National Park Service
U.S. Department of the Interior

Manassas National Battlefield Park

UNFINISHED RAILROAD

Cultural Landscape Report



April 2014

Manassas National Battlefield Park

UNFINISHED RAILROAD

CULTURAL LANDSCAPE REPORT

Prepared for:

National Park Service

Manassas National Battlefield Park

And

National Capital Region

Cultural Landscapes Program

Final April 2014

Prepared by:

The Louis Berger Group, Inc.

1250 23rd Street, NW, 4th Floor
Washington, DC 20037

Quinn Evans Architects

2121 Ward Place, NW, 4th Floor
Washington, DC 20037



Cover Illustration: Groveton/Deep Cut Monument, 1865. Library of Congress.

Publication Credits: Information in this publication may be copied and used, with the condition that full credit is given to the authors, their companies, and the National Park Service. Appropriate citations and bibliographic credits should be made for each use.

United States Department of the Interior Mission Statement: As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally-owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

National Park Service Mission Statement: The National Park Service preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

Document Number: MANA 379 114364

TABLE OF CONTENTS

Introduction

Management Summary Intro.1
Historical Overview Intro.1
Project Scope and Methodology Intro.2
Description of the Study Boundaries Intro.3
Introduction Endnotes..... Intro.7

Chapter 1: Site History

Landscape Conditions Prior to 1724..... 1.1
European Settlement along Bull Run, 1724-1853..... 1.1
Coming of the Railroad, 1854-1860 ..... 1.5
Civil War – First and Second Battles of Manassas, 1861-1865..... 1.12
Reconstruction and Memorialization, 1866-1869..... 1.29
Early Battlefield Preservation, 1870-1934..... 1.35
Preserving the Battlefield, 1935- present..... 1.47
Chapter 1 Endnotes..... 1.47

Chapter 2: Existing Conditions

Natural Systems and Features..... 2.2
Spatial Organization..... 2.3
Views 2.4
Land Use 2.8
Topography 2.9
Vegetation 2.10
Circulation 2.11
Buildings and Structures 2.25
Small Scale Features 2.30
Archeological Sites 2.31
Chapter 2 Endnotes..... 2.35
Existing Conditions Drawings..... 2.37

Chapter 3: Landscape Analysis and Evaluation

Statement of Significance Considerations..... 3.1
Natural Systems and Features..... 3.2
Spatial Organization..... 3.3
Views 3.4
Land Use 3.7
Topography 3.8
Vegetation 3.9
Circulation 3.15
Buildings and Structures 3.19
Small Scale Features 3.22
Archeological Sites 3.22
Chapter 2 Endnotes..... 3.27

Chapter 4: Management Philosophy

Chapter Overview..... 4.1
Landscape Management Zones..... 4.2
Drawing LM -1..... 4.3
General Management Plan Guidance..... 4.5
Cultural Landscape Guidance..... 4.7
Treatment Approach..... 4.9
Chapter 4 Endnotes..... 4.10

Chapter 5: Treatment Goals, Objectives, Management Issues and Treatment Alternatives

Landscape Treatment Goals..... 5.1
Landscape Treatment Objectives 5.1
Overall Project Area
Management Issues and General Recommendations..... 5.2
Unfinished Railroad Zone
Management Issues and General Recommendations 5.4
Unfinished Railroad Zone Specific Issues 5.6

Sudley Zone
Management Issues and General Recommendations..... 5.11

Groveton/Deep Cut Monument Zone
Management Issues and General Recommendations..... 5.12

Quarry Zone
Management Issues and General Recommendations..... 5.13

Treatment Alternatives..... 5.14

Endnotes..... 5.15

Chapter 6: Treatment Plan

Overview..... 6.1

Overall Project Area General Treatment Recommendations..... 6.1

Unfinished Railroad Zone
General Treatment Recommendations..... 6.2

Sudley Zone Treatment Recommendations..... 6.10

Groveton / Deep Cut Monument Zone
Treatment Recommendations..... 6.11

Quarry Zone Treatment Recommendations..... 6.12

Standard Operating Procedures

Overview of Standard Operating Procedures..... 6.13

General Standard Operating Procedures..... 6.14

Standard Operating Procedures for Vegetation..... 6.16

Standard Operating Procedures for Trails..... 6.21

Chapter 6 Endnotes..... 6.36

Drawings T-1 through T-5..... 6.37

Bibliography

Appendix A: Inspection Form

This page intentionally left blank.



Introduction

INTRODUCTION

Management Summary

The purpose of this Cultural Landscape Report is to investigate, document, evaluate, and provide treatment guidance for the physical landscape associated with the portion of the unfinished Manassas Gap Railroad Independent Line that is located within Manassas National Battlefield Park. Part I includes a complete historical narrative, existing conditions documentation and analysis and evaluation of the abandoned railroad corridor. This includes evaluation of the character-defining features, materials, and qualities that make the landscape eligible for the National Register of Historic Places. Part II includes selection of an appropriate management philosophy based on The Secretary of the Interior's Standards for Treatment of Historic Properties and Guidelines for the Treatment of Historic Landscapes, and a plan for the treatment and management of the historic landscape resources within the project area that is consistent with the landscape's significance, condition, and use.

Historical Overview

The project area is a portion of the Manassas Battlefield Historic District that is historically significant for its association with the First Battle of Manassas on July 21, 1861 and the Second Battle of Manassas on August 28-30, 1862.[1] Dissatisfied by the high shipping costs of the Orange and Alexandria Railroad Company, the Manassas Gap Railroad Company decided to construct their own railroad line from Gainesville to Alexandria. In 1854, an eighty-foot wide corridor was acquired from land owners within in the Sudley/Groveton area. The grading for the alignment commenced soon afterward, where the trees were cleared from the right-of-way to establish an even grade with a series of cuts and fills. In five areas, within the present day boundaries of Manassas National Battlefield Park (MANA), a trestle or bridge was needed to span a ravine area or road. The Manassas Gap Railroad Company strained their resources and went bankrupt soon after the grading operations were nearing completion in 1858. The railroad bed was left abandoned for possible future use. Its use by Confederate forces during the Second Battle of Manassas, elevated its significance as a makeshift fortification. Since the 1860s, the unused railroad grade created an artificial barrier for land owners. In some cases the land owners maintained the integrity of the corridor by constructing fences to define their fields to the south and north of the railroad grade. Others thought it unnecessary to maintain the fence lines for this abandoned corridor.

By the 1930s, the once open corridor started to see dense stands of pines and hardwoods encroaching upon the grade, especially at the most pivotal location "Deep Cut," where intense fighting occurred during the Second Battle of Manassas. In other areas, cedars and Virginia pine started to grow on the railroad grade, which compromised the structural integrity. In 1940, the Secretary of the Interior officially designated the Manassas battlefield as a part of the National Park System.[2] Early acquisitions of land included the Chinn farm, and the NPS acquired the Henry farm prior to the park's designation as a national battlefield park. Both properties witnessed significant action in both First and Second Manassas battles. Legislation expanding the boundary in 1954 led to additional acquisitions in the 1960s. Property as far west as Pageland Lane was acquired only after the passage of the 1980 park boundary legislation, which added the Brawner farm to the park's authorized acreage. This marks a third phase in park acquisition, following the

original assemblage of park land in the 1930s and 40s and the park expansion undertaken in the wake of the 1954 legislation.

Project Scope and Methodology

The project scope includes preparation of a complete Cultural Landscape Report for the project area, meeting applicable guidelines and standards. Objectives include: documenting and describing the appearance of the project site from its early conditions through the present day; documenting the existing conditions of the project site; evaluating the integrity of the landscape; and providing a preferred treatment recommendation for managing the historic landscape.

This Cultural Landscape Report has been prepared according to federal standards guiding cultural landscape reports including *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques,* and *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Historic Landscapes.*[3] A project team led by Brenda Williams, Historical Landscape Architect with Quinn Evans Architects (QEA) included Lindsey Pickornik, design technician and Quinn Evans staff. Sarah Grosbeck, historian with Louis Berger Group (LBG) conducted research, and John Bedell, archeologist at LBG assisted with preparation of a contextual overview of the project site. Charles Leedecker, Principal, LBG, served as the principal in charge for the consultant team. Throughout the project Maureen Joseph, Program Lead Cultural Landscapes Program and Danny Schaible, Cultural Resource Specialist with the National Park Service National Capital Region assisted in providing information and advice. Manassas National Battlefield Park staff Ray Brown, Chief of Interpretation and Cultural Resources Management and Jim Burgess, Museum Specialist contributed their support and knowledge regarding the park's resource and management background, issues related to future management, and logistics associated with gathering historic materials.

Brenda Williams conducted a field survey of the study area in December 2012. She was assisted by Jim Burgess, Manassas National Battlefield Park museum specialist. Base materials for project area maps were provided by Tammy Stidham of the National Capital Region, National Park Service. Primary and secondary research was conducted at the following repositories: files and other holdings at the library and Resource Management Office of Manassas National Battlefield Park; Technical Information Center, National Capital Region, National Park Service; office files, Cultural Landscapes Program, National Capital Region, NPS; National Archives and Records Center, Washington, D.C.; Library of Congress, Geography and Maps Division; RELIC (the Virginia Room) and other holdings at Bull Run Regional Library, Prince William County; County Archives, Prince William County Courthouse; County Records, Prince William County Courthouse. The team utilized the extensive secondary information existing for Manassas National Battlefield Park: Cultural Landscape Inventory for Northwest Quadrant; Unfinished Railroad Resource Survey, conditions assessments; archeological reports; National Register nominations; Brawner Farm Cultural Landscape Report; and Zenzen's account of the history of preservation efforts related to the park.[4]

Description of the Study Boundaries

Manassas National Battlefield Park is located in the Piedmont region of Virginia approximately 25 miles west of Washington, D. C. (see Figure I-1). The project area is located within the northwest quadrant of the park (see Figure 2). The project area encompasses approximately 40 acres centered on the abandoned Manassas Gap Railroad Independent Line corridor within the park. It includes a roughly eighty-foot wide strip that runs in a southwestern route between Sudley and Pageland Lane. The project area widens in three locations to include resources associated with the Unfinished Railroad including: the Sudley area north of the railroad grade and adjacent to Sudley Road; the Groveton/ Deep Cut Monument south of the railroad grade and west of Featherbed Lane, and a quarry site south of the rail-bed and east of Pageland Lane (see drawing PA-1).

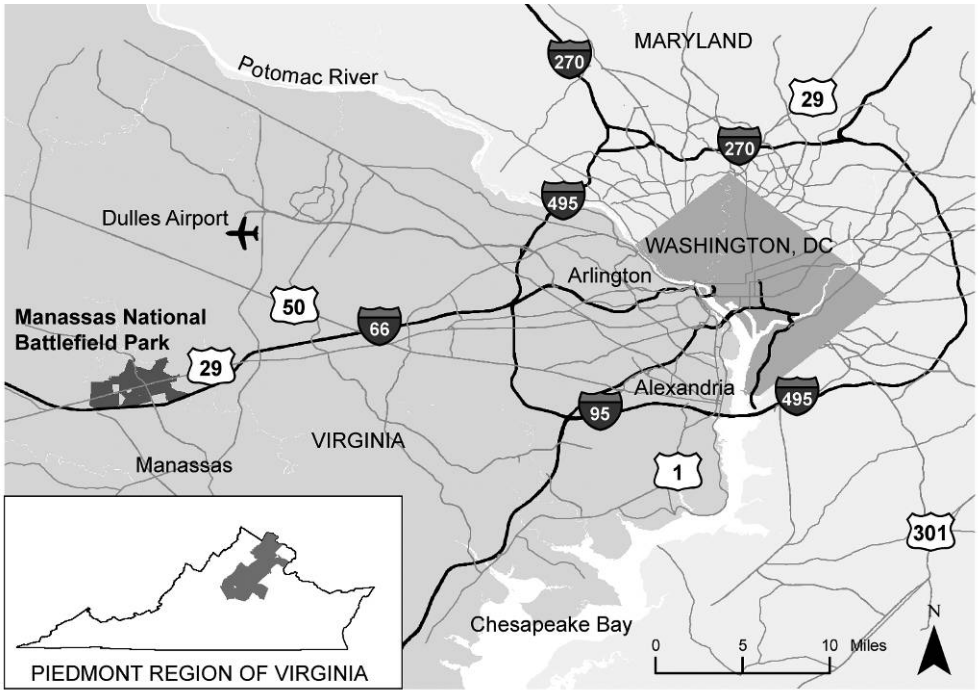


Figure I- 1: Location of Manassas National Battlefield Park

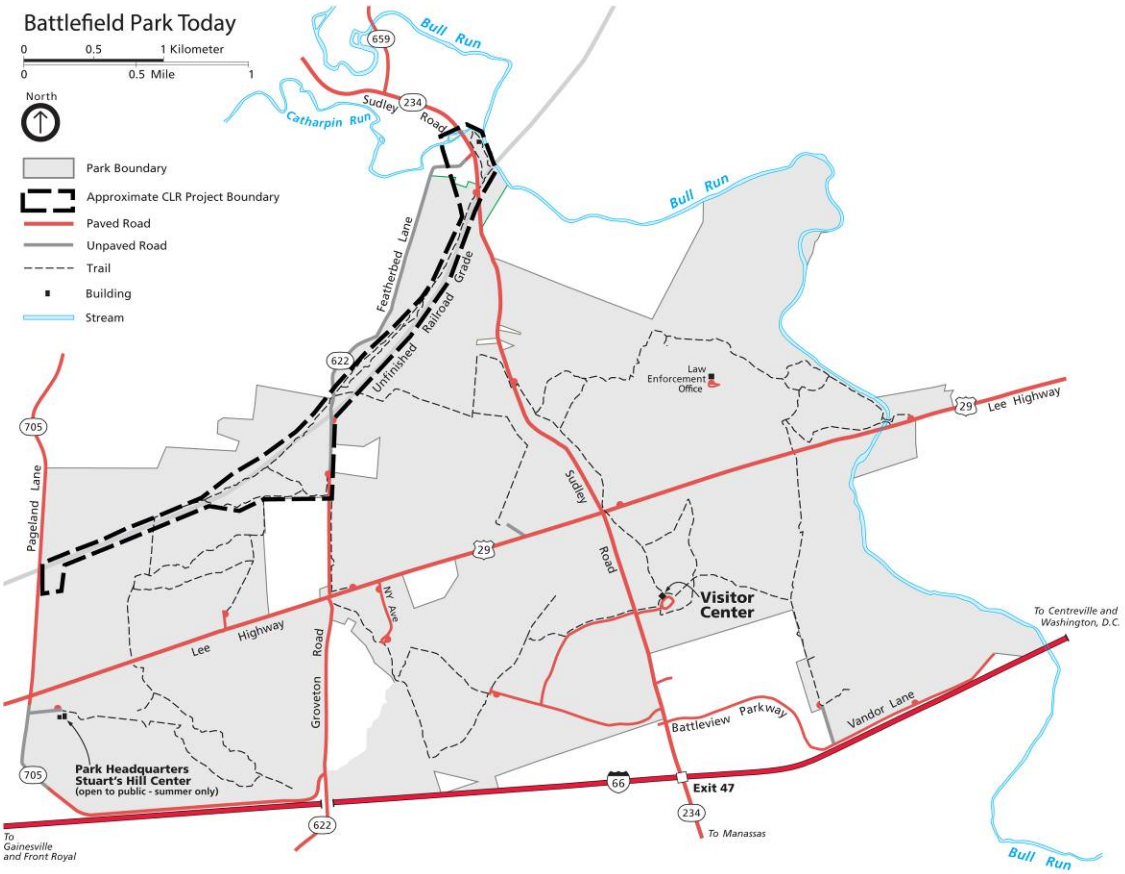


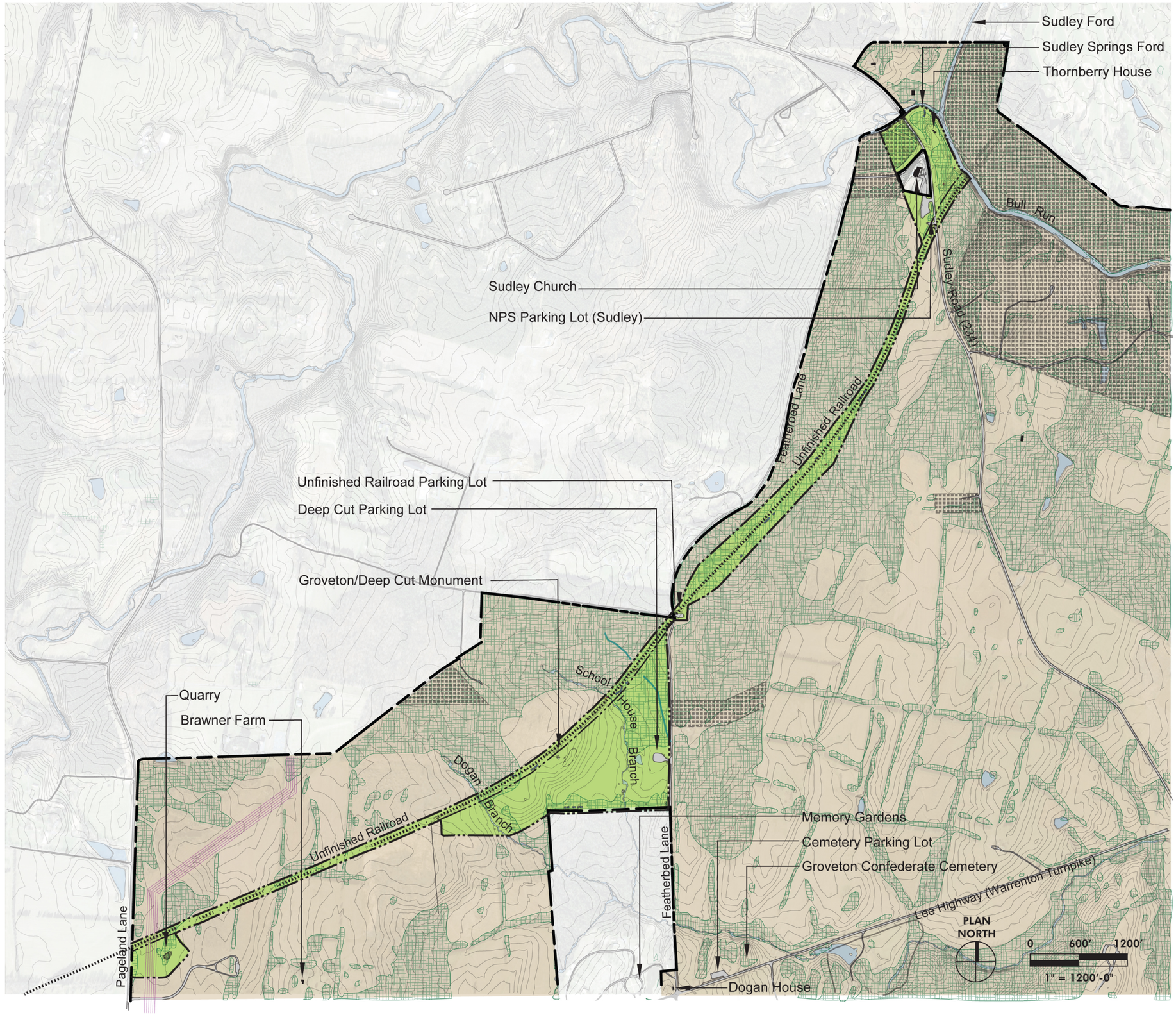
Figure I- 2: Location of the Project Area within Manassas National Battlefield Park

Next page: Drawing PA-1

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Project Area Boundary



Legend

- Legislative Boundary
- Project Boundary
- Unfinished Railroad
- Roads
- Existing Buildings
- Forest, Fencerow Vegetation, and Individual Trees
- Park Area
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned or Non-NPS Public Land Within Park Boundary
- Contours

Map Notes and Sources

Note: Detailed information for the Sudley, Deep Cut, and Quarry areas is provided on Sheets EC-2, EC-3 and EC-4

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Williams, Field Investigations 12/2012
3. Google Earth Aerial 10/12/2012
4. Digital base map data provided by National Capital Region, National Park Service

QUINN EVANS ARCHITECTS

NATIONAL PARK SERVICE

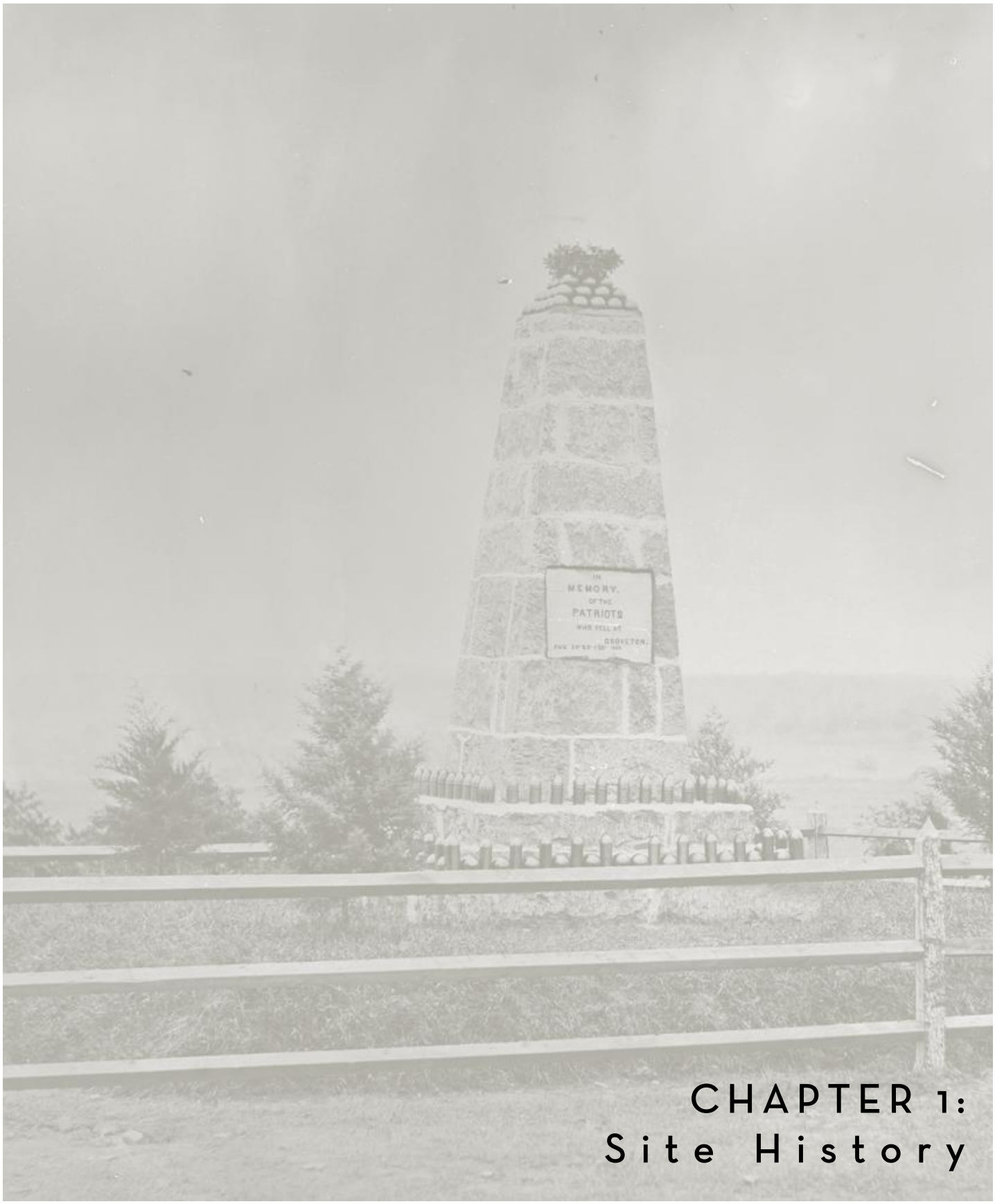
NPS 379
MANA 114363

PA-1

Endnotes

[1] Laura Virginia Trieschmann,"Manassas Battlefield Historic District (Amended and Boundary Expansion)," National Register of Historic Places Registration Form (Washington, D.C.: U.S. Department of the Interior, National Park Service, 2004), Section 7, 1.
[2] "Manassas National Battlefield Park Unfinished Railroad Cultural Landscape Report Scope of Work" (U.S. Department of the Interior, National Park Service, 2012).
[3] Robert R. Page Cathy A. Gilbert, and Susan A. Dolan, *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques* (Washington, DC: U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Park Historic Structures and Cultural Landscapes Program, 1998); and Charles A. Birnbaum and Christine Capella Peters, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes.* Washington, DC: Department of the Interior, National Park Service, 1996).
[4] Joan M. Zenzen, *Battling For Manassas: The Fifty-Year Preservation Struggle at Manassas National Battlefield Park* (Pennsylvania State University Press, 1998).

This page intentionally left blank.



CHAPTER 1:
Site History

Chapter 1: Site History

This chapter includes a description of the physical history of the project area. A brief historical context is provided for each major period of development from settlement to present related to five time periods including: 1724-1853, European Settlement along the Bull Run; 1854-1860, Coming of the Railroad; 1861-1865, Civil War – First and Second Battles of Manassas; 1866-1869, Reconstruction and Memorialization; 1870-1934 Early Battlefield Preservation; 1935-present NPS Preservation of the Battlefield. This includes evaluating the historic significance and integrity of the property.

Landscape Conditions prior to 1724

The physiographic region area Manassas National Battlefield Park is located is part of the Culpeper Basin within the Piedmont Lowlands region that extends between New Jersey and central Virginia.1 The area historically contained widespread native savannas and grasslands that were kept open by frequent fires. Some of the fires were natural and others were deliberately set by Native Americans. Throughout Piedmont Virginia, Native American villages were ordinarily located near sources of water. The prevalence of natural springs and creeks in the project area combined with grasslands and a temperate climate, made this a desirable location for Native American activities. Evidence of prehistoric camp sites and lithic scatters have been found in the park, including indications of prehistoric use near the project area at the Brawner site and the Sudley Post Office / Thornberry site. Other prehistoric camp sites, most of Middle to Late Archaic occupation, have been identified on high bluffs overlooking Bull Run within the National Battlefield Park . [2]

European Settlement along the Bull Run, 1724-1853

Carter Family Plantations (1724-1814)

The same landscape characteristics that indicated good prehistoric camp sites attracted Europeans. Access to fresh water, woodland and open grasslands provided the necessary natural resources required for establishing agricultural-based settlement. When European settlers arrived in the area, they cleared grasslands to establish agricultural fields, cut woodlands for building materials, firewood, and other uses, and suppressed fire to protect permanent dwellings and other investments. These activities resulted in the evolution of a new mosaic of land uses and characteristics upon the landscape.[3]

Between 1724 and 1729, Robert “King” Carter acquired large quantities of land including the entire landscape that would become Manassas National Battlefield Park.[4] Initially, land in the Bull Run area was leased to tenant farmers, who established agricultural practices in the sparsely populated region, then considered to be a “frontier.” Agricultural production became firmly established in the 1750s, and cultivation of tobacco and grains was prevalent. Plantations were established and farms increased productivity. Lumber production was an integral part of plantation operations. John Carter established a mill complex along Catharpin Run in circa 1760 to process the area’s grains and lumber. Logs were brought from the Bull Run Mountains via the creek and the power for the lumber mill was produced using energy from the rushing water. The presence of the mill in Sudley brought auxiliary services and activities to the area. These included a blacksmith, wheelwright and store providing supplies to the mill complex as well as the

customers who came to the area for milling services. John Thornberry was a wheelwright, blacksmith, carpenter, and undertaker whose wheelwright shop, at the property known as the Thornberry house today, served as part of the Sudley complex. It was a prosperous operation that supported the family until the Civil War.[5]

By 1800, there were 50 water-powered grist and saw mills operating in Prince William County. This large number of mills indicates a high level of grain production in the area. The increase in agricultural production was accompanied by landscape improvements and compelled the development of improved transportation networks, especially roads.[6]

Manor houses were constructed at the Carter-heir plantations including Pittsylvania (1765), Sudley (1760-1770), Rosefield (ca. 1790), and Peach Grove at the Henry Dogan property (ca. 1790). Numerous outbuildings were associated with each of these self-sufficient properties including a "wash house, ice house, meat house, carriage house, barn, well, slave quarters, weaving building, and schoolhouse." Also necessary were a variety of gardens, a family cemetery, and a slave graveyard.[7] Woodlots were necessary components of these properties and forest cover was generally retained in steep areas and rocky locations along streams. Portions of plantations were designated for woodland or clearing.[8] Agricultural fields were primary components of these properties, occupying extensive acres at each plantation. Crops included staple foods, grains, and the most valuable cash-crop of the time, tobacco.[9] The relation of tobacco to the regional economy was of great importance:

> "The large tobacco plantation formed the economic basis of colonial Tidewater Virginia. Tobacco provided the main source of wealth, although long-term growth of tobacco led to poor crops. It was believed that tobacco damaged the soil through "exhaustion," or depleting soil of nutrients (however, the cause more likely was an abundance of fungi, nematodes, and other microscopic pests, whose growth is encouraged by monocultures). Tobacco monoculture also caused the erosion of topsoil, which washed into streams and rivers and was deposited as silt. Depleted agricultural lands were often simply abandoned and subsequently became overgrown by successional vegetation."[10]

The productivity of the local farms is reflected in the establishment of a grist mill in the Sudley area in 1780. Built near the confluence of Catharpin Run and Bull Run, the mill took advantage of substantial water power provided by the two water courses as well as the close proximity to nearby agricultural fields. The mill was a typical country mill and most likely run as a seasonal operation by a local farmer who served as the part-time miller.[11]

During this period, farm roads were created between plantation houses and tobacco fields, and roads were built to provide links to commercial districts and transport agricultural products to regional markets. Roads providing access to the Sudley Mill included a roughly north-south route with a branch to the west, north of Sudley, and an east-west route between Haymarket and Centreville, along the south side of Catharpin Run (see Figure 1-1). To facilitate crossing water-courses, fords were established along Bull Run and Catharpin Run.[12]

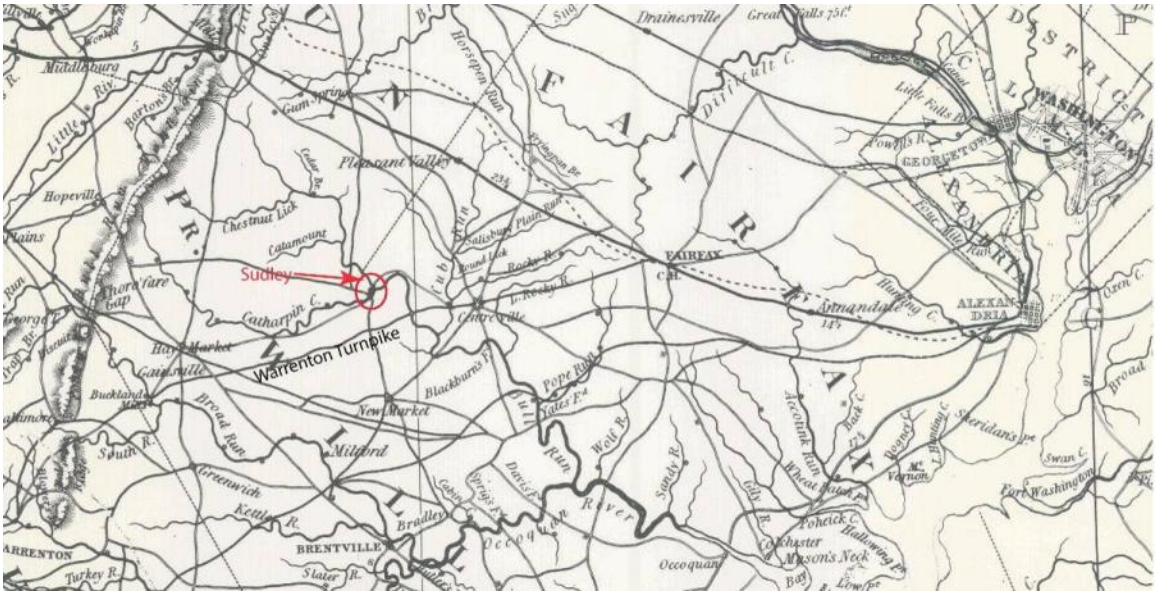


Figure 1- 1: 1826 Herman Boye Map of Virginia, excerpt. Roads linking the Sudley area to regional markets are depicted. (source: David Rumsey Historical Map Collection, copyright 2000 by Cartography Associates)

Development in the Sudley/Groveton Area (1815-1853)

The Fauquier and Alexandria Turnpike Company was established in 1808 to provide a direct trade route between Alexandria and Warrenton (see Figure 1-1). Construction of the road bed was completed between Sudley Mill Road and Alexandria by 1815. By 1827, two stagecoaches per week were passing through the Sudley area. Vehicles were required to stop at toll gates every seven miles along the route, including one at the "Stone House" tavern which was located at the intersection of Sudley Mill Road and the turnpike. The turnpike was completed to Warrenton in 1828.[13] The Dogan family had businesses in the Groveton area. John D. Dogan operated a house of private entertainment from 1837 to 1845. For the year 1841, paid for an ordinary license, allowing him to serve liquor. Mary Jane Dogan operated a general merchant store from 1874 to 1885.[14]

In the early 1800s the cash-crop changed from tobacco to wheat and corn. By 1850, no tobacco was produced by the farms in the project area. Many farms in the region now also included productive orchards and livestock, in addition to the features indicated during the earlier period. However, within the project area only the Carter family recorded a productive orchard in 1850.[15] Subdivision and limited sale of Carter family property continued. Single-family homes were built, typically on top of hills. These developments were modest compared to the Carter plantation complexes and more substantial than those occupied by tenants. They included enough enhancement to reflect the owner's economic status. Cultivated fields and pasture encompassed low areas surrounding the houses. Parcels were divided to include equal proportions of woodland and open areas. Over the next fifty years, the land owned by the Carter family continued to shrink. As the size of parcels for sale or lease became smaller, individuals with lesser resources were able to establish farms, including simple vernacular residences. In or near the project area, an overseer's house was constructed at Peach Grove in circa 1820.[16] Sometime in the mid-1840s, the Thornberry family built a house in Sudley. The Thornberry's lived at the property until 1871.[17] In 1822, the Carter family donated land

for a church in the Sudley area. The church site was "…situated on a ridge above the confluence…" and held "…a commanding view of the surrounding Carter lands."[18]

> "The growing number of plantations and smaller farms sparked the development of a network of roads in northern Prince William County that further encouraged expansion of the area's population. Movement east over Bull Run had been augmented in 1825 by the construction of the Stone Bridge, a structural element that would eventually play a significant role in the Civil War engagements. By 1828, the Bull Run tracts were traversed by such major transportation routes as Manassas-Sudley Road; Groveton-Sudley Road; Warrenton, Alexandria and Washington Road; and Warrenton Turnpike."[19]

The small communities of Sudley and Groveton continued to grow as a result of the development of rural roads (local and regional) and prosperous agricultural endeavors in the area. By 1825, Sudley included a store, sawmill, grist mill, blacksmith shop, wheelwright shop, the church and a few homes. Located at the intersection of Warrenton Turnpike and Groveton-Sudley Road (Featherbed Lane), Groveton grew to include a tavern, school, blacksmith shop, store and several homes.[20]

The 1850 United States Agricultural Census Manuscript indicates a thriving agricultural community including farms run by seven individuals known to be associated with land within the project area including John C. Brawner, George A. Douglas, John D. Dogan, William H. Dogan, C.C.Cushing, Emily Carter, and George H. Carter. In 1850 these seven owned or operated a total of 2,779 acres of land, 1,747 acers (63%) of which were "improved," or being used for cultivation, hay or pasture. The main crops associated with these farms were corn (2,980 bushels produced), oats (1,610 bushels), and wheat (1,183 bushels). Butter, potatoes, buckwheat, wool, and meat were other common products of these farms.[21]

Of the seven, in 1850 the property associated with William H. Dogan was the largest at 722 acres, and the most valuable ($9000). The farm included 422 improved acres upon which 400 bushels of wheat, 16 of rye, 375 of corn, and 100 bushels of oats were produced. Livestock included ten horses, six milk cows, 22 other cattle, four oxen, 90 sheep, and 25 swine. John Brawner farmed the next largest parcel, with 550 acres valued at $8000. Brawner's tabulations may be associated with land other than what is known today as the Brawner farm. That parcel, in 1850, was still occupied by George A. Douglas.[22] On 300 acres, Brawner's farm produced 140 bushels of wheat, 10 of rye, 630 of corn, and 140 bushels of oats. Livestock included five horses, two milk cows, 20 other cattle, two oxen, 22 sheep, and 16 hogs. John D. Dogan's farm included 450 acres worth $4500. Although his property was smaller than Brawner's, his improved acreage was larger. Crops raised on 350 acres of land yielded 300 bushels of wheat, 25 of rye, 600 of corn, and 700 bushels oats. Livestock included 20 swine, 10, milk cows, four other cattle, four oxen and six horses. George A. Douglas' 325 acres was valued the lowest at $1250, even though the property and yields were larger than several other farms. On 275 acres, production included 180 bushels of wheat, 200 of corn, and 150 bushels of oats. He also owned six horses, three milk cows, five other cattle, two oxen, 12 sheep, and 22 swine. Emily Carter owned 283 acres worth $2500 and on 200 acres the farm produced 45 bushels of wheat, 500 of corn, and 80 of oats. She owned two horses, two milk cows, two oxen, and ten swine. The Cushing farm, located south of Sudley, contained 250 acres of land and was valued at $3100. Production included 85 bushels of wheat, 600 of corn and 400 of oats, produced on 200 acres. Livestock included six horses, five milk

cows, ten other cattle, 16 sheep, and 32 swine. The smallest of the seven farms was George H. Carter's 199 acre property, valued at $1600. On 140 acres the harvest included 33 bushels of wheat, 75 of corn, and 40 bushels of oats. The animals he raised included four horses, three milk cows, three other cattle, three oxen, and four swine.

