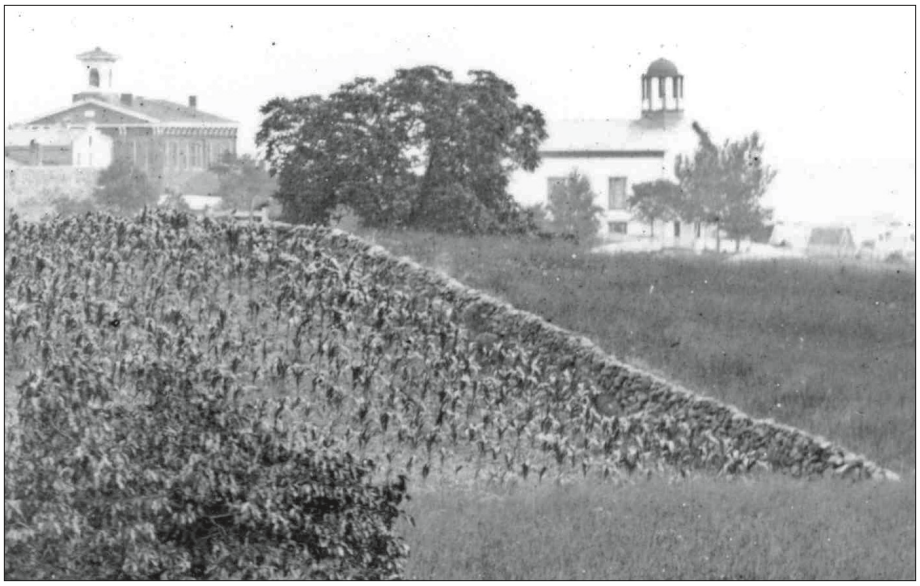


Figure 130. Stone wall separating the Wolf and Study fields. Detail of view north from near McKnight's Hill, 1863 (GETT 41135, Historic Photograph Collection, 2B-2019e).

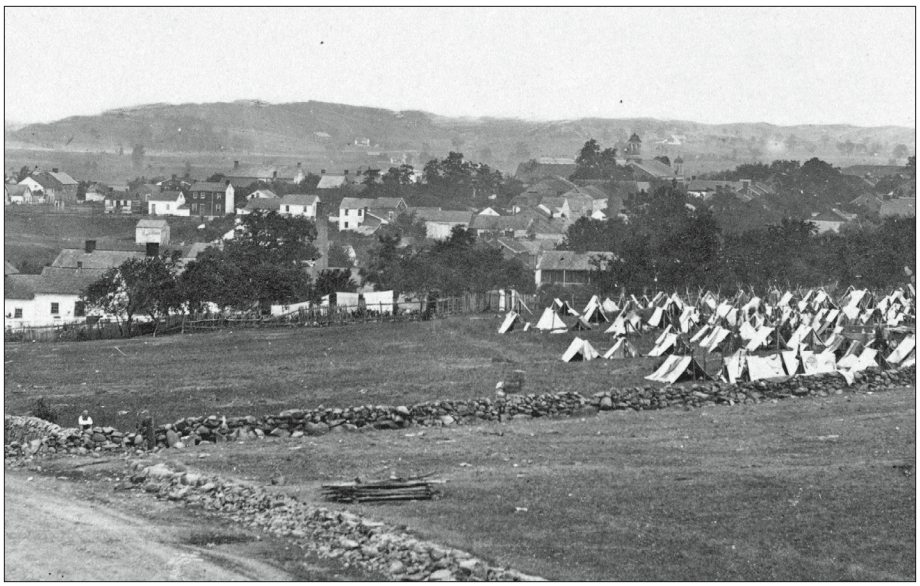
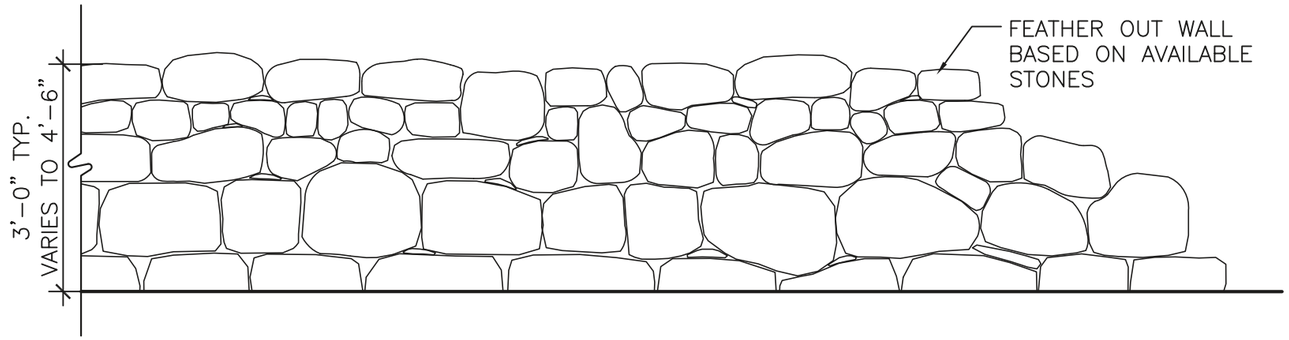
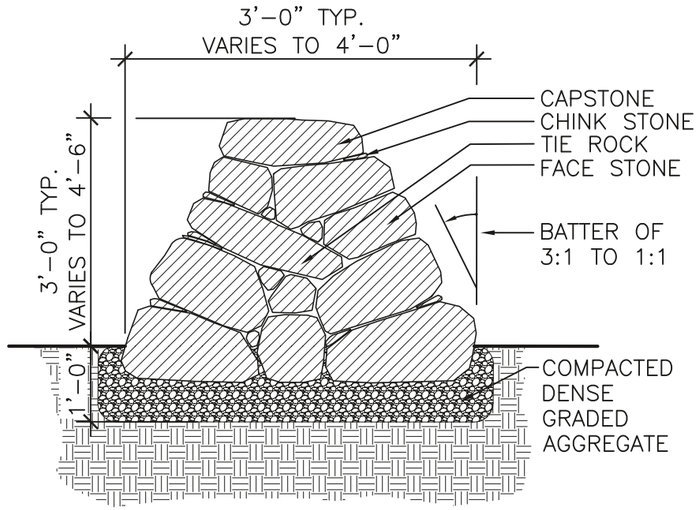


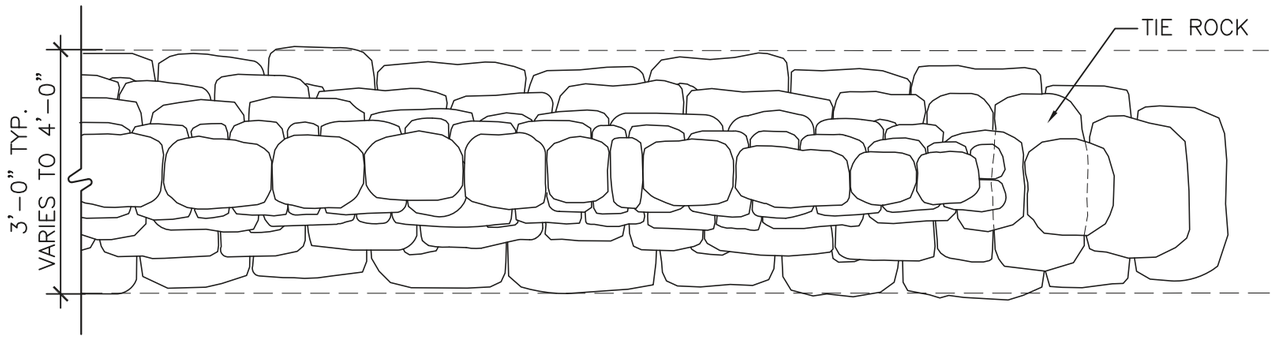
Figure 131. Stone wall, partly dismantled and relocated for defense works, dividing Study Field 1 and Menchy Field 2. Detail of view northwest from Cemetery Hill, 1863 (Library of Congress, Digital ID ppmsca 35051).



1 STONE WALL ELEVATION
SCALE: 1/2"=1'–0"



2 STONE WALL SECTION
SCALE: 1/2"=1'–0"



3 STONE WALL PLAN
SCALE: 1/2"=1'–0"

GENERAL NOTES

1. DRAWINGS DEPICT AGRICULTURAL STONE WALLS AND DO NOT PERTAIN TO STONE WALL DEFENSE WORKS OR BREASTWORKS CONSTRUCTED DURING THE BATTLE.
2. IF BUILDING NEW STONE WALL, FULL ARCHEOLOGY COMPLIANCE SHALL BE COMPLETED FOR A 1' DEEP FOUNDATION. A COMPACTED AGGREGATE BASE SHALL BE LAID TO MINIMIZE SETTLING AND FROST HEAVE.
3. IF REBUILDING EXISTING STONE WALL, RESTACK EXISTING STONE AND MATCH EXISTING ALIGNMENT AND APPEARANCE OF STONE SIZES, SHAPES, COLORS, AND PATTERNING.
4. IF BUILDING NEW STONE WALL, SELECT STONE FROM AN EXTERNAL SOURCE THAT IS CONTEMPORARY BUT COMPATIBLE WITH STONE SIZES, SHAPES, COLORS, AND PATTERNING IN LANDSCAPE.
5. IF REBUILDING EXISTING STONE WALL THAT LACKS ENOUGH EXISTING STONE TO ACHIEVE DESIGN HEIGHT, REBUILD LOWER PORTION USING EXISTING STONE AND UPPER PORTION USING STONE FROM AN EXTERNAL SOURCE. MATCH EXISTING ALIGNMENT AND APPEARANCE OF STONE SIZES, SHAPES, COLORS, AND PATTERNING.
6. WALLS ARE GENERALLY 3' TO 4' WIDE AT THE BASE, BY 3' TO 4.5' IN HEIGHT, WITH THE TOP STONES TYPICALLY 1' WIDE (BATTER 3:1 TO 1:1).
7. LAY STONES IN HORIZONTAL TIERS WITH EDGES BUTTED TOGETHER SO THAT LONGER EDGE IS PERPENDICULAR TO WALL. WALL CORE CONSISTS OF TIGHTLY PLACED STONES INTERWOVEN WITH FACE STONES AND TIE ROCKS.
8. MAINTAIN TIGHT CONTACT BETWEEN STONES, STAGGER JOINTS, AND PRESERVE A CONSISTENT BATTER, WITH THE SIZE OF THE STONES DIMINISHING AS THE WALL GROWS IN HEIGHT EXCEPT CAPSTONES.
9. WALLS SHALL BE TOPPED WITH CLOSELY–FITTING, LARGE, FLAT CAPSTONES FOR WEATHER–PROOFING AND LONGEVITY.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Stone Wall

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Fences, Gates, and Bridges, George A. Martin, 1900, reprinted 1999.
4. Stone by Stone, Robert M. Thorson, 2002.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #4

5. STONE AND RIDER FENCE

WALL COMPONENTS

- Face: The visible side of the wall. The character of the wall will vary greatly depending on size and shape of the stones and how tightly they are set.
- Batter: The relationship of rise to run in the face of a retaining wall or the angle that the wall inclines back; a batter of 1.5:1 to 3:1 will allow the placement of cross braces over the wall.
- Headers: Stones laid with their lengths perpendicular to the direction of the wall.
- Tie rocks: Headers that span the entire width of the wall.
- Chink stone: Small stone placed below a larger one to make it match the height of the adjacent course.
- Capstones: Heavy flat stones that top the wall, closely fit to diminish the flow of water and ice into the core of the wall. A wooden rail is placed on the capstone.
- Surface rock foundation: Existing surface rock will be retained as a base for rebuilt or new stone walls
- Excavation and foundation: If building a new stone wall, full archeology compliance shall be completed for a 1 foot deep foundation, and a compacted aggregate base shall be laid to minimize settling and frost heave. Place aggregate in 4 lifts. Each lift shall be a loose 4 inch depth and compacted to 3 inches.
- Stone sources: If rebuilding an existing stone wall, restack existing stone and match the existing alignment and appearance of stone sizes, shapes, colors, and patterning. If building a new stone wall, select stone from an external source that is contemporary but compatible with the stone sizes, shapes, colors, and patterning in the landscape. If rebuilding an existing stone wall that lacks enough existing stone to achieve the design height, rebuild the lower portion using existing stone and the upper portion using stone from an external source. Match the existing alignment and appearance of stone sizes, shapes, colors, and patterning.