Consideration of the information related to these seven farms reveals a thriving small agricultural community. Growth was stimulated by improvements in transportation, and leaders in the region anticipated expansion and prosperity. They worked to further improve transportation between rural production areas and regional markets and initiated massive efforts to establish a network of railroad lines.

Coming of the Railroad, 1854-1860

The Manassas Gap Railroad Independent Line

Early settlement in inland portions of Northern Virginia was directly associated with rivers that provided routes for transportation of supplies and marketable goods. As the emphasis on engineered modes of transportation increased, patterns of development upon the landscape shifted. Increased investments resulted in expanded networks of regional roads and canals providing links not possible when limited to natural river courses. Transportation opportunities grew and development intensified with the arrival of the steam engine and the construction of railroads as major transportation routes. The first American railroads were constructed in the 1820s, beginning a frenzy of building that resulted in 3,668 miles of track being laid by 1844. The first railroad line to serve the region was provided by the Orange & Alexandria Railroad Company, established in 1848. This route connected Alexandria with Richmond via the Virginia Central Railroad. The O&A reached Manassas Junction in December 1851, and the entire line was in operation by March 1854.[23]

Before construction of the O&A was complete, Virginia farmers and Alexandrians collaborated to develop a rail line to "recapture the wheat trade of the upper Shenandoah Valley" that had been acquired by the B&O's Winchester branch. A public referendum garnered financial support for the project and the Manassas Gap Railroad Company was formed in July 1850. The company's goal was to construct a line from the O&A through the Thoroughfare Gap. Edward Carrington Marshall, a well connected and influential Alexandrian, was elected as president of the company.[24] Other supporters of the Manassas Gap Railroad project included prosperous and powerful citizens including some of the leading merchants of Alexandria. Combined, these men owned many of the Alexandria wharves, warehouses, shops, and mansions, and controlled the Mount Vernon Cotton Manufacturing Company, Alexandria Flour Mill Company, Alexandria Savings Institute, Potomac Bank of Alexandria, Alexandria Canal, Alexandria Water Company, and the largest brewery in the city.[25] The company quickly began to sell stock and survey the potential route. Within the year, grading had begun and rails were ordered. Construction began in Manassas Junction in November 1851 and a portion of the line was in service by 1852.[26] Soon after starting construction of the Manassas Gap route, the company pursued plans to extend that route and initiate other branch lines. In March 1853 the company was granted approval by the Virginia Legislature for each of these proposals.

> "When constructed, this rail network would have greatly expanded the reach of the Manassas Gap Railroad. The company would have direct access not only to the farms of the Shenandoah but through its Loudoun Branch would also have been able to compete

with Georgetown for much of the farm trade of Northern Virginia. Additionally, the connecting line would have provided an uninterrupted link to the expanding coal-fields of northwest Virginia (now West Virginia) and allowed the Manassas Gap Railroad Company, through the ports of Alexandria, an entry into the increasingly lucrative coal trade all along the East Coast. At the same time, the construction of an Independent Line east to Alexandria promised to increase the company's overall profitability. From the beginning, the Manassas Gap Railroad had been wholly dependent upon the O & A for its connection to Alexandria; and this granted the O & A considerable control over freight rates and usage fees. It did not take long for Marshall and the Board of Directors to conclude that the yearly rent (amounting to $33,500 in the fiscal year of 1854) which they paid for use of the O & A's tracks was excessive. By Marshall's calculations, such a fee allowed the O & A to earn just as much in hauling a barrel of wheat the twenty-eight miles from Manassas Junction to Alexandria as the Manassas Gap Railroad would make in hauling the barrel the sixty miles from Strasburg to Manassas Junction."[27]

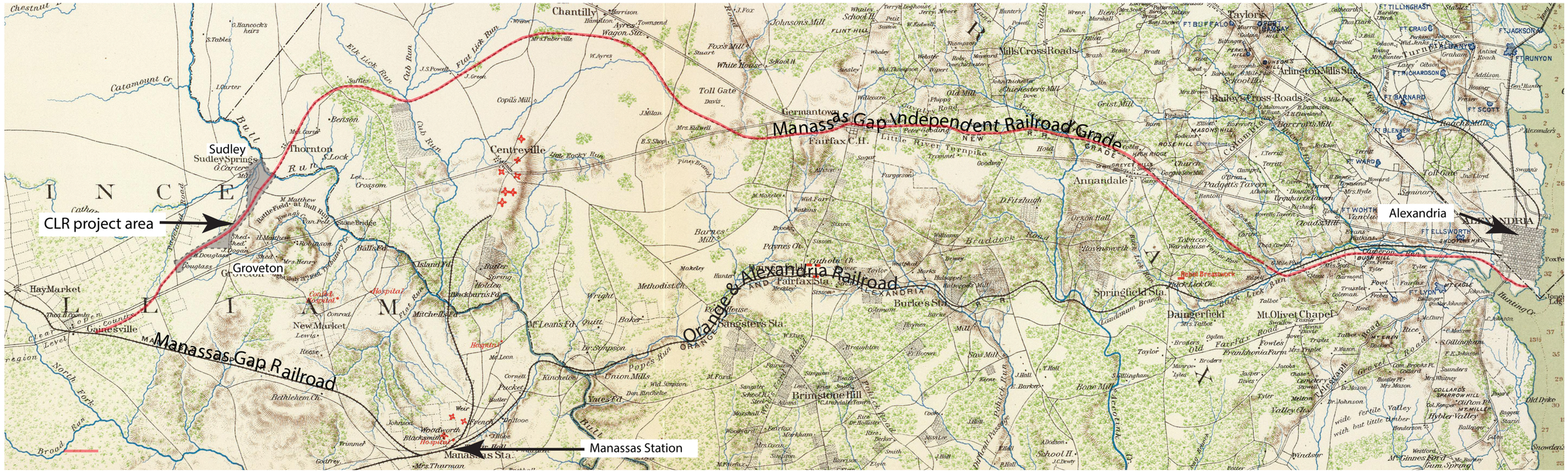


Figure 1- 2: 1862 Hasselbach Military Survey, excerpt showing the Manassas Gap Independent Line, or Unfinished Railroad route, from Gainesville to Alexandria.
(source: David Rumsey Historical Map Collection, copyright 2000 by Cartography Associates)

A survey team led by Chief Engineer John McD. Goldsborough set out immediately to determine the route for the Independent Line. The alignment was selected by early 1854, a thirty-four mile route from an intersection with the company's main line near Gainesville to a depot at Jones' Point south of Alexandria (see Figure 1-2).

> "Between these two points, the Independent Line crossed the Bull Run to the west of Chantilly and crossed the Cub Run just below its fork with Elk Lick Run. The line then made a long sweeping curve and crossed the Warrenton Turnpike approximately two miles west of Fairfax Courthouse, turned east, crossed the Little River Turnpike, and passed through the northern section of Providence (now known as the city of Fairfax). That the Fairfax County Court approved the company's request for a right of way through the city in May 1854 was quite an accomplishment as very few communities in that era allowed railways to be built through them, and even Alexandria did not allow railways within its city limits. From there, the roadbed ran east to above the village of Annandale, curved south to cross the Little River Turnpike, ran southeast through the Indian Run Valley, and intersected with the O&A's railroad bed five and three-tenths miles west of Jones' Point. After crossing over the O&A, the Independent Line turned sharply east, paralleled the O&A to the edge of Alexandria, and then detoured around the city to a small peninsula which jutted into the Potomac."[28]

The Manassas Gap Railroad Company was moving fast to establish the extensive network they had planned (see Figure 1-3). As surveying was being conducted, the process used to acquire land for the route was established. The Fairfax County Court appointed five commissioners "who would determine the compensation to be awarded to those local landowners whose land was to be taken." A multitude of lawsuits were filed and the right of way was acquired in a quick nine months. As land was being secured, construction contracts were being awarded. Nine contracts for the most difficult sections of the rail-bed were awarded in May 1854. The portion of line near Sudley was included in one of these early contracts.[29]

By October 1854, the company was facing a shortage of capital necessary to complete construction. A short-term solution allowed construction to continue, but the financial problem was not resolved. The regional economy was depressed, and the company was not successful in raising the monetary support necessary to complete its ambitious construction projects. One of the many difficulties was related to an early agreement by the company that it would not use funds raised west of the Blue Ridge on construction of lines east of the range. Failed attempts to raise funds in the area meant work on the Independent Line was stalled. During 1856 only $31,294 was spent on the line. Unfortunately, the design of the company's rail network relied heavily on the completion of the Independent Line. In 1857 the company's fate was sealed when it was forced to stop all work on the Independent Line.[30]

> "As President Marshall related at the seventh annual stockholders meeting, "the Company now finds itself stalled, and embarrassed with a debt incurred in the prosecution of the work - though the debt is small in comparison with the amount invested."
>
> Thus in late 1857, the Independent Line of the Manassas Gap Railroad Company stood half finished and virtually abandoned. The most difficult grading and masonry work had been substantially completed, and the rest of the required grading was reported to be of "a light character." Indeed, Chief Engineer Goldsborough asserted that the line was only one good work season away from being ready to lay the rails."[31]

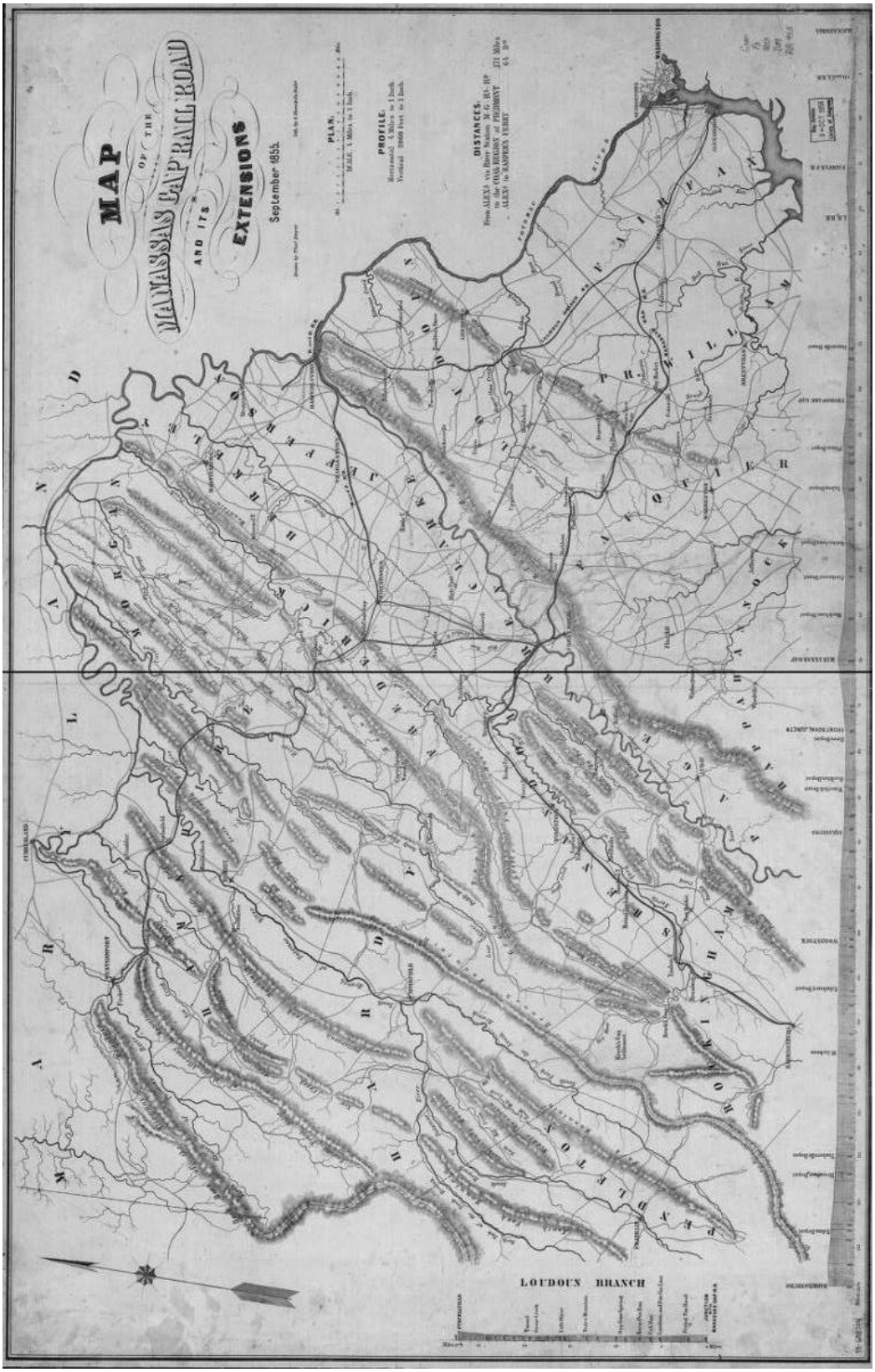


Figure 1- 3: Manassas Gap Railroad and Its Extensions, September 1855. (Library of Congress)

The company was never again able to resume work on the Independent Line. The company had spent $244,929 on the line, and in October 1858 President Marshall stated that an additional $900,000 was necessary to complete the work. The Manassas Gap Railroad continued to operate and improve its financial situation and in late 1860 President Marshall was predicting resumption of work on the Independent Line. The American Civil War finally put to rest all lingering plans for the route.[32]

Construction of the Rail-bed

The portion of the Manassas Gap Independent Line that lies within Manassas National Battlefield Park was an early focus of acquisition and construction efforts by the company. As surveyors worked to identify the best route for the line, the Sudley area was identified as a logical location for the alignment. The Bull Run Valley near Sudley was identified as one of the "difficult sections" where work was to begin first. Within the 2.7 mile segment contained by the project area, the company purchased an 80-foot wide corridor from property owners. In 1854, the Manassas Gap Railroad purchased property from the heirs of William H. Dogan, George Doublass, John D. Dogan, B. Newman, Catherine Newman, and Cundiff. The property sold by Catherine Newman was purchased by Cushing in 1855.[33] The construction contract for this section was awarded in May 1854.

No known documentation describing the company's construction techniques exists, but an understanding of general engineering practices and consideration of the extant resources provides a wealth of information regarding the approach used. Grading to provide the easiest possible route for a steam locomotive was the primary focus for construction of railroads in the 1850s. The desired slope of the route needed to be as level as possible, and not exceed a few degrees of elevation per mile. This was achieved by a combination of excavating high parts, and filling in low areas to create a relatively level route composed of a series of cuts, fills, and ungraded sections. The efficiency of the operation relied greatly on skilled planning to achieve a balance between materials excavated and those used for constructing embankments. When extra materials were required, they were extracted from areas as close to the building site as possible, as moving stone and earth was laborious and time consuming. The process involved workers using shovels, wheelbarrows, horses and carts. One quarry site used during construction was located on the Brawner farm near Pageland Lane.

It appears that a three step process was used. Cuts were excavated first so that the material acquired could be used as a source of fill material in other locations. The second step was preparing stone work for abutments and culverts. Constructing filled embankments was the final stage. Stone for masonry features was delivered to the construction site in rough-cut blocks and formed on site to fit the evolving structure.[34]

> "Stones that broke during this process were discarded or used in fill. Once an abutment or culvert was assembled in place, then stonecutters reworked the facing stones, smoothing them and cutting a straight edge onto the corners. Only after all of this work was complete was the fill added to complete the roadbed."[35]

Within the project area workers constructed eleven sections of fill representing 5,190 linear feet; thirteen cut segments totaling 4,818 linear feet; twelve level sections equal to 2,166 linear feet; and two ungraded sections that amount to 977 feet.[36] Sites for three proposed trestles, spanning a total of 800 linear feet, were also prepared.

The process used to construct fills and excavate cuts was carefully engineered to ensure the stability and longevity of the rail-bed. The embankments were constructed by placing 2-4 foot thick layers of earth and crushed stone that were compacted by hand ramming and rolling with horse-drawn rollers, then left to settle. Following this, the process was repeated until the desired elevation was reached. In areas that required excavation, this was also done one layer at a time. When dense sections of bedrock were encountered, blasting power was used to dislodge the rock. The resulting debris was used for fill material in some cases, and left upon the landscape in others. The area called "The Dump" (the proposed site of Trestle #2) includes a large amount of rock debris created by blasting.[37]

To ensure proper drainage, culverts were designed for key locations. To construct these features, cut stone was necessary. It is likely that at least four locations within the project area were intended culvert locations however no remnants of these features are apparent today. The cut stones were valuable for construction projects in the area and may have been reused elsewhere. One account indicated that the sandstone used to build the Groveton/Deep Cut monument was acquired from a culvert site. In locations where bridges were necessary to span runs, creeks and marshy ground, sites had to be prepared to support trestles. Within the project area trestles were proposed at three sites (see HP-2). All three are low stream or drainage crossings and the rail-bed on either side required construction of high fill embankments. Immediately adjacent to the project area on the north bank of Bull Run, a large embankment and bridge abutment constructed of cut stone were completed. [38]

Little documentation regarding the specific individuals who constructed the rail-bed has been found. The work was undertaken by contractors about whom little is known. However, information relating to other railroads built in the area during the period indicates it is highly likely that the work was done by a diverse group of workers.

> Native white artisans performed the most skilled tasks, quarrying, cutting, and laying the stone for the abutments and culverts. Native white and recently arrived Irish laborers from Alexandria performed the semi-skilled tasks, building the worker houses and storage sheds that supported the construction and maintaining the company's equipment. The worst and most tedious tasks were reserved for gangs of rented black slaves, who through their manual labor shifted the tons of earth required to make the many cuts and fills. These slaves, owned by local masters, were hired on by the year at a cost of between eighty and one hundred dollars, with the company responsible for feeding and housing them during that time. In one instance in June 1853, slaves in the employ of the Manassas Gap Railroad Company rioted and seriously impeded the construction of the main line through the Summit Cut. Only the arrival of Captain Turner Ashby and his cavalry militia, later of Civil War fame, prevented the loss of all the hands and allowed the work to continue.[39]

Although the grade was abandoned by the company, it would soon figure prominently in the Civil War battles at Manassas. While unfinished railroads played a role in at least four major eastern Civil War battles, only at Second Manassas did an uncompleted railroad bed "actually define the battlefield—in the sense that a battle was fought there largely because of the abandoned railroad grade."[40]

Civil War – First and Second Battles of Manassas, 1861-1865

First Battle of Manassas, July 1861

On 12 April 1861, the opening shots of the Civil War rang out at Fort Sumter, South Carolina. The first major land battle of the war was fought three months later in the Sudley area. In war, as in peace, the railroads were the major supply networks of the time. Intent on quickly capturing the Confederate capital in Richmond, Federal forces worked to undermine Confederate forces by capturing the rail lines used to supply the army.

> "The strategic importance of the Manassas Gap Railroad, linking as it did the Shenandoah Valley to the rest of Virginia, impelled the Confederates to station General Pierre G. T. Beauregard and his troops in Manassas Junction in the spring of 1861. This is reported to be the first time that a military force was ever deployed with the mission of protecting a railroad. It was the presence of these troops that attracted the attention of Union generals and led to the Battle of First Manassas (First Bull Run) in July 1861. During this battle, Confederate General Joseph E. Johnston used the Manassas Gap Railroad to move troops to Manassas Junction from the Shenandoah Valley..."[41]

On 21 July 1861, The Confederate army was concentrated near Manassas Junction to protect the crucial rail hub when Federal troops began to move south toward Manassas from Washington. Steep banks along portions of Bull Run served as excellent defensive positions for the Confederates. The creek's many fords made the stream difficult to protect. The Federal army targeted three crossings at Sudley Ford, Poplar Ford, and the Stone Bridge on Warrenton turnpike. The main Union column crossed at Sudley Ford and moved on Sudley Mill Road to the south. They were met by Confederate troops and a battle followed on a hill near the Matthews farmstead, north of the Stone House at the intersection of Sudley Mill Road and the Warrenton turnpike. When the Confederates were forced to retreat to the next ridge, they established a line southeast of the Henry House. Federals established a position on Matthews Hill near Rosefield, the Dogan farm. Both armies were inexperienced at this early point in the war. Federals attempted to advance to Henry Hill, but their poorly coordinated brigades crumbled when faced with Confederate counterattacks. They abandoned their equipment and retreated across Bull Run. Losses to troops on both sides were significant with nearly 5,000 killed, wounded or missing out of the 36,000 soldiers who fought in the First Battle of Manassas, or the Battle of Bull Run.[42] Figures 1-4 and 1-5 illustrate two interpretations of the conditions present during the battle.

During and after this battle, the Sudley Church and Thornberry house at Sudley were used by Union surgeons as a hospital and triage center for the wounded. The area was deemed to be out of range of the fighting and close enough to the wounded to serve as a fitting hospital site. The church and nearby structures were completely emptied of furnishings and other possessions to make way for the medial services. The materials removed were never returned to the occupants.[43]

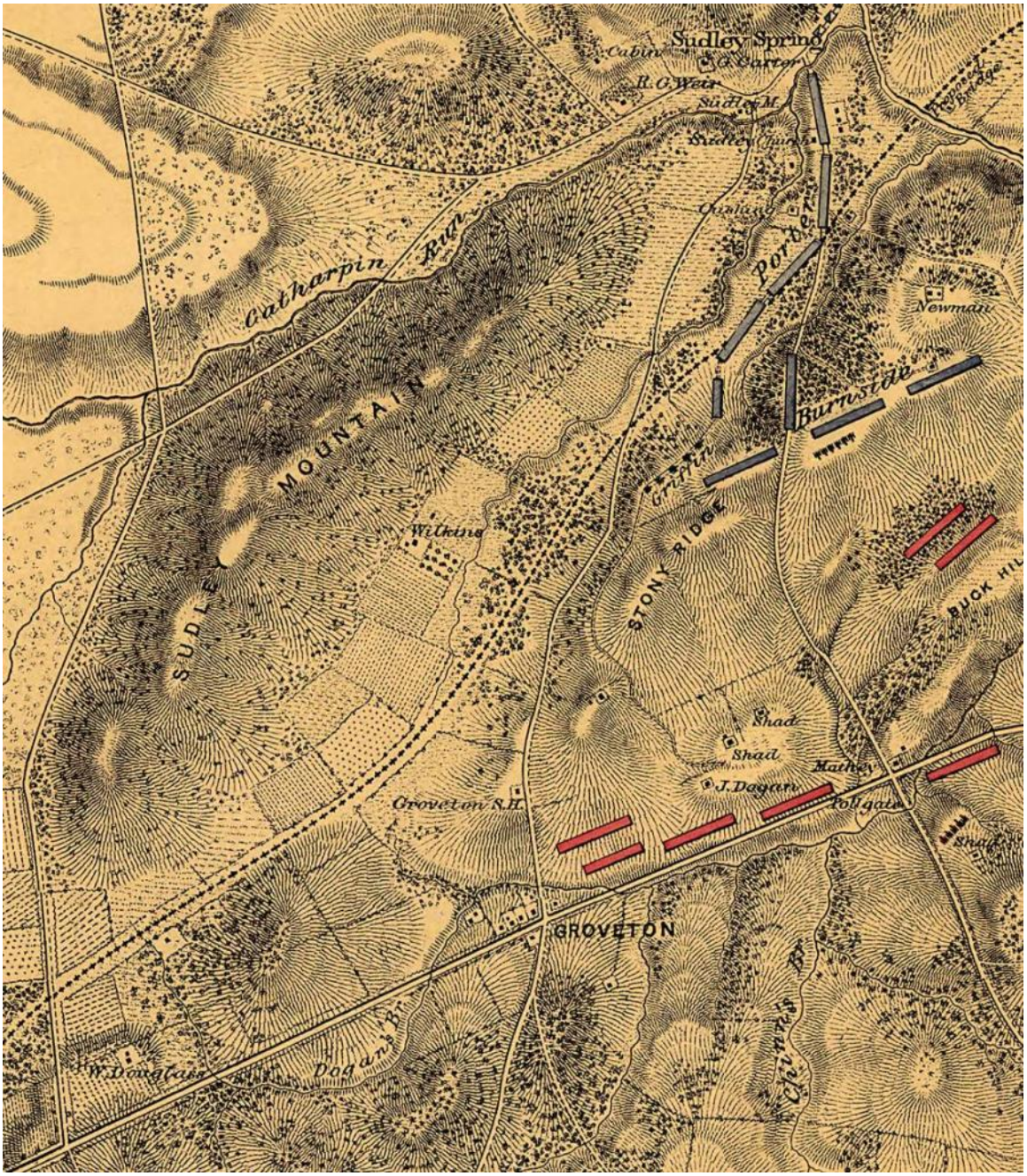


Figure 1- 4: McDowell Map of the Battlefield of Bull Run Virginia, prepared 1877, reflecting activities that occurred on 21 July 1861 (MNBP)

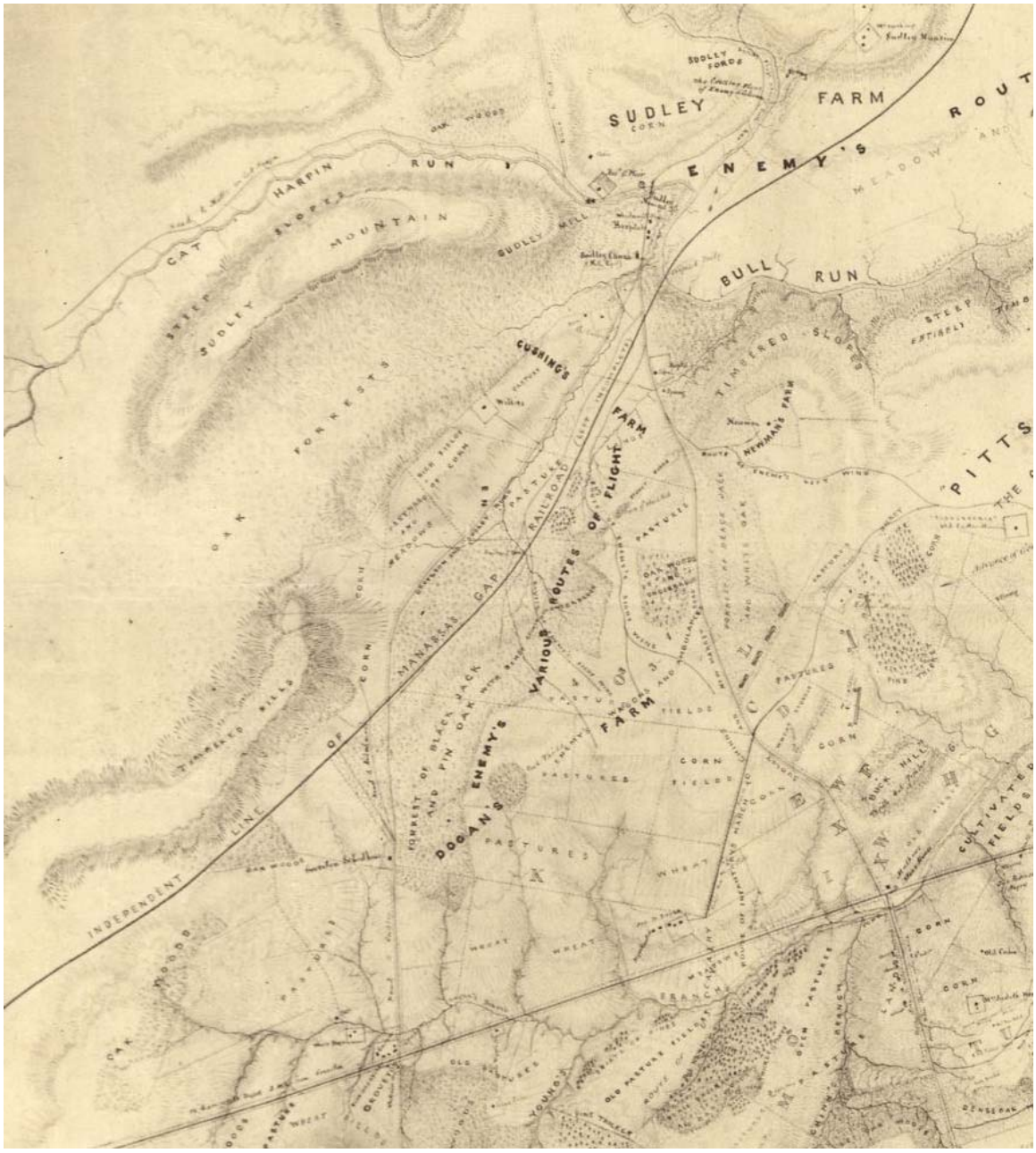


Figure 1- 5: Atkinson Map of the First Battle of Manassas and the Surrounding Area, prepared 1862 reflecting the conditions of 21 July 1861 (Library of Congress)

Second Battle of Manassas, August 1862

This section, addressing the Second Battle of Manassas in the area was prepared by John Bedell.[44]

The campaign of Second Manassas or Second Bull Run is considered by some to be the Army of Northern Virginia's finest performance on the field, a three-day battle that led to the defeat of the Union forces and the court martial of one of their corps commanders. At the beginning of August, 1862, the Union army was divided. Much of their strength was with George McClellan on the peninsula southeast of Richmond, the remainder in northern Virginia under John Pope. Lee believed, correctly as it turned out, that McClellan was so stunned by his reverses in the Seven Days campaign of June 25 to July 1 that he would take no offensive action. After an indecisive fight at Cedar Mountain on August 9, Lee transferred the majority of his men northward to the Rapidan-Rappahannock region. Upon discovering Confederate intentions to trap Union forces south of the river, Pope withdrew to a strong position on the North bank of the Rappahannock River.

To maneuver Pope out of his strong lines, Lee divided his army and sent Stonewall Jackson's command, known as the "Left Wing", around the Union right flank. Jackson threatened the Union rear and captured a supply base at Manassas Junction. However, he was isolated and vulnerable. Pope turned his forces to attack Jackson, hoping to destroy his force before the Army of Northern Virginia could reassemble. However, Pope was misinformed as to Jackson's exact whereabouts, and as his men moved toward their designated assembly point at Centreville, several units marched across in front of Jackson's actual position north of the Warrenton Turnpike. Jackson, for his part, misinterpreted the movement of the Federal forces as a withdrawal toward Fairfax, and he determined to attack lest the Union Army escape the battle he and Lee were preparing to offer them.

On the morning of August 28, Jackson's wing was in the process of concentrating in a strong defensive position north of the Brawner Farm, along Stony Ridge. The area was a patchwork of fields, pastures, and small wood lots, and Jackson's men were concealed in the woods. The first action around Brawner Farm took place on the morning of August 28, when Confederate guns opened up on lead elements of Brigadier General John Reynolds' division as it marched toward Manassas junction. It seems that the Confederate guns were posted east of the Brawner house, along the ridge, although the sources are imprecise. Reynolds deployed his own guns to silence the fire, and the Confederates withdrew.

This small demonstration not having slowed the flow of Union forces to the south, Jackson decided on a larger one. Later that afternoon, three Confederate batteries opened fire from the ridge at troops of Rufus King's division. Union guns were deployed to answer, and several Union regiments took shelter in Brawner's woods, southeast of the house. At around 6:30 in the evening, Union Brigadier General John Gibbon, commander of the "Black Hat" Brigade, determined to silence the guns, led his 2nd Wisconsin regiment up the hill just east of the Brawner Farm to engage them. Two companies of the 2nd Wisconsin were deployed as skirmishers, covering a wide front in loose array; with the rest of the regiment deployed behind them in regular line of battle. Confederate skirmishers opened fire on the advancing Wisconsin men, delaying them while the battery near the Brawner house was withdrawn. Advancing toward the farm, the Union troops saw Confederate battle lines emerging from the woods north of the house. These

men were the lead unit of an attack that eventually involved most of two of Jackson's divisions. Gibbon deployed his entire brigade in line to face them. He concentrated the 2nd Wisconsin just to the east of the Brawner house, bringing the 19th Indiana up on their left. The 19th Indiana, numbering about 400 men, was the left end of Gibbon's line, and their left flank was anchored on the Brawner Farm house. Facing them was Jackson's old division, now under the command of William B. Taliaferro. Neither commander had a good idea of what he was up against; interestingly, both wrote in their official reports that they were facing "greatly superior" enemy forces. In fact the Confederates had the advantage in numbers, but Jackson was not able to deploy his men in a concerted fashion.

The 19th Indiana was stopped just north of the Brawner house by a volley from the 4th Virginia, part of the First ("Stonewall") Brigade, under Colonel William S. Baylor. The Confederate soldiers deployed behind a rail fence and some of Brawner's outbuildings. For about 90 minutes, until darkness fell, two lines of infantry stood 70 to 80 yards apart and shot it out in what Gibbon said was the most intense small arms fire he saw during the entire war. He later wrote, "the left of my line rested at the Douglas House (i.e, the Brawner Farm house), and from that point as darkness came on, I could see the enemy's line extending far to my left. Should the enemy get possession of the house, and yard full of trees, he would entirely flank my line and enfilade it."[45]

The troops Gibbon saw to his left were three regiments of Taliaferro's Third Brigade, under Colonel A.G. Taliaferro, and as they moved up to the right of the First Brigade they pressed the assault on Gibbon's flank. Still the Confederates were not able to make any headway, partly because they lacked artillery support. The division's guns had been driven from their initial position by what Taliaferro described as "most severe fire" from Union guns. However, the Confederate gunners were able to find a new position on the right that allowed them to rejoin the fray and they received additional support from John Pelham, who brought his section of guns toward the farm. Colonel Meredith of the 19th Indiana sent two companies to silence Pelham's guns, and Pelham was forced to fall back, but he continued to fire on the left flank of Gibbon's line. With this additional support Taliaferro's Third Brigade finally gained the Brawner farm yard, and the 19th had to fall back to a rail fence. The 19th began a fighting retreat that took them back to Brawner's Woods, and the Virginians were left in control of the Brawner House. At around 9:00 PM, the fighting died down, and under the cover of darkness wounded men were taken off the battlefield. Nightfall left the Brawner Farm in Confederate hands.

On the next day, August 29, Jackson deployed his 20,000 men in an arc in front of Stony Ridge, behind an unfinished railroad grade. His artillery massed on the ridge itself. Jackson did not attempt to form a complete, static line, but held his men in more mobile formations so they could concentrate at any point of attack.

Meanwhile, confusion reigned on the Union side. Pope wanted to concentrate his entire force of more than 60,000 men to attack and destroy Jackson. However, on the morning of August 29 he did not know where most of his men were, and his orders to them were so unclear that his corps commanders were not sure what he wanted them to do. It took them all day to concentrate around Groveton as Pope wanted. Rather than waiting until his force was assembled, Pope sent his men forward in a series of uncoordinated attacks throughout the day. The fighting was mostly by brigades, since the Union was never able to mass larger formations for attack. Several times Union troops breached the Confederate front line, but since they were not properly supported, Jackson was always able to bring men from elsewhere along his line to counterattack, driving the Union soldiers back. Jackson made particularly effective use of his artillery, which was kept

mobile to mass its fire at any point of attack. The most successful attack was made very late in the day on Jackson's far left wing, near Sudley Springs. Kearny's Division drove back A.P. Hill's division, crossed the unfinished railroad and reached Stony Ridge. But once again the attack was not supported by action elsewhere, so Jackson was able to move Jubal Early's men from his right wing to counterattack and drive the Union men back off Stony Ridge.

While Pope tried unsuccessfully to come to grips with Jackson, the rest of Lee's army was arriving on the field. During the day on the 29th, James' Longstreet's "Right Wing" passed through Thoroughfare Gap and marched down the Warrenton Turnpike toward the scene of the fighting. Most of his men had arrived by late afternoon, and Lee urged an immediate assault, but Longstreet demurred. He wanted to better assess the situation and form up his men properly for the attack, and he was worried about strong Union forces arrayed to his right, south of Chinn Ridge. Since Lee could see that Jackson was in no real danger, he agreed to the delay.

Some Union commanders sensed the buildup of Confederate troops west of their position and urged Pope to assume the defensive, but Pope was determined to strike another blow at Jackson. The repositioning of one Confederate division convinced him that they were planning to retreat. On the morning of the 30th he therefore ordered Porter and Reynolds to attack the western end of Jackson's position, northeast of the Brawner Farm. Lee had anticipated such an attack by massing artillery north of the Brawner Farm, well positioned to fire at the flank of the advancing Union troops. Following the repulse of Porter's attack at the Deep Cut, Lee and Longstreet launched their own attack. Longstreet's force of 25,000 men launched the largest single charge of the Civil War, advancing east along the Warrenton Turnpike and striking Pope's force in the flank.

Longstreet's line stretched from the Brawner Farm south a mile and a half to the Manassas Gap Railroad. Only two Union brigades (Warren and McLean) were in position to oppose Longstreet's forces when the counterattack began. Initially Warren's small brigade was overrun by Hood's Texas brigade south of Groveton; then Hardin's brigade peeled off of Reynolds' division (which had been ordered north of the Warrenton Turnpike in the aftermath of Porter's repulse) and joined Kerns' battery in stalling Hood on the forward slope of Chinn Ridge. McLean's brigade (with Wiedrich's battery) held off first Hood then Evans before yielding to Corse's brigade (of Kemper's division). Following this, Tower's brigade joined the battle mid-ridge and Stiles' brigade joined Tower before they both withdrew further up the ridge. The 41st New York (of Stahel's brigade) and Koltes' brigade reached the battle line next. Krzysanowski's brigade arrived last, on the north end of Chinn Ridge for a brief stand before the Confederates (Jones' division) forced them back. By this time, the Federals had established defensive positions along the Manassas-Sudley Road and on the slopes of Henry Hill.

Pope ordered Porter to advance his corps along the Warrenton Turnpike, supported by the divisions of Reynolds and Hatch. Ricketts was ordered to advance his division on the right, with Heintzelman's corps in support. When the Confederates did not withdraw the pursuit proved impractical and the attack was reduced to Porter's corps with Hatch in immediate support. Hard fighting followed, but the Confederates slowly pressed forward. Lee urged Jackson to move to the offensive to support Longstreet, but Jackson's worn-out men were slow to move, and they provided little help. Fighting raged around the crossroads through the afternoon. Eventually, though, the battered Union left showed signs of caving in, and Pope ordered a general withdrawal toward Centreville. The retreat

was orderly, and the Confederates did not pursue. Lee had won a victory, but he had failed in his goal of trapping and destroying Pope's army.

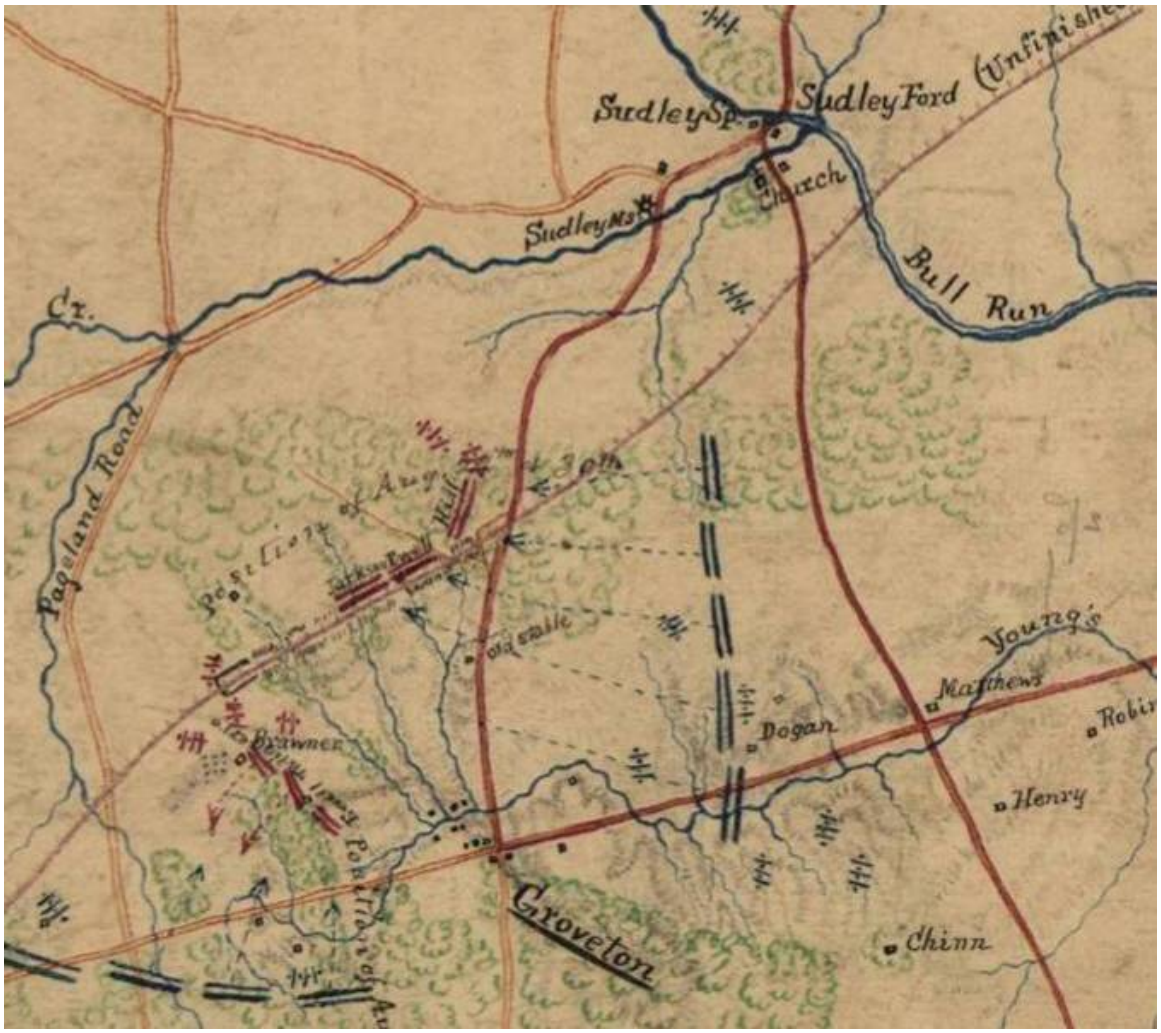


Figure 1- 6: Hotchkiss Map of the Manassas Battlefield Area (excerpt), 1863 (Library of Congress)

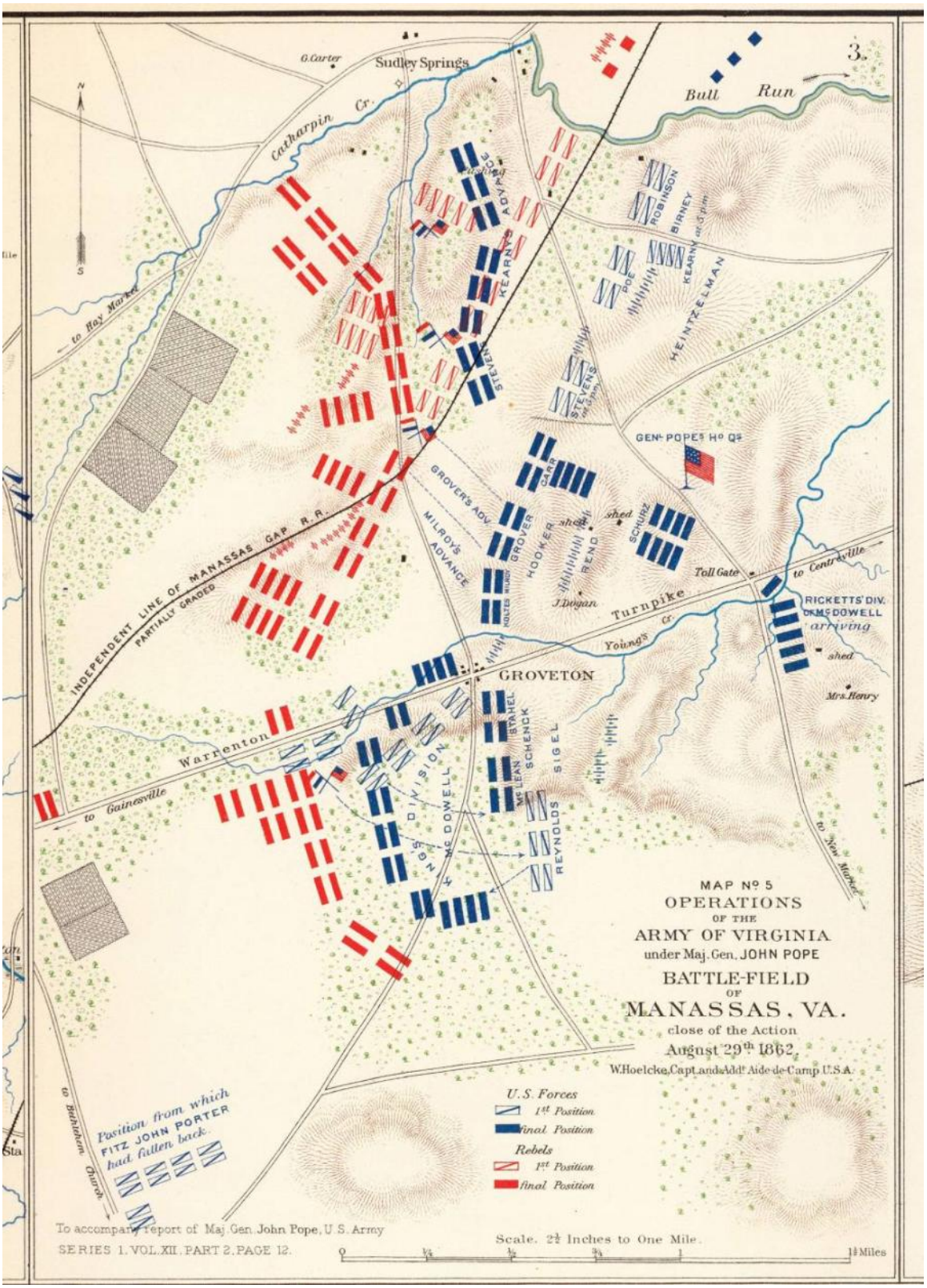


Figure 1- 7: Stengal and de Fonvielle, Operations of the Army of Virginia, 29 August 1862 (source: David Rumsey Historical Map Collection, copyright 2000 by Cartography Associates)

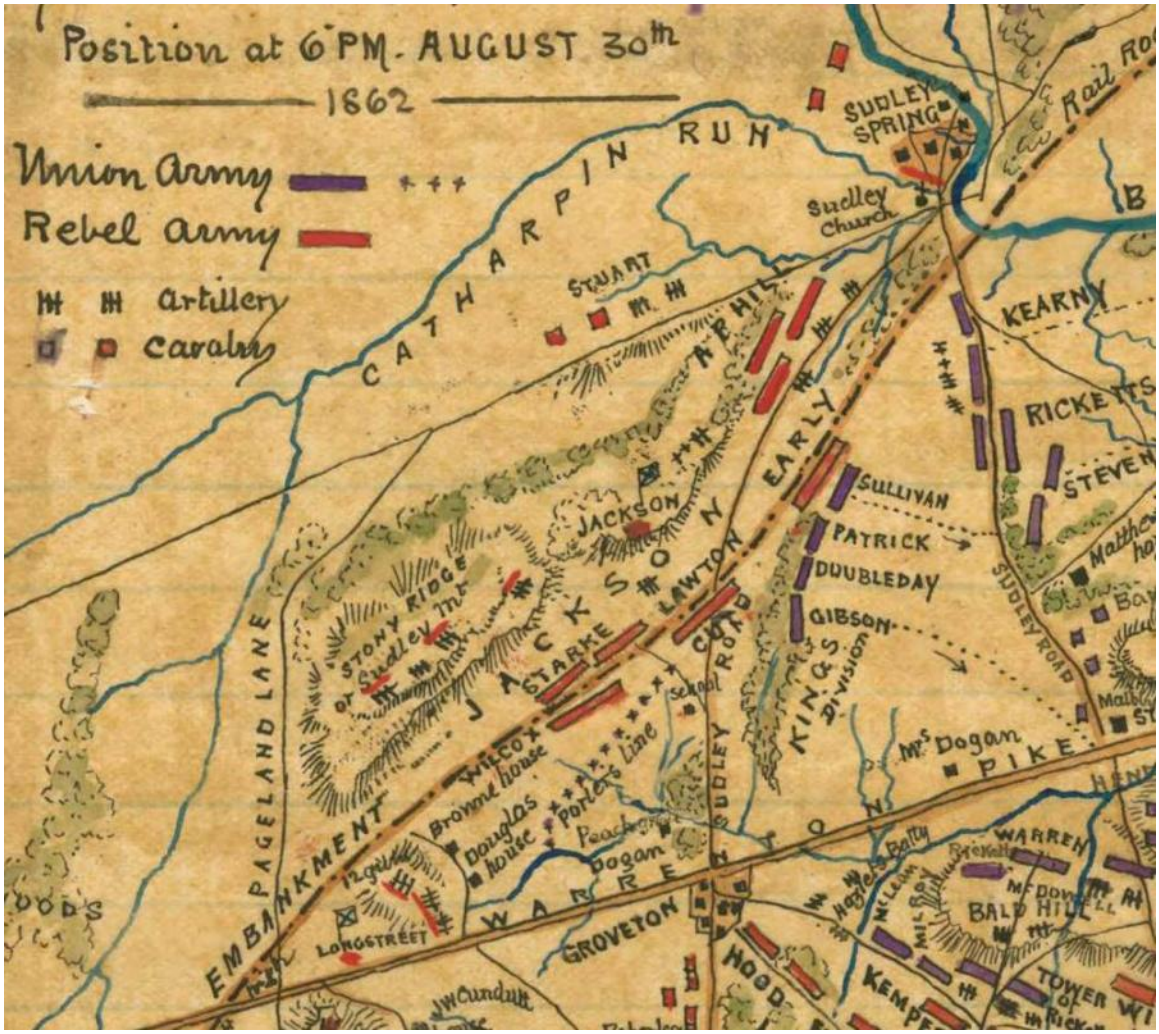


Figure 1- 8: Sneden Plan of Second Battle of Bull Run, 6pm 30 August 1862 (Library of Congress)

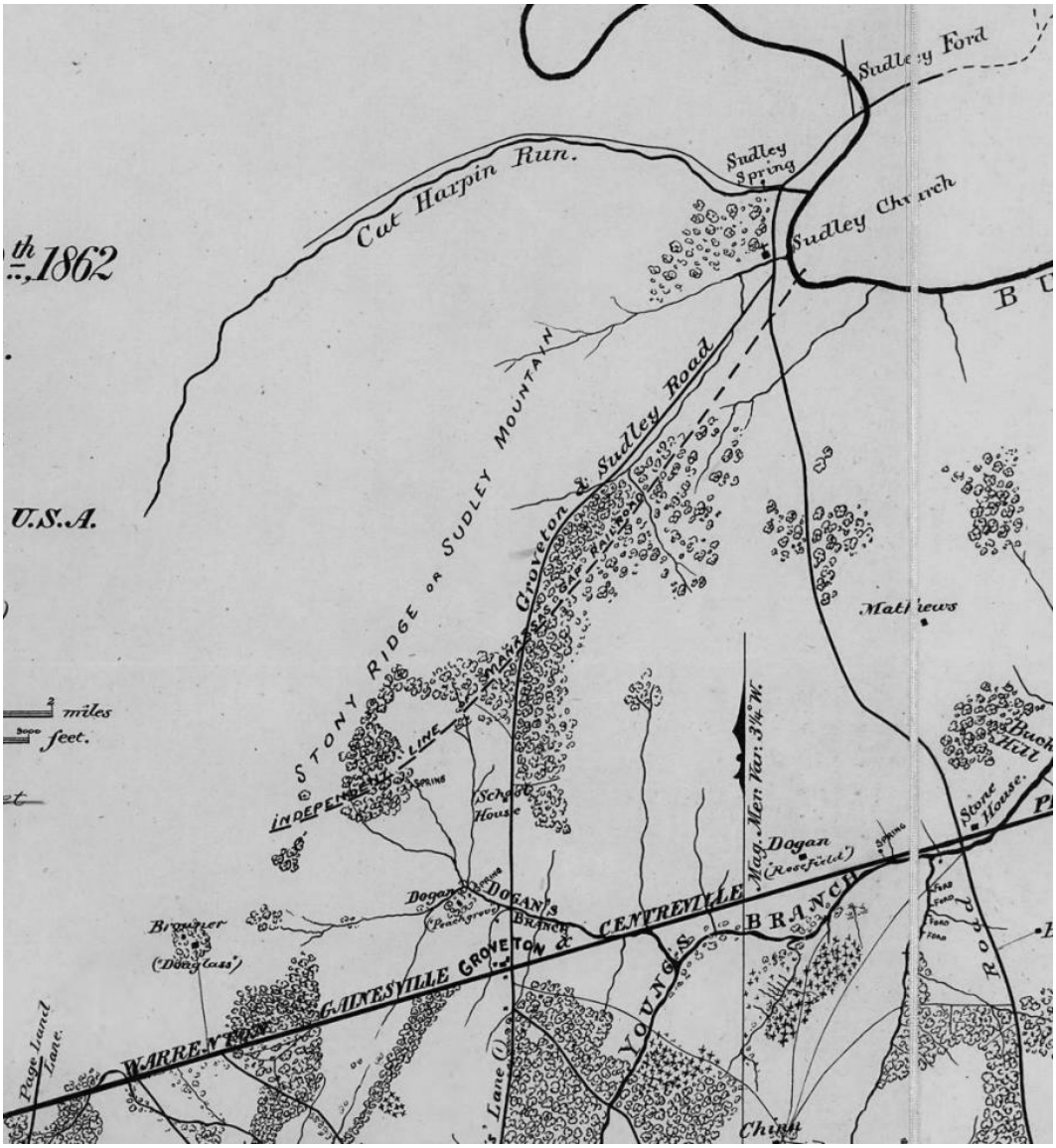


Figure 1- 9: Excerpt from the Warren Map of project area without troop locations, "Map of the Battle-Grounds of August 28th, 29th, and 30th, surveyed in June 1878. (source: MNBP)

Battle Maps

Following the battles, maps were produced to document the landscape conditions and military activities. The maps present a range of graphic styles, accuracy, and level of details depicted. Preparation of the historic period plan for this time span (see HP-1) utilized a combination of battle maps, including maps prepared by Warren in 1878 (Figure 1-9), McDowell in 1861 (Figure 1-4), Atkinson in 1862 (Figure 1-5), Sneden in 1862 (Figure 1-8), Hotchkiss in 1863 (Figure 1-6), and Stengal and deFonvielle depicting 1862 conditions (Figure 1-7).

The Warren maps are considered to be among the most accurate in depicting conditions present during the Second Battle of Manassas. They were prepared based on a survey conducted in June 1878 by G. K.Warren, who was also present at the Second Battle of Manassas. Warren surveyed and prepared the maps to portray conditions during 1862 because the Army deemed existing maps of the battlefield to be inadequate for the purpose of rehearing the case of Fitz John Porter. The Unfinished Railroad project area is at the very edge of the Warren maps. Details in the project area include the railroad grade, roads, streams, springs, Sudley Church, Groveton School House, Peachgrove, the Brawner farm, Rosefield, and the village of Groveton. These landscape features are presented according to Warren's map on drawing HP-1, the Historic Period Plan for 1861 through 1869.

In 1995, an analysis of the accuracy of the maps was made by comparing several maps to the 1995 conditions. The Hotchkiss map illustrating the 1862 events was identified as the most detailed illustration of the Groveton area, which included a cluster of buildings at the intersection of Groveton-Sudley Road and Warrenton turnpike (see Figure 1-6). Other details were observed:

> "To the northwest of Groveton, there is another complex of buildings. A stone building, possibly the ruins of "Peach Grove," a barn and an unknown structure are depicted. Just to the south of the barn, was a small orchard. On Groveton-Sudley Road less than one-quarter of a mile north of Groveton, a farm road followed Dogan Branch to the west to the stone structure. To the north of this farm road along Groveton-Sudley Road, the school house is depicted as a stable. To the north of the school house a road is defined from Groveton-Sudley Road through the woodlot north of "Deep Cut." The other interesting feature revealed from the Hotchkiss map is a structure to the north of the unfinished railroad along Dogan's Branch. Another unknown structure is depicted on the east side of the Groveton-Sudley Road east of Groveton. In this location, Federal guns were positioned on a knoll overlooking Dogan's Branch, during the second day of the battle. The depiction of the tree lines and roads is also fairly accurate on this final map produced by Jed Hotchkiss."[46]

The 1995 document indicates that the Harris map seems to be the most accurate for the Sudley area. Unfortunately, the majority of the current project area is not depicted on that map. The Atkinson Map (see Figure 1-5) of the First Battle of Manassas and the surrounding area, prepared in 1862 to illustrate the conditions of 21 July 1861, is more helpful for the current project. Although it disagrees with other maps regarding the arrangement of roads and watercourses in the Sudley area, it provides helpful information not found elsewhere. While Atkinson and Harris and Sneden all depict one ford crossing Catharpin Run at Sudley, the McDowell, Hotchkiss and Stengal/deFonvielle maps clearly indicate a second crossing to the west of the first. An understanding of the geography of the area may provide a partial explanation. The location of the ford closest to Bull Run is

prone to seasonal flooding. A second crossing may have been necessary during wet periods, while the more direct route north was preferred when passable. The relationships of buildings to roads and creeks also vary considerably on the maps. One example is the Sudley Church, which is shown in a variety of locations from immediately adjacent to Catharpin Run (Hotchikss and Sneden) to a considerable distance south of the creek (Atkinson and McDowell). The quantity of buildings depicted also varies. This may be due to the loss of buildings during the battles, or other events, before the site visits were made by those preparing the maps. The historic period plan for 1861-1869 illustrates the buildings with consistent documentation indicating their presence.

Regarding the majority of the alignment of the unfinished railroad, the corridor is laid out differently on each historic map, but conceptually they all essentially agree that it ran at a roughly northeast angle from Pageland Lane toward Sudley and the Bull Run. Of great interest for the current report are the patterns of woodlands, fields, fences, creeks, and roads depicted on the battle maps. Comparison of the patterns of vegetation is difficult due to the wide range of attention paid to this detail. The Atkinson map is the earliest that includes a high level of detail regarding vegetation, and it was relied on most heavily for this period. Of interest is that the Atkinson map indicates a greater quantity of wooded land present compared to most of the other plans. Accounts of woods being cut by soldiers throughout the war may help to explain this discrepancy.



Figure 1- 10: Cyclorama painting depicting conditions during the Second Battle of Manassas. (source: MNBP)

Next page: Historic Period Plan for 1861 through 1969

1861-1869 Landscape Chronology

1861 21 July - First battle of Manassas (Battle of Bull Run)
- Buildings, crops, and fences were destroyed.
- Sudley Springs Ford was used by the Federals during their advance and retreat.
- Sudley Church and most other buildings used as field hospitals.
- Soldiers buried in shallow graves where they fell and mass graves.

1862 28, 29, 30 August -- Second Battle of Manassas
- Jackson's Confederate forces used the Unfinished Railroad between Sudley and the Brawner Farm as a defensive position, and focal point of the battle.
- The woods and fields north of the rail-bed were utilized as Jackson's Headquarters
- Clashes occurred at the William Dogan farm, John D. Dogan farm, Catherine Dogan, Lucinda Dogan, Douglas farm (Brawner farm), Cushing farm, Lucinda Dogan farm, Groveton, Cundiff property, and south of Sudley church.

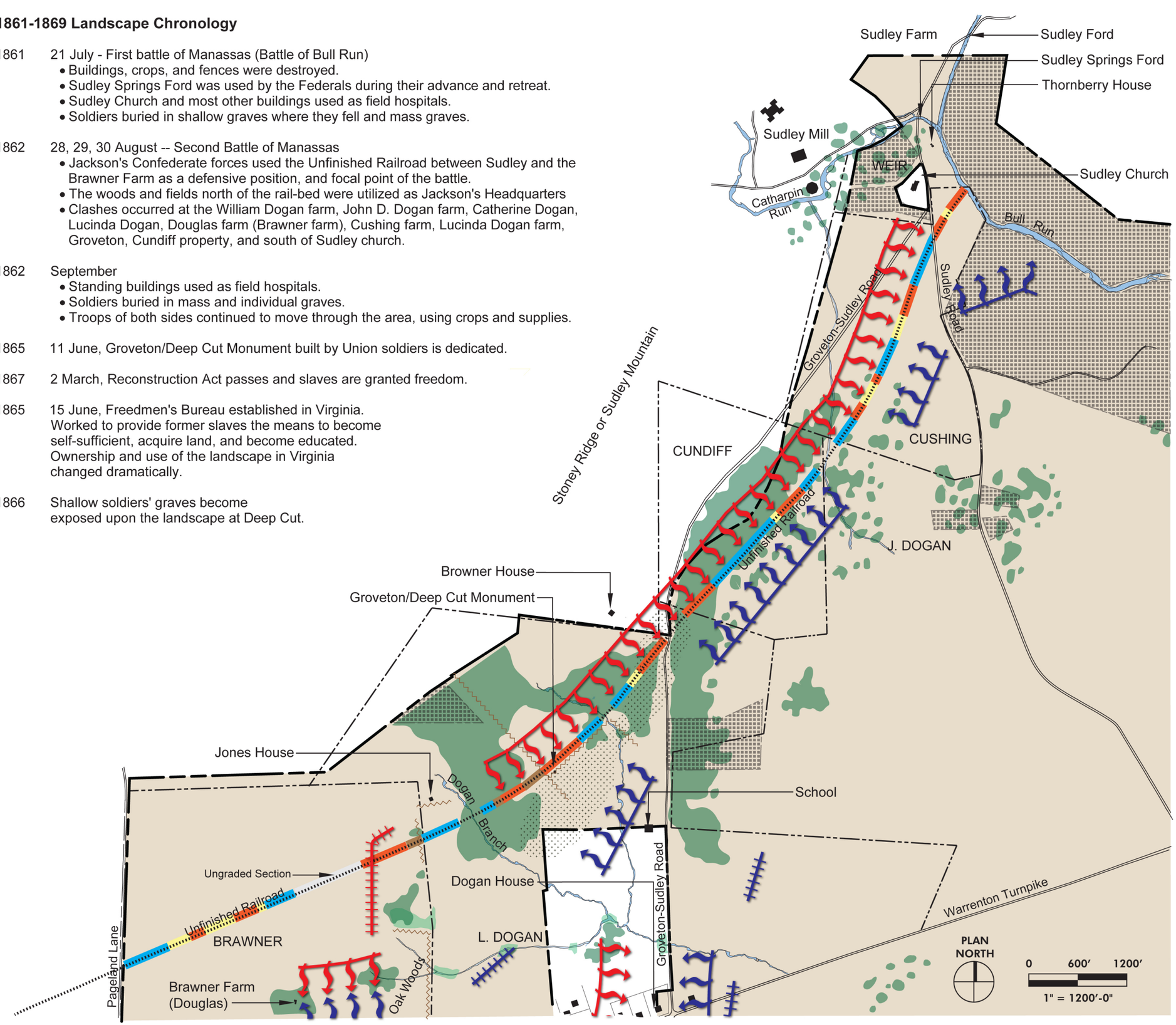
1862 September
- Standing buildings used as field hospitals.
- Soldiers buried in mass and individual graves.
- Troops of both sides continued to move through the area, using crops and supplies.

1865 11 June, Groveton/Deep Cut Monument built by Union soldiers is dedicated.

1867 2 March, Reconstruction Act passes and slaves are granted freedom.

1865 15 June, Freedmen's Bureau established in Virginia. Worked to provide former slaves the means to become self-sufficient, acquire land, and become educated. Ownership and use of the landscape in Virginia changed dramatically.

1866 Shallow soldiers' graves become exposed upon the landscape at Deep Cut.



MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Historic Period Plan 1861-1869

Legend

- Park Boundary
- Property Boundary During Time of Battle
- Unfinished Railroad
- Roads
- Buildings
- Forest, Fencerow Vegetation, and Individual Trees
- Open Field
- Current Privately Owned or Non-NPS Public Land Within Park Boundary
- Confederate Battle Line
- Union Battle Line
- Confederate Artillery
- Union Artillery
- Headquarters
- Fence
- Contours
- Concentration of Union Graves Present in 1866
- Railroad Cut
- Railroad Fill
- Level Railroad Grade
- Trestle Site

Map Notes and Sources

Note: Features illustrated on this plan are conjectural base on comparisons of existing conditions and historic documents Including: 1862 Map by Warren, 1878 Warren Survey Notes, Brawner Farm CLR, Manassas CLR, Northwest Quadrant, Manassas Fences, Fields and Forests CLR, 1861 Map by McDowell, 1862 Map by Atkinson, 1862 Map by Sneden, 1863 Map by Hotchkiss. Vegetation shown based on 1862 Warren Map and Brawner Farm CLR. Fences shown based on 1878 Warren Survey Notes and Brawner Farm CLR.