RAIL COMPONENTS

- This fence typically consists of two horizontal rails. The lower rail, or seating rail, rests on top of the stone wall and the upper rail, or rider, sits in the cross brace. Rails are generally split, debarked, alkaline copper quaternary (ACQ) pressure treated yellow or red pine, or untreated black locust, oak, or poplar. The rails are sector (pie-slice) shape in cross section. The girth (circumference) shall range from 13 inches minimum to 16 inches maximum.

- Rider: The rider is the top-most rail of the fence. It is generally the heaviest rail in each panel to weigh down the fence, preventing the rails from breaking or collapsing if climbed upon.
- Cross Brace (also referred to as the rider post): The vertical element of the fence, usually 8 feet in length. It should be equal in size to the rails, debarked, and should not be milled, shortened, or rounded. It should be set firmly on the ground near the base of the stones and crossed at the lock joint.
- Lock Joint: The lock joint occurs between the rails where the cross braces intersect. The cross braces are angled so they rest on the lower rail and are then weighted down by rider above, creating a lock.

FENCE CONSTRUCTION AND MAINTENANCE

The stone and rider fence is common throughout the park. Typically, the stone portion of the fence is less than 3 feet wide by 3 feet high. Stones used in walls were typically unearthed by farmers in adjacent fields. Stone wall repairs should match local size, shape, color, and patterning. The wooden portion of the fence consists of 2 rails and 2 cross braces set firmly on the ground close to the base of the stones. The fence is typically 5 feet high to the top of the rider.

Walls require restacking every few years to reset stones that have rolled off or been pushed out of the wall by ice or visitors. Discourage visitors from climbing over and along walls and direct visitors to gaps in the walls to pass from one side of the wall to the other.

The wooden components may require restacking if dislodged. Vegetation along these fences is maintained with gas powered string trimmers and is fairly easy to maintain. Stone and rider fence along roadsides is trimmed three times a year. Fence rails are replaced every 7 to 10 years for untreated wood and every 15 to 20 years for treated wood.

AGRICULTURAL FUNCTION

These durable fences were generally referred to as “cow high-pig tight” because they were able to contain both small and large animals. The low height of the stone wall component of the fence necessitated adding the rider in order to give the fence the required mass and height to contain livestock. If a farmer had insufficient stone gathered from his field to attain a high stone wall, he was compelled to add the height by use of the rider.

BATTLE OUTCOME

This type of fence provided cover similar to a stone wall, and it was an obstacle to troops trying to cross over. During the battle, soldiers often dismantled the

wooden portion of the fence for military purposes. The rails were sometimes stacked atop the wall to provide a tighter and higher barricade or were removed altogether and carried to a new location for incorporation in construction of defense works. Both armies also removed rails for firewood during their occupation of the Gettysburg area.

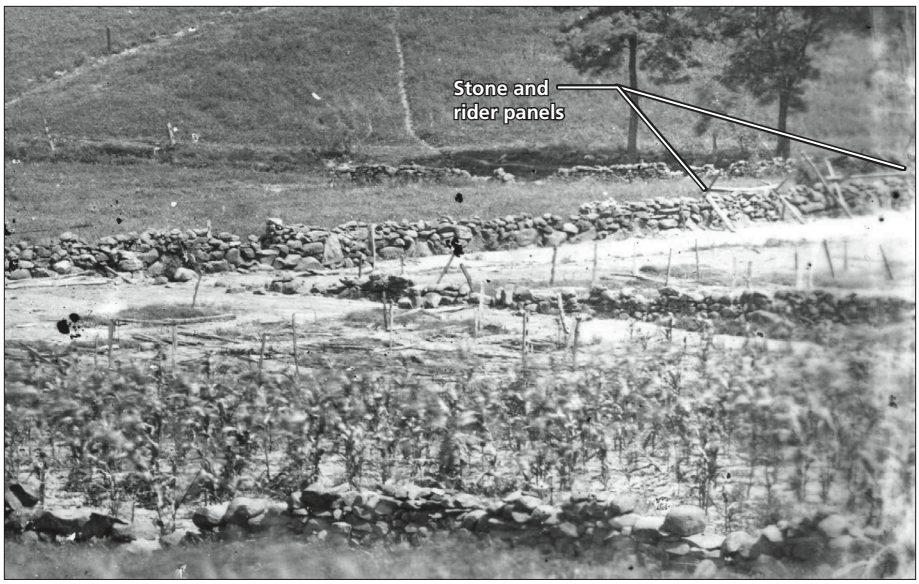


Figure 132. Stone and rider fence panels along east side of Brickyard Lane. Detail of view southeast from East Cemetery Hill, 1863 (GETT 41135, Historic Photograph Collection, 2B-2038b).

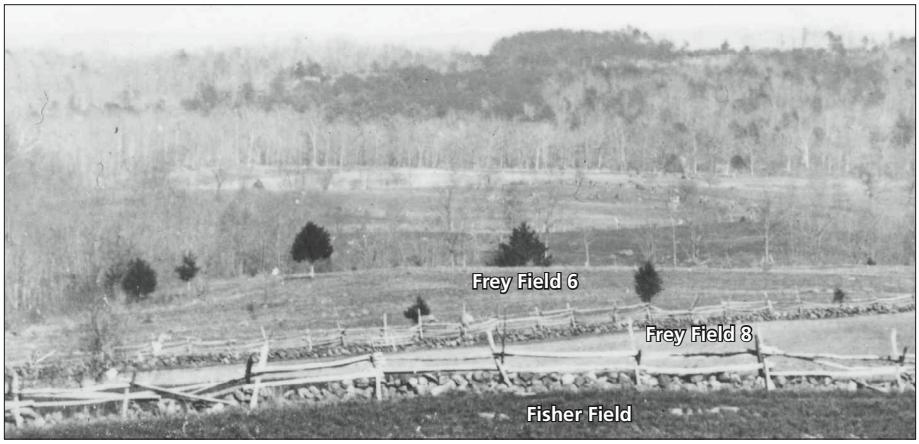


Figure 133. Stone and rider fences between Fisher and Frey fields. Detail of view northeast from Cemetery Ridge, 1882 (GETT 41135, Historic Photograph Collection, 3C-3004i)

Figure 134. Stone and rider fence along south boundary of Sherfy Meadow. View northeast from Wheatfield Road, September 2014. Note when the wooden component is rebuilt, milled posts will no longer be used (OCLP 0027).

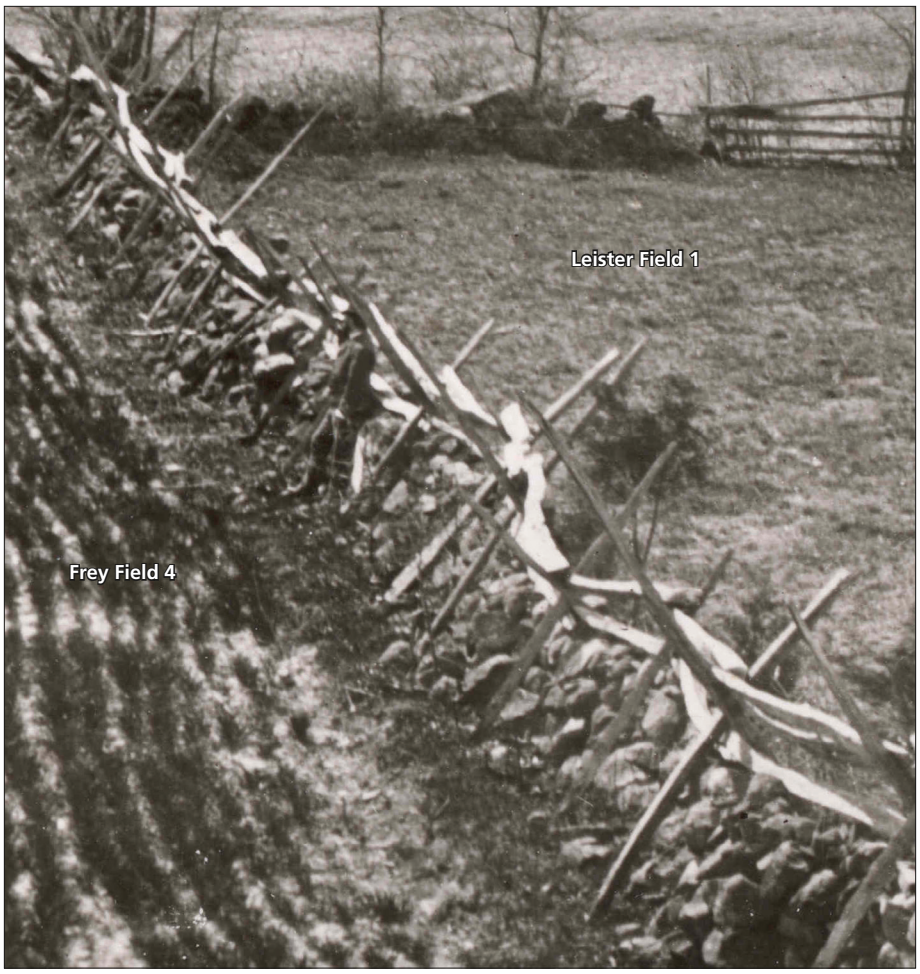
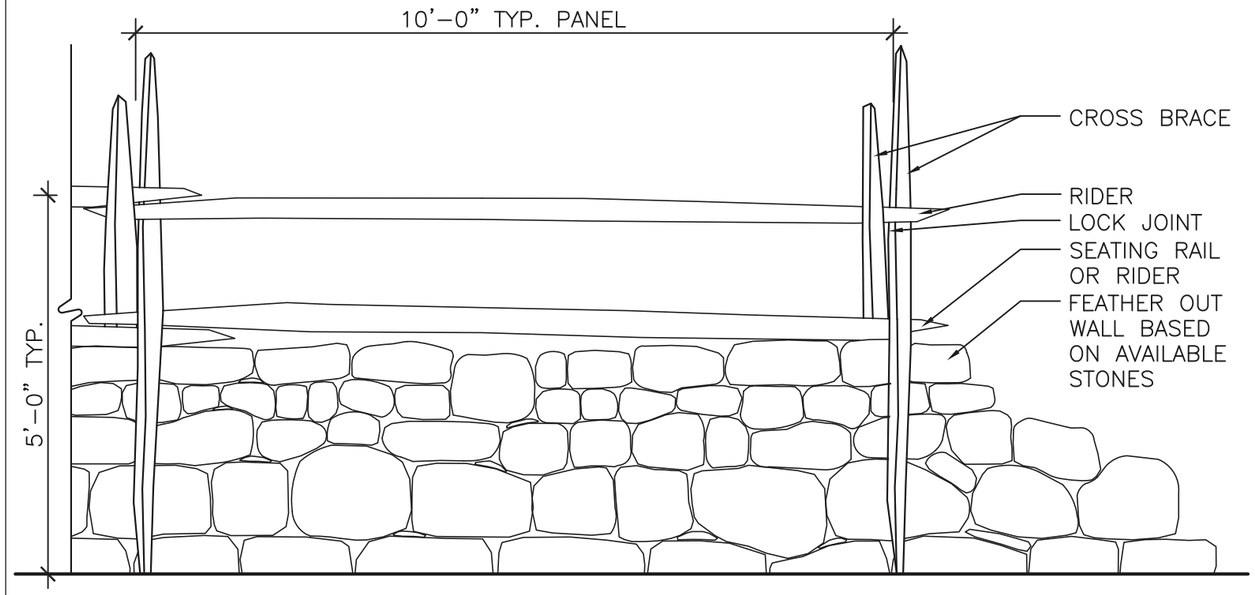
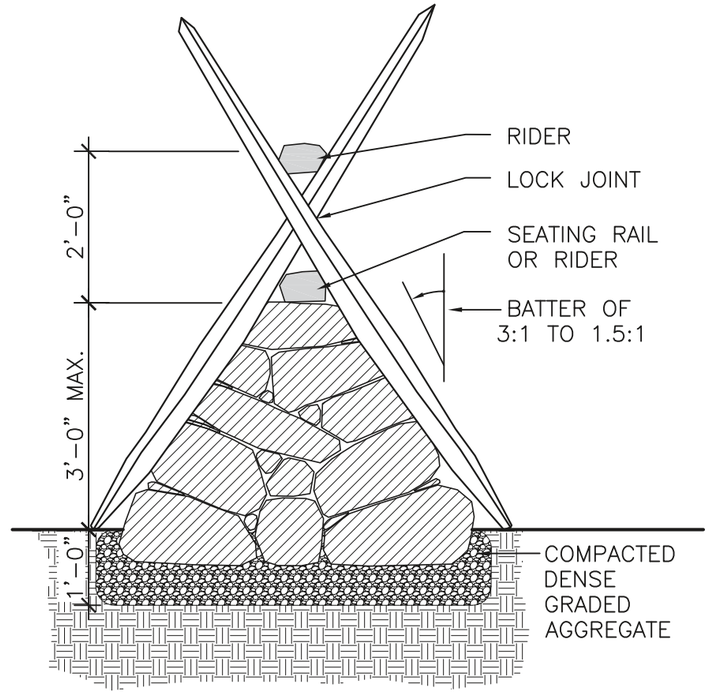


Figure 135. Stone and rider fence between Frey and Leister fields. Detail of view west, 1882 (GETT 41135, Historic Photograph Collection, 3C-3010c).