QUINN EVANS ARCHITECTS

NATIONAL PARK SERVICE Department of the Interior

NPS 379
MANA 114363

HP-1

1860s Landscape Conditions

The project area landscape experienced its most substantial change between 1861 and 1869 as a result of the American Civil War. Immediately preceding the start of the war, the Groveton/Sudley area included a post office, church, school, 28 houses, stores, taverns, saw and gristmills, and workshops for a cooper, wheelwright, and blacksmith. At the small community of Groveton, a tavern, school, blacksmith shop, store and several homes were present. Farms in the area were prospering. Each farmstead required a variety of buildings including a residence, barns, privies, ice houses, meat houses, slave houses, kitchens, and other necessary structures. These diversified farms raised sheep, swine, cattle, milk cows, oxen and horses and grew a variety of crops including corn, oats, wheat and rye. Fences and farm roads followed the edges of fields. Wooded areas were interspersed in areas of steep slopes and along rocky stream banks. The landscape was a rich mosaic of vegetation and small structures connected by a web of roads and streams.[47] A section of the unfinished Manassas Gap Railroad Independent Line cut through the area. The largely forgotten rail-bed was a structurally sound, level corridor, providing an excellent route for moving troops. The cuts and fills associated with the grade also held great potential as defensive positions. This capacity would soon be utilized strategically by the Confederate army.

Within the project area, the Sudley location was intensely impacted by the First Battle of Manassas. Property was damaged by the activities. The fields were littered with military artillery and equipment. Dead and wounded soldiers and horses laid upon the ground. Buildings in the area, including the Sudley Church, served as field hospitals. Many casualties were buried where they fell in hastily dug shallow graves.[48] Figure 1-10 provides an artist's interpretation of the conditions during the battle.

Impacts to the landscape did not stop when the battle ended. The surrounding area was occupied by Confederate troops for several months following the encounter. Officers utilized houses that were still standing, and surrounding land was used for soldier encampments. The occupying troops raided stored crops, stripped woodlands, and damaged fields to the point of limiting future cultivation.[49]

> Near Portici, Confederate troops from the 38th Virginia under the direction of Major General G.W. Smith established a winter encampment just west of present-day Rock Road. Occupied from
> December 1861 to March 1862, Camp Smith consisted of a series of log huts with stone chimneys.
> In December 1861, the camp was home to more than 622 men, a number that fluctuated as a result of sickness and furloughs. On March 10, 1862, the occupying 38th Virginia was one of the last
> regiments to leave the Manassas area, headed south for Richmond. Within days, 300 soldiers of the 20th New York State Militia had moved into the area and occupied the encampment on March 14th.

Most of the agricultural fields in the area of the battle were abandoned. The majority of the farmers were unavailable to work the land, as they were engaged in fighting the war. The significance of the battle made the location a point of interest attracting visitors.

> The Stone House, located prominently at the intersection of Sudley Road and Warrenton Turnpike, became a landmark of the battle, visited in the intervening months by curious troops, local residents, and visitors from both the North and South. Immediately following the first battle, the building continued to be used as a hospital until patients and prisoners could be moved.[50]

The landscape was even more severely impacted during the three days of intense activity associated with the Second Battle of Manassas. Although the battle was completed on 30 August 1862, this account of the conditions in June 1865 illustrates that the extreme devastation of the landscape lingered well beyond the days of battle.

> "From Alexandria to the battlefield is one wide area of desolation. Fences are utterly swept away. Here and there a dilapidated house shelters a few squalid inmates and occasionally a small patch of wheat or corn is passed, but the whole face of the country is changed. Scrub oak and pine are springing up everywhere. The first Bull Run field has been stripped clear by relic hunters except in the matter of horse bones. The battlefield of Groveton, two miles beyond toward Warrenton, is more distinctly marked with traces of battle. Here the shot and shell are thickly strewn, the trees splintered and in many places the forest looks as if having been visited by smallpox. The bones of soldiers of both armies are scattered over the fields and one may find enough skulls to build a monument."[51]

War claims submitted by John Brawner and the Henry Dogan Estate provide a glimpse of the damage sustained to crops, buildings, and fences. Lucinda M. Dogan filed a war claim indicating that corn and fodder were "taken from a field in a growing condition in July 1861 during the time of the First Battle of Bull Run." She indicated that about 30 acres of the field was planted in corn in good condition before the battle and "grazed off and trodden down by the troops of Gen. McDowell in their movements during the time of the battle." The same portion of corn was destroyed during the Second Battle in 1862. Army horses were put out to graze in the corn field. Other items lost included: rail fences that enclosed about 400 acres divided into eight large fields; timber cut from woods and used for fires by soldiers; and potatoes taken from a one acre field.[52] Gen. Pope's forces massed on the farm for three days and nights during which fence rails were burnt for fires. Fences lined the roads and defined six fields on the farm. By 1871, the fences had been replaced: "Since the war the fences have been rebuilt so the same ground where they were before the war and I have counted the panels of fencing and find there were 3,648."[53] The woodlots on the farm were cut as indicated in a statement by Andrew Redman:

> "I saw a Regiment of cavalry camped in claimants woods for a month or more and while there I heard chopping in their camp and I saw the wood disappear from day to day and I believe they cut it - but did not see them do it. I lived on the south edge of the woods and they were on the north side. This was the winter of 1862 or spring of 1863. They cut several acres of good timber."[54]

Mary B. Brawner (John C. Brawner's daughter) indicated that corn, hay, wheat, oats salt, flour, chickens and bacon were taken from the Brawner farm by the soldiers. Their cow, horse and hogs were killed. The garden was trampled and destroyed.

> "Part of the time we were within the confederate lines: when the southern army fell back we were then within the union lines. That was in 1863. The union army was passing backwards and forwards all the time after the southern army left. We were not able to cultivate the farm after the first year. We raised a small crop in 1862.
>
> The corn was lost at the time of the battle. The battle was all around my father's house, and the Quartermaster came for supplies by the order (the soldiers said) of Gen. King, and stated that he would bring receipts, but the battle came on, and we did not get any

> receipts. This was the 28th of August 1862-the day of the second battle of Bull Run. Soldiers came and got the corn; I saw them take it."[55]

The landscape and resources of the project area, and the surrounding region were truly devastated at the end of the war.

> "When Lee surrendered on April 9, 1865, and ended the war, the resources of Virginia had probably been more thoroughly drained than those of any other of the Confederate States. The country between the Potomac and Appomattox had been subjected to the repeated raids and continuous occupation of the opposing armies, and farms were in a mined condition, without farming implements and stock. In many cases crops had not been raised for years or had been repeatedly destroyed."[56]

Reconstruction and Memorialization, 1866- 1869

Reconstruction

> With the close of the war, the reunited nation began its slow recovery from the battles that had forever physically scarred the landscape. Soldiers returned to find their agricultural fields fallow, equipment and supplies destroyed, and livestock and crops gone. One Union soldier described the Manassas Battlefield as "an arid plain which seemed interminable, and without a human habilitation in sight, no fences or signs of cultivation, only a few stunted, dried down shrubs apologizing for the wasted forests that once stood upon the exhausted soil.[57]

Following the war, it was a necessity for survival of the residents of the area to reconstruct their badly damaged farms, as "crop cultivation and animal husbandry continued to be the main sources of income." [58] They went to work repairing buildings, planting crops, and replacing fences with what remaining resources they had. Formerly open fields had to be re-cleared where successional woodland had encroached. Although soldiers had cut sections of woodlots during the war, some remained and were utilized by residents to help rebuild their farms. Without the labor force formerly provided by slaves, many plantations could no longer function as they had previously. Portions of properties were subdivided and sold to obtain funds necessary to survive and rebuild. This resulted in a new pattern on the landscape, including increased divisions of property and more clusters of buildings associated with each new parcel.

> Whether constructed on or near the historic foundations or in a new location, the domestic buildings erected at the battlefield in the decades following the war were similar in form, style, and materials to one another. Set upon stone foundations, the structures were generally constructed of wood frame with weatherboard siding. The roofs were side gables with end chimneys of stone or brick. The modest buildings were typically three or four bays wide, and two bays deep. Not exhibiting fashionable architectural styles or trends, the buildings had I-house and L-house forms with vernacular detailing, primarily in the turned supports of front porches. Following the traditional land use of the area, the properties contained a number of wood frame agricultural outbuildings, such as barns, smokehouses, corncribs, chicken houses, and freestanding kitchens.[59]

In addition to the pre-war farmers who worked to re-establish their farms, new farmers required land and education to support themselves. On 15 June 1865, the Freedmen's Bureau was established in Virginia to help provide former slaves the means to become self-sufficient, acquire land, and become educated. The bureau was given the authority to utilize land confiscated by the federal government to benefit freedmen. A variety of

approaches were used to accomplish this: some land was rented to freedmen to use to operate farms; some was managed by the government with African American workers earning wages; and some was worked on a share system. The majority of confiscated land was returned to the owners by the 1870s, leaving mostly woodland for the Freedmen's Bureau to manage. Schools were also established at military posts by various benevolent societies with the aid of the Freedmen's Bureau. The emancipation of slaves changed the historic use of the landscape. Once large tracts of land, with slave labor, the farmers would now have to pay for laborers to work their land. Large tracts of land were segmented into smaller more manageable tracts for one family to oversee.[60]

> The elimination of slave labor as an element of agricultural production also had a direct impact on the economy of Manassas and the former Confederacy. Consequently, the traditional farm economy faltered as many rural families commenced raising less labor-intensive crops, such as vegetables and fruit that could be sold in nearby urban markets.
>
> The abandonment of the agricultural fields and the loss of dwellings and farms within the battlefield forced the subdivision of the historically vast tracts into smaller parcels, as demonstrated at the Robinson Farm, Dogan property, and Pittsylvania, where the land was divided into manageable lots and sold individually. The division of the land in turn prompted the construction of modest vernacular dwellings and supportive outbuildings as individual farmers and tenants moved into the area. According to the Agricultural Census Records of 1870 and 1880, the typical farmer owned or leased a small amount of land that was substantial enough to support his family and a few hired laborers. As before the war, wheat, corn, oats, apples, peaches, and hay were cultivated and animal husbandry continued to be popular.[61]

Memorialization

> By the latter part of the 19th century, preservation of the battlefield progressed in the form of commemoration to those who had fought there, thereby aiding in the retention of the rural integrity of the mid-19th century landscape. …the U.S. Army ordered the 5th Pennsylvania Heavy Artillery to construct a twenty-foot-high, obelisk-shaped memorial ornamented with five 200-pounder Parrott shells. Known as the Bull Run Monument, a brownstone monument was placed on Henry Hill, just east of the Henry House site, to commemorate the First Battle of Manassas. A complementary sixteen-foot monument was placed along the unfinished railroad grade near Deep Cut, an area that had seen heavy action during the Second Battle of Manassas. Similarly, the Deep Cut monument was originally ornamented with relic shots and shells provided by the soldiers erecting the monument, however, none of the original shells survive on either monument. Both monuments displayed the inscription "In memory of the patriots who fell." Consecrated on June 11, 1865 by chaplains, the monuments stood as the first physical commitment of the United States government toward preserving the memory of events at Manassas.[62]

Stone for the Groveton/Deep Cut Monument was reportedly salvaged from a culvert along the Unfinished Railroad. In addition to the original ornamentation, a tin box containing relics was placed within the cornerstone of the structure. An earthen terrace was built as a base for the monument and the entire area was enclosed by a cedar fence. Four cedar trees were planted upon the terrace, one near each corner of the monument (see Figure 1-11).[63] Erected by Union Soldiers, the monuments were reportedly vandalized by Confederate supporters. In his 1866 letter to Col. M. J. Ludington, First Lieutenant R. W. Tyler noted: "There has been a Monument erected in the most central part of each battle-ground; both of these Monuments have been somewhat mutilated by the ill disposed inhabitants of that vicinity."[64]



Figure 1- 11: Groveton / Deep Cut Monument, 1865. (source: Library of Congress)

Immediately following the battles, soldiers were buried hurriedly in shallow graves. Over time, some of the graves were exposed by erosion (see Figure 1-12). Once the war was over, efforts were made on both sides to provide more appropriate burials. In March 1866, First Lieutenant R. W. Tyler visited the area and reported on the conditions of Union burials.

> "Very few graves of those who fell in the First Battle are visible, and none can be identified except in some cases by U. S. buttons where they may be found with the remains.
>
> Of those who fell in the Second Battle very few have head-boards—the inhabitants having destroyed them—and the names where there are head-boards are so obliterated that very few of them can be identified, though a large portion may be recognized as Union Soldiers by the remnants of the blue clothing and the U.S. buttons. The remains of nearly all of our soldiers seem to have been buried on the surface by throwing earth over them from each side, and they to (?) [sic] just where they fell with a few exceptions where large numbers were collected together and covered up in one common pile.
>
> In many places the earth has washed away and left the skulls and bones bare, others have been – and are being – rooted up by the hogs, and I was told by gentlemen who reside in that vicinity, that large quantities of these (human) bones have been gathered up and carried away by the bone grinders.
>
> …There are about thirty graves in an enclosure of about one acre around the Monument on the Second Field, which is situated on the Dogan farm, near the railroad in a Northwesterly direction from Groveton. The contents of these were gathered up in that immediate vicinity and placed there at the time the Monument was erected. At the edge of the woods on the Railroad, a distance of two hundred yards from the Monument N. E. – were (I was informed) from two

> to three hundred of our men buried in one pile, and a log pen built around them, this has not been disturbed.
>
> There are large numbers of graves on both sides of the railroad as far as its junction with Groveton wagon road and a considerable distance beyond. There are also some on the Douglas place S.W. of this Monument, and also large numbers in the woods S.E. of Groveton, and in the vicinity of the Chin House.
>
> I believe that both Monuments are in the most appropriate localities that could have been selected, but the owners of these grounds are Rebels, and expect the government to pay them large prices for their ground. There is however a very favorable locality on an eminence just north of the Stone House—which Mr. Starbuck (a northern man) offers to give for this purpose.
>
> I judge that material might be sent to Manassas sufficient to make a small enclosure
> around each Monument with very little expense, I would suggest this plan as the most practicable for the fact that timber and fencing is very scarce in the vicinity.
>
> There is nothing but a few bones left, to be removed. And as none are properly interred, all would have to be removed at last, hence, I believe that they can be placed in two small enclosures with less trouble and expense than they could in more than two."[65]

Although Tyler seemed confident in his ability to identify Federal remains from Confederate, it seems more likely to be an extremely difficult, if not impossible, task. A Washington Star article illustrates the complicated situation.

> "Where the dead lay thick upon the field large numbers were buried together in the trenches, and in such cases the remains have not been disturbed. But in removing them it would be hard to distinguish 'Union' from 'Rebel' bodies. There they lay together, friend and foe; and a button or two, or a shred of blue or grey clothing affords an uncertain index of the politics of the wearer, as necessity often compelled the Confederate Soldier to don the Federal blue."[66]

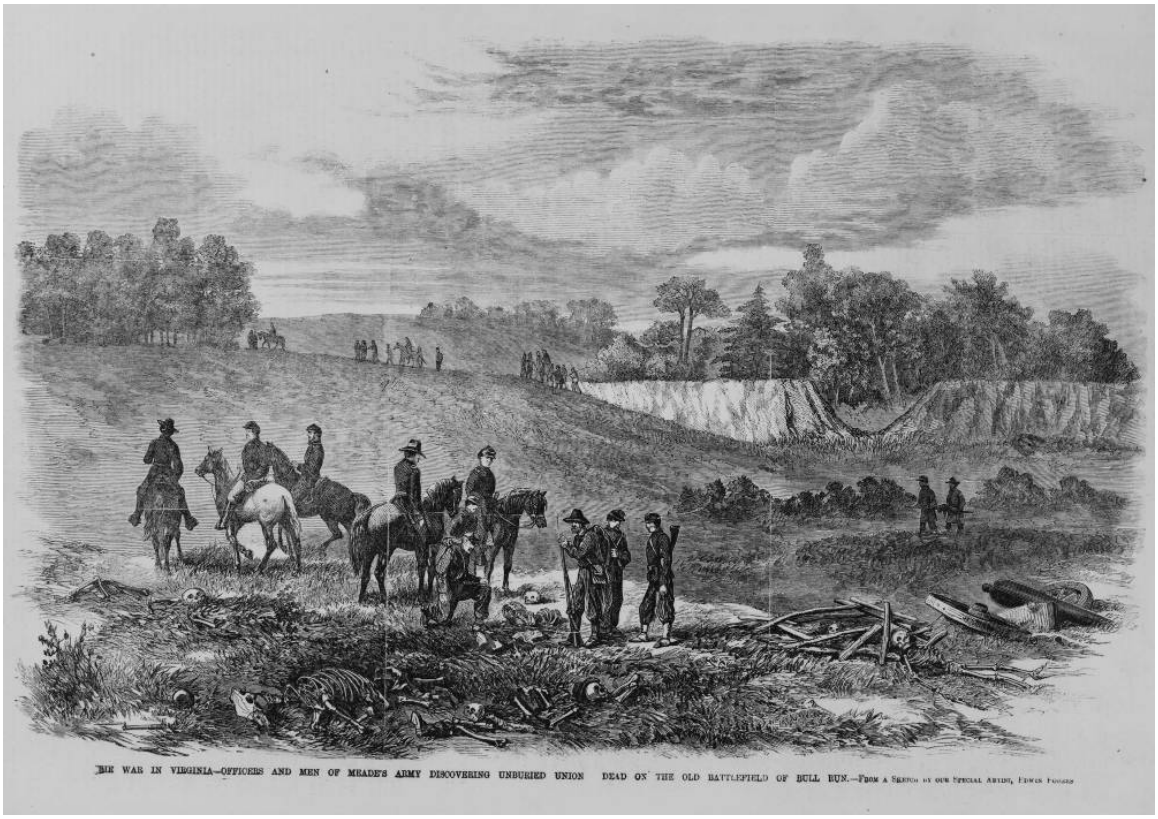


Figure 1- 12: The War in Virginia – Officers and Men of Meade's Army discovering unburied Union dead on the old battlefield of Bull Run. (Frank Leslie's Illustrated Newspaper, 14 November 1863)

Nevertheless, Tyler prepared a diagram illustrating the locations of Union graves (see Figure 1-13) and the Federal Government attempted to move the Union bodies from the battlefield. Those moved were re-interred in the new Federal cemetery at Arlington.[67] In 1867, the local community raised funds to establish the Groveton Confederate Cemetery and relocate the remains of Confederate Soldiers from graves in the area to plots in the cemetery. Many soldiers who lost their lives in the Manassas battles were re-interred in the cemetery.[68]

Memorials identifying specific individuals or groups who lost their lives in the Manassas battles were erected in the landscape. Private George E. Albee of the First U.S. Sharpshooters placed a wood marker at the site of his unit's position. The Cedar Post Marker is a reconstruction of that marker.

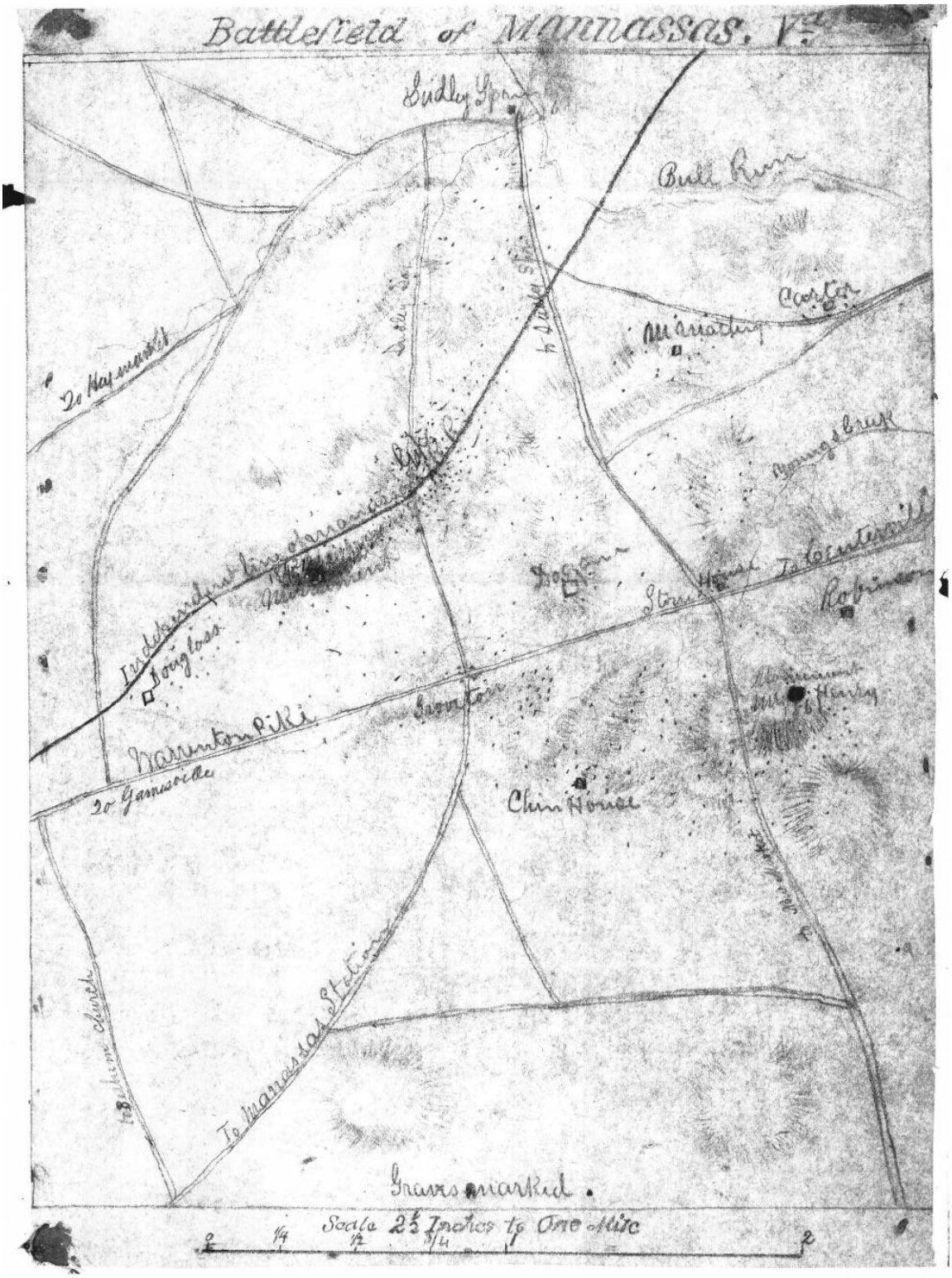


Figure 1- 13: Map of Union Graves at Manassas, prepared by First Lieutenant R. W. Tyler during his field visit in 1866. (MNBP Files, transcription of letter, original at NARA RG 92)

Early Battlefield Preservation, 1870-1934

The community of Sudley was revived following the war. In 1871 the post office was moved from Groveton to Sudley. It remained in Sudley until 1903 when the operation was moved to the Stone House. The post office was operated by Elizabeth Matthews who operated the facility from her residence (the house previously occupied by the Thornberry family).[69] Sudley Mill was rebuilt on the foundation of its previous structure, the mill race was improved and a new timber dam and a mill pond were constructed to replace the old stone dam. The natural chalybeate spring was believed to have medicinal value, attracting enough visitors to result in the establishment of the Sudley Springs Hotel. A general store opened on Groveton-Sudley Road west of the Sudley Church, which was reconstructed in 1886.[70]

Two surveying efforts provide historic documentation that is particularly helpful in considering landscape conditions during this period. The Warren survey was conducted in 1878 and the Burr survey in 1904 (see Figures 1-9 and 1-14). Vegetation and circulation routes illustrated in these two diagrams show changes occurring in the landscape. The 1878 diagram shows only small areas of woodland, depicting the smallest amount of forest cover during the study period. By 1904, successional growth appears to be well established in formerly cultivated areas that have not been actively managed since the war. A series of photographs of the Unfinished Railroad and Groveton/Deep Cut Monument also illustrate the encroachment of woodland on the railroad grade and in the surrounding landscape (see Figures 1-15 through 1-18).

The landscape during this period was greatly divided from a perspective of land ownership. Farm roads were added to provide access to numerous parcels, and clusters of buildings were associated with each small farm. Selected parcels of land were cultivated for agricultural crops or used for grazing, while others were left untended to succeed back to forest.



Figure 1- 14: Edward Burr map of project area, surveyed June-July 1904 (source: Library of Congress, www.loc.gov/item/2007627520)



Figure 1- 15: Deep Cut, ca. 1900. (source: MANA, photographer: W.N. Wenrich)



Figure 1- 16: Groveton/Deep Cut Monument with surrounding vegetation, 4 August 1903. (source: Montgomery County Historical Society)



Figure 1- 17: Unfinished Railroad, 1903. (source: Montgomery County Historical Society)



Figure 1- 18: Unfinished Railroad at Groveton-Sudley Road, now Featherbed Lane, facing west, 1903. The railbed is in a cut in this location. (source: Montgomery County Historical Society)

Early Battlefield Preservation Efforts

Beginning in the 1890s, efforts to commemorate Civil War battle sites expanded from establishing memorials to preserving battlefields. National military parks were instituted at Chickamauga and Chattanooga in 1890, Shiloh in 1894, Gettysburg in 1895, Vicksburg in 1899. Antietam was established as a national battlefield site in 1890. Advocates began to seek federal support to create a military park to preserve the Manassas Battlefields. Union veteran George Carr Round led the effort supported by local residents, Civil War veterans and Virginia representatives. Their efforts to build congressional support were unsuccessful, most likely because Manassas was associated with two definitive Confederate victories. Nevertheless, commemoration efforts continued at Manassas. Groups placed markers and monuments upon the landscape in tribute to fallen soldiers. Some parcels of land were purchased for this purpose and other property owners allowed placement of the memorials without compensation. [71]

The area maintained a strong association with the battles. In 1904, Manassas was selected as the site for staging "peacetime maneuvers on American soil." This training exercise focused on the experiences of the Manassas battles as a basis for preparing battle plans. The activity involved 12,000 militiamen and 5,000 regular troops. On 21 July 1911, the Manassas National Jubilee of Peace was held as a commemoration of peace and reconciliation between North and South. The event was attended by 350 Confederate and 125 Union veterans who met near the site of the original Henry House and walked the battlefield together.[72]

Efforts to preserve the battlefield landscape at Manassas were initiated by private citizens. The Manassas chapter of the United Daughters of the Confederacy obtained an option to purchase the 128-acre Henry Farm in 1920. In 1921 the Sons of Confederate Veterans founded the Manassas Battlefield Corporation to establish the Manassas Battlefield Confederate Park at Henry Hill.[73]

> In contrast to the earlier memorials placed to honor individuals and regiments, the Confederate Park preserved land that told the story of the Battles of Manassas. The principal purpose of the park was an educational one, to present the Confederate perspective on the war. The park's founders believed that many of the histories related to the Civil War were portraying Confederates as enemies of the country and that the South's "distinct, wonderful, equally thrilling, all-important story" needed to be told. The park was also envisioned as a battlefield memorial to Confederate soldiers. The Henry House, which had become an informal museum of war relics under the Henry family's ownership, continued to serve as such, although the Manassas Battlefield Corporation had hopes of building a fireproof museum.[74]

A national survey to classify all American battlefields was authorized by Congress in 1926. Although the Manassas Battlefield was identified as worthy of designation as a national monument, it was not included in the parks added to the War Department between 1926 and 1933.[75] The federal government provided a landscape architect to assist in site design and planning for the property in the late 1920s.[76] In 1933, President Roosevelt transferred the military parks to the National Park Service. By 1933, the Manassas Battlefield Confederate Park was having financial difficulties and sought assistance from National Park Service Director Horace Albright. The request led to the initiation of National Park Service preservation efforts at Manassas.

Preserving the Battlefield, 1935-present

Establishment of a National Battlefield Park

In 1933, the National Industrial Recovery Act was initiated. The New Deal program focused on the development of recreational demonstration projects that would provide more recreational facilities to lower income families. Under the program, the Bull Run Recreational Demonstration Area was designated by 1935, including 1,476 acres of land associated with the Manassas battlefields. The program was supervised by the National Park Service.

During the 1930s, the federal government undertook significant efforts to purchase land associated with the Manassas battles. The National Park Service developed Master Plans focused on preserving the sites and interpreting the two battles. As part of the Works Progress Administration, local men were hired to clear areas and restore the landscape using natural resource conservation techniques.[77] In 1939, land associated with Manassas battles was used again for a military training ground. The activities involved building trenches for maneuvers and resulted in some damage to the Dogan property near the Deep Cut.[78] Manassas National Battlefield Park was finally established on 10 May 1940 including more than 1,600 acres of the Bull Run Recreational Demonstration Area and former Manassas Battlefield Confederate Park. [79]

The ownership of the land along the Unfinished Railroad corridor following the collapse of the company was passed to the Southern Railway when that company took over the operations of the Manassas Gap Railroad. It seems the company granted quit-claim deeds when asked to do so. A memorandum prepared by James Isaac Lee at Manassas National Battlefield Park on 3 March 1949 provides information regarding this issue.

> "The right of way for the 'Independent Line' and for the Loudon Branch was acquired under condemnation proceedings. It is recognized that a fee was acquired under these proceedings, which constitutes a cloud on the title of adjoining property owners. In recent years, there has been much real estate activity in the sections traversed by the old lines and in a number of cases involving land title transfers, the interested parties have approached the Southern Railway (successor in title to the Manassas Gap Railroad Company) with the object of removing the cloud on their title. In such cases, the Southern Railway organization in Washington, D.C., has been glad to cooperate with the owners and have granted quit-claim deeds to the applicants."[80]

Landscape Change

The character of the landscape in the area changed in the 1920s. Automobiles became more common, resulting in changes to road alignments and grades, as well as the establishment of gas stations and other small commercial enterprises along roadsides. This was particularly apparent along Warrenton turnpike (Lee Highway). The road was widened and re-graded to make it smoother. Sudley was no longer a thriving community, including only a couple of buildings by 1929.[81]

The earliest aerial photograph that was accessible to the project team was taken in 1937. It illustrates a large amount of woodland vegetation along the Unfinished Railroad corridor (see Figure 1-19). The eastern section between Sudley Road and Featherbed Lane includes a pasture, and open fields are on either side of the railroad grade in the area near the Brawner farm.

The National Park Service prepared a Master Plan for the Battlefield Park in 1942 (see Figure 1-21). The plan included recommendations for restoring a section of the Unfinished Railroad corridor near the Groveton/Deep Cut Monument and clearing vegetation to establish a foot trail along the alignment between Sudley Road and Pageland Lane. The plan also proposed the establishment of a descriptive marker and information station in the current location of the Deep Cut parking lot.

By the 1950s, land use in the region shifted from agricultural to suburban housing, as the area evolved into a suburban community of Washington, D.C. In the project area, more land that had been cultivated or used as pasture was left to succeed to forest. Areas around the park were impacted by intense growing pressures and the historic character of the landscape was jeopardized by impending development. A privately owned cemetery, Stonewall Memory Gardens, was established in Groveton in 1951. The property includes 85.6 acres, approximately 35 are currently developed.[82]

In the 1960s, the National Park Service acquired land associated with the Second Battle of Manassas. Post-war structures were removed and a corridor was cleared in the forest near the Groveton/Deep Cut area for a trail from Featherbed Lane to Deep Cut (see Figure 1-20). Also, a trail was added along the Unfinished Railroad corridor. The current locations and conditions of the trails are described in Chapter 2: Existing Conditions.