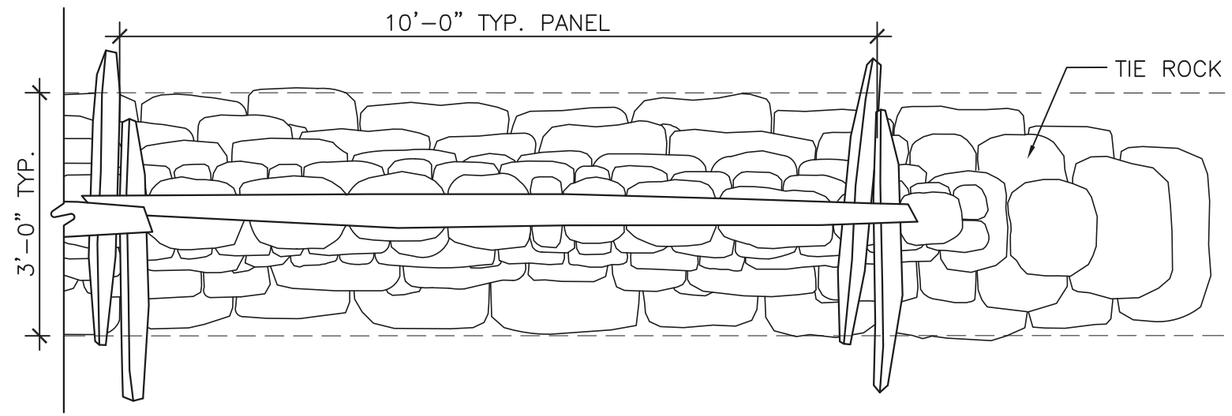
Figure 136. Stone and rider fence along the McMillan Orchard 1 west boundary. View east from West Confederate Avenue, September 2013 (OCLP PC049).



1 STONE AND RIDER FENCE ELEVATION
SCALE: 1/2"=1'–0"



2 SECTION AT CROSS BRACE
SCALE: 1/2"=1'–0"



3 STONE AND RIDER FENCE PLAN
SCALE: 1/2"=1'–0"

GENERAL NOTES

1. STONE PORTION OF WALL SHALL BE TYPICALLY 2' TO 3' WIDE AT THE BASE, BY 3' IN HEIGHT (SEE DRAWING #4 OF STONE WALL FOR MORE DETAIL).
2. LAY STONES IN HORIZONTAL TIERS WITH EDGES BUTTED TOGETHER SO THAT LONGER EDGE IS PERPENDICULAR TO WALL. WALL CORE SHALL CONSIST OF TIGHTLY PLACED STONES INTERWOVEN WITH FACE STONES AND TIE ROCKS.
3. TIGHT CONTACT BETWEEN STONES SHALL BE MAINTAINED, JOINTS STAGGERED, AND A CONSISTENT BATTER SHALL BE PRESERVED, WITH THE SIZE OF THE STONES DIMINISHING AS THE WALL GROWS IN HEIGHT.
4. RIDERS AND CROSS BRACES SHALL BE ALKALINE COPPER QUATERNARY (ACQ) PRESSURE TREATED SOUTHERN YELLOW PINE, RED PINE, OR UNTREATED BLACK LOCUST SPECIES. ALL LUMBER SHALL BE SPLIT AND WITHOUT BARK. RIDERS SHALL BE 11' IN LENGTH AND CROSS BRACES SHALL BE 8' IN LENGTH.
5. CROSS BRACES SHALL BE SET FIRMLY ON THE GROUND AND TIGHT AGAINST FACE OF WALL AND CROSSED AT THE LOCK JOINT.
6. RIDER SHALL BE THE HEAVIEST RAIL TO WEIGH DOWN THE LOCK JOINT.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Stone and Rider Fence

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Fences, Gates, and Bridges, George A. Martin, 1900, reprinted 1999.
4. Stone by Stone, Robert M. Thorson, 2002.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #5

6. STONE AND RAIL FENCE

WALL COMPONENTS

- Face: The visible side of the wall. The character of the wall face will vary greatly depending on size and shape of the stones and how tightly they are set.
- Batter: The relationship of rise to run in the face of a retaining wall or the angle that the wall inclines back; a 3:1 batter should be used for walls the carry a lot of running, freezing, and thawing water; a 1:1 batter should be used in drier areas.
- Headers: Stones laid with their lengths perpendicular to the direction of the wall.
- Tie rocks: Headers that span the entire width of the wall.
- Chink stone: Small stone placed below a larger one to make it match the height of the adjacent course.
- Capstones: Heavy flat stones that top the wall, closely fit to diminish the flow of water and ice into the core of the wall, improving wall longevity.
- Surface rock foundation: Existing surface rock will be retained as a base for rebuilt or new stone walls.
- Excavation and foundation: If building a new stone wall, full archeology compliance shall be completed for a 1 foot deep foundation, and a compacted aggregate base shall be laid to minimize settling and frost heave. Place aggregate in 4 lifts. Each lift shall be a loose 4 inch depth and compacted to 3 inches.
- Stone sources: If rebuilding an existing stone wall, restack existing stone and match the existing alignment and appearance of stone sizes, shapes, colors, and patterning. If building a new stone wall, select stone from an external source that is contemporary but compatible with the stone sizes, shapes, colors, and patterning in the landscape. If rebuilding an existing stone wall that lacks enough existing stone to achieve the design height, rebuild the lower portion using existing stone and the upper portion using stone from an external source. Match the existing alignment and appearance of stone sizes, shapes, colors, and patterning.

FENCE COMPONENTS

- Rails: The horizontal element of the fence, split, debarked, alkaline copper quaternary (ACQ) pressure treated yellow or red pine, or untreated black locust, and 11 feet in length with a taper in the last 12 inches of each end. The girth (circumference) shall range from 13 inches minimum to 16 inches maximum.

- Posts: The vertical element of the fence, alkaline copper quaternary (ACQ) pressure treated yellow or red pine, or untreated black locust, usually 4 by 8 inches in width and thickness, and 8 feet long with the lower 3 feet below ground. Each post contains 3 to 4 mortised post holes, typically 2.5 inches wide by 5 inches high. See Drawing #11 for post treatment in wet areas.

FENCE CONSTRUCTION AND MAINTENANCE

The stone and rail fence is uncommon and only found at the Frey Field 3 east boundary immediately west of Taneytown Road. The stone portion of the fence is typically less than 3 feet in height by 3 feet in width. Stones used in walls were typically unearthed by farmers in adjacent fields and added to this type of wall as they were found, giving it a piled-up look. Farmers constructed stone and rail fences in one of two ways. For the first method, a farmer stacked loose small rubble along an existing post and rail fence line. In time, the farmer would not replace the bottom rails where the stone rubble had taken its place. These fences appear as a post and rail fence inserted within the line of the short and less substantial stone wall.

For the second method, the farmer actually began construction of an agricultural stone wall but did not have enough materials to complete or maintain a stand-alone wall. In that event, with a wall already set on its huge stone foundation stones, it made it impossible to sink post holes. Consequently, post and the rail panels were set inside the wall, i.e., in the cultivated field or pasture.

Stone wall repairs should match local size, shape, color, and patterning. The wooden portion of the fence is built exactly like the post and rail fence, however; the number for rails will depend upon the height of the wall. If the wall is very low, 3 to 4 rails may be required in the panel. If the wall is higher elsewhere along the run, a panel may require only 2 rails. The overall fence is typically 5 feet high.

Walls require restacking every few years to reset stones that have rolled off or been pushed out of the wall by ice or visitors. Discourage visitors from climbing over and along walls and direct visitors to gaps in the walls to pass from one side of the wall to the other. The wooden components may require replacement if components are dislodged. Vegetation along the base of the wall is maintained with gas powered string trimmers. Fence rails are replaced every 7 to 10 years for untreated wood and every 15 to 20 years for treated wood.

AGRICULTURAL FUNCTION

These fences required less labor to build than a tall stone wall, but had a greater mass than a post and rail fence. Many of these fences were located south of town, where clearing of the smaller agricultural fields provided excess rubble stone, but not enough for a stand-alone wall.

BATTLE OUTCOME

This type of fence provided cover similar to a stone wall and became an obstacle to moving troops. During the battle, soldiers often dismantled the wooden portion of the fence for military purposes. The rails were sometimes stacked atop the wall to provide a tighter and higher barricade or were removed altogether and carried to a new location for incorporation in construction of defense works. Both armies also removed rails for firewood during their occupation of the Gettysburg area.

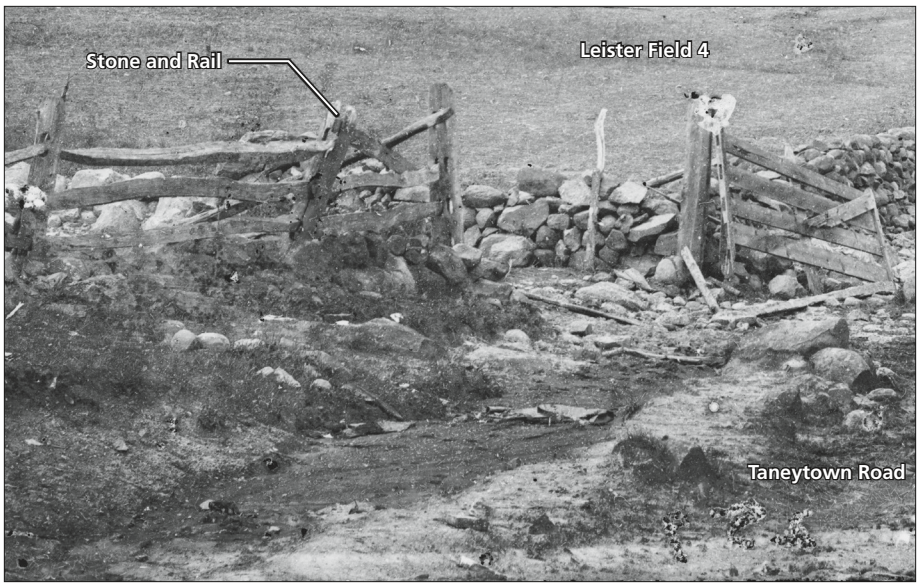
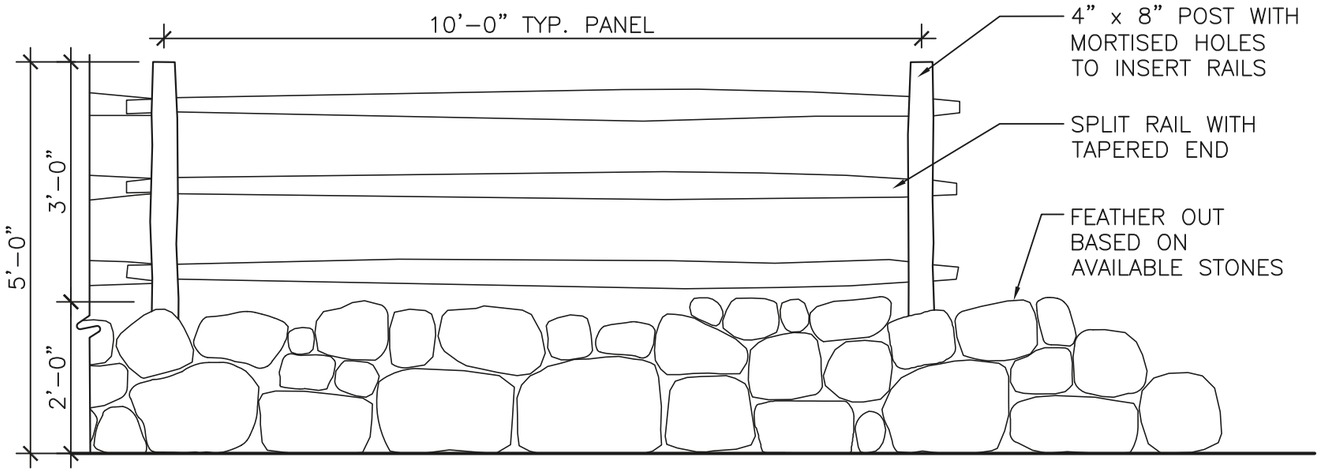


Figure 137. Stone and rail fence at the east boundary of Frey Field 5. The post and rail component is installed behind, or west, of the stone wall. Detail of view northwest, 1863 (Library of Congress, Digital ID cwpb 00887).