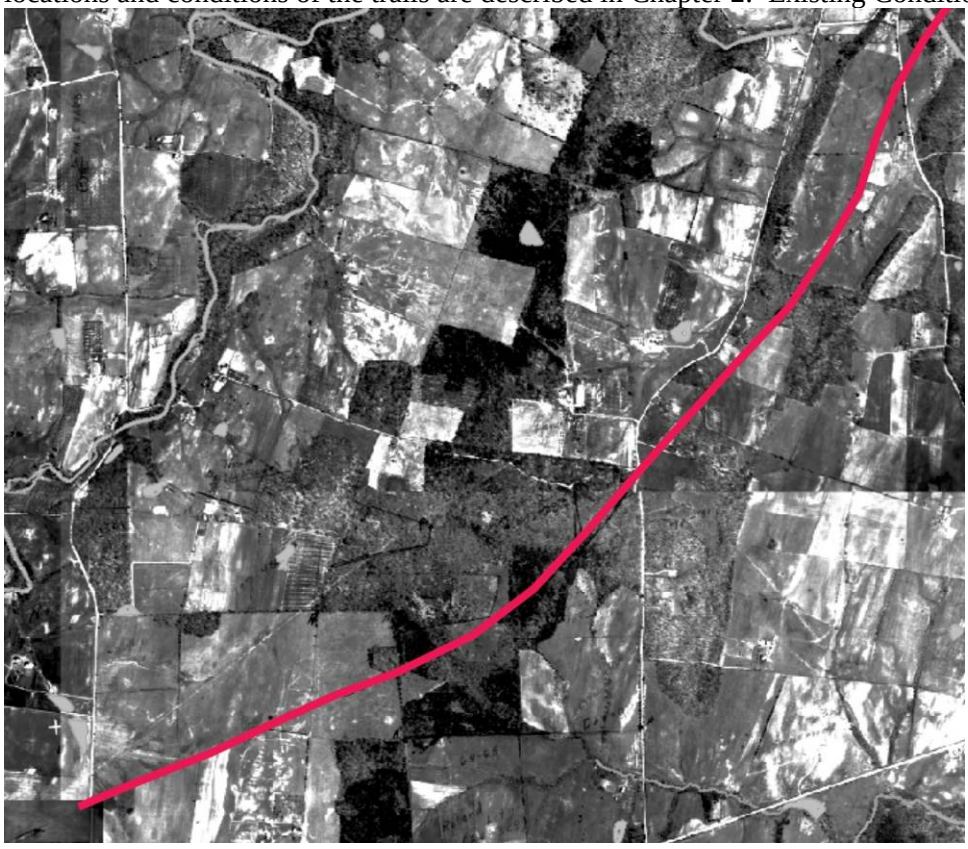


Figure 1- 19: 1937 Aerial of project site, the Unfinished Railroad alignment is indicated with a red line. (Prince William County, on-line maps at:gisweb.pwcgov.org/webapps/CountyMapper)

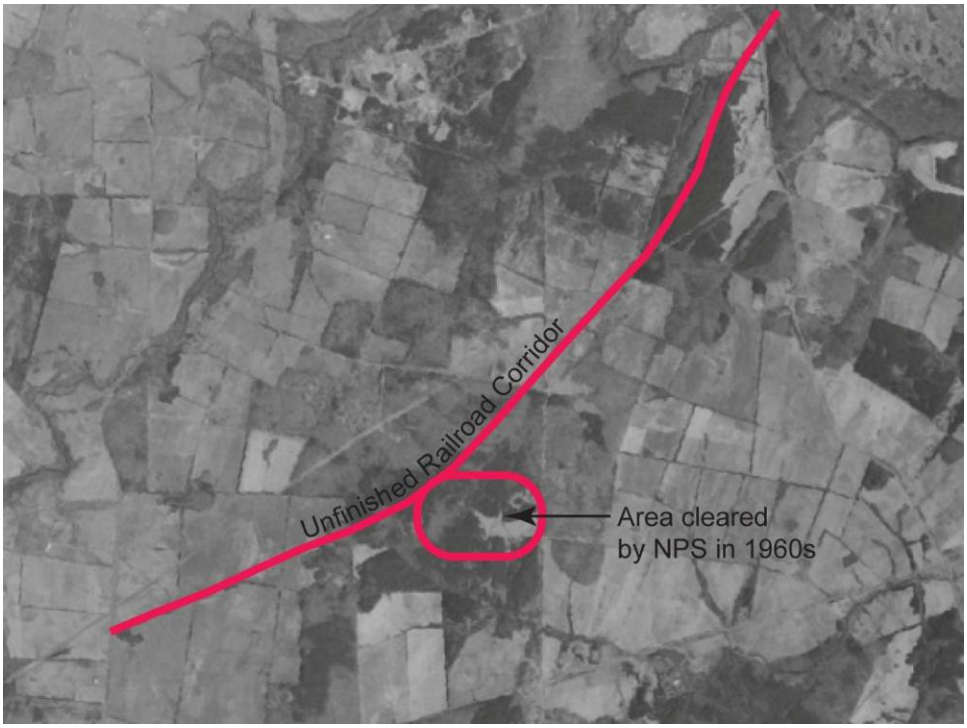


Figure 1- 20: Aerial of project area, 1972, showing area cleared by NPS in 1960s. (source: MNBP)

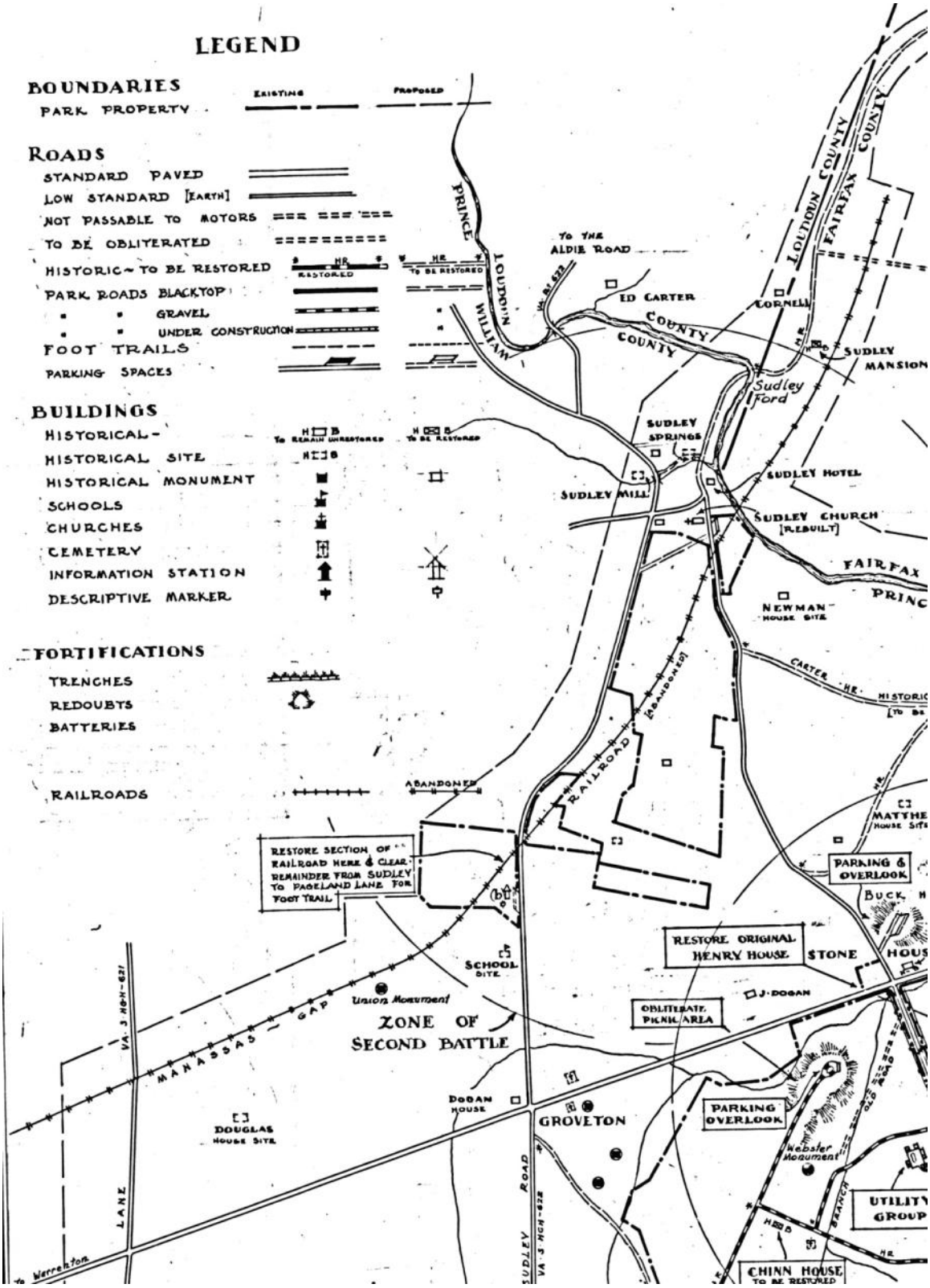


Figure 1- 21: National Park Service Master Plan, excerpt, 1942 (source: NPS, TIC)

Manassas National Battlefield Park was designated as a National Register Historic District in 1966. Since then, a series of boundary expansions and National Register Nomination revisions have been completed. In 1998 powerlines extending across the Brawner Farm were shifted west improving historic views within the area.[83]

By 2006, the majority of the project area was surrounded by dense woods (see Figure 1-22). During the summer of 2007, the National Park Service initiated a major effort to restore open fields to present a landscape character and views more representative of those present during the Civil War. Comparison of aerial photographs taken in 2006 and 2008 clearly illustrates these efforts (see Figures 1-22 and 1-23).

In 2009, the western end of the railroad grade was damaged by grading related to construction within a utility corridor between the quarry and Pageland Lane (see Figure 1-24). Although the damaged area was re-graded, it was not done using the same layered approach applied in the original construction of the embankment and is prone to erosion. Also, this area includes a dense thicket that makes inspection of the embankment condition difficult.[84]



Figure 1- 22: 2006 Aerial of project area. The majority of the rail corridor is surrounded by woods. (source: MNBP)



Figure 1- 23: 2008 aerial of project area, a large amount of woodland has been cleared to open fields and views within the project area. (source: MNBP)



Figure 1- 24: Overview of Plank Road crossing the Unfinished Railroad, Facing Southwest. (source: Orrence and Potter, 2010)

Endnotes

[1] Heidy P. Fogel, Ph.D. and John Bedell, M.A., "Phase 1 Archaeological Survey at the Waverley Farms and Squire Tract, Prince Williams County, Virginia" (Fairfax, Virginia: Engineering-Science, Inc., 1994)

[2] Matthew B. Reeves, "Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office (44PW294), Manassas National Battlefield Park, Manassas, Virginia, Occasional Report No. 14" (Washington, D.C.: Regional United States Department of the Interior, National Capital Region, National Park Service, Regional Archeology Program, 1998); Reeves cites Thomas E. McGarry and Charles F. Bohannon, "An Archaeological Survey of Selected Portions of Manassas National Battlefield Park, Prince William County, Virginia, 1986," Manuscript on file at Manassas National Battlefield Park, Manassas, Virginia; and Judith Earley and Kay Fanning, "Cultural Landscape Report, Brawner Farm, Manassas National Battlefield Park" (United States Department of the Interior, National Park Service, National Capital Region, 2005), 10-11.

[3] J.E. Thomas, J.P. Campbell, T.J.B. Carruthers, W.C. Dennison, B. Gorsira, M. Lehman, and M. Nortrup, "Manassas National Battlefield Park natural resource condition assessment: National Capital Region. Natural Resource Report NPS/NCRN/NRR—2011/414," (Fort Collins, Colorado: National Park Service, 2011), 9. The report cites Allard and Leonard, 1962; Brown, 2000; Van Lear and Waldrop, 1989; and Maxwell, 1910.

[4] Maureen Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant" (United States Department of the Interior, National Park Service, 1996), 3-2.

[5] Reeves, "Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office (44PW294), Manassas National Battlefield Park, Manassas, Virginia, Occasional Report No. 14," 2.8 – 2.13.

[6] Reeves, "Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office (44PW294), Manassas National Battlefield Park, Manassas, Virginia, Occasional Report No. 14," 2.1-2.2; Laura Virginia Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)" National Register of Historic Places Registration Form (Washington, D.C.: U.S. Department of the Interior, National Park Service, 2004), Section 8, 46.

[7]Reeves, "Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office (44PW294), Manassas National Battlefield Park, Manassas, Virginia, Occasional Report No. 14," 2.1-2.2; Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 46.

[8] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-3.

[9] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 7, 5.

[10] Judith Earley and Kay Fanning, "Cultural Landscape Report, Brawner Farm, Manassas National Battlefield Park" (United States Department of the Interior, National Park Service, National Capital Region, 2005), 11; cites: G. Terry Sharrer, "Biological Thought in Eighteenth-Century Agriculture," in *Magnolia, Bulletin of the Southern Garden History Society* 16 (Winter 2000-2001): 1; also Patricia Parker, "The Hinterland," 67.

[11] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-3; cites Brooke Hindle and Steve Lubar. *Engines of Change: The American Industrial Revolution 1790-1860*. (Washington, D.C.: Smithsonian Institution Press, 1986), 99.

[12] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-2.

[13] Ibid., 3-5.

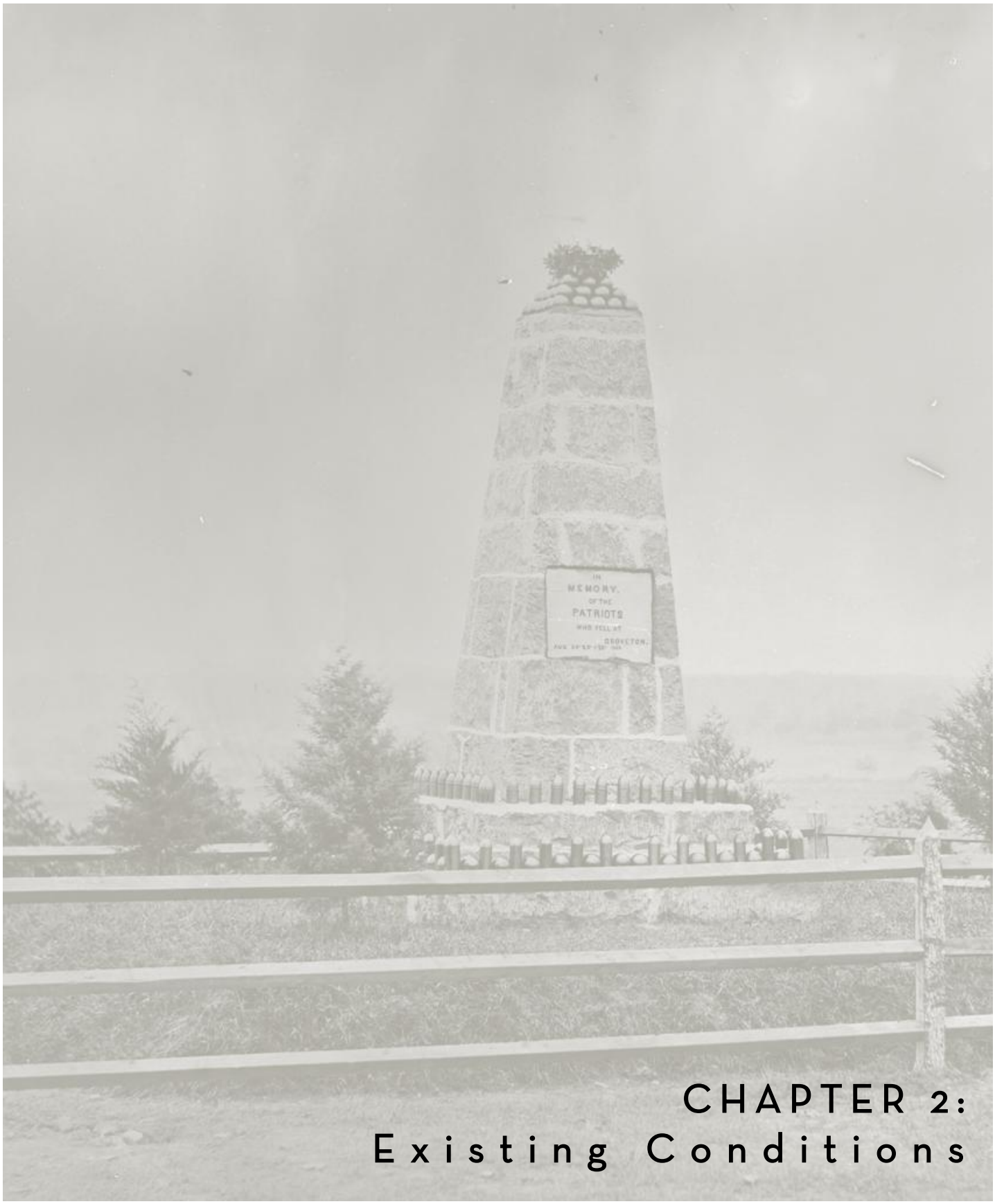
[14] Ronald Ray Turner, "Prince William County Virginia 1805-1955 Businesses" (http://www.pwcvirginia.com/documents/Business1805-1965.pdf), 1999.

[15] Maureen Joseph, "1850 United States Agricultural Census Manuscript summary table" prepared from National Archives, Non-Population Schedules, Agricultural Census, Prince William County,

VA. Also located at the Prince William County Library, Bull Run Branch, RELIC Collection, Microfilm, Manassas, VA.
[16] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 46-47.
[17] Reeves, "Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office (44PW294), Manassas National Battlefield Park," 1.1.
[18] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-7.
[19] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 48. Manassas-Sudley Road is commonly known as Sudley Road or Route 234; Warrenton Turnpike (also historically known as Fauquier and Alexandria Turnpike) is known as Lee Highway or U.S. Route 29; Groveton-Sudley Road is known as Featherbed Lane; and Warrenton, Alexandria and Washington Road is known as Ball's Ford Road.
[20] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 48.
[21] Joseph, "1850 United States Agricultural Census Manuscript summary table" prepared from National Archives, Non-Population Schedules, Agricultural Census, Prince William County, VA. Also located at the Prince William County Library, Bull Run Branch, RELIC Collection, Microfilm, Manassas, VA.; and Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-8.
[22] John Bedell, "Context statement for the Unfinished Railroad, Manassas National Battlefield Park," 2012. A CLR and other documents addressing the history of the Brawner Farm have been prepared where more detailed information about this property is documented. The first documented owner of the property is George Tennille, who owned the farm from the late 1700s until his death in 1840. At that time the property included 629 acres. His grandson, George A. Douglass, inherited the parcel and lived at the farm until his death in 1855. The property was then rented to tenant farmers. John C. Brawner moved to the farm in 1857 and worked it as a tenant farmer.
[23] Ronald D. Howe and Richard Sacchi, "Manassas Gap Railroad Independent Line" National Register Nomination (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1999), Section 8, 4-5.
[24] Ibid., Section 8, 4-6.
[25] Ibid., Section 8, 6.
[26] Ibid., Section 8, 7-8.
[27] Ibid., Section 8, 8-9.
[28] Ibid., Section 8, 10.
[29] Ibid., Section 8, 11.
[30] Ibid., Section 8, 10-17.
[31] Howe and Sacchi, "Manassas Gap Railroad Independent Line" National Register Nomination, Section 8, 10-17; Howe cites *Alexandria Gazette*, 30 October 1857, 3 : l.
[32] Howe and Sacchi, "Manassas Gap Railroad Independent Line," National Register Nomination, Section 8, 10-17.
[33] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-3; cites Brooke Hindle and Steve Lubar. *Engines of Change: The American Industrial Revolution 1790-1860*. (Washington, D.C.: Smithsonian Institution Press, 1986), 3-11; also Joseph research notes indicate the following Deed Books were used: William H. Dogan heirs (DB 23:76); George Douglass (B 23:55); John D. Dogan (DB 23:53 or 55); B. Newman (DB 23: 57); Catherine Newman (DB 23:58); Cundiff (DB 23:58).
[34] Howe and Sacchi, "Manassas Gap Railroad Independent Line," National Register Nomination, Section 8, 10-17.
[35] Ibid.
[36]David W. Lowe and CRGIS. "Unfinished Railroad Resource Survey, Manassas National Battlefield Park" (Washington, D.C.: National Capital Region, WASO National Park Service, 2013), xii.

[37] Lowe and CRGIS. "Unfinished Railroad Resource Survey, Manassas National Battlefield Park," v. Lowe cites George L. Vose, *Handbook of Railroad Construction for the Use of American Engineers* (Boston and Cambridge: James Munroe & Co, 1857).
[38] Lowe and CRGIS. "Unfinished Railroad Resource Survey, Manassas National Battlefield Park," v.
[39] Howe and Sacchi, "Manassas Gap Railroad Independent Line" National Register Nomination, Section 8, 10-17.
[40] Earl McElfresh, "Unfinished Railroad Cut at Second Manassas" Originally published by *Civil War Times* (2011). Accessed 5 October 2011, http://www.historynet.com/unfinished-railroad-cut-at-second-manassas.htm. The other battles included Chancellorsville, Gettysburg, and the Wilderness.
[41] Howe and Sacchi, "Manassas Gap Railroad Independent Line" National Register Nomination, Section 8, 10-18.
[42] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8; Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 11-12 ; Earley and Fanning, "Cultural Landscape Report, Brawner Farm, Manassas National Battlefield Park," 21-22.
[43] Reeves, "Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office (44PW294), Manassas National Battlefield Park, Manassas, Virginia, Occasional Report No. 14," 2.8 – 2.16.
[44] John Bedell, Unpublished summary of Second Battle of Manassas related to Unfinished Railroad (2013). Citations include: Brawner, John C. Brawner. Claim No. 1335, filed April 27, 1871, with the Commission of Claims, United States War Department, National Archives, Washington, DC.; John Gibbon, *Personal Recollections of the Civil War* (New York: G.P. Putnam's Sons, 1928); and Historic Preservation Training Center, "Manassas National Battlefield Park, Brawner Farm House, Historic Structure Report, 2002 Addendum" (Frederick, Maryland: U.S. Department of the Interior, National Park Service Historic Preservation Training Center, 2002).
[45] Bedell, Unpublished summary of Second Battle of Manassas related to Unfinished Railroad. Bedell cites John Gibbon, *Personal Recollections of the Civil War*, 54.
[46] Maureen Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-19.
[47] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 54-55.
[48] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 54. Trieschmann cites: William C. Davis, Civil War Properties in Prince William County Virginia.
[49] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 55.
[50] Ibid., Section 8, 54.
[51] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-16 through 3-17. Joseph cites: Excerpt from "Rambler" column Sunday Star' June II , 1914, abstract from file of the Star for June, 1865.
[52] Lucinda Dogan, "Henry Dogan Estate War Claim" Southern Claims Commission, Prince William County, No.21237, 1871.
[53] Ibid.
[54] Ibid.
[55] Mary Dogan. "John C. Brawner War Claim" Southern Claims Commission, Prince William County, No. 1335, 1871.
[56] James Hamilton Eckenrode, *The Political History of Virginia During the Reconstruction*, rev. ed. (Gloucester, MD: Peter Smith, 1966), 26.
[57] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 58-60.
[58] Ibid., Section 7, page 7-8.
[59] Ibid., page 7-8.

[60] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-22 through 3-23. Joseph cites Eckenrode, *The Political History of Virginia During the Reconstruction,* 56.
[61] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 58-60.
[62] Ibid. Section 8, 58-60.
[63] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-18.
[64] R.W. Tyler letter to Colonel M.J. Ludington, 28 March 1866. Transcription of letter on file at MNHP library file.
[65] Ibid.
[66] "The Union Dead on the Battle-Fields of Virginia." From the *Washington Star*, 8 April 1866, copyright *The New York Times*.
[67] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 58-60.
[68] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 58-60; and Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-8. Joseph cites: Original contract with Benson L Pridmore is within the Manassas National Battlefield Park study collection, catalog # 1797.
[69] Reeves, "Views of a Changing Landscape," 1.1.
[70] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-27 and 3-28.
[71] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 60-61; and Zenzen, *Battling for Manassas: The Fifty-Year Preservation Struggle at Manassas National Battlefield Park.*
[72] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 62.
[73] Joan M. Zenzen, *Battling for Manassas: The Fifty-Year Preservation Struggle at Manassas National Battlefield Park* (Pennsylvania State University Press, 1998).
[74] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 63.
[75] Ibid., Section 8, 64.
[76] Zenzen, *Battling for Manassas: The Fifty-Year Preservation Struggle at Manassas National Battlefield Park.*
[77] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 8, 64.
[78]Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-34.
[79]Zenzen, *Battling for Manassas: The Fifty-Year Preservation Struggle at Manassas National Battlefield Park,* Chapter 2.
[80] James Isaac Lee, memorandum, 3 March 1949, The Unfinished Railroad, The Cherished Hope of a Century Ago Which Failed to Materialize, 7.
[81]Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-34 and 3-35.
[82] Trieschmann, "Manassas Battlefield Historic District (Amended and Boundary Expansion)," Section 7, 15-16.
[83] *Manassas National Battlefield Park, General Management Plan, Environmental Assessment for Power Line Relocation,* 1994.
[84] Karen L. Orrence, Karen L. and Dr. Stephen R. Potter, "Assessment of Damage to Archeological Resources at the Unfinished Railroad (Site 44PW299) on the Brawner Farm, Manassas National Battlefield Park, Manassas, Virginia, Case Incident Number 09-00195." United States Department of the Interior, National Park Service, National Capital Region, Regional Archeology Program, 2010. 6; and Lowe and CRGIS. "Unfinished Railroad Resource Survey, Manassas National Battlefield Park," xii.



CHAPTER 2:
Existing Conditions

Chapter 2: Existing Conditions

The existing conditions within the project area are presented in this chapter, accompanied by plan drawings and photographs. This chapter includes documentation of existing landscape characteristics relevant to the historic landscape including natural systems and features, spatial organization, land use, topography, vegetation, views, circulation, buildings, structures, small-scale features, and archeological sites.[1] A site survey was conducted in December 2012 to record existing conditions within the approximately 28-acre, 2.7 mile long project area. Plan drawings illustrating existing conditions at the site are included at the end of this chapter and include drawing sheets EC-1 through EC-8, containing the following information:

EC-1: Existing Conditions, Project Area (1"=1200')
EC-2: Existing Conditions, Sudley and
Unfinished Railroad Landscape Character Area SN 001-023 (1"=300')
EC-3: Existing Conditions, Unfinished Railroad
Landscape Character Area SN 024-062 (1"=300')
EC-4: Existing Conditions, Groveton/Deep Cut and
Unfinished Railroad Landscape Character Area SN 063-107 (1"=300')
EC-5: Existing Conditions, Quarry and
Unfinished Railroad Landscape Character Area SN 108-147 (1" = 300')
EC-6: Existing Topography, Project Area (1"=1200')
EC-7: Existing Circulation, Project Area (1" = 1200')
EC-8: Existing Views, Project Area (1"=1200')

A number of recent documents provide useful information regarding existing conditions in the project area. These were reviewed and pertinent information has been incorporated into this section of the report. In particular, the Unfinished Railroad Resource Survey, Manassas National Battlefield Park, Cultural Resources GIS report prepared by David W. Lowe and CRGIS staff is of great assistance, as it provides detailed documentation of current conditions of the Unfinished Railroad corridor. The report includes comprehensive GPS survey data for the 2.7 mile segment of the Unfinished Railroad within the park boundaries and detailed information recorded for each of 147 stations established at 100-foot intervals along the rail bed. Included is information regarding whether the rail-bed at each location is a cut, fill, or level, noting the depth or height. Ground cover type, damaged areas, and trail locations are also noted. Regarding damage to the resource: "The most common damage observed was erosion and compaction from trail activities. While animal burrowing was noted in several places, the surveyors observed no evidence of malicious human activities, such as relic hunting."[2]

Natural Systems and Features

Natural aspects that influence the development and resultant form of landscapes are important characteristics to understand when considering condition, significance and integrity. Within the Unfinished Railroad project area, vegetation, topography, drainage patterns, water bodies and native stone all fall into this category.

Natural vegetation present today includes forest communities representing a variety of successional stages and ecological conditions. They cover roughly sixty percent of the project area with the greatest concentration being between Sudley and Deep Cut. The forests are primarily deciduous stands of basic oak-hickory dominated by white oak *(Quercus alba),* pignut hickory *(Carya glabra),* white ash (*Fraxinus americana),* eastern redbud *(Cercis Canadensis),* red oak (*Quercus rubra),* and red hickory *(Carya ovalis).* Stands are found on low ridges and rolling to flat uplands. Areas of successional coniferous forest exist in locations previously occupied by open fields and are characterized by Virginia pine (*Pinus virginiana),* eastern red cedar *(Juniperus virginiana),* flowering dogwood (*Cornus florida),* and white ash (*Fraxinus americana).*[3] Invasive exotic species in the forested areas include garlic mustard *(Alliaria petiolata),* and Japanese honeysuckle (*Lonicera japonica).*

The natural topography associated with the project area includes rolling hills accented by areas of steep terrain juxtaposed with relatively level terraces. Today, the juxtaposition of the natural topography with the constructed railroad grade presents a powerful interpretive opportunity in the landscape. The topography combined with the numerous drainages and wet areas provide interesting and diverse terrain for current hiking trails.

A vernal pond is located west of Deep Cut. Vernal ponds are temporary water bodies that generally fill during the winter and dry out as the growing season progresses. The Deep Cut loop trail crosses the eastern end of this pond, requiring boardwalks due to the intermittent wet conditions. Park staff monitor the conditions at this location.

Native stone is seen in exposed sections of fill along the railroad corridor, and the remnant of a small historic quarry is located at the far west end of the project area. The stone and quarry represent use of local materials to construct the rail-bed.

Spatial Organization

The main organizing feature within the project area is the Unfinished Railroad alignment. This graded corridor of cuts, fills, and level areas is an integral part of several interpretive trails focused on the stories related to the First and Second Battles of Manassas. The spatial character of the project area is distinguished by the linear railroad grade and trail corridors. In wooded areas, vegetation encloses these corridors and channelizes views along the trails and railroad grade. In open locations, the eighty-foot wide project area is not clearly defined by visible edges and the quality of the space is more expansive than the corridor. The rolling topography and masses of vegetation beyond the boundary create a broader sense of space. Other organizing features include the roads that bisect the corridor. These define beginning and ending points for trails and include interpretive materials.

The Sudley landscape character area extends to the northwest of the Unfinished Railroad corridor. It is influenced by the steep topography, dense deciduous forest vegetation, Bull Run on the east, and Sudley Road on the west. The trail through this area is aligned to provide access to key points of interest, providing a loop for hikers.

The Groveton / Deep Cut landscape character area is roughly triangular in shape and is focused upon the Groveton/Deep Cut Monument. The space around the monument is a broad expanse of grassland and brush on slopes that descend from the monument in a rough arc toward the southeast. This space is edged on the northeast by woodland vegetation and the topographic low point aligned with School House Branch. To the southwest the topography undulates presenting a mixture of open and wooded areas.

The Quarry area extends to the south of the rail-bed in a location that slopes gently down to the west. A stand of woody vegetation masks the rocky site from view. Once within the vegetation, the area has a distinct quality of enclosure.

Views

In key locations, the types of views present today greatly affect the ability of visitors to visualize the historic conditions, and understand the battle stories. This is particularly important in locations that were open during the period of significance but are forested today.

Views within the project area are greatly influenced by topography and vegetation. Currently, approximately seventy percent of the Unfinished Railroad is surrounded by dense woodland vegetation, limiting views to linear corridors aligned with trails and the rail-bed (see drawing EC-8). Areas where dense forest and steep cuts are combined have a distinctly enclosed character and views are limited by the vegetation. At the northeastern end of the corridor, in the Sudley area northeast of Sudley Road, the majority of the rail line is a cut with ten-foot high side slopes on both sides. This area is enclosed by dense deciduous forest with a leaf litter and herbaceous plants on the ground surface (see Figure 2-1). Views are strongly directed along the railroad corridor in this enclosed wooded area. The Unfinished Railroad Loop trail (east of the Unfinished Railroad parking lot) includes large sections where views are limited due to vegetation. Figure 2-2 illustrates one location where dense vegetation screens views and creates a sense of enclosure.

Other locations include fencerow vegetation or small clumps of trees surrounded by open fields that guide views along the corridor while also allowing partial views of the surrounding landscape. Partially enclosed views allow for interpretation of historic troop movement despite the presence of vegetation. Locations of areas that provide these types of views are illustrated on drawing EC-8. Adjacent to the Sudley parking lot Cedar trees grow in a line on top of the railroad grade and woody plants are encroaching on the northwest side-slope (see Figure 2-3). The row of Cedars strongly guides views along the linear corridor. Since the row is only one-tree wide, views to the south present the broad open fields that extend well beyond the rail corridor. Another example is found on the trail east of Deep Cut where a thin stand of trees are present on either side of the trail (see Figure 2-4). Despite the trees, views of the surrounding landscape are broad.

Although a large proportion of the project area is a narrow corridor, the associated spatial organization and views are considerably more expansive. This is especially true in areas where the corridor passes through, or is adjacent to, open fields. In locations where the project area includes grassland/open fields and rolling terrain, the landscape has an expansive open character and long-reaching views provide opportunities to interpret historic activities. Locations that provide expansive views of the surrounding landscape are illustrated on drawing EC-8. Examples include the view from the railroad grade toward the Groveton/Deep Cut Monument (see Figure 2-5) and views from the base of the hill near Featherbed Lane to the west toward the Groveton/Deep Cut Monument (see Figure 2-6).



Figure 2- 1: Unfinished Railroad cut near the Benson House Site, facing northeast, September 2013. (QEA 00539) The trail is on the rise to the left, the Unfinished Railroad rail-bed is the low linear corridor, and the cut slopes are visible on either side of the cut.

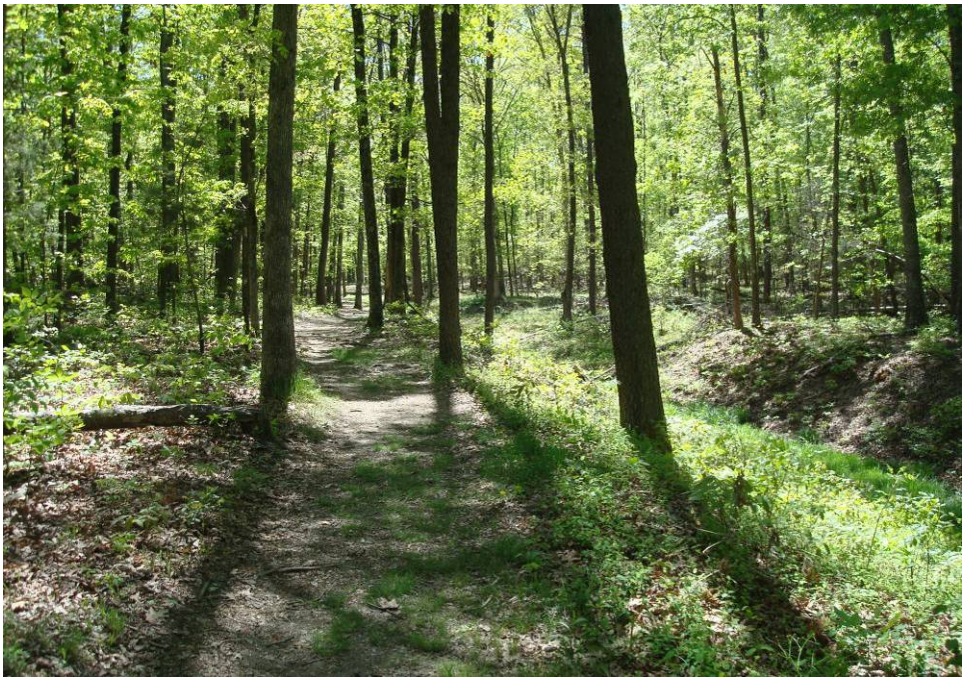


Figure 2- 2: Unfinished Railroad Loop Trail east of Unfinished Railroad parking lot. The trail is in the center of the image and the railroad cut is to the right. Although it is early in the season, dense vegetation screens views and creates a sense of enclosure, May 2013. Trees growing on the sideslopes are impacting the resource. (QEA 07244)



Figure 2- 3: Unfinished Railroad south of Sudley Parking Lot, facing southwest, December 2012. (QEA 2007-07-25 17.57.23) Cedar trees are growing on top of the railroad grade and woody plants are encroaching on the northwest side-slope.



Figure 2- 4: Rail corridor and trail east of Deep Cut, facing southwest, December 2012. (QEA trail DC partial open)



Figure 2- 5: View from Unfinished Railroad corridor toward Groveton/Deep Cut Monument, facing northeast, December 2012 (QEA, 02306)



Figure 2- 6: View toward Groveton / Deep Cut Monument from near the Deep Cut parking lot, facing west, December 2012 (QEA, 02158)

Land Use

The property within the project area is located within the legal boundary of Manassas National Battlefield Park. The majority of the project area is owned by the National Park Service. A small portion of the project area is privately owned. Sudley United Methodist Church, located at the north end of the project area, is owned and operated privately.

The majority of the property within Unfinished Railroad corridor project area is currently set aside to preserve the resources associated with the historic use of the landscape. Interpretative trails, signs and waysides are the main elements related to this use. Others include roads used for a driving tour, parking lots, and the Groveton Monument at the Deep Cut.

Only limited agricultural use occurs. A portion of the open fields is leased for hay and mown regularly during the growing season. Other vegetation is managed to preserve significant cultural and natural resources including views, the railroad bed, topography and vegetation associated with the Civil War, the Thornberry House, historic road trace, and ford, fencerow vegetation, the quarry, wildlife habitat, and wetlands.

Topography

Topography within the project area is a combination of the natural rolling Virginia piedmont landscape with the engineered corridor of the Unfinished Railroad grade. The cut banks and filled areas along the graded corridor are identifiable as constructed features in the landscape that contrast with the surrounding topography. In locations of high fills and deep cuts, this visibility lends itself to interpretation. Visitors can see and understand the efforts necessary to construct the grade and the role that these features played during the Second Battle of Manassas. Interpretive waysides along the trails include several references to the use of cuts for fortifications as well as the difficulty caused to those attempting to overtake troops in these well protected areas.

Three areas of exceptionally steep terrain were graded to accommodate railroad trestles that were never built. These three locations include steep sections of trail and/or stairs today. They are each associated with drainages that require small bridges to ensure that trails are passable during wet periods. The locations of cuts, fills, level areas, and planned trestle sites are illustrated on drawing EC-6.

Vegetation

Vegetation within the project area includes grassland/open fields, forest communities, and fencerow vegetation. Vegetation within the project area is illustrated on drawing sheets EC-1 through EC-5.

Open fields are managed to maintain historic scenes and land use patterns that existed at the time of the battles. In addition, the park has a goal to promote quality grassland habitat for birds and other species that utilize grasslands. The main approach used is conversion of cool-season grasslands to warm-season grasslands. Warm-season species are native to the Mid-Atlantic region and include big bluestem (*Andropogon gerardii),* little bluestem *(Schizachyrium scoparium),* and Indian grass (*Sorghastrum nutans).* Cool-season species are not native and include bluegrass *(Poa, sp.),* brome *(Bromus sp.),* and fescue (*Festuca sp.).* Open fields are maintained through mowing by park personnel and agricultural/hay leases. They cover approximately forty percent of the project area, with the largest concentration in the Deep Cut landscape character area. Warm-season grasslands are mown once each summer, beginning in mid-July and ceasing prior to September to allow regrowth before winter. Cool-season grasslands are mown in late May or early June, and cutting may continue throughout the summer.[4]

In a few locations, remnant fencerow vegetation and individual trees are present, including; southwest of Sudley Road, at the Groveton/Deep Cut Monument, in the field near the Deep Cut Parking Lot, and along the section of the Unfinished Railroad between Deep Cut and the Quarry Landscape Character Areas. Species vary according to location and include Eastern red cedar *(Juniperus virginiana),* white oak *(Quercus alba),* pin oak (*Quercus palustris),* and pignut hickory *(Carya glabra).*

Woodland vegetation, at a variety of successional stages, encompasses approximately sixty percent of the project area. The greatest concentration of wooded areas is located between Sudley and Deep Cut. The forests are primarily deciduous stands of basic oak-hickory dominated by white oak *(Quercus alba),* pignut hickory *(Carya glabra),* white ash (*Fraxinus americana),* eastern redbud *(Cercis Canadensis),* red oak (*Quercus rubra),* and red hickory *(Carya ovalis).* Stands are found on low ridges and rolling to flat uplands. Areas of successional coniferous forest exist in locations previously occupied by open fields and are characterized by Virginia pine (*Pinus virginiana),* eastern red cedar *(Juniperus virginiana),* flowering dogwood (*Cornus florida),* and white ash (*Fraxinus americana).*[5] Invasive exotic species in the forested areas include garlic mustard *(Alliaria petiolata),* and Japanese honeysuckle (*Lonicera japonica).*

Circulation

The project area can be accessed on foot, by vehicle, or on horseback. A variety of hiking trails, equestrian trails, roads, and parking areas are positioned to provide access and recreational/interpretive opportunities. Circulation routes within and related to the project area are illustrated on drawing sheet EC-6: Existing Circulation, Project Area.

Vehicular circulation

Primary roads providing access to the project area include Sudley Road and Lee Highway (formerly Warrenton Turnpike). Sudley Road is the main vehicular route providing access to the Sudley Landscape Character area at the northeast end of the project area. It is the only primary road that runs through the project area. The road is heavily utilized by north-south through traffic, especially during peak morning and evening rush hour times. The route is also utilized as part of the Second Manassas Battlefield Driving Tour with stops 3, 4, and 5 located along the alignment. Stop number 5 is located on the west side of Sudley Road, north of the railroad grade (See EC-6). The parking lot is lower than the road and difficult to identify when travelling north on Sudley Road. The turn into the lot is awkward due to the speed of traffic and limited sight distance. The parking lot is paved with asphalt covered with gravel and is in fair to poor condition (see Figure 2-7). Pedestrians must cross Sudley Road to get to the Sudley Loop Trail and related features. The quantity and speed of traffic combined with limited sight distance make this a dangerous pedestrian crossing (see Figures 2-8 and 2-9).



Figure 2- 7: Sudley Parking Lot, December 2012. The lot is paved with asphalt covered with gravel. (QEA)



Figure 2- 8: Sudley Road at Sudley Parking Lot facing north, December 2012. The speed of cars travelling along Sudley Road combined with the short sight distance make this a dangerous pedestrian crossing. The utility truck is just above the trail on the east side of the road, the trail head is difficult to identify. (QEA)



Figure 2- 9: Sudley Road at Sudley Parking Lot facing south, December 2012. The speed of traffic and short sight distance make this a dangerous pedestrian crossing. (QEA)

Lee Highway (formerly Warrenton Turnpike) is the primary east-west vehicular route providing access to the project area. It does not intersect with the project area but is roughly parallel to the Unfinished Railroad corridor, and provides a link between several key features and driving tour stops. Traffic on this route is heavy during peak morning and evening rush hour times.

Featherbed Lane (formerly Groveton-Sudley Road) extends from Lee Highway at Groveton to the north to Sudley. It crosses the Unfinished Railroad corridor at the northeast end of the Deep Cut Landscape Character Area and continues in a northeasterly

direction to Sudley. At Sudley, Featherbed Lane intersects with Sudley Road between the Sudley Church and the bridge crossing Catharpin Creek. The two-lane road is paved with asphalt from Lee Highway to a location beyond the Deep Cut parking lot. The remainder of the road is a roughly compacted alignment with many ruts (see Figure 2-10). Featherbed Lane provides access to the Deep Cut and Unfinished Railroad parking areas, stops 7 and 6 of the Second Manassas driving tour. The Deep Cut parking lot is the largest within the project area, paved with asphalt and in good condition. It includes space for eleven cars and one bus to park and is a designated bus tour route stop. The Unfinished Railroad parking area has an asphalt surface and provides parking for approximately six cars.



Figure 2- 10: Featherbed Lane north of Deep Cut Parking Lot and south of the Unfinished Railroad, facing north, December 2012 (QEA)

Pageland Lane is located at the far western end of the project area. An access road from Pageland Lane provides the closest vehicular route to the Brawner Farm and driving tour stop 1. This road is also a designated bus tour route. The road passes to the south of the Quarry Landscape Character Area, is paved with asphalt in good condition.

There is evidence of abandoned road traces intersecting with the Unfinished Railroad within the project area. One is in the Sudley Landscape Character Area and includes the original alignment of Sudley Road extending from the existing route to Catharpin Run and Sudley Springs Ford. This alignment is a visible grade (cut) that extends down the hill to the creek. It is parallel with a hiking trail at the upper section. In the floodplain the grade is impacted by erosion from flooding and foot traffic. To alleviate this problem boardwalks constructed of recycled materials have been placed on the grade. These appear effective but had shifted when viewed in December 2012. The park has since pinned the boardwalks into place. There is erosion along the creek beds at the ford site (see EC-2 and Figure 2-11).







Figure 2- 11: Top and Middle: Trail at Sudley, leading to the Sudley Springs ford. The boardwalks have been shifted and warped by flooding. Bottom: Sudley Springs Ford and wayside. The area shows impacts of recent highwater. December 2012 (QEA)

The second abandoned road trace is the grade associated with a historic farm road in the Deep Cut Landscape Character Area. The grade is apparent on the west side of Featherbed Lane north of the Deep Cut parking lot and extends to the northwest to the Unfinished Railroad rail-bed and beyond. The surface was covered with a thick layer of dry leaves in December 2012, but appears to be in good condition (see EC-4 and Figure 2-16). The route is clearly identifiable and although there are downed trees lying across it in some areas, mature trees have not become established within the alignment.

A second historic road trace is located north of the Deep Cut parking lot on the west side of Featherbed Lane. This route was a farm road that has been utilized by the NPS as a trail in the past (see Figure 2-12). A dense layer of leaf cover protects the grade from erosion. Tree roots and fallen trees may be impacting the grade.

Another possible road trace located west of the Deep Cut area, near the break in the grade where trestle 3 was planned, was not verified as part of the CLR.



Figure 2- 12: Trace of historic farm road north of Deep Cut parking lot, December 2012. A dense layer of leaf cover protects the grade from erosion. Tree roots and fallen trees may be impacting the grade. (QEA)

Pedestrian Circulation

The project area includes a network of interpretive trails that provide opportunities for visitors to explore the Unfinished Railroad alignment and features associated with the First and Second Battles of Manassas. Drawing sheet EC-6 illustrates existing circulation routes.

Sudley Loop Trail

The Sudley Loop Trail is a hiking trail located in the Sudley Landscape Character area. It is approximately .6 miles long. Features associated with the trail include the Thornberry House, Benson House site, two small bridges, a section of boardwalk near Sudley Springs Ford, and several signs and waysides. A portion of the trail is located on the rail-bed on the north side of the railroad corridor cut. At the bluff above Bull Run the trail proceeds to the northwest along the bluff overlooking the tributary. The trail extends downhill to Sudley Springs Ford, then curves around the base of the knoll occupied by the Thornberry House. In this area, the trail continues upon the trace of the historic Sudley Road. A boardwalk constructed of recycled materials has been placed on the route in the floodplain to ensure that it is passable during wet (but not flooding) conditions. In December 2012, the boardwalk had been displaced and was later pinned in place. At the top of the historic trace, the trail intersects with a portion of the trace that extends to the existing alignment of Sudley Road. From here, the trail continues to the south over the rolling forested landscape, back to the Unfinished Railroad. Along the route, the trail surface varies from leaf cover to bare earth. A trail bridge with no railing and water bars help to improve the walking surface and reduce erosion (see Figure 2-13).



Figure 2- 13: Sudley Loop Trail, footbridge, and water-bars, December 2012 (QEA)

Unfinished Railroad Loop Trail

This 1.2 mile trail consists of a loop with interpretive markers and waysides. The northern quarter of the trail includes one trail upon the rail-bed and a second on the south side of the grade. The remaining section has trail alignments on either side of the railroad grade. The majority of the trail is compacted earth with leaf litter cover and bare patches in some areas. Stairs are provided at the ends of the berms in the location of proposed trestle 1 (see Figure 2-14). At the northern berm a social trail is used more frequently than the stairs and an eroded groove has formed. In some low areas drainage washes across the trail after rainfalls causing sheet erosion. To alleviate this problem, boardwalks are provided in some low areas. Footbridges are provided at stream crossings (see Figure 2-15). The trail crosses through areas of hardwood forest, pine woods, and grasslands.[6]



Figure 2- 14: Steps on the nose of the railroad embankment near the location of proposed trestle 1. (Lowe and CRGIS, 2013, foresight photo STA40F)



Figure 2- 15: Footbridge over stream at Unfinished Railroad Loop (QEA)

Second Manassas Trail

The Second Manassas Trail is a 6.2 mile walking trail that intersects with the project area at the Unfinished Railroad and Deep Cut parking areas. The interpretive trail begins at the park visitor center and provides visitors with an opportunity to visit and learn about stages of the second battle. Within the CLR project area, the trail provides a link between the Unfinished Railroad and Deep Cut loop trails.

Second Manassas Trail crosses Featherbed Lane at the Unfinished Railroad parking lot. This crossing is confusing for pedestrians, as it is unclear where the trail continues on the east side of the road. Drivers come upon this area unexpectedly and may be surprised by pedestrians and equestrians, creating a potentially dangerous situation (see Figure 2-16).

The majority of this section of the trail is parallel and adjacent to the railroad grade, on its south side. The dirt path is covered with leaf litter in areas and bare in others. Portions of the alignment are soggy during wet seasons. At the southwest side of Featherbed Lane the trail is on the resource at a low point where water pools causing erosion (see Figure 2-17). Stairs lead up from the rail-bed cut to the trail that runs adjacent to the resource on the south side (see Figure 2-18).

Anotehr set of stairs provide access from the location of unbuilt trestle 2 up the sideslope to the area known as "The Dump" (see Figure 2-19). Footbridges are provided at stream crossings. Southwest of "The Dump" the trail is located atop the rail-bed, has a rocky surface and a groove has been worn into the surface (see Figure 2-20).[7]



Figure 2- 16: Second Manassas Trail crosses Featherbed Lane at the Unfinished Railroad parking lot. This crossing is confusing for pedestrians, as it is unclear where the trail continues/connects. Drivers come upon this area unexpectedly and may be surprised by pedestrians and equestrians, creating a potentially dangerous situation. (Lowe and CRGIS, 2013, Backsight Photo STA 67B)



Figure 2- 17: Second Manassas Trail at southwest side of Featherbed Lane, facing southwest. The trail is at a low point where water pools causing erosion. Stairs lead to the trail on the left of the image. (Lowe and CRGIS, 2013, Foresight Photo STA67F)

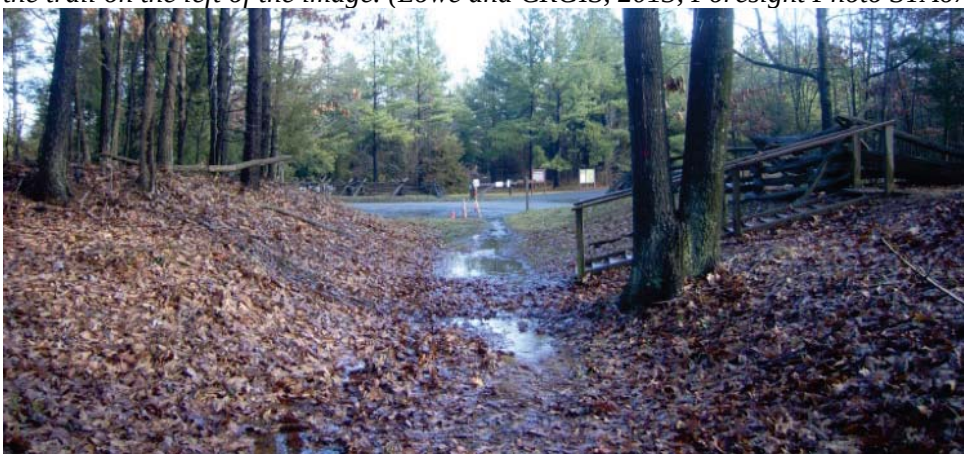


Figure 2- 18: Near Featherbed Lane, Unfinished Railroad cut and stairs to Second Manassas Trail on right (south side of rail-bed), facing northeast. Standing water during wet periods causes erosion of the rail-bed and trail. (Lowe and CRGIS, 2013, Backsight Photo STA 68B)



Figure 2- 19: Second Manassas Trail at "The Dump"/trestle 2 location, facing southwest, December 2012. The bridge in this location is in fair condition. The stairs are in good condition. (QEA)



Figure 2- 20: Second Manassas Trail atop rail-bed, facing southwest. Exposed rocks provide an interpretive opportunity. (Lowe and CRGIS, 2013, Foresight Photo STA82F)

Deep Cut Loop Trail

The 1.2 mile long Deep Cut loop trail passes through areas related to intense battles between Jackson's troops and major Union assaults. Interpretive markers and waysides provide historical information for visitors. Approximately one-third of the trail is located adjacent to or on the Unfinished Railroad grade. The rest of the trail extends to the south of the rail-bed through the rolling fields historically associated with Second Manassas military activities and Dogan family farmland. The majority of the trail traverses through grassland/open fields, the exception is a small area west of Deep Cut that crosses the edge of a vernal pool and passes through an area of mixed forest.

Near the Groveton/Deep Cut Monument, the trail is in an open area and barely apparent, but there are some patches of bare earth (see Figure 2-21). Along the trail, boardwalks are meant to provide a stable and dry walking surface. The boardwalks are constructed in a variety of ways. Conditions range from good to poor, as some have shifted and provide irregular surfaces that are dangerous for pedestrians (see Figures 2-22 and 2-23). In most locations the trail is in good condition, but some exceptions exist. Figure 2-24 illustrates erosion of the rail-bed where the Deep Cut loop trail is on the north side of the rail-bed north of unbuilt trestle 3.

Stairs are provided in several locations along the trail. At the end of the berm in the location of proposed trestle 3 wood stairs are constructed over the grade minimizing impacts to the resource and providing a safe walking surface (see Figure 2-25). In other locations steps are built into the sideslope. This approach impacts the resource during construction, provides opportunities for erosion, and provides a less stable walking surface (see Figure 2-26).

The trail leaves the rail-bed near SN 106 and curves to the northeast toward the Cedar Pole marker. Along this route, the trail surface varies from grass to bare earth to rocky ground (see Figures 2-27 through 2-29).



Figure 2- 21: Deep Cut loop trail at Groveton/Deep Cut Monument, facing southwest, December 2012. The trail is barely apparent, but there are some bare patches. (QEA)



Figure 2- 22: Boardwalk at Deep Cut loop trail west of Monument, facing southwest, Dec2012. The boardwalk has been dislodged and is very irregular. (QEA)

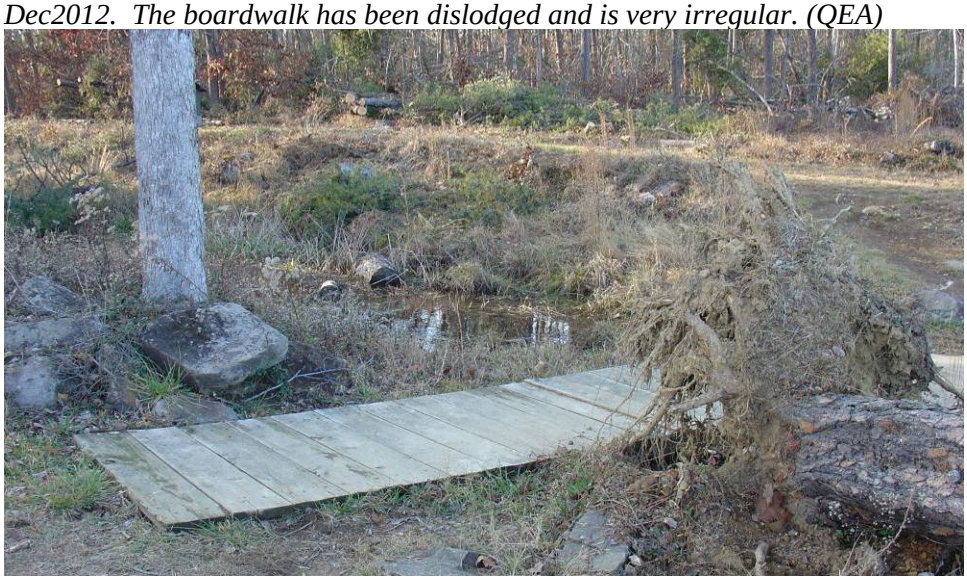


Figure 2- 23: Boardwalk at vernal pond west of Deep Cut, facing west, Dec2012. The boardwalk is in fair condition.(QEA)



Figure 2- 24: Erosion of rail-bed at Deep Cut loop trail on the north side of the rail-bed north of proposed trestle 3 site, facing southwest, Dec 2012 (QEA)



Figure 2- 25: Stairs at nose of fill south of proposed trestle 3 site, facing southwest, Dec 2012 (QEA)



Figure 2- 26: Steps built into the embankment, and a bench at the location where the Deep Cut trail leaves the rail-bed, Dec 2012 (QEA)



Figure 2- 27: Deep Cut loop trail and interpretive marker near Dogan Run, Dec 2012 (QEA)



Figure 2- 28: Deep Cut loop trail at Dogan Run, Dec 2012. The trail surface is very irregular and has large rocks exposed at this seasonal drainage area. (QEA)



Figure 2- 29: Deep Cut loop trail south of stone rubble, facing east, Dec 2012. The trail is in good condition. (QEA)

Equestrian Circulation

Manassas National Battlefield Park has approximately 21 miles of bridle trails. Designated bridle trails are separate from hiking trails. Within the project area, bridle trails cross hiking trails and intersect with the Unfinished Railroad grade in two locations. At the Unfinished Railroad parking lot a bridle trail crosses the rail-bed and the Second Manassas trail. The Second Manassas trail and the bridle trail are combined to the northeast of the parking lot. On the west side of Featherbed Lane, the two trails diverge, with the bridle trail leading to the northwest and the hiking trail continuing along the Unfinished Railroad corridor to the southwest (see Figure 2-30). Adjacent to the west side of Featherbed Lane heavy foot and equestrian traffic combined with a low area that retains moisture, has resulted in compaction and erosion of the surface.[8] Roughly 200 feet south of the spot where the Deep Cut loop trail extends to the south and east from the rail-bed, a section bridle trail crosses the rail-bed and a foot trail. In this location, the trail is compacted. A bridle trail at the Brawner Farm crosses the rail-bed northeast of the Quarry site (see Figure 2-31). The trail is in good condition.



Figure 2- 30: On the West side of Featherbed Lane, the two trails diverge. The Unfinished Railroad and Second Manassas Loop trail are on the left and the Bridle Trail is on the right. Facing west, September 2013. Although dry in this image, the erosion caused by seasonal standing water is clearly apparent in this image.(QEA)



Figure 2- 31: Bridle Trail crossing Unfinished Railroad grade at Brawner Farm, facing north, Dec 2012 (QEA)

Buildings and Structures

The project area includes two historically significant structures, the Unfinished Railroad resource and the Groveton/Deep Cut Monument and one historically significant building, the Thornberry House.

Unfinished Railroad

The 2.7 mile segment of the Manassas Gap Independent Line Unfinished Railroad corridor that lies within the boundary of Manassas National Battlefield Park is essentially a topographic feature, and the main focus of this cultural landscape report. The alignment was created by extensive grading within the 80-foot wide corridor established in 1854. Today, the cuts and fills established by the railroad company are visible reminders of the efforts to improve commercial traffic in the region and the strategic use of the topographic features during the Civil War.

Drawing sheet EC-5, Existing Topography, illustrates the locations of cuts, fills, level areas, and ungraded sections of the rail-bed. It also indicates the locations of proposed trestles and two areas that have been damaged by disturbance. The corridor includes: eleven sections of fill representing 5,190 linear feet; thirteen cut segments totaling 4,818 linear feet; twelve level sections equal to 2,166 linear feet; and two ungraded sections that amount to 977 feet.[9] Sites for three proposed trestles were prepared and, although the structures were never built, the manipulation of the topography remains as a reminder of the unrealized plan.

Within the project area, the rail-bed grade is well preserved, with the exception of three locations where it has been disturbed. One is a 57 foot-long section located at Sudley Road. On the north side of Sudley Road the ground has been heavily disturbed by grading related to the road right-of-way. The surface is compacted, bare earth is exposed and erosion is occurring. This disturbance continues for a short distance on the south side of Sudley Road.[10]

A second disturbed section is a 284 foot long segment where the trail intersects with Featherbed Lane. The disturbed area is mainly on the northeast side of Featherbed Lane, with a small section of disturbance on the opposite side of the road. Grading for the parking lot and road have impacted the rail-bed. Immediately adjacent to the road and extending almost 300 feet to the northeast (roughly at the location where the north and south sections of the Unfinished Railroad Loop Trail unite), there is no visible trace of the rail-bed. The ground has been eroded by foot and horse traffic. The only ground cover consists of pine needles, which are not sufficient to protect the ground surface.[11]

Finally, a section of the rail-bed near Pageland Lane was damaged in 2009 by a utility company's errant bull dowser operator and rebuilt later. The “rebuilt” segment did not apply the historic construction methods, and is subject to surface erosion, water-logging, sheet erosion, extensive burrowing by animals, and dense growth of invasive plants.[12] This segment is located on the east side of Pageland Lane, within the utility corridor.

Condition of the Rail-bed

Compared to typical Civil War military earthworks, the Unfinished Railroad rail-bed is much more durable. While military earthworks were constructed hastily to last only a short time, the Manassas Gap Independent Line was constructed using a process that was deliberately intended to create a long-lasting structure that could withstand decades of heavy use (see Figure 2-32). Understanding of the technique used to construct the rail-bed is useful for consideration of current and potential impacts to the resource.

> "The embankments were built up from horizontal layers of crushed stone and earth transported from elsewhere and then heavily compacted by horse-drawn rollers. Rainwater soaking into the surface is shunted to the outside by the compacted layers and shed down the outer slopes. The embankment retains its integrity so long as the underlying compressed layers remain intact."[13]

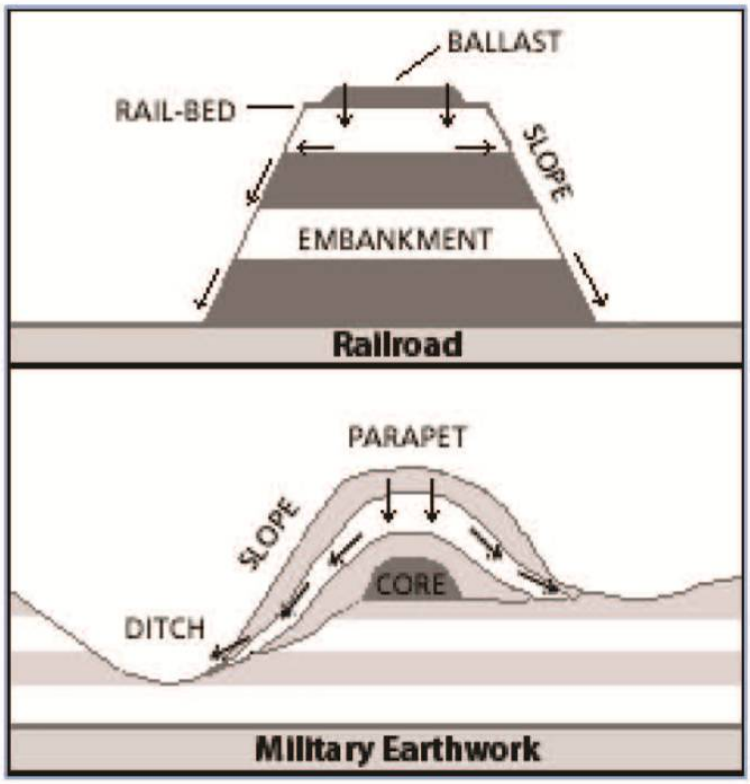


Figure 2- 32: Comparison of the structural composition of the railroad grade to a military earthwork (Lowe and CRGIS, 2013)

Although the rail-bed was constructed almost 150 years ago, the construction technique produced a structure that has withstood the test of time and the overall resource is in good condition. Impacts affecting portions of the railroad grade include damage from tree roots, erosion and compaction from trail use, and animal burrowing. Of these, trees growing directly upon the rail-bed present the greatest threat to the structural integrity of the resource. As tree roots grow, they separate the compacted materials creating openings that allow rainwater to soak into the structure causing the earthwork to spread and slump. In addition, these openings create opportunities for animal burrowing.[14]

Also, in cases where trees fall and their roots are pulled from the ground, large segments of the rail-bed are dislodged, intensifying the impacts of erosion and burrowing. An example was witnessed south of the Deep Cut near trestle 3 in December 2012 (see Figure 2-33).



Figure 2- 33: Uprooted tree near trestle 3 site, facing southeast, trail is in foreground, December 2012 (QEA)

For several decades, about 4,200 feet of hiking trails have been situated upon the top of the rail-bed. The resulting foot traffic has worn a shallow groove into the surface, causing superficial damage in the form of erosion.[15] Trails on the side-slopes of the railroad grade are of more concern. To alleviate erosion from trails on sloped surfaces, stairs are constructed. Current stairs are constructed in two ways. Those anchored at the top and bottom of the slope, with the majority of the structure being settled on top of the surface, minimize impacts and provide a safe walking surface (see Figure 2-25). In other locations steps are built into the sideslope. This approach impacts the resource during construction, provides opportunities for erosion, and provides a less stable walking surface (see Figure 2-26).

Groveton / Deep Cut Monument

The Groveton / Deep Cut Monument was erected by Union troops on 11 June 1865 adjacent to Deep Cut overlooking slopes where Union troops struggled to advance during Second Manassas (see Figure 2-34). Stone for the monument was reportedly salvaged from a culvert along the Unfinished Railroad. The monument was decorated with shots and shells found in the surrounding area (these are no longer extant). A tin box containing relics was placed within the cornerstone of the structure (this is no longer extant). A cedar fence encloses the area, that includes an earthen berm upon which the Monument is situated. Cedar trees that were planted at each corner of the Monument are no longer extant. The monument is in good to fair condition.



Figure 2- 34: Groveton/Deep Cut Monument, December 2012 (QEA)

Thornberry House / Sudley Post Office

One of only three wartime buildings within the park, the Thornberry House / Sudley Post Office (44PW294) is the subject of an archeological and historical investigation and report completed in 1998. The building is located at the northern portion of the Sudley Landscape Character Area atop a knoll overlooking the confluence of Bull Run and Catharpin Creek. Constructed in the mid-1840s by the Thornberry family, the house served as their home until 1871. It is an excellent example of vernacular architecture representative of rural nineteenth-century dwellings associated with occupants of lower to middle economic status. The one-and-a-half story building consists of the original section, constructed before the Civil War, and additions that were added later whose dates are uncertain.[16] The NPS rehabilitated the building and it is open for public access during special events. The building is in good condition (see Figure 2-35).



Figure 2- 35: Thornberry House/Sudley Post Office, south and west elevations, December 2012 (QEA)

Small Scale Features

One historically significant small scale feature is located within the project area. The Cedar Pole Marker is near the Deep Cut parking lot and described herein. Other small scale features related to the project area include boardwalks, stairs, steps, bridges, signs, fences and benches. These elements are all associated with current use. Their locations are indicated on the existing conditions drawing sheets EC-1 through EC6. These features are associated with the trails within the project area. Tables 2-1 through 2-4 provide lists of small scale features within each landscape character area.

Cedar Pole Marker

The Cedar Pole Marker is a simple wood sign on a cedar post located southwest of the Deep Cut parking lot, at the foot of the slope near Schoolhouse Branch. This marker is a replacement for the original postwar marker that was installed by a Union veteran. It indicates the position of Berdan's Sharpshooters along the stream during the attack on the Confederates' position at Deep Cut. The sign present during field investigations in December 2012 (see Figure 2-36) is being replaced again with a sign that more closely replicates the original sign which is in the park curatorial/museum collection.



Figure 2- 36: Cedar Pole Commemorative Marker, December 2012. The sign is being replaced with a new replica.(QEA)

Archeological Sites

Archeological resources within the landscape provide evidence of historic and prehistoric human activities and demonstrate the impact of the war on the community. A number of archeological sites have been identified within the project area. Throughout the park, archeological sites have been identified related to specific concerns, but no comprehensive park survey of archeological resources has been prepared. Surveys completed within the park indicate that the area contains a variety of prehistoric and historic resources.[17]

Known archeological sites within the project area include the Unfinished Railroad, two historic building sites (Amos Benson House Ruin and Thornberry House / Sudley Post Office Site), two disinterred grave sites (Sudley Unfinished Railroad and Deep Cut) and a quarry (near Pageland Lane) operation site. Locations are illustrated on drawing sheet EC-8: Existing Archeological Sites, Project Area. Also shown are documented sites in close proximity to the project area. The Unfinished Railroad is described in the Topography section of this chapter. Other archeological sites within the project area are described in the following narrative.

Thornberry House / Sudley Post Office Site

The Thornberry House is described in the Buildings and Structures section. In 1981 a historic sites survey was conducted, documenting features associated with this property. The survey identifies a trace of Old Sudley Road, Sudley Springs Ford, a privy site, well, and terraced landscape. [18] Conditions at the property in March 1862 are illustrated in Figure 2-37. The overall site is in fair condition. There is evidence of flooding and erosion along the lower portion of the Old Sudley Road trace, and vegetation appears to have encroached around the house site since 1981.



Figure 2- 37: George N. Barnard photographer, March 1862, Library of Congress (Reproduction #LC-B8171-0317)[19]

Amos Benson House Ruin

The Amos Benson House ruin is located on the north side of the Unfinished Railroad approximately 200' feet southwest of Bull Run. The site is marked by a pile of rubble stone and brick marking the former location of the house. The site is surrounded by forest and trees are growing within the rubble pile (see Figure 2-38).



Figure 2- 38: Ruin of Amos Benson House, facing northeast, December 2012. (QEA)

Sudley Unfinished Railroad Disinterred Graves Site

On the southeast side of the Unfinished Railroad, approximately 400' southwest of Bull Run is a site that includes indentations reported to be disinterred soldiers' graves.[19] During the war, fallen soldiers were frequently buried hastily where the fell following battles. After the war ended efforts were made to move and properly bury bodies. The remaining pockmarks in the ground serve as evidence of the wartime events.