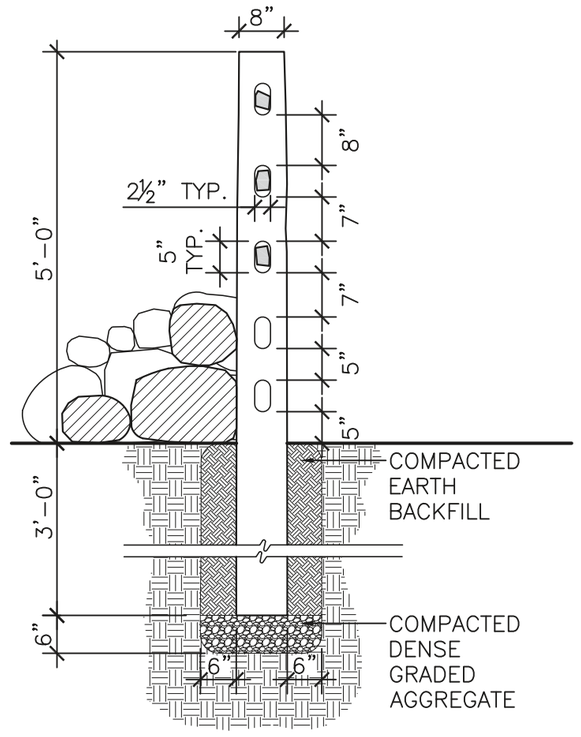
Figure 138. Stone and rail fence along east boundary of Frey Field 3. After this photograph was taken, the park scattered the stacked stones to depict gathered rubble stones randomly set to replace a missing lower rail. View northwest, September 2014 (OCLP 0069).

Figure 139. Stone and rail fence along east boundary of Frey Field 3. View northwest, September 2014 (OCLP 0058).



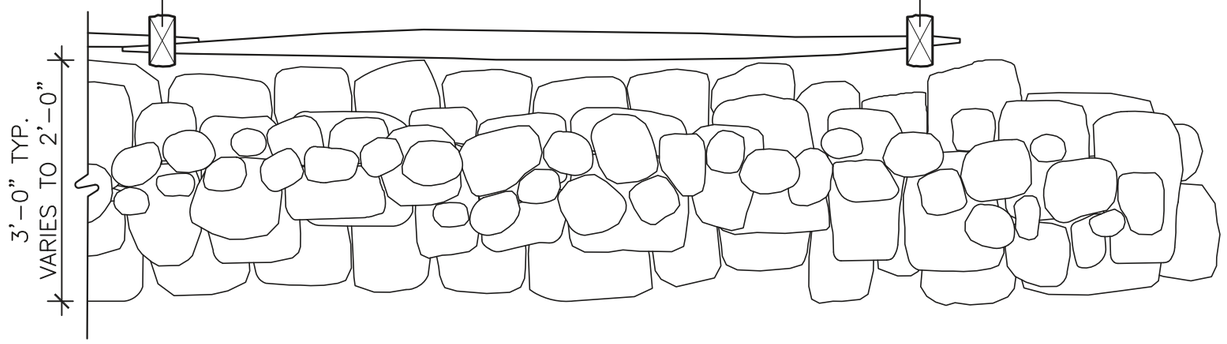
1 STONE AND RAIL FENCE ELEVATION

SCALE: 1/2"=1'–0"



2 POST INSTALLATION

SCALE: 1/2"=1'–0"



3 STONE AND RAIL FENCE PLAN

SCALE: 1/2"=1'–0"

GENERAL NOTES

1. STONE PORTION OF WALL SHALL BE TYPICALLY 2' TO 3' WIDE AT THE BASE, BY 2' IN HEIGHT (SEE DRAWING #4 OF STONE WALL FOR MORE DETAIL). LUMBER PORTION FENCE SHALL BE 5' IN HEIGHT.
2. LAY STONES IN HORIZONTAL TIERS WITH EDGES BUTTED TOGETHER SO THAT LONGER EDGE IS PERPENDICULAR TO WALL. WALL CORE SHALL CONSIST OF TIGHTLY PLACED STONES INTERWOVEN WITH FACE STONES AND TIE ROCKS.
3. POSTS SHALL BE BLACK LOCUST SPECIES, WITHOUT BARK AND SHALL BE 8' IN HEIGHT AND SET 3' IN GROUND. POSTS SHALL HAVE A HEAVY DUTY 2½" WIDE BY 1" DEEP GALVANIZED STAPLE DRIVEN INTO THE TOP OF THE POST.
4. RAILS SHALL BE ACQ PRESSURE TREATED POPLAR OR OAK, WITHOUT BARK, AND 11' IN LENGTH. RAILS SHALL BE SPLIT WITH 90% OF THE ANGLE FACING OUT. ENDS SHALL BE TAPERED IN THE LAST 12", AND GIRTH OF WOOD RAIL SHALL BE 13" MINIMUM AND 16" MAXIMUM. TYPICALLY, ONE PANEL CONSISTS OF 3 RAILS.
5. FINISH GRADE SHALL BE PITCHED AWAY FROM POSTS.
6. FOR POST TREATMENT OPTIONS, SEE DRAWING #11.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Stone and Rail Fence

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Fences, Gates, and Bridges, George A. Martin, 1900, reprinted 1999.
4. Stone by Stone, Robert M. Thorson, 2002.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #6

7. POST AND RAIL FENCE

FENCE COMPONENTS

- Rails: Horizontal elements of the fence are alkaline copper quaternary (ACQ) pressure treated yellow or red pine, or untreated black locust, and 11 feet in length with a taper in the last 12 inches of each end. Rails are split with 90 percent or more of the angle faced out. The girth (circumference) shall range from 13 inches minimum to 16 inches maximum.
- Posts: Vertical elements of the fence are usually 4 by 8 inches and 8 feet in height, with the lower 3 feet set in the ground. Each post contains 5 mortised post holes, typically 2.5 inches wide by 5 inches high. The mortises are graduated in distance between each hole, descending in value the lower down the post. As a result, the rails are tighter (pig-tight) at the bottom and less tight at the top. Each post shall have a heavy duty 2.5 inch wide by 1 inch deep galvanized staple driven into the top. At the time of the battle, some fences contained 6 rails, though they were less common.

FENCE CONSTRUCTION AND MAINTENANCE

The post and rail fence is very common and is found throughout the park. The preferred species for posts and rails is black locust, but the cost may be too high to continue purchasing this lumber. Typically, one panel is 10 feet in length by 8 inches thick and 5 feet high. Post and Rail fence is replaced every 7 to 10 years for untreated wood and every 15 to 20 years for treated wood.

An exception is the post and rail fence along Emmitsburg Road where 11 foot spacing of posts requires 12 foot long rails. This variation is not based on historic precedent, but was an attempt to save labor costs. This has become problematic because it requires ordering and stockpiling a different rail length. In the future, when the fence requires total replacement, the park may rebuild with new post holes set at 10 feet spacing (which will require archeological review), and use 11-foot rails to save on material costs, storage, and time.

AGRICULTURAL FUNCTION

Post and rail fences were favored because they conserved timber, used less space than the Virginia worm fencing, and weed control was easier. Adding the graduated rails within each panel assured that this type of fence was the elite among the wooden fences for farming purposes. Their main disadvantage was the high cost of materials, tools, and labor needed to create the mortised holes and to dig the post holes. The post and rail fence had a major upfront commitment of time, labor, and cost, but was only rivaled by stone walls for longevity and ease of maintenance.

BATTLE OUTCOME

This five-foot high wooden fence was more difficult to tear down than the Virginia worm fence, and hence was an obstacle that soldiers had to climb over while under fire. These massive and sturdy fences were so formidable to the armies that whenever possible, officers detailed men with axes and saws to cut them down prior to an advance.[12]

Figure 140. Post and rail fence along north boundary of Leister Field 3. Detail of view northwest, 1863 (GETT 41136, Tipton Collection, T2403).

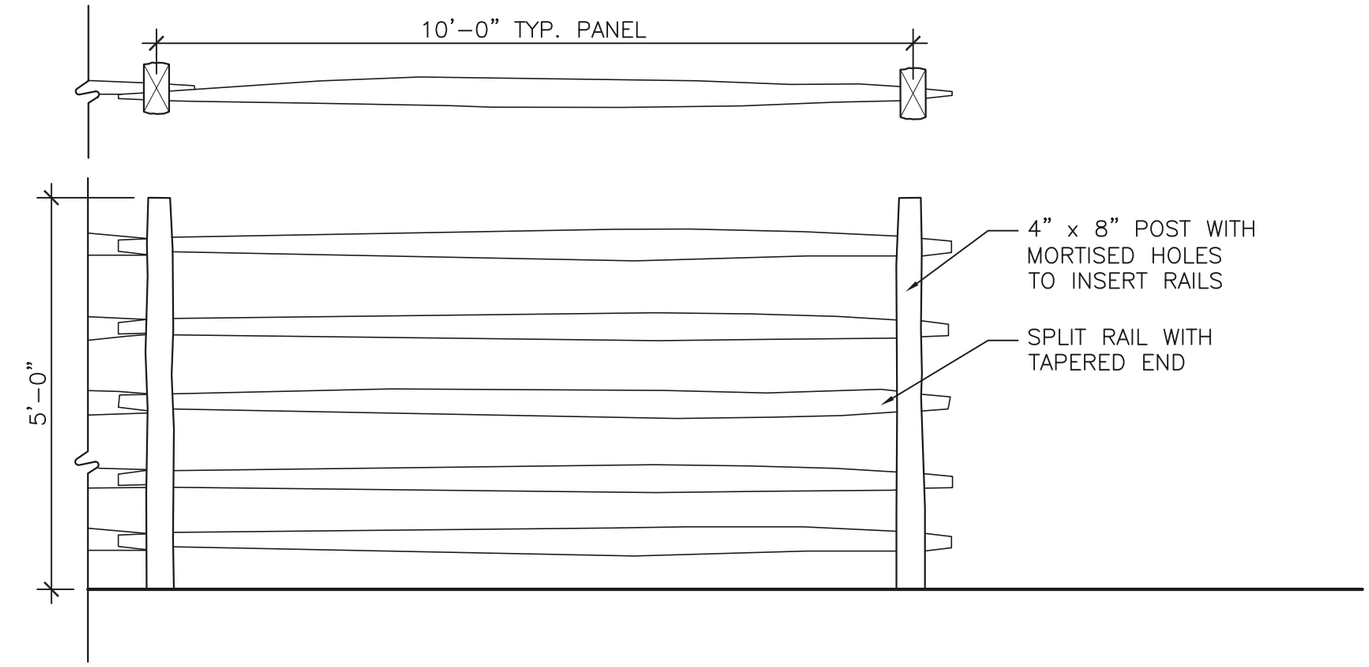
Figure 141. Post and rail fence along north boundary of Leister Field 3. Noted the graduated spacing of the rails. Detail of view northwest, 1863 (GETT 41136, Tipton Collection, T2403).

Figure 142. Post and rail fence along south boundary of McClean Field 8. Detail of view northwest from Mummasburg Road, 1870s (GETT 41136, Tipton Collection, T1801a).

Figure 143. Post and rail fence along west boundary of Small Field 2. Detail of view southwest, circa 1875 (GETT 41135, Historic Photograph Collection, 2B-2049a).

Figure 144. Post and rail fence along south boundary of McKnight Field 3. View northwest, September 2014 (OCLP 0208).

Figure 145. Post and rail fence along north boundary of Frey Field 3. View north, September 2014 (OCLP 0071).