Quarry Site

The site of a Quarry associated with the construction of the Manassas Gap Independent Railroad line was documented in 1995. The Quarry is adjacent and south of the rail-bed east of Pageland Lane on the park's western border. The report identified a site that includes a quarry, two platforms, and wagon tracks used to transport the rock to the Unfinished Railroad bed (see Figure 2-39).[20] Sometime before 25 August 2009, the Unfinished Railroad adjacent to the Quarry (Site 44PW299) was impacted and disturbed by unauthorized construction and installation of a plank road over and through the Unfinished Railroad by Dominion Virginia Power.[21]

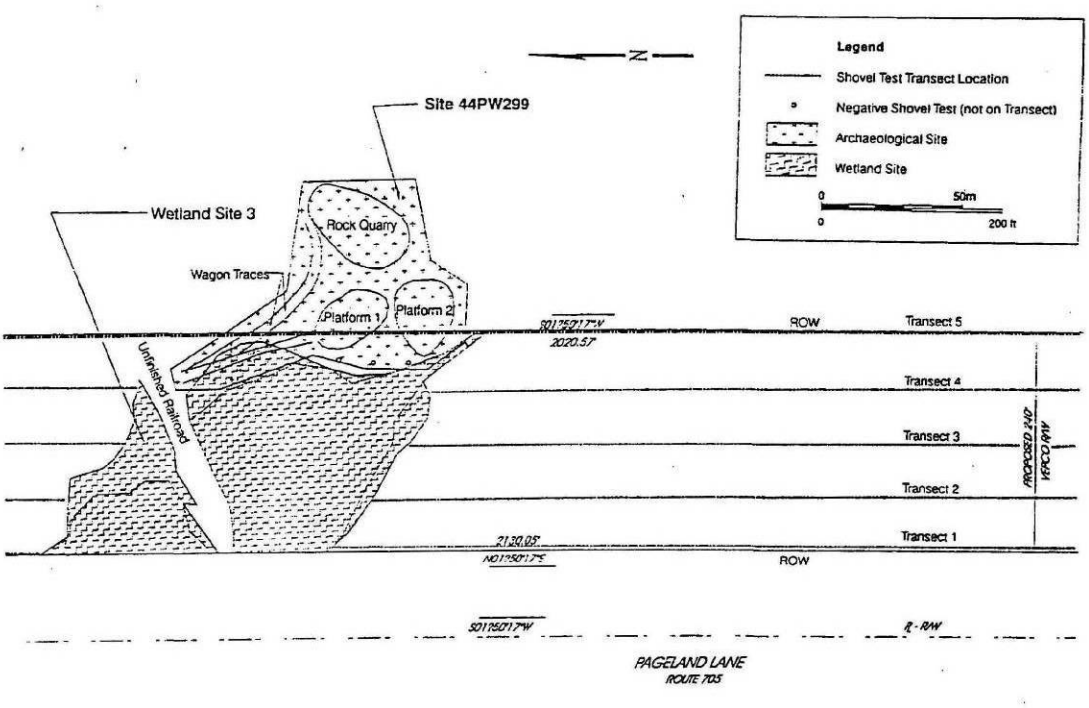


Figure 2- 39: Quarry Site Plan, 1995 (Gray & Pape, Inc.)

Endnotes

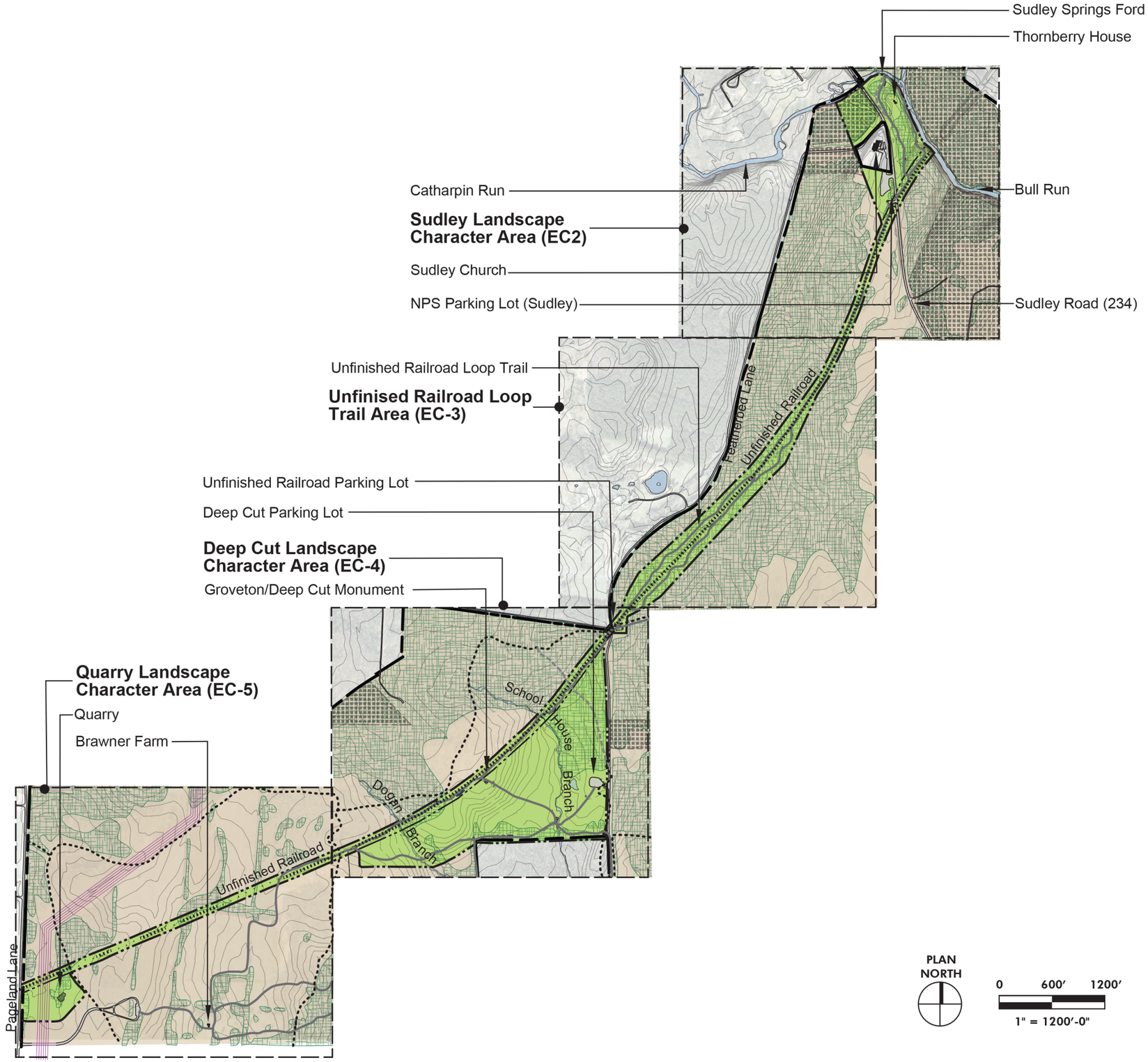
[1] See the Introduction for an explanation of the cultural landscape approach used throughout this report.
[2] David W. Lowe and CRGIS. "Unfinished Railroad Resource Survey, Manassas National Battlefield Park: National Capital Region" (WASO National Park Service, Washington, DC), 2013. vi.
[3] G. P. Fleming and J.T. Weber. 2003. Inventory, classification, and map of forested ecological communities at Manassas National Battlefield Park, Virginia. Natural Heritage Tech. Rep. 03-7. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond. Unpublished report submitted to the National Park Service, 61 and 81.
[4] J. E. Thomas, J.P. Campbell, T.J.B. Carruthers, W.C. Dennison, B. Gorsira, M. Lehman, and M. Nortrup. 2011. Manassas National Battlefield Park natural resource condition assessment: National Capital Region. Natural Resource Report NPS/NCRN/NRR—2011/414. National Park Service, Fort Collins, Colorado, 8-9; and Final General Management Plan/Environmental Impact Statement, Manassas National Battlefield Park, 2008. United States Department of the Interior, National Park Service, 86-87.
[5] Fleming and Weber, 2003. Inventory, classification, and map of forested ecological communities at Manassas National Battlefield Park, Virginia. Natural Heritage Tech. Rep. 03-7. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond. Unpublished report submitted to the National Park Service, 61 and 81.
[6] Lowe and CRGIS. "Unfinished Railroad Resource Survey, Manassas National Battlefield Park," 36-64.
[7] Williams, field investigations, 2012, and Lowe, David W. and CRGIS. 2013. Unfinished Railroad Resource Survey, Manassas National Battlefield Park: National Capital Region, WASO National Park Service, Washington, DC, 67-84.
[8] Williams, site investigations December 2012; Equestrian Trails, Manassas National Battlefield Park; and Lowe David W. and CRGIS. 2013. Unfinished Railroad Resource Survey, Manassas National Battlefield Park: National Capital Region, WASO National Park Service, Washington, DC, 64, 107, and 115.
[9] Lowe and CRGIS. "Unfinished Railroad Resource Survey, Manassas National Battlefield Park,"xii.
[10] Ibid., 7-8.
[11] Ibid., 64-66.
[12] Ibid., vi-vii.
[13] Ibid., v.
[14] Ibid., iv-vi. Detailed information regarding conditions along the route is provided in Lowe's report, including maps and photographs illustrating conditions observed in 2012.
[15] Ibid., vii. Lowe argues that the foot traffic may even contribute to the longevity of the rail-bed by providing a small amount of compaction.
[16] Reeves, Matthew B., Views of A Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office (44PW294), Manassas National Battlefield Park, 1998.
[17] Final General Management Plan/Environmental Impact Statement, Manassas National Battlefield Park, 2008. United States Department of the Interior, National Park Service, 99-100.
[18] Final General Management Plan/Environmental Impact Statement, Manassas National Battlefield Park, 2008. United States Department of the Interior, National Park Service, 266; and Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 4-108.
[19] Final General Management Plan/Environmental Impact Statement, Manassas National Battlefield Park, 2008. United States Department of the Interior, National Park Service, 266; and Lowe and CRGIS, "Unfinished Railroad Resource Survey, Manassas National Battlefield Park." National Capital Region, WASO National Park Service, Washington, DC.
[20] Gray and Pape, 1995.
[21] Karen L. Orrence, Karen L. and Dr. Stephen R. Potter, 2010. Assessment of Damage to Archeological Resources at the Unfinished Railroad (Site 44PW299) on the Brawner Farm,

Manassas National Battlefield Park, Manassas, Virginia, Case Incident Number 09-00195. United States Department of the Interior, National Park Service, National Capital Region, Regional Archeology Program.

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Project Area Existing Conditions



Legend

- Legislative Boundary
- Landscape Character Area Boundary
- Unfinished Railroad
- Roads
- Existing Buildings
- Forest, Fencerow Vegetation, and Individual Trees
- Park Area
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned or Non-NPS Public Land Within Park Boundary
- Existing Utility Line
- Existing Trails
- Existing Bridle Trails
- Historic Road Trace
- Contours
- Enlargement Sheets (EC2 - EC5)

Map Notes and Sources

Note: Detailed information for the Sudley, Deep Cut, and Quarry areas is provided on Sheets EC-2, EC-3 and EC-4

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service

PLAN NORTH

0 600′ 1200′

1" = 1200′-0"

QUINN EVANS ARCHITECTS

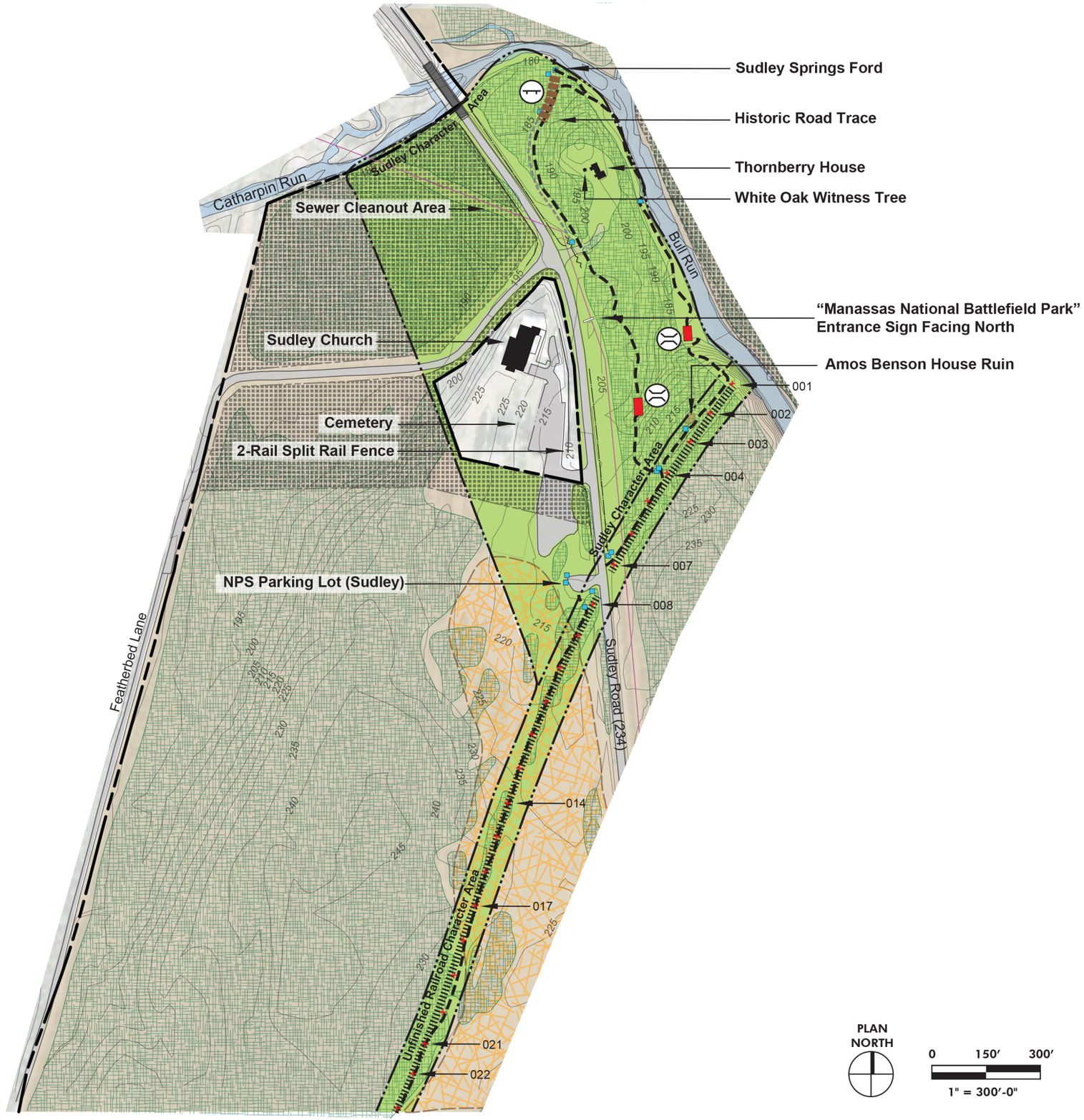
NPS 379
MANA 114363

EC-1

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Existing Conditions
Sudley and Unfinished Railroad
Landscape Character Area SN 001-023



Legend

- Legislative Boundary
- Landscape Character Area Boundary
- Unfinished Railroad
- Roads
- Existing Buildings
- Forest, Fence Row Vegetation, and Individual Trees
- Grasslands/Open Field
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned or Non-NPS Public Land Within Park Boundary
- Existing Utility Line
- Existing Worm Fence
- Contours
- Existing Interpretive Trails
- Historic Road Trace
- Existing Boardwalk
- Existing Trail Bridge
- Existing Interpretive Sign or Wayside
- Hay Lease
- Existing Guardrail

Map Notes and Sources

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Google Earth Aerial 10/12/2012
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map

PLAN NORTH

0 150′ 300′

1" = 300′-0"

QUINN EVANS ARCHITECTS

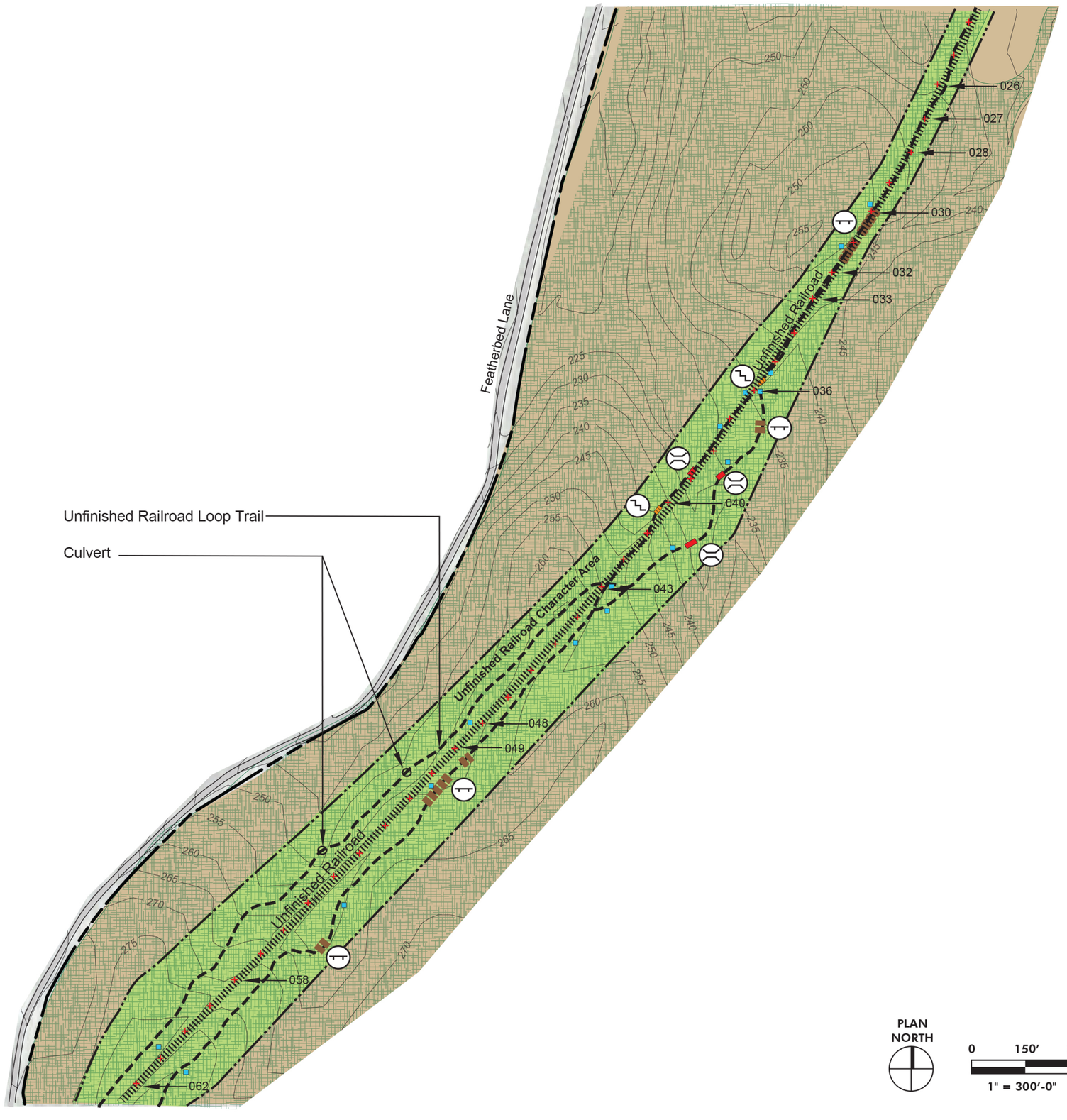
NPS 379
MANA 114363

EC-2

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Existing Conditions
Unfinished Railroad
Landscape Character Area SN 024-062



Legend

- Legislative Boundary
- Landscape Character Area Boundary
- Unfinished Railroad
- Roads
- Existing Buildings
- Forest, Fence Row Vegetation, and Individual Trees
- Grasslands/Open Field
- Project Area
- Privately Owned Land Outside Park Boundary
- Contours
- Existing Interpretive Trails
- Existing Boardwalk
- Existing Trail Bridge
- Existing Stairs
- Existing Interpretive Sign or Wayside

Map Notes and Sources

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service

PLAN NORTH

0 150′ 300′

1" = 300′-0"

QUINN EVANS ARCHITECTS

NPS 379
MANA 114363

EC-3

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Existing Conditions
Groveton/Deep Cut and Unfinished Railroad
Landscape Character Area SN 063-107



Legend

- Legislative Boundary
- Landscape Character Area Boundary
- Unfinished Railroad
- Roads
- Existing Buildings
- Forest, Fence Row Vegetation, and Individual Trees
- Grasslands/Open Field
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned Land Within Park Boundary
- Existing Utility Line
- Existing Worm Fence
- Contours
- Existing Interpretive Trails
- Historic Road Trace
- Existing Bridle Trail
- Existing Boardwalk
- Existing Trail Bridge
- Existing Stairs
- Existing Interpretive Sign or Wayside

Map Notes and Sources

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service

QUINN EVANS ARCHITECTS

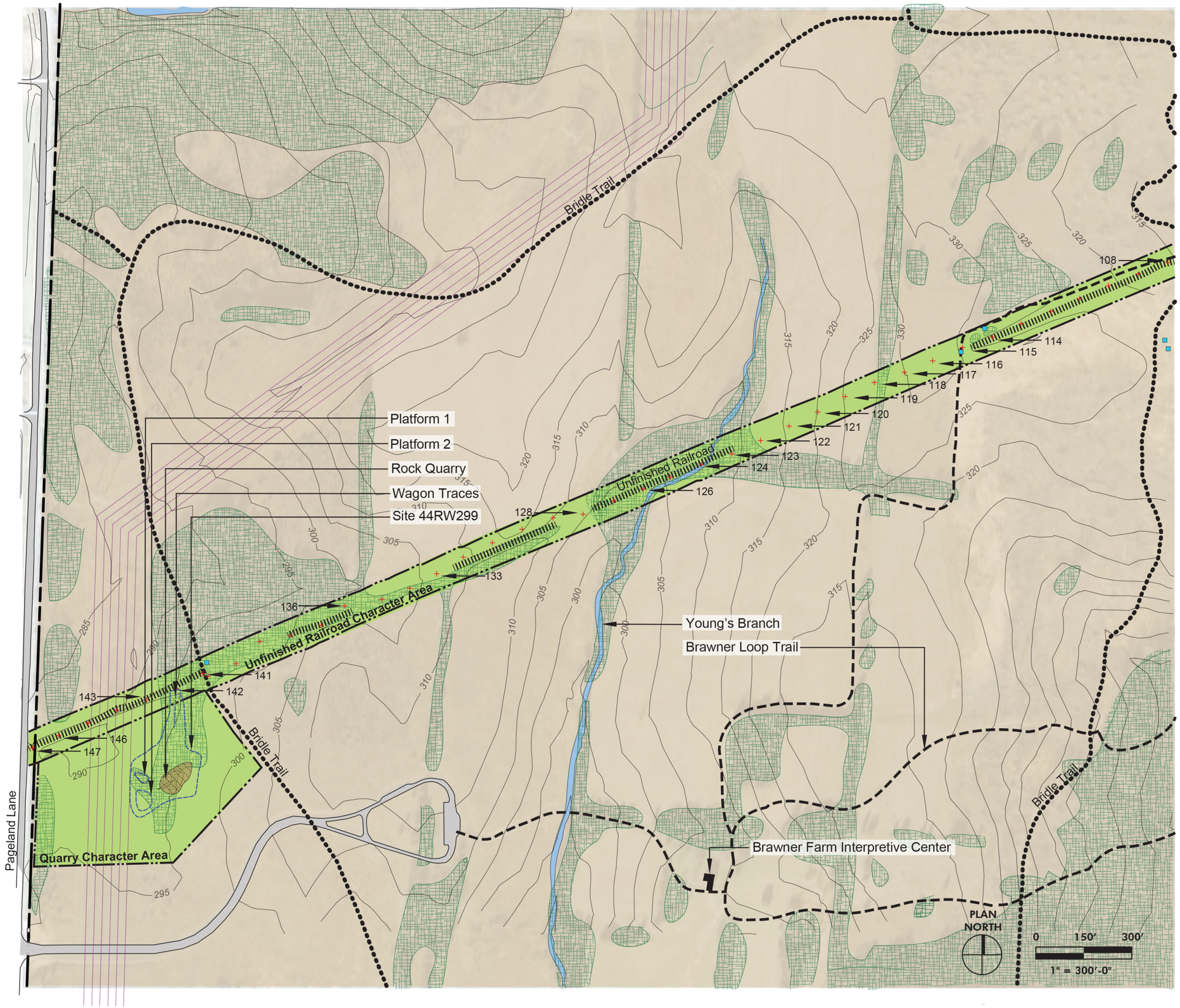
NPS 379
MANA 114363

EC-4

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Existing Conditions
Quarry and Unfinished Railroad
Landscape Character Area SN 108-147



Legend

- Legislative Boundary
- Landscape Character Area Boundary
- Unfinished Railroad
- Existing Roads
- Existing Buildings
- Forest, Fence Row Vegetation, and Individual Trees
- Grasslands/Open Field
- Project Area
- Privately Owned Land Outside Park Boundary
- Existing Utility Line
- Existing Worm Fence
- Contours
- Existing Interpretive Trails
- Existing Bridle Trail
- Existing Interpretive Sign or Wayside

Map Notes and Sources

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service

QUINN EVANS ARCHITECTS

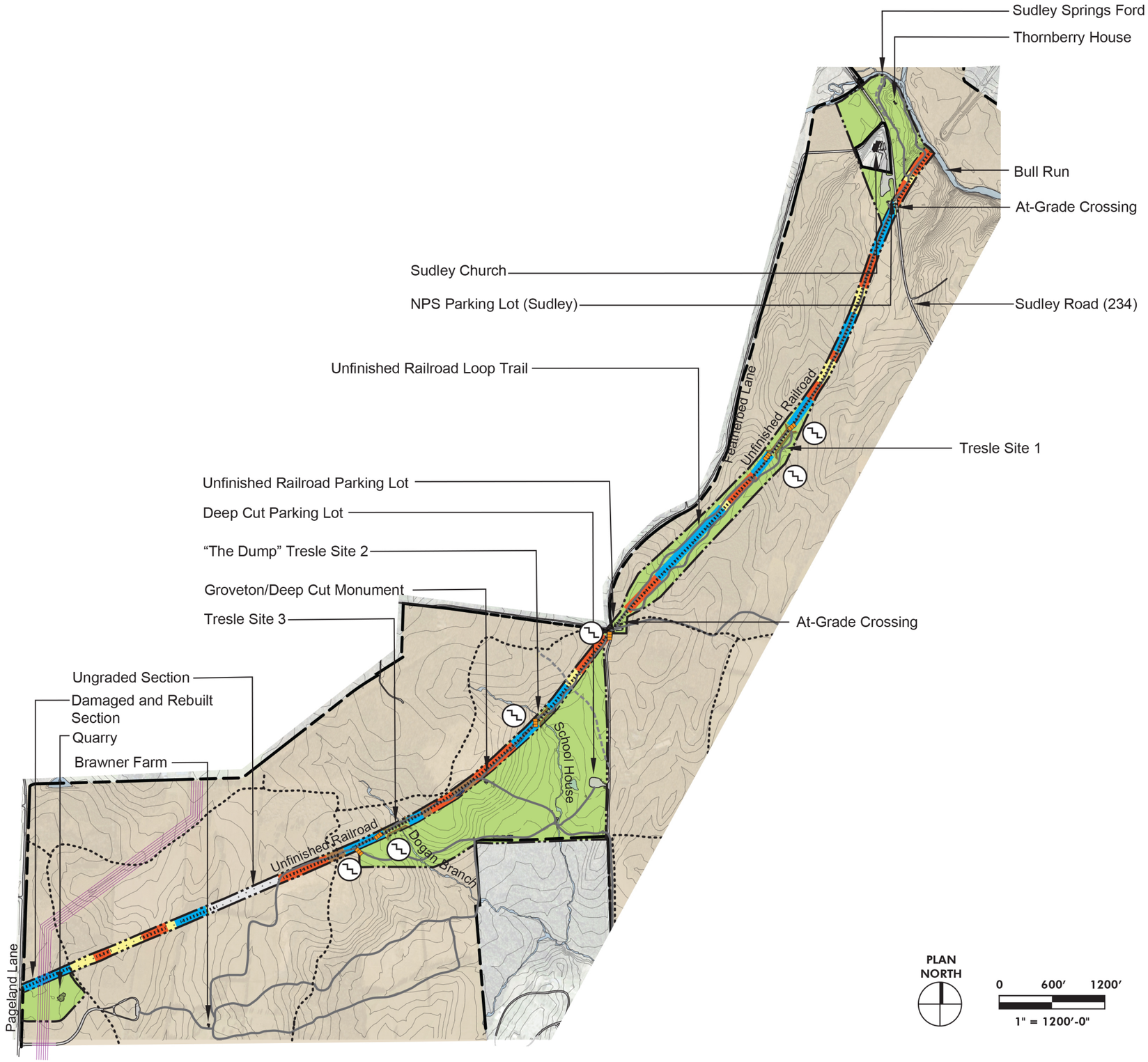
NPS 379
MANA 114363

EC-5

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Project Area Topography



Legend

- Legislative Boundary
- Landscape Character Area Boundary
- Unfinished Railroad
- Roads
- Park Area
- Project Area
- Existing Utility Line
- Existing Trails
- Existing Bridle Trails
- Historic Road Trace
- Contours
- Railroad Cut
- Railroad Fill
- Level Railroad Grade
- Trestle Site
- Existing Stairs

Map Notes and Sources

Note: Detailed information for the Sudley, Deep Cut, and Quarry areas is provided on Sheets EC-2, EC-3 and EC-4

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service

PLAN NORTH

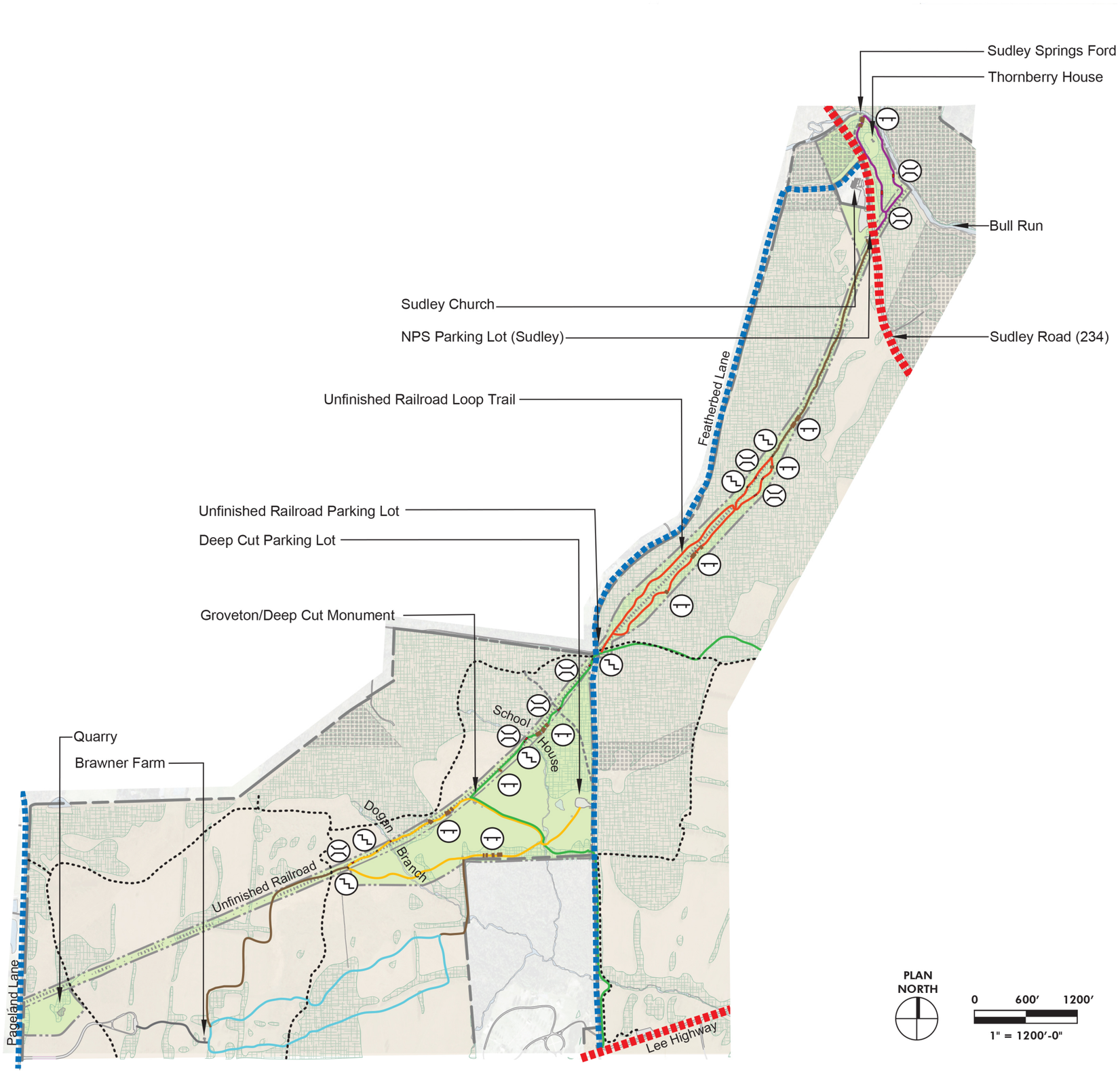
0 600′ 1200′

1" = 1200′-0"

QUINN EVANS ARCHITECTS

NPS 379
MANA 114363

EC-6



MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Existing Conditions Circulation

Legend

- Legislative Boundary
- Landscape Character Area Boundary
- Unfinished Railroad
- Roads
- Forest, Fencerow Vegetation, and Individual Trees
- Park Area
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned or Non-NPS Public Land Within Park Boundary
- Existing Primary Road - Public Road
- Existing Secondary Road - Public Road
- Existing Sudley Loop Trail
- Existing Unfinished Railroad Loop Trail
- Existing Second Manassas Loop Trail
- Existing Deep Cut Loop Trail
- Existing Brawner Loop Trail
- Existing Connector Trails
- Existing Bridle Trails
- Historic Road Trace
- Existing Boardwalk
- Existing Trail Bridge
- Existing Stairs

Map Notes and Sources

Note: Detailed information for the Sudley, Deep Cut, and Quarry areas is provided on Sheets EC-2, EC-3 and EC-4

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service

PLAN NORTH

0 600′ 1200′

1" = 1200′-0"