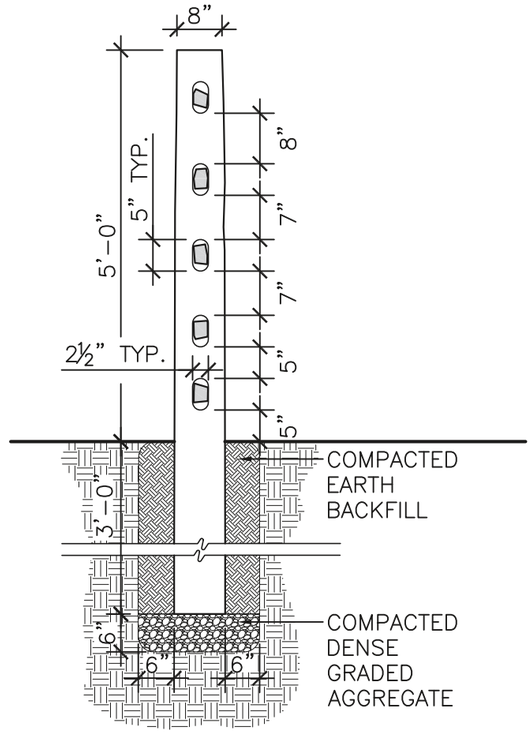


1 POST AND RAIL FENCE PLAN AND ELEVATION

SCALE: 1/2"=1'–0"

GENERAL NOTES

1. POSTS SHALL BE BLACK LOCUST SPECIES, WITHOUT BARK AND SHALL BE 8' IN HEIGHT AND SET 3' IN GROUND. POSTS SHALL HAVE A HEAVY DUTY 2½" WIDE BY 1" DEEP GALVANIZED STAPLE DRIVEN INTO THE TOP OF THE POST.
2. RAILS SHALL BE ACQ PRESSURE TREATED POPLAR OR OAK, WITHOUT BARK, AND 11' IN LENGTH. RAILS SHALL BE SPLIT WITH 90% OF THE ANGLE FACING OUT. ENDS SHALL BE TAPERED IN THE LAST 12", AND GIRTH (CIRCUMFERENCE) OF RAIL SHALL BE 13" MINIMUM AND 16" MAXIMUM. TYPICALLY, ONE PANEL CONSISTS OF 5 RAILS.
3. FINISH GRADE SHALL BE PITCHED AWAY FROM POSTS.
4. FOR POST TREATMENT OPTIONS, SEE DRAWING #11.



2 POST INSTALLATION

SCALE: 1/2"=1'–0"

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Post and Rail Fence

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Fences, Gates, and Bridges, George A. Martin, 1900, reprinted 1999.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #7

8. POST AND PLANK OR SLAB MORTISED FENCE

FENCE COMPONENTS

- Plank or Slab Boards: Unsquared or untrimmed sawn lumber 1 inch in thickness ranging from 10 to 12 inches in width and extending 11 feet in length minimum. In some cases, the planks are milled to a narrower width, ranging from 6 to 10 inches. Both ends are shallow tapers to fit in mortise holes. Each panel typically consists of 4 to 5 boards slid into posts with mortised holes and nailed to intermediate posts. The distance from the ground to the lowest board is typically 3 to 6 inches.
- Mortised Line Posts: Vertical elements made of 4 by 8 inch milled lumber, usually 8 feet in height, with the lower 3 feet set in the ground. Posts contain mortised holes, typically 2.5 inches wide by 5 inches high. Spacing varies according to board width.
- Intermediate Posts: Vertical elements that support planks at their midpoint. Posts feature one split or milled side for nailing the planks into and are 8 feet in height with the lower 3 feet set in the ground. In some cases, a 1 inch thick piece of milled lumber is attached to the outside face of the planks, sandwiching the planks between this facing board and the intermediate post.

FENCE CONSTRUCTION AND MAINTENANCE

The post and plank or slab fence is uncommon and only found at the Sherfy Fields 1, 2, and 5 boundaries along Emmitsburg Road. Typically, one panel is 10 feet in length by 5 feet in height with a width of between 9 and 10 inches from the front of the line post to the back of the intermediate post. The long planks are supported mid-length by intermediate posts. Spacing between boards ranges from 2 to 4 inches. All plank or slab fences presently in the park are painted white.

AGRICULTURAL FUNCTION

Farmers favored plank or slab fences because they did not have to purchase milled lumber but could make the boards themselves with a portable lumber mill or by a two-handed saw cutting along the grain of a felled tree. They could hand adze the tapered ends with an adze or axe. The resulting fence was cheaper and more substantial than the thin milled lumber nailed into posts for the sawn board fences. When a farmer painted a plank or slab fence, it had the appearance of the more refined milled and sawn board fences put up at great expense by wealthier owners. Posts are typically on the fence owner's side and board cladding on the neighbor or road side.

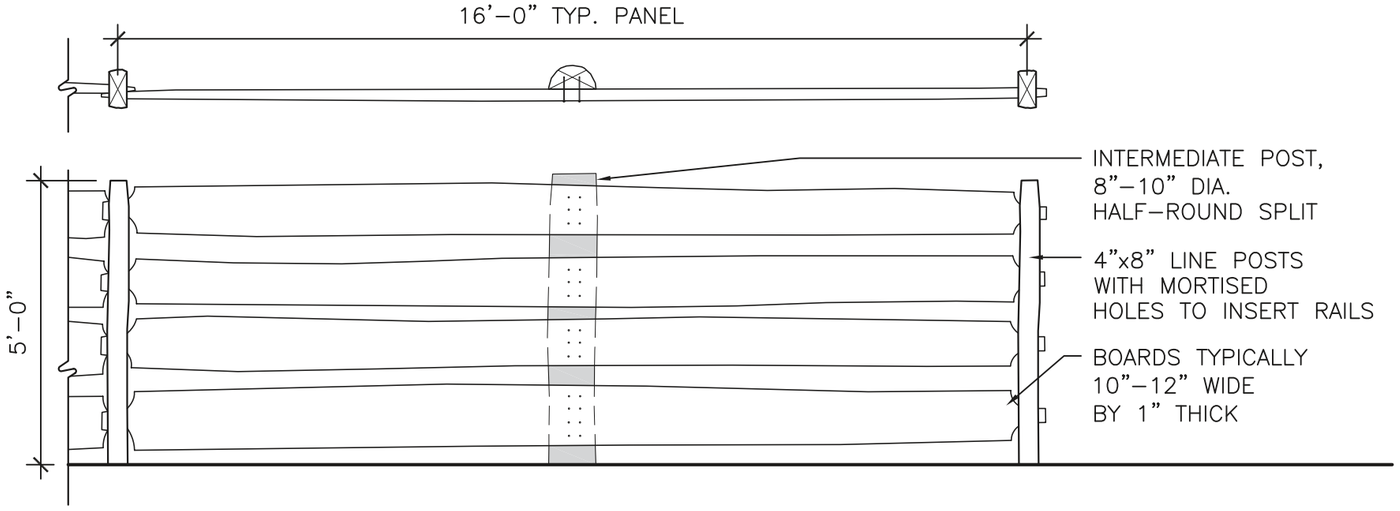
BATTLE OUTCOME

This five foot high wooden fence was more difficult to tear down than the Virginia worm fence and post and rail due to the mortised and nailed boards. The fence was considered an obstacle during the battle, as soldiers had to climb over the fence while under fire. The fence also provided some cover.

Figure 146. Post and plank fence along Baltimore Pike at East Cemetery Hill, circa 1885 (GETT 41136, Tipton Collection, T1833).

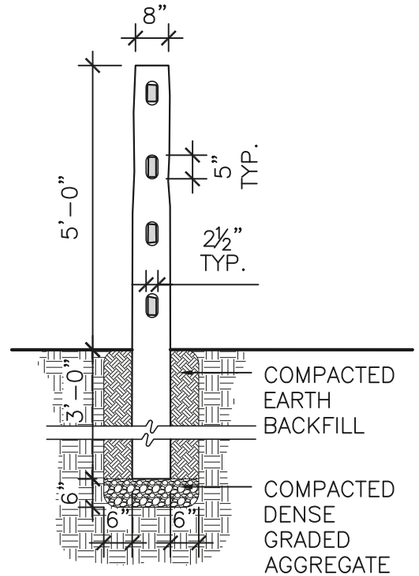
Figure 147. Post and plank fence with mortised posts, at Sherfy farm, circa 1890 (GETT 41136, Tipton Collection, T2499).

Figure 148. Post and plank fence along both sides of the road at Sherfy farm, September 2014. Note the intermediate posts are on the inside/ owner's side of the fence (OCLP 5924).



1 PLANK OR SLAB BOARD FENCE PLAN AND ELEVATION

SCALE: 3/8"=1'–0"



2 LINE POST INSTALLATION

SCALE: 3/8"=1'–0"

GENERAL NOTES

1. BOARDS SHALL BE SOUTHERN YELLOW PINE, FULL DIMENSIONAL ROUGH SAWN STOCK AND ARE 17' LONG. ONE PANEL TYPICALLY CONSISTS OF 4 TO 5 PLANKS.
2. POSTS SHALL BE BLACK LOCUST SPECIES, WITHOUT BARK AND SHALL BE 8' IN HEIGHT AND SET 3' IN GROUND.
3. PANEL SHALL BE SUPPORTED BY AN INTERMEDIATE POST SET BEHIND PLANKS AND SHALL BE INSTALLED PER LINE POSTS. INTERMEDIATE POST MAY INCLUDE A MILLED BOARD ON THE OUTWARD SIDE OF FENCE TO COVER NAIL HEADS.
4. PAINTED FINISH SHALL CONSIST OF ONE COAT SHERWIN–WILLIAMS COMPANY A–100 ALKYD EXTERIOR WOOD PRIMER, OR APPROVED EQUAL AND TWO COATS SHERWIN–WILLIAMS COMPANY A–100 EXTERIOR ACRYLIC LATEX FLAT, A6 SERIES, OR APPROVED EQUAL.
5. FINISH GRADE SHALL BE PITCHED AWAY FROM POSTS.
6. FOR POST TREATMENT OPTIONS, SEE DRAWING #11.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Plank or Slab Board Fence

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Fences, Gates, and Bridges, George A. Martin, 1900, reprinted 1999.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #8

9. SAWN BOARD NAILED FENCE

FENCE COMPONENTS

- Boards: Milled lumber 1 inch thick ranging from 4 to 8 inches in height and extending 7 to 8 feet in length. Each panel typically consists of 4 to 5 boards nailed to vertical posts. Within a fence panel, boards could vary in width. The distance from the ground to the lowest board is typically 5 to 9 inches.
- Posts: Vertical elements made of 6 by 6 inch milled lumber, usually 8 feet in height, with the lower 3 feet set in the ground. Posts were set on the inner side of the property. An additional plank could cover the nailed ends on the outward side (roadside or neighbor's side) of the post to strengthen the fence.

FENCE CONSTRUCTION AND MAINTENANCE

The sawn board fence is common and is found throughout the park. Typically one panel is 7 to 8 feet in length and 7 inches wide by 5 feet in height. Typically the upper and lower boards align from panel to panel, but the intermediate boards may not align. Spacing between boards ranges from 2 to 6 inches. Many sawn board fences are painted white.

AGRICULTURAL FUNCTION

Sawn board fences were not valued as an agricultural fence but as a "show" fence. They were invariably built along road frontages, to enclose entrance lanes, and to enclose livestock holding areas at barns and pens. These venues gave the landowner the ability to showcase his property and his wealth because these kinds of fences were constructed entirely of purchased materials and thus showed he had surplus personal wealth. Sawn board fences were also built by owners of small suburban tracts who had no free access to split rails, stone, or slab boards, and had to purchase fencing materials. As a result, they opted for the more refined look of the painted and trimmed boards. Posts are typically on the fence owner's side and board cladding on the neighbor or road side.

BATTLE OUTCOME

This five foot high wooden fence was more difficult to tear down than the Virginia worm fence, but easier to knock off the boards than disassemble a post and rail. The fence was considered an obstacle during the battle, as soldiers had to climb over or knock apart the fence while under fire. The fence also provided some cover.

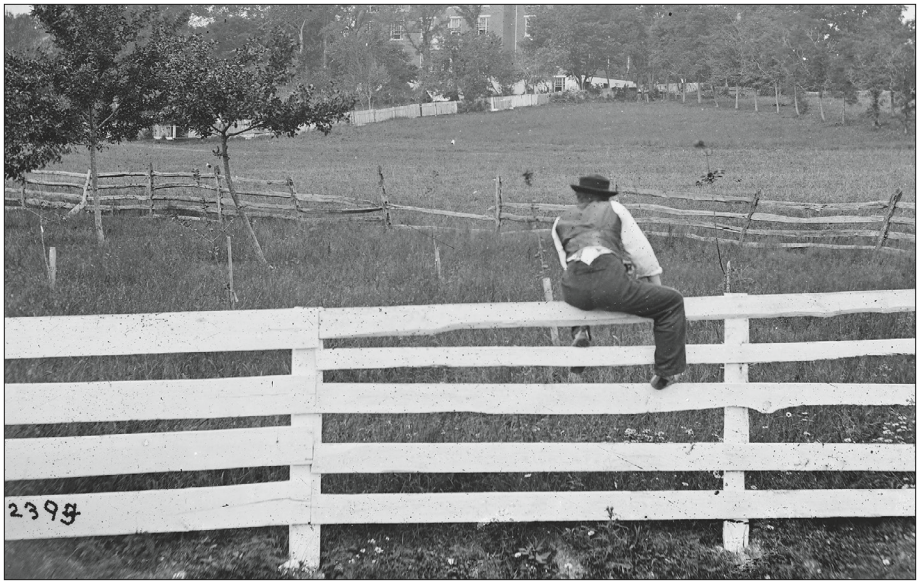
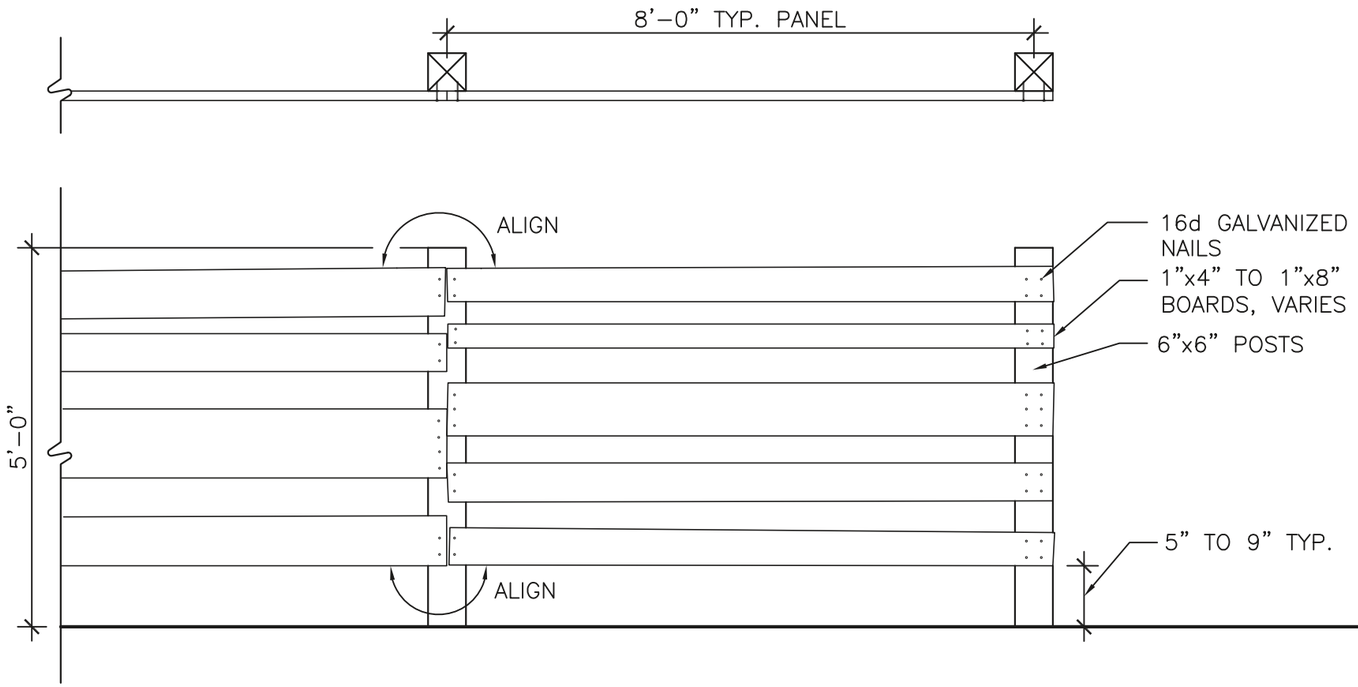


Figure 149. Detail of sawn board nailed fence west of the Lutheran Seminary viewed from the Foulk Farm, 1863. Note the variable size of nailed boards (Library of Congress, Digital ID cwpb 01650).

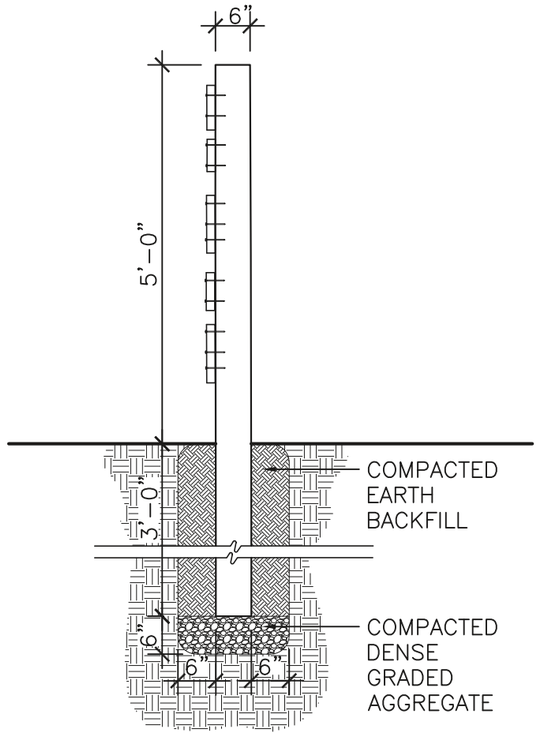
Figure 150. Sawn board nailed fence at Pfeffer House along Baltimore Pike, 1863. Note the vertical boards nailed to the posts to secure the ends of the horizontal boards (GETT 41135, Historic Photograph Collection, 2B-2198).

Figure 151. Sawn board nailed fence painted white along Brian Field 1, September 2013 (OCLP PC066).



1 SAWN BOARD NAILED FENCE PLAN AND ELEVATION

SCALE: 1/2"=1'–0"



2 POST INSTALLATION

SCALE: 1/2"=1'–0"

GENERAL NOTES

1. DESIGN DRAWING IS SUGGESTED STYLE FOR APPEARANCE AND IS NOT A TEMPLATE FOR EVERY TWO PANELS IN THE FENCE.
2. POSTS SHALL BE BLACK LOCUST SPECIES, WITHOUT BARK AND SHALL BE 8' IN HEIGHT AND SET 3' IN GROUND. POST MAY INCLUDE A PLANK ON THE OUTWARD SIDE OF FENCE TO COVER NAIL HEADS.
3. BOARDS SHALL BE 7' TO 8' LONG BY 4" TO 8" WIDE BY 1" THICK, AND ONE PANEL SHALL CONSIST OF 4 TO 5 BOARDS.
4. UNPAINTED BOARD FENCES SHALL BE ALKALINE COPPER QUATERNARY (ACQ) PRESSURE TREATED SOUTHERN YELLOW PINE SPECIES, WITHOUT BARK.
5. PAINTED FINISH SHALL CONSIST OF ONE COAT SHERWIN–WILLIAMS COMPANY A–100 ALKYD EXTERIOR WOOD PRIMER, OR APPROVED EQUAL, AND TWO COATS SHERWIN–WILLIAMS COMPANY A–100 EXTERIOR ACRYLIC LATEX FLAT, A6 SERIES, OR APPROVED EQUAL.
6. FINISH GRADE SHALL BE PITCHED AWAY FROM POSTS.
7. FOR POST TREATMENT OPTIONS, SEE DRAWING #11.

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Sawn Board Nailed Fence

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Fences, Gates, and Bridges, George A. Martin, 1900, reprinted 1999.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted

Drawing #9

10. PICKET FENCE

FENCE COMPONENTS

- Rails: The top rail (generally 1 by 2 inches and 6 foot length) and bottom rail (generally 1 by 3 inches and 6 foot length) hold the pickets.
- Kickboard: A horizontal board (generally 1 by 4 inches) that closes up the pickets to deter small vermin and rodents from getting into a garden or to keep chickens from escaping a yard.
- Posts: The vertical members of the fence, typically 4 by 4 inch milled black locust, which are set 2 to 2.5 feet into the ground. Sections of post set below grade should receive 1/2 by 2 inch "Bor-8" impel rods spaced 9 inches apart.
- Pickets: The vertical members of the fence which are evenly spaced (generally 3 feet high by 2 to 3 inch wide and 1 to 2 inch spacing). Each fence section contains 15 to 18 pickets. The upper end of each picket is tapered. Historic photographs depict the variety of picket styles in the Gettysburg landscape.

FENCE CONSTRUCTION AND MAINTENANCE

The picket fence is common and is found throughout the park. The fence is generally 3 to 4 feet high and one panel extends 6 feet in length. The fence bed is generally 6 inches wide. Each fence typically had a unique type of picket and the park has simplified some to facilitate rebuilding and repairs. All picket fences within the park are painted white.

Fences are cared for by the buildings and utilities maintenance group. Most picket fences stand within Class A and B lawn areas (areas frequently mown) and a lawn mower and string trimmer are used to keep the grass at a height of about 3 inches during the growing season.

AGRICULTURAL FUNCTION

Picket fences typically surrounded the domestic core of the property, protecting the yard, laundry area, and kitchen garden from roaming livestock and containing poultry, pets, and children without blocking views.

BATTLE OUTCOME

Picket fences were obstacles to movement since they increased the amount of area associated with dwellings around which the advancing battle lines had to move. They were readily and easily dismantled for a firewood source and some pickets were used for grave markers.

Figure 152. Picket fence at Leister House, 1860s. Note the ornamentation of pickets (Sue Boardman Collection, SV606a).

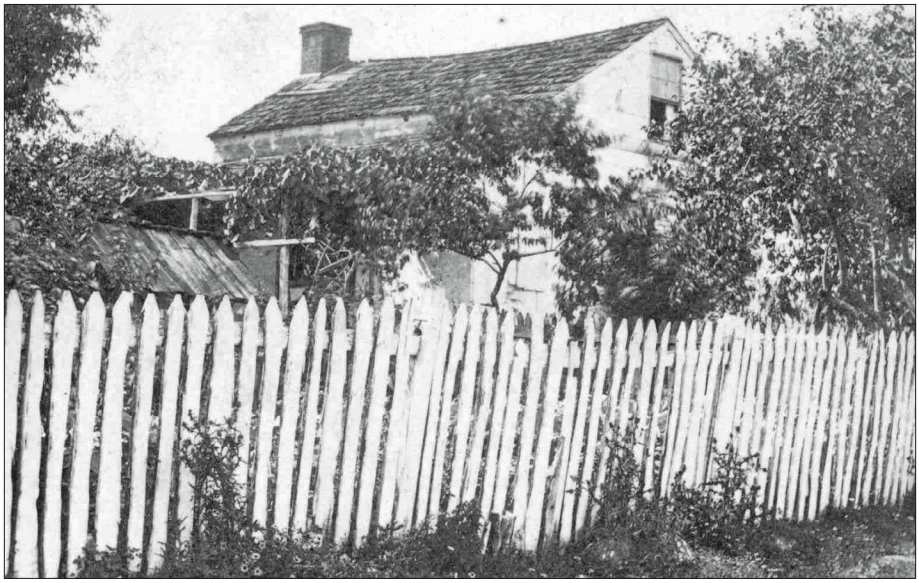


Figure 153. Picket fence at Leister House, 1870s. Note the rough hewn pickets (Sue Boardman Collection, SV170a).

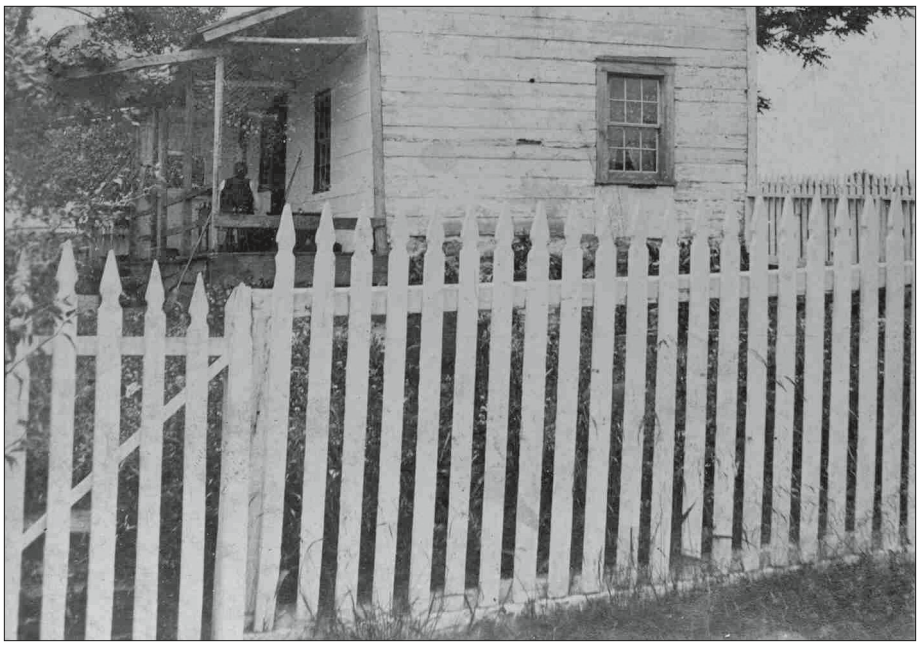


Figure 154. Picket fence at Leister House, circa 1890. Note the increased ornamentation and wider spacing of replaced pickets (Sue Boardman Collection, SV445a).

Figure 155. Picket fence sections at Leister House, September 2014. Note variation in picket styles, which is evident in historic photographs on previous page (OCLP 0063).

Figure 156. Picket fence in foreground of McPherson lot near Sheads with Lutheran Seminary and college in the distance, 1880s (Sue Boardman Collection, SV79a).

Figure 157. Picket fence, image right, along road abutting post and rail fence (GETT 41135, Historic Photograph Collection, 21P-1266).

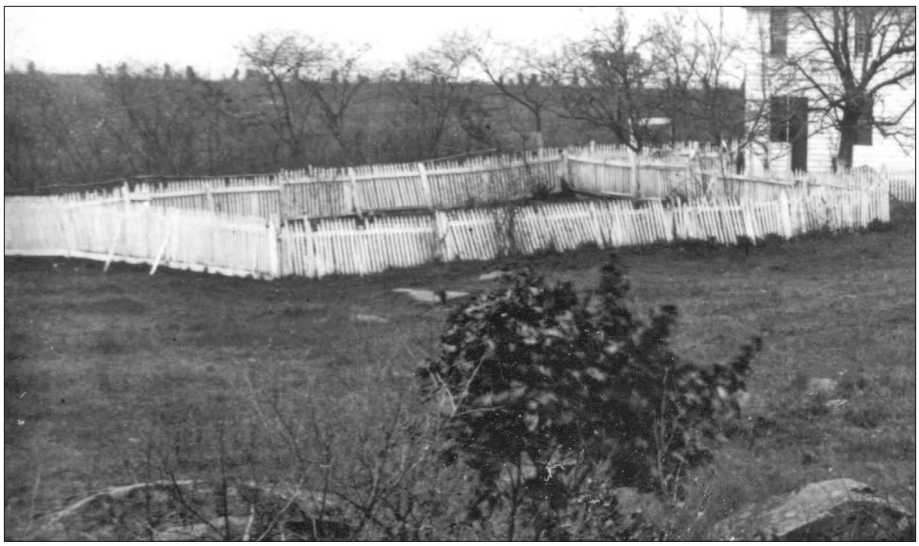


Figure 158. Picket fence enclosing Hummelbaugh yard, 1870s. Note the variable height of pales and the occasional braces to keep the fence upright (GETT 41136, Tipton Collection, T1878d).

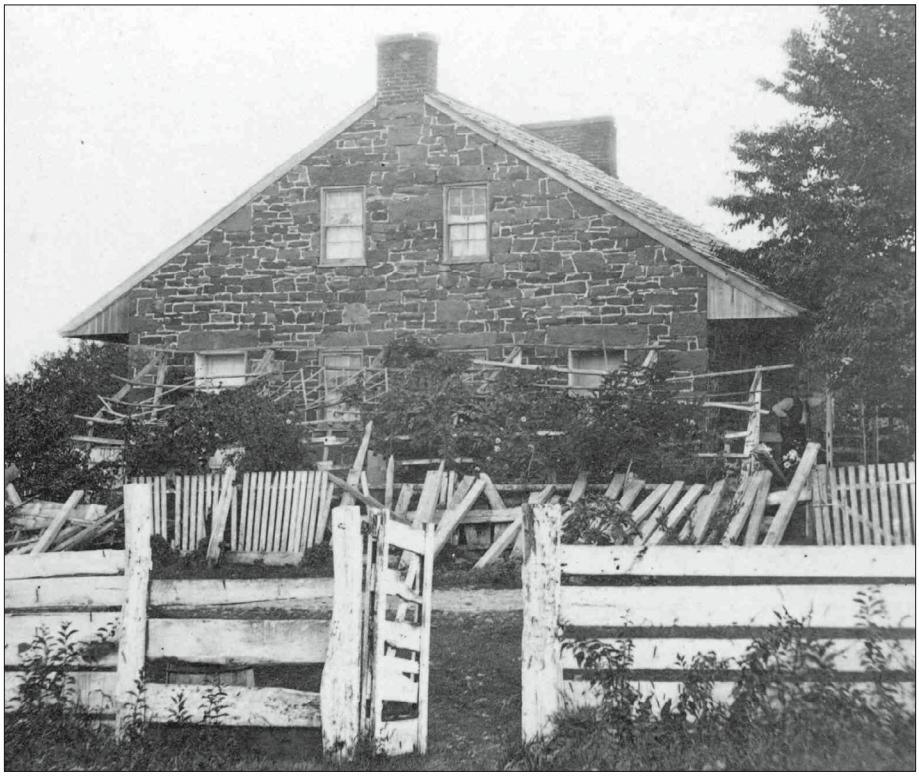
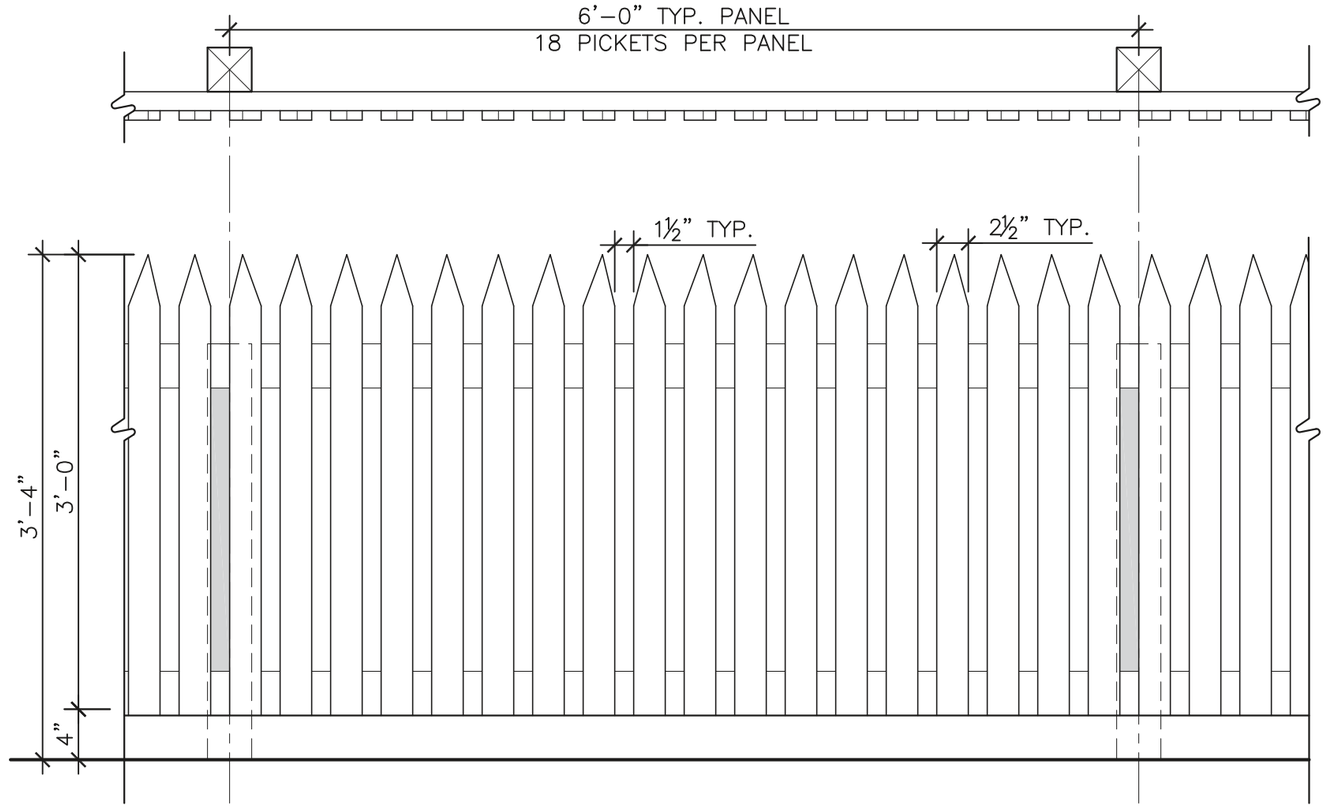


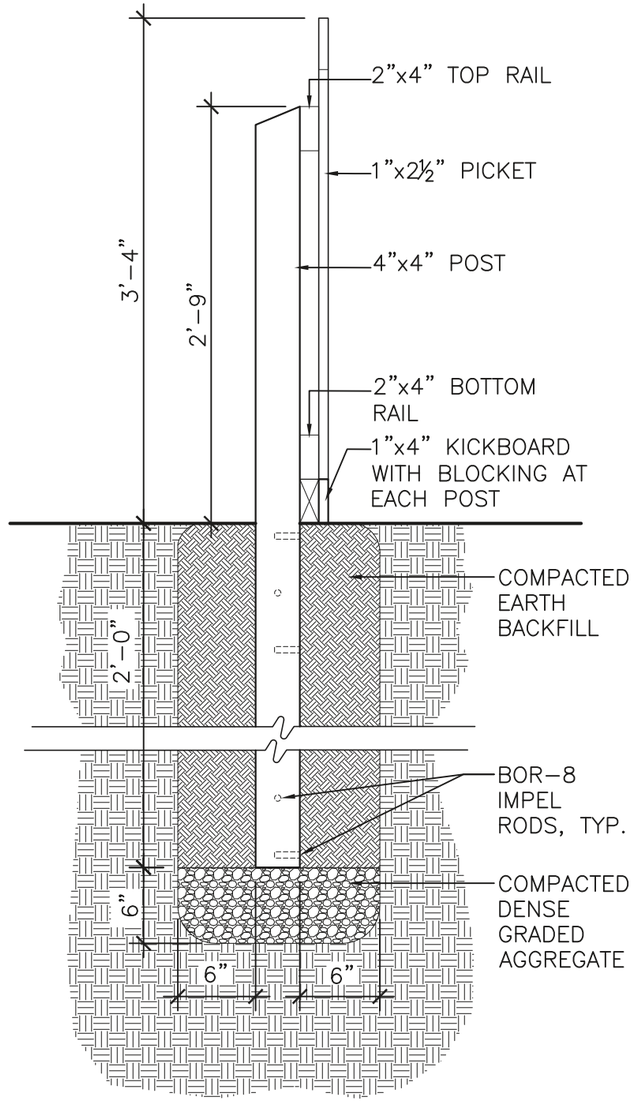
Figure 159. Picket fence and post and board fence at Lee's Headquarters along Chambersburg Pike, 1870s. Note the pickets are not tapered (Sue Boardman Collection, SV410).



1 PICKET FENCE PLAN AND ELEVATION
SCALE: 1"=1'–0"

GENERAL NOTES

1. DO NOT USE PICKET FENCE DESIGN IN LOCATIONS WHERE THERE IS CONCLUSIVE BATTLE–ERA DOCUMENTATION OF A PALING FENCE.
2. SOME VARIATION ON PICKET FENCE DESIGN EXISTS WITHIN THE PARK. WHEN REPAIRING EXISTING FENCES, MATCH PROPERTIES OF EXISTING FENCE.
3. PICKETS AND RAILS SHALL BE SPANISH CEDAR OR MAHOGANY, FULL DIMENSIONAL ROUGH SAWN STOCK.
4. PICKETS SHALL BE WIDER THAN THE SPACE BETWEEN PICKETS, AND EACH 6' PANEL SHALL CONSIST OF 15 TO 18 PICKETS.
5. POSTS SHALL BE BLACK LOCUST. SUBSURFACE PORTION SHALL BE TREATED WITH ½" x 2" 'BOR–8' IMPEL RODS SPACED 9" APART.
6. PAINTED FINISH SHALL CONSIST OF ONE COAT SHERWIN–WILLIAMS COMPANY A–100 ALKYD EXTERIOR WOOD PRIMER, OR APPROVED EQUAL, AND TWO COATS SHERWIN–WILLIAMS COMPANY A–100 EXTERIOR ACRYLIC LATEX FLAT, A6 SERIES, OR APPROVED EQUAL.
7. FINISH GRADE SHALL BE PITCHED AWAY FROM POSTS.



2 POST INSTALLATION
SCALE: 1"=1'–0"

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Picket Fence

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Fences, Gates, and Bridges, George A. Martin, 1900 reprinted 1999.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

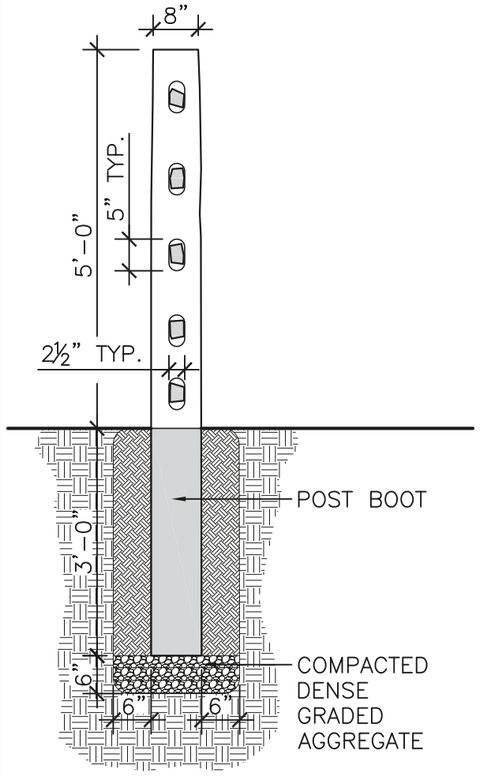
Scale As Noted

Drawing #10

11. POST DETAILS

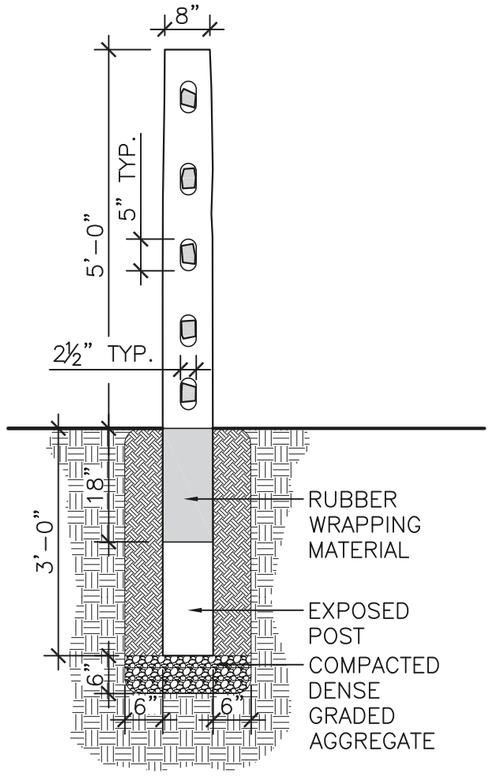
Posts are commonly the first component of a fence to fail due to rot at the base of the post. In the aerobic zone where the post meets the soil, constant moisture and microorganisms hasten decay of the wood. Deeper in the soil, decay is slowed by a lack of oxygen. Above ground, decay is slowed by the routine cutting of vegetation around the fence, which improves airflow and eliminates a microclimate for organisms.

Three alternative treatments can slow post decay: 1) a booted footing that consists of one to two coats of marine epoxy on the lower 3 feet of the post; 2) a rubber wrap of 18 inches around the aerobic soil zone of the post, which also includes one to two coats of epoxy to the top 18 inches of the post below grade, and; 3) a barrier of compacted dense graded aggregate, which is packed around the post to a depth of 3.5 feet. A standard footing option is shown to illustrate that additional treatment materials may not be necessary if the post will be set in a high, dry location with a sandy, well-drained soil.



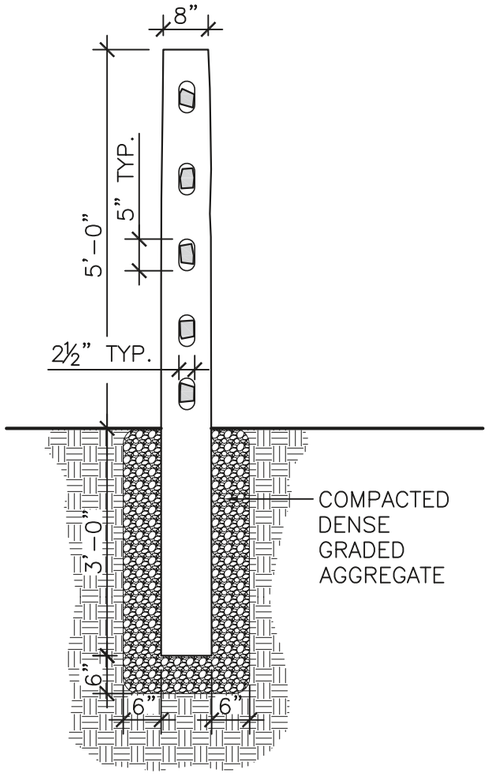
ALT:APPLY 1–2 COATS MARINE EPOXY ON LOWER 3' OF POST.

1 BOOTED FOOTING
SCALE: 1/2"=1'-0"

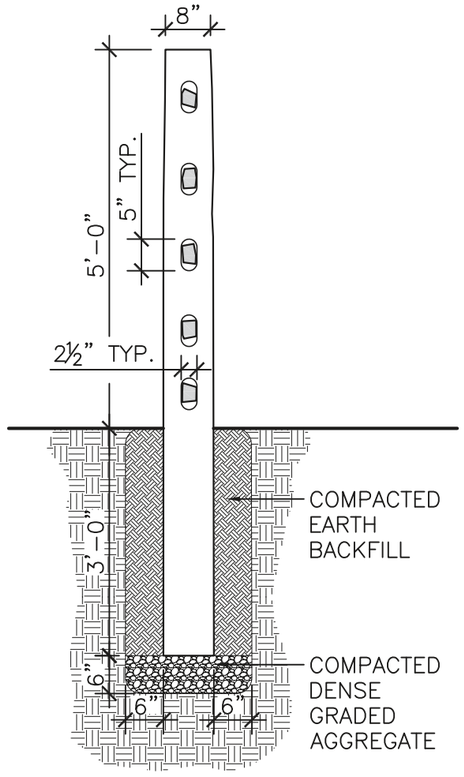


ALT: APPLY 1–2 COATS MARINE EPOXY TO TOP 18" OF POST BELOW GRADE.

2 WRAPPED FOOTING
SCALE: 1/2"=1'-0"



3 GRAVEL FOOTING
SCALE: 1/2"=1'-0"



4 STANDARD FOOTING
SCALE: 1/2"=1'-0"

Record of Treatment

Gettysburg National Military Park

Gettysburg, Pennsylvania

Post Details

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. Gettysburg Treatment Philosophy, 2004.
2. Fence Construction Standards Gettysburg National Military Park, 1980.
3. Notes from interview with Randy Hill, September 2014.

DRAWN BY

Ashley M. Braquet, AutoCAD Adobe Illustrator, 2015

Scale As Noted
Drawing #11

REFERENCES

Allport, Susan. *Sermons in Stone, the Stone Walls of New England and New York*. New York: W. W. Norton & Company, 1990.

Campbell, Eric. *Treatment Philosophy: The 1863 Landscape*. United States Department of the Interior, National Park Service, March 2004.

Harrison, Kathy G. Park Historian Files. "Fencing Projects." (1994-2002) including Memorandum from Kathy Harrison to Chief, Resource Planning Division, January 2002.

Fence Construction Standards Gettysburg National Military Park, 1980.

Final General Management Plan and Environmental Impact Statement. Vol. 1, *Final GMP/EIS*. United States Department of the Interior, National Park Service, June 1999.

Historic Photographs: Boardman collection, etc.

Martin, George A. ed. *Fences, Gates, and Bridges, A Practical Manual.* 1900. Reprint, Lexington, MA: The Stephen Greene Press, 1999.

Paige, Christine. *A Landowner's Guide to Fences and Wildlife: Practical Tips to Make Your Fences Wildlife Friendly*. Pinedale, WY: Wyoming Land Trust, 2012, http://macdnet.org/WY%20Fence%20Guide_FINAL.pdf (accessed 02-27-2015).

Thorson, Robert M. *Stone by Stone, The Magnificent History of New England's Stone Walls*. New York: Walker & Company, 2002.

ENDNOTES

1 *Laws of the Commonwealth of Pennsylvania, from the Fourteenth Day of October, One Thousand Seven Hundred, to the Twentieth Day of March, One Thousand Eight Hundred and Ten*, Vol. 1 (Philadelphia: John Bioren, 1810), 13.

2 *Final General Management Plan and Environmental Impact Statement*, Vol. 1, *Final GMP/EIS*, United States Department of the Interior, National Park Service, June 1999, 57.

3 Ibid., 33.

4 Ibid., 124, 128-131, 135. Notes: Alternative D, "maximum park rehabilitation," proposed reconstructing 104 miles of fencing in the Major Battle Action area, see page 142. Alternative C indicates approximately 24 new staff would be required for implementation, see page 286.

5 Some artists, such as Godfrey Frankenstein accurately depicted fence styles. Others such as Augustus Kollner, always painted post and rail rather than the actual fence. Generally war reports did not specify fence type.

6 In the Pickett's Charge FMSS maintained landscapes area, the park seeks to represent several fences that were dismantled during the battle action. While this could be explained with an interpretive sign, the addition of signs would detract from the historic scene. The park's current practice is to maintain the corners or ends of key fence lines, and leave the middle sections empty. Guides explain the fence representation to visitors. An overall treatment approach that would prescribe the ideal number of fence sections to remove has not yet been fully articulated. Removing too many fence sections makes it difficult for visitors to comprehend the impact of the fence line, whereas removing too few fence panels may lead visitors to interpret that the break in the fence line is for farm equipment.

7 Eric Campbell, *Treatment Philosophy: The 1863 Landscape*, United States Department of the Interior, National Park Service, March 2004, 59.

8 Trostle Farm Lane was found to be dangerous because the distance between the cross braces on the sides of the farm lane was less than eight feet. Subsequent specifications for fence widths along lanes was widened to eighteen feet. GETT Historian Files, Fencing Projects, Meeting Notes 2002.

9 Correspondence by Kathy Harrison, Senior Historian to Chief, Resource Planning Division, January 8, 2002.

10 Campbell, *Treatment Philosophy*, 59.

11 Ibid., 60.

12 For an example east of Seminary Ridge, please see the damage claims of Zachariah Myers.

Gettysburg
Record of Treatment Research Form

National Park Service
U.S. Department of the Interior
Gettysburg National Military Park
Pennsylvania

Project Name: _____

1863 Period Plan Features in Project: _____

Representative Narrative Reference from "Raw Data" Files:

_____

_____

_____

_____

_____

_____

Representative Narrative Reference Source: _____

KOCOA Reference(s)

Feature: _____ Value: _____ Side: _____

Feature: _____ Value: _____ Side: _____

Feature: _____ Value: _____ Side: _____

Feature: _____ Value: _____ Side: _____

Feature: _____ Value: _____ Side: _____

Feature: _____ Value: _____ Side: _____

Historic Imagery References

☐ 1868 Warren Map ☐ 1863 Cope Map

☐ 1863 Bachelder Map ☐ 1863 Elliott Map

☐ 1872 Topographical Survey Map

☐ Gettysburg National Park Commission (GNPC) Drawings Reference # _____

☐ Tipton Photographs Reference # _____

☐ Boardman Photographs Reference # _____

☐ Park Historical Photographs Reference # _____

☐ Other Reference _____

Gettysburg
Record of Treatment Implementation Form

National Park Service
U.S. Department of the Interior
Gettysburg National Military Park
Pennsylvania

Project Name: _____

Narrative Description of Project:

_____

_____

_____

_____

_____

_____

Project Record of Treatment Area (e.g., Area 1 — First Day – Union 1st Corps):

_____

Feature Type:

☐ Cultural Features — Select Type

☐ Natural Features — Select Type

☐ Defense Works — Select Type

☐ Industrial Sites — Select Type

Before Project Start Digital Photo

After Project End Digital Photo

Project Manager: _____ **Project Start Date:** _____

PMIS #: _____ **PEPC #:** _____ **Project End Date:** _____

Estimated Cost: _____ **Actual Cost:** _____ **Contractor / Volunteer / IDIQ:** _____

Additional Notes (i.e., field changes, material substitutions, etc.) _____

_____

_____

_____

National Park Service
Olmsted Center for Landscape Preservation
15 State Street, 6th Floor
Boston, Massachusetts 02109
www.nps.gov/oclp