QUINN EVANS ARCHITECTS

NATIONAL PARK SERVICE Department of the Interior

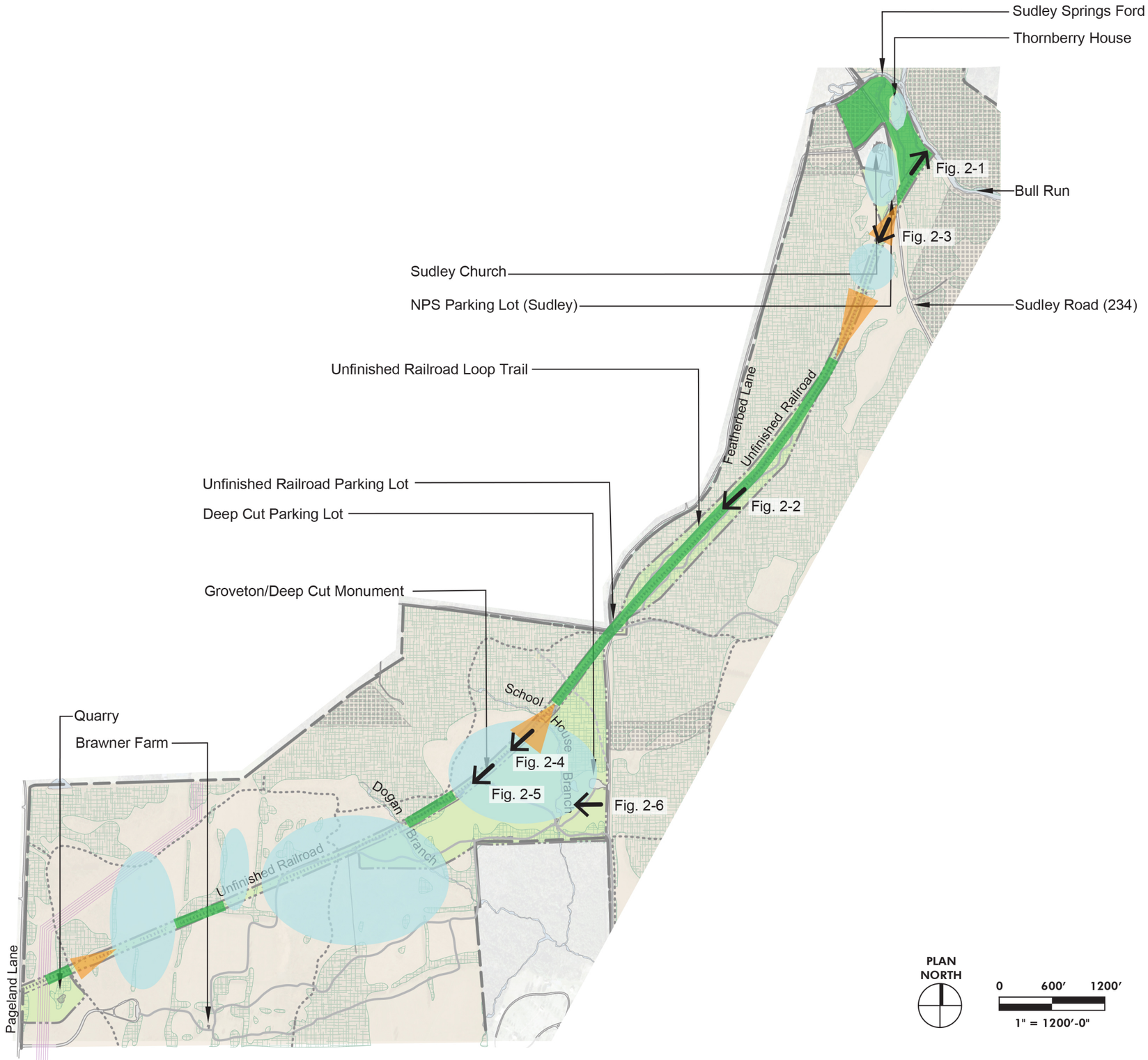
NPS 379
MANA 114363

EC-7

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Existing Conditions Views



Legend

- Legislative Boundary
- Landscape Character Area Boundary
- Unfinished Railroad
- Roads
- Forest, Fencerow Vegetation, and Individual Trees
- Park Area
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned or Non-NPS Public Land Within Park Boundary
- Existing Utility Line
- Existing Trails
- Existing Bridle Trails
- Historic Road Trace
- Views (Fig. 2-1 through Fig. 2-6)
- Expansive Views of the Surrounding Landscape
- Partially Enclosed Views
- Linear Views Enclosed by Vegetation

Map Notes and Sources

Note: Detailed information for the Sudley, Deep Cut, and Quarry areas is provided on Sheets EC-2, EC-3 and EC-4

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service

PLAN NORTH

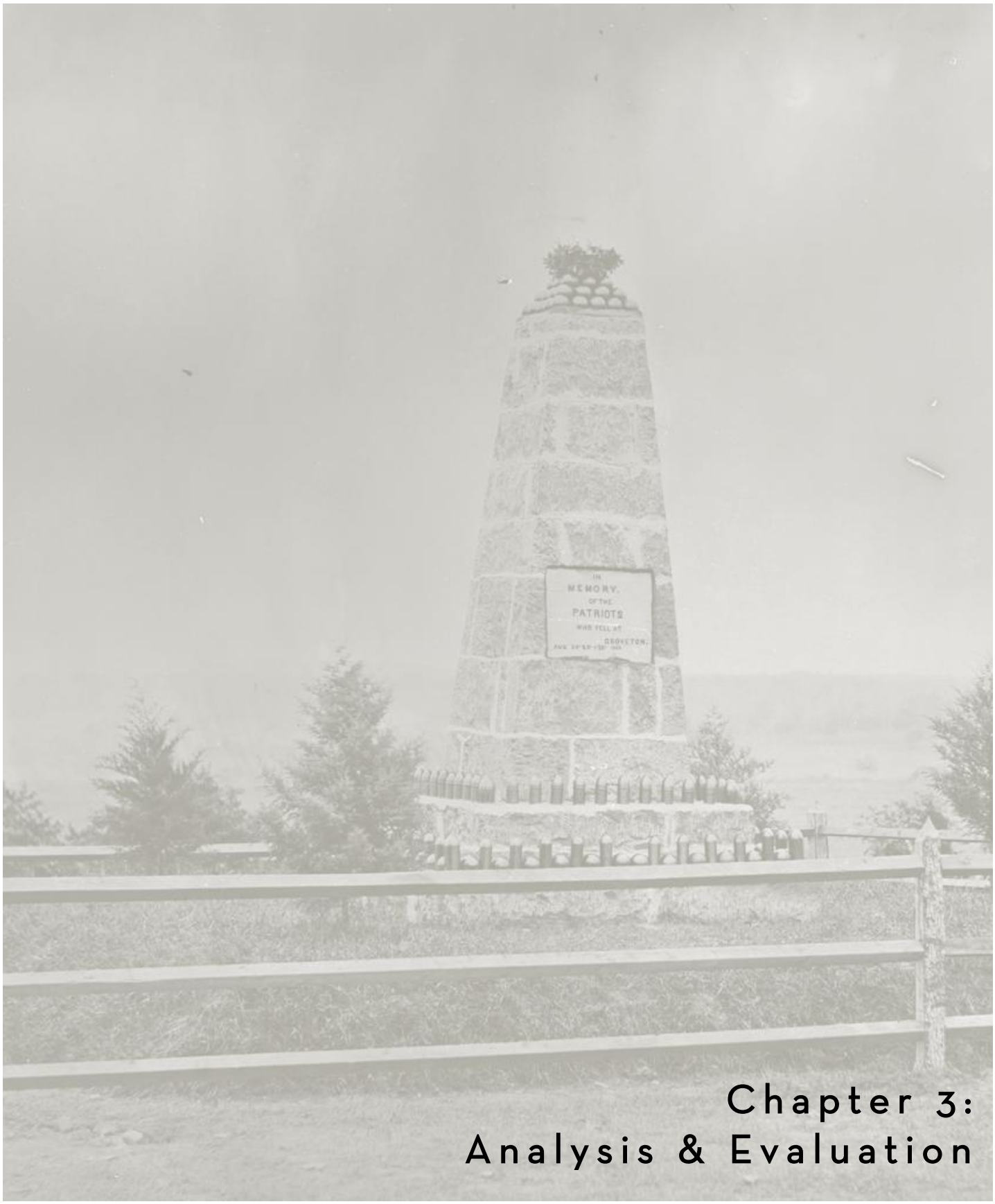
0 600′ 1200′

1" = 1200′-0"

QUINN EVANS ARCHITECTS

NPS 379
MANA 114363

EC-8



Chapter 3:
Analysis & Evaluation

Chapter 3: Analysis & Evaluation

This chapter provides a comparison of the findings of the site history with the existing conditions within the project area to facilitate the identification of landscape characteristics and extant features that have historical significance. The integrity of each characteristic is evaluated according to National Register standards within the context of the project area landscape as a whole. Landscape characteristics addressed include natural systems and features, spatial organization, views, land use, topography, vegetation, circulation, buildings, structures, small-scale features, and archeological sites.

Unfinished Railroad Project Area, Statement of Significance Considerations

The Manassas Battlefield Historic District meets all four of the National Register criteria, and is significant under the themes of military, archeology, architecture, and commemoration with national significance for the period between 1820, representing the subdivision of the Carter family property and date of the oldest extant standing resources, and 1942, when the Visitors Center was completed. The Unfinished Railroad project area lies within the Manassas Battlefield Historic District that is historically significant for its association with the First Battle of Manassas on July 21, 1861 and the Second Battle of Manassas on August 28-30, 1862.

The project area is significant under Criterion A, broad patterns of history, related to the Civil War, and also to settlement, economic development, and the development of transportation in the region; Criterion B, for association with Confederate General Thomas J. "Stonewall" Jackson, whose fame increased following the Confederate success at Second Manassas; Criterion D, for its ability to yield important information about the battle; and criteria consideration F, as a commemorative site associated with the Civil War.[1]

The project area landscape is uniquely situated to convey information related to the time period that begins in 1853 with the construction of the railroad grade and spans the Civil War, reconstruction and memorialization phases through 1869. Changes to the landscape following 1870 began a gradual departure from the earlier conditions, especially related to vegetation. Because of this, the management period for the Unfinished Railroad landscape is focused on 1853 through 1869. Discussions of integrity highlight the ability of the current landscape to represent this time period.

Natural Systems and Features

In the Unfinished Railroad project area, vegetation, topography, drainage patterns, water bodies and native stone are all aspects of the natural environment that have influenced the development and form of the historic landscape.

By the time construction began on the Unfinished Railroad corridor in the project area, natural vegetation in the region had been modified for agricultural purposes. Many forested areas were cleared for farms, with small wood lots retained in locations with steep slopes and wet areas not suitable for cultivation. During the First and Second Battles of Manassas, the remaining wood lots provided cover and fuel for troops. Cleared fields threatened exposure to enemy fire. Following the war and a brief period of revived agricultural use, the memorialized landscape was freed from human manipulation of the vegetation. Vegetation patterns gradually shifted from a matrix of open fields and small wood lots to being dominated by successional forest vegetation. Beginning in 2006, NPS efforts have recovered portions of the open areas through intensive management efforts designed to inhibit natural succession of forest communities.

The topography and natural resources of the project area encouraged human use and Native Americans utilized the region prior to European settlement. The rolling hills, natural springs, creeks, native grasslands and forest, provided sources of water, food, building materials and fuel in a temperate climate. European settlement in the area was predicated upon the topography and soils, which were well suited to agriculture. The natural topography associated with the project area is a powerful reminder of the terrain present historically. The rolling hills accented by areas of steep terrain juxtaposed with relatively level terraces characterize the region and greatly influenced the choice of location for the Manassas Gap Railroad. Manipulation of the topography to construct the railroad grade resulted in a distinct feature upon the landscape that is most identifiable in locations of large cuts and fills. The combination of the natural topography with the constructed railroad grade affected the outcome of the Second Battle of Manassas. The slopes were strategically utilized by soldiers on both sides to aid in concealment and force exposure of opposing troops.

The numerous drainages and wet areas affected the historic design of the railroad grade and the activities of troops during the war; they also influence management of the landscape today. The presence of native stone in the area also influenced the location and construction of the rail-bed. Access to small quarries near the construction sites increased efficiency and lowered costs associated with constructing the filled embankments.

Spatial Organization

Spatial organization within the project area has been affected by the natural topography, waterways, vegetation, ownership, patterns of circulation, and land use, including military activities. During the 1700s, the regional area was managed as a plantation by one owner. Large swaths of crops and pasture utilized the gently sloping areas and woodlots were maintained along steep slopes and waterways. Gradually, the property was divided among a few family members. The division of land resulted in a denser patchwork of land use in the region, with additional clusters of farm buildings and apportionment of fields and other land use. The exact arrangements of land use patterns and spatial organization within the project area during this early period are not precisely known. When the Manassas Gap Railroad Independent Line route was constructed through the area in 1854, patterns on the landscape changed. The corridor was laid out as a linear route seeking the most efficient passage through the area. The former ownership and land use patterns were bisected as the rail bed was constructed through fields and woodlots. The rail-bed structure impacted the organization of fields within farmer's properties. In locations where high fills or deep cuts were constructed, passage from one section of a farm to another was blocked. Some property owners constructed fences along the embankment. Other changes to the arrangement of features upon the landscape during this period were made as properties were further divided. An emphasis was placed on balancing parcels with equal amounts of arable and wooded land. Agricultural use in the project area reached its peak in 1861. Fences outlined a patchwork of crops in the landscape. Roads curved along fence lines and woodlots provided enclosed masses that balanced with the open fields.

Military activities during the Civil War greatly affected the organization and appearance of the landscape. Fences, crops, and buildings were destroyed. Woodlots were cut and greatly reduced in size. During and immediately following the war, the landscape was strewn with artillery, bodies, broken equipment, burnt buildings, and was generally in disarray. Within the project area, this type of condition was prevalent for most of the war and farms were mostly abandoned. Farming was reestablished for a period following the war and small farms again established a diverse matrix on the landscape. Beginning in 1920, efforts to preserve the battlefield landscape led to a decrease in cultivation and an increase in wooded areas. By 2006, the majority of the property in the project area is owned by the National Park Service and is wooded. Since then, the NPS has initiated efforts to restore open fields to reflect the spatial character present during the Civil War. Woodland vegetation has been cut in large areas and hay fields and native grasslands have been established. These fields reflect the general character of the open fields present during the Civil War period, but lack the diversity of crops and fences.

Summary of Integrity related to Spatial Organization

Efforts to remove woodland vegetation in areas that were open during the Civil War have greatly improved integrity in the project area related to spatial organization. However, throughout the project area, the lack of farming activities, equipment, and organizational patterns on the landscape reduces integrity of materials and workmanship. The Deep Cut area and the portion of the project area that extends from Deep Cut to the Quarry area retains integrity of location, association, design and setting related to spatial organization. The remainder of the project area, including the rail-bed, Sudley area, and Quarry area, retain integrity of location and association, but the dense woodland present in these formerly open areas diminishes integrity of setting, design, materials, and workmanship.

Views

During the First and Second Battle of Manassas, views from and into the project area affected the strategies used by troops on both sides. Vegetation and topography greatly affected these views. Although topography has not changed dramatically since the Civil War period, vegetation has. Prior to the Civil War, farming in the area resulted in extensive clearing of forest vegetation, resulting in expansive views across the rolling landscape (see Figure 3-1). Beginning in 1920, efforts to preserve the battlefield landscape led to a decrease in cultivation and successional woodland vegetation encroached upon the formerly open fields. By 2006, the majority of the project area is wooded. Since then, the NPS has initiated efforts to restore open fields to restore views present during the Civil War. Woodland vegetation has been cut in large areas and hay fields and native grasslands have been established. These activities have restored selected views within the project area.

In Chapter 2, Existing Conditions, three types of views are described and their locations within the project area are identified (see drawing EC-8 in Chapter 2). Drawing LA-1, Historic Views, illustrates vegetation present between 1861 and 1869 and the locations of military battle lines during the First and Second Battles of Manassas. This is overlaid with conceptual symbols representing the types of views that were associated with the project area. Expansive views of the surrounding landscape were present at the northeast and southwest sections of the project area, as well as at Deep Cut. Partially enclosed views existed along much of the middle section of the corridor, especially in the current location of the Unfinished Railroad loop trail. There were three short sections where woodland vegetation created enclosed linear views. They were on either side of Deep Cut and at the east side of Groveton-Sudley Road/ Featherbed Lane. Comparison of drawing LA-1 to drawing EC-8 illustrates the effect that encroaching woodland vegetation has had on views, especially along the Unfinished Railroad corridor east of Featherbed Lane.

Summary of Integrity related to Views

Efforts to remove woodland vegetation in areas that were open during the Civil War have greatly improved integrity in the project area related to views. However, throughout the project area, the lack of farming activities, equipment, and organizational patterns on the landscape reduces integrity of materials and workmanship. The Deep Cut area and the portion of the project area that extends from Deep Cut to the Quarry retains integrity of location, association, design and setting related to views. In the remainder of the project area, including the rest of the rail-bed, Sudley area, and Quarry area, the dense woodland present in these formerly open areas diminishes integrity of setting, design, materials, and workmanship.

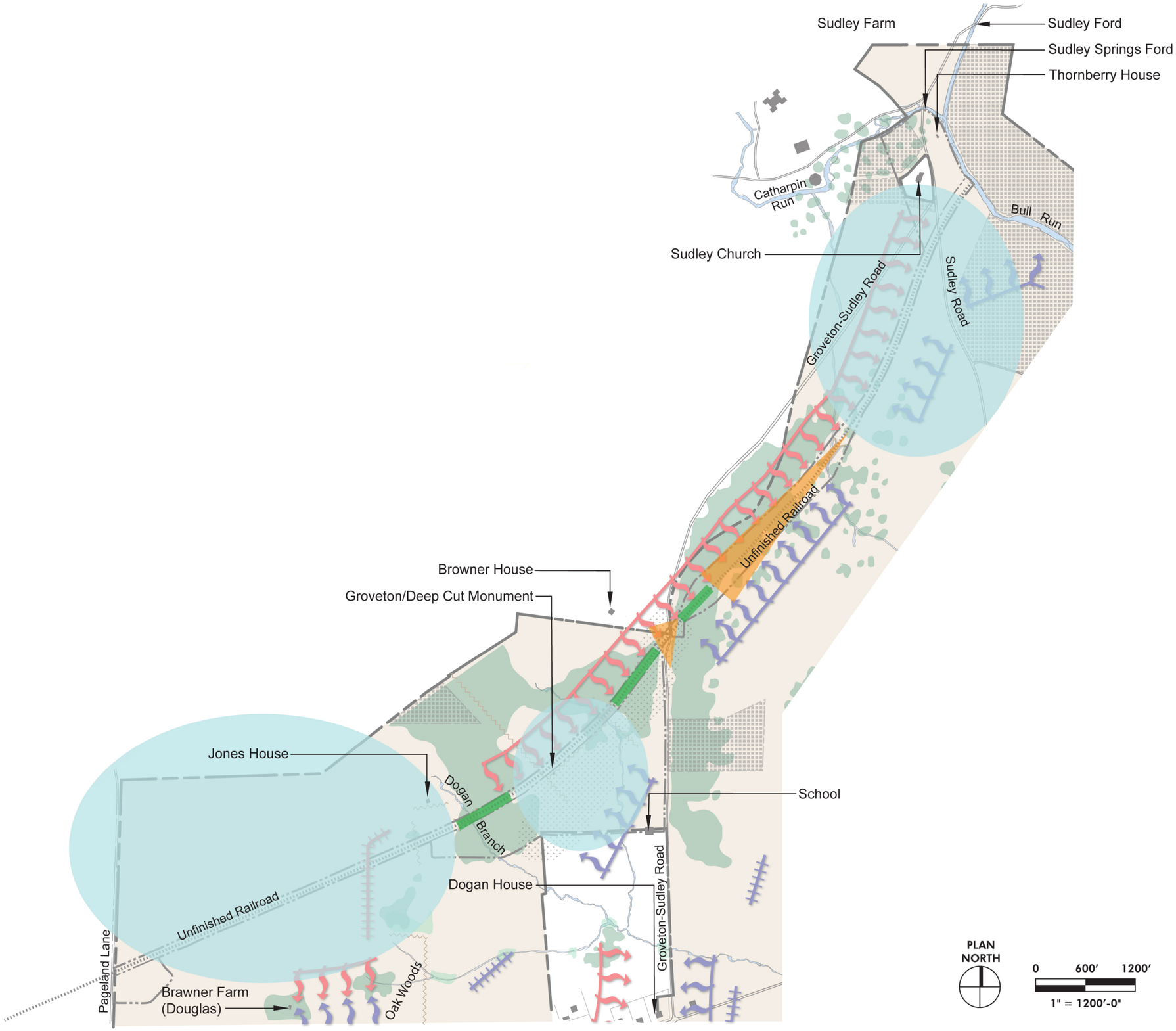


Figure 3- 1: Artist's rendering of the landscape associated with the Second Battle of Manassas, ca. 1863

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Historic Views 1861-1869



Legend

- Park Boundary
- Unfinished Railroad
- Roads
- Buildings
- Forest, Fencerow Vegetation, and Individual Trees
- Park Area
- Current Privately Owned or Non-NPS Public Land Within Park Boundary
- Confederate Battle Line
- Union Battle Line
- Confederate Artillery
- Union Artillery
- Fence
- Expansive Views of the Surrounding Landscape
- Partially Enclosed Views
- Linear Views Enclosed by Vegetation

PLAN NORTH

0 600′ 1200′

1" = 1200′-0"

Map Notes and Sources

Note: Features illustrated on this plan are conjectural base on comparisons of existing conditions and historic documents Including: 1862 Map by Warren, 1878 Warren Survey Notes, Brawner Farm CLR, Manassas CLR, Northwest Quadrant, Manassas Fences, Fields and Forests CLR, 1861 Map by McDowell, 1862 Map by Atkinson, 1862 Map by Sneden, 1863 Map by Hotchkiss. Vegetation shown based on 1862 Warren Map and Brawner Farm CLR. Fences shown based on 1878 Warren Survey Notes and Brawner Farm CLR.

QUINN EVANS ARCHITECTS

NATIONAL PARK SERVICE Department of the Interior

NPS 379
MANA 114363

LA-1

Land Use

Land Use within the project area is closely associated with property ownership and vegetation. As the original Carter property was subdivided among various family members, parcels were designed to contain access to a water source and a balance between wooded areas and land appropriate for pasture and cultivation. This balance allowed small sites to thrive by establishing diverse operations. It also created a varied patchwork of land use upon the landscape.

Land use occurring before the First and Second Battles of Manassas contributed to the decisions to use the area for military operations. The fords at Sudley provided suitable crossings for the Union forces approaching Manassas in 1861 when the steep banks of the Bull Run were occupied by Confederate troops in other areas. The abandoned Unfinished Railroad corridor provided a clear and sturdy alignment for movement before and after the battle. A year later, the Confederate leadership recognized that the conditions present along the corridor provided an excellent defensive position. The use of the landscape contributed to these conditions. The fact that the rail-bed was abandoned meant that it was essentially off the radar and mostly forgotten by the Union commanders in the area. The location chosen by Jackson for hiding his forces to await reinforcement also took advantage of the mixture of woodlands and open fields. The wooded areas provided excellent cover for his troops and the surrounding openings would expose approaching opponents. This matrix of openings and enclosed areas was the direct result of the farming occurring in the area.

Following the Civil War, the impacts of the war, continued subdivision of property, declining agricultural economy, and, ironically, the establishment of efforts to preserve the civil war battle sites, led to changes in land use. This is most apparent in the area around the Deep Cut, where fields were abandoned and successional woodland vegetation encroached. During this time, the National Park Service gradually acquired land associated with the battles. Today, the National Park Service owns the majority of the land within the project area and manages it to preserve historic resources, conserve natural resources, and provide interpretive and recreational opportunities for visitors.

Summary of Integrity related to Land Use

Land Use within the project area is compatible with the preservation of historic resources. The activities occurring on the landscape today are related to preservation, interpretation and recreation, compared to the military and agricultural uses predominant during the Civil War period. Notable exceptions include the use of the Groveton/Deep Cut Monument and the Cedar Post Memorial, both of which were established as memorials during the 1860s. These two sites retain integrity of location, design, association, setting, and feeling related to land use. The Groveton/ Deep Cut Monument also retains integrity of materials and workmanship. Use of grasslands for hay leases are compatible with the historic land use.

Topography

The topography of the project area is historically significant for its association with transportation and commerce in the region during the 1850s and the role it played in the American Civil War during the 1860s.

As agricultural productivity in the region increased, the demand for improved access to markets grew. The Manassas Gap Railroad Company determined to develop a new line to connect the area to regional markets in Gainesville and Alexandria.

As the company surveyed the landscape to locate the best route for the new alignment, the existing topography was a major consideration. By taking advantage of the gently rolling landscape, the rail-bed was constructed by making a series of cuts and fills to create a gradual grade. The company purchased an 80-foot wide corridor from land owners and began construction in 1854. In areas of fill, whenever possible, stones were gathered within the 80-foot corridor to build up the grade. Where necessary materials were not available on site, stone was excavated from nearby small quarries, like the one at the western end of the project area.[2] Although the railroad line was never completed, the efforts made to construct the railroad grade represent a significant event related to the development of transportation in the region.

The significance of the railroad alignment increased during the Civil War. The rail-bed served as a circulation corridor for the advancement of Union Troops to and from the battlefield during the First Battle of Manassas. During the Second Battle of Manassas the Confederate Army utilized the embankment as a fortification, giving them a major advantage over the Union Troops, who had insufficient shelter during their advances on the Confederate line. The topography had a major impact on the outcome of the battle.

Summary of Integrity related to Topography

The overall project area retains integrity of location, design, association, setting, materials, workmanship, and feeling related to topography. Contributing topographic features include the Unfinished Railroad rail-bed, grading associated with three proposed trestle sites, the Quarry site, and topography associated with specific battle activities (for instance, the slope on the east side of the Deep Cut). Since the 1860s the railroad grade has maintained its integrity and is intact through the park. Disturbances to topography are modest including; the re-grading of public roads bisecting the grade (VA Route 234 - Sudley Mill Road and Featherbed Lane / Groveton-Sudley Road); construction of interpretive trails on the grade and side-slopes of the berms; use of bridle trails that cross the rail-bed; and gradual erosion caused by weather.

Vegetation

Historic and current activities have influenced vegetation within the project area. Prior to 1853 vegetation within the project area included a mix of dense oak forest, cultivated fields, and pasture. Construction of the railroad corridor by the Manassas Gap Railroad Company included extensive grading and clearing of vegetation within an 80-foot wide railroad corridor. The company went bankrupt soon after grading was completed and the corridor was abandoned. In areas where farmland surrounded the grade, some adjacent landowners built fences to enclose livestock and mark property lines. Although abandoned, many of the areas disturbed for the railroad grade, particularly those densely compacted and filled, resisted the growth of woody vegetation. In areas of less disturbance or better soil conditions successional species encroached into locations not managed by local farmers.

Drawing LA-2 illustrates conceptual vegetation related to the 1861-1869 period, the 1920-2006 period and current vegetation. The diagram is a useful reference when considering the following narrative.

In 1861 and 1862 the section of the Unfinished Railroad corridor to the southwest of Deep Cut was mostly open pasture (see drawing LA-2). From Deep Cut a forested section extended to the northeast, yielding to open fields near and south of Sudley. The woods combined with the protective embankments of the railroad grade near Deep Cut made this location ideal for Jackson to await reinforcements in 1862. During Second Manassas, advancing Union troops sought cover in forested areas whenever possible. When forced to traverse open fields with little cover, success was evasive and casualties were extensive. This was especially apparent at Deep Cut, where Union troops were decimated as they approached the rail grade.

In addition to utilizing vegetation strategically during battle, other military activities also had a dramatic effect on vegetation. Sections of woods were cut to reduce enemy threats. Crops and fences were trampled and destroyed by troop movements and artillery. Following the battle, these grounds were scattered with mortars, shells, shallow graves, and the corpses of horses. Cultivation could not be reinitiated without extensive investment, and most farm buildings and equipment had been completely destroyed during the battle. In the immediate aftermath of the Civil War, there was little hope of re-establishing the thriving agricultural community that existed prior to 1861.

By the 1930s a dense stand of pines and hardwoods encroached upon the rail grade, especially at Deep Cut (see drawing LA-2). An aerial photograph taken in 1937 shows woodland enclosing a small opening at the Deep Cut. By 1972, no opening in the woods is discernible. Between 2006 and 2008 the National Park Service cleared a large amount of woodland in the areas of the Deep Cut and Brawner Farm in order to re-establish views and the open character of the landscape present during the Civil War (see Figures 3-2 and 3-3 and drawing LA-2).

In other locations, eastern red cedar (Juniperus virginiana) and Virginia pine (Pinus virginiana) encroached upon the embankment. Although the roots from these trees impact the structural integrity of the railroad grade, they also provide visual references helping visitors to be able to identify locations from afar. In the location of the Quarry, vegetation has changed substantially since the 1860s. The formerly open site is in a low-lying area that accumulates water and is not desirable for cultivation. As a result,

vegetation has established including wetland species. The site is occupied by a stand of sycamore (Platanus occidentalis), tulip poplar (Liriodendron tulipifera), walnut (Juglans nigra), and ash (Fraxinus sp.).

Summary of Integrity related to Vegetation

Considered at a conceptual level that allows comparison of grasslands to wooded areas, integrity of vegetation within the project area varies greatly between areas to the east and west of Featherbed Lane.

To the east of Featherbed Lane, overall integrity related to vegetation is low. The majority of the project area east of Featherbed Lane was open fields during the 1853-1869 period. Today, the majority of the same area is wooded (see drawing LA-2). The exception is a portion of the Unfinished Railroad corridor immediately east of Featherbed Lane. This area was wooded during the historic period and is wooded today. West of Featherbed Lane, efforts by the NPS to restore open fields have been instrumental in raising the level of integrity related to vegetation.

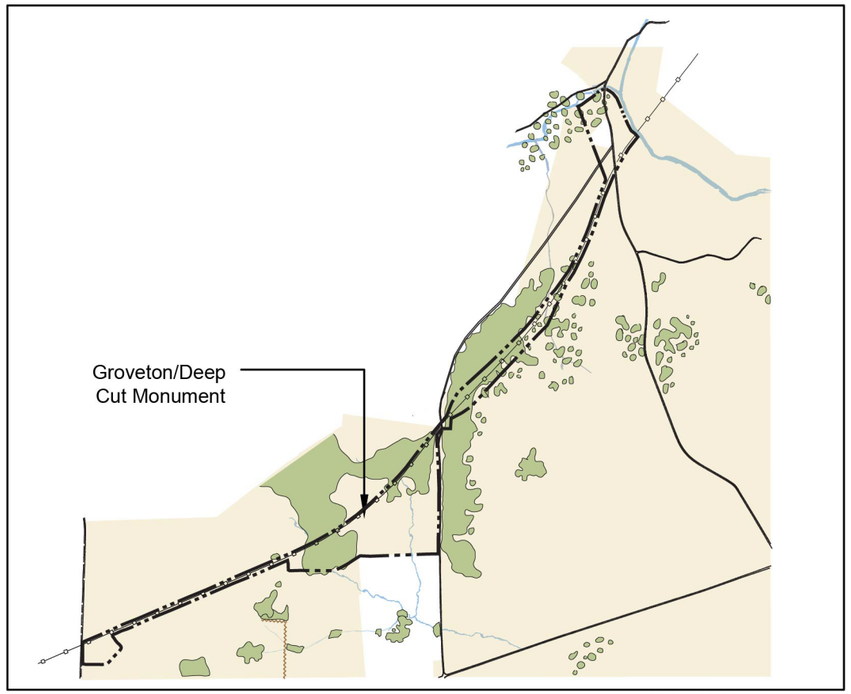


Figure 3- 2: 2006 Aerial photograph of area between Pageland Road and Featherbed Lane. The Unfinished Railroad is indicated with a red line. Dense forest vegetation covers the majority of the project area (MANA)

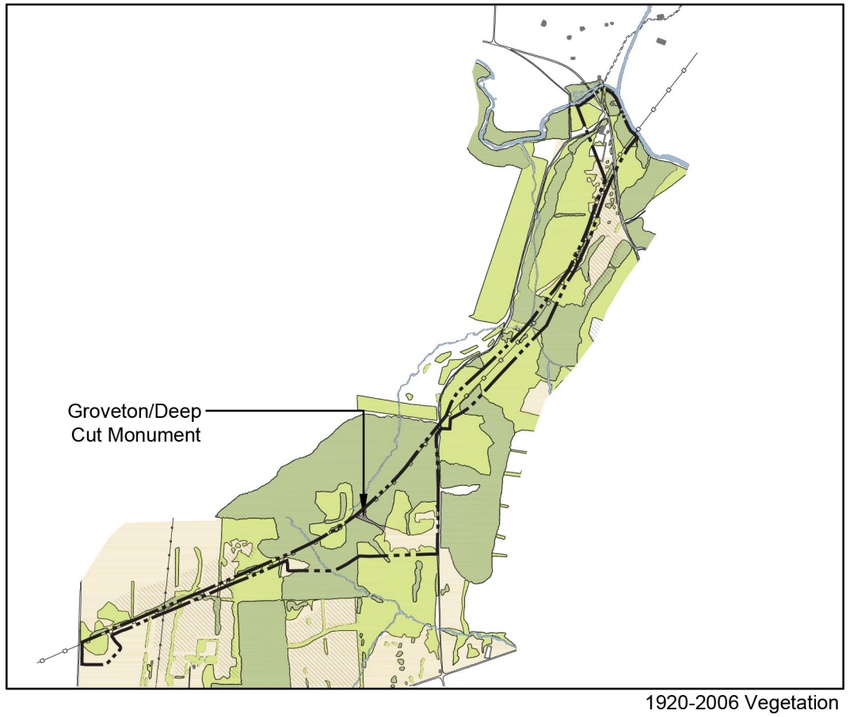


Figure 3- 3: 2008 Aerial photograph of area between Pageland Road and Featherbed Lane. The Unfinished Railroad is indicated with a red line. Extensive clearing of woodland vegetation has occurred in the area of Deep Cut and north of Brawner Farm (MANA)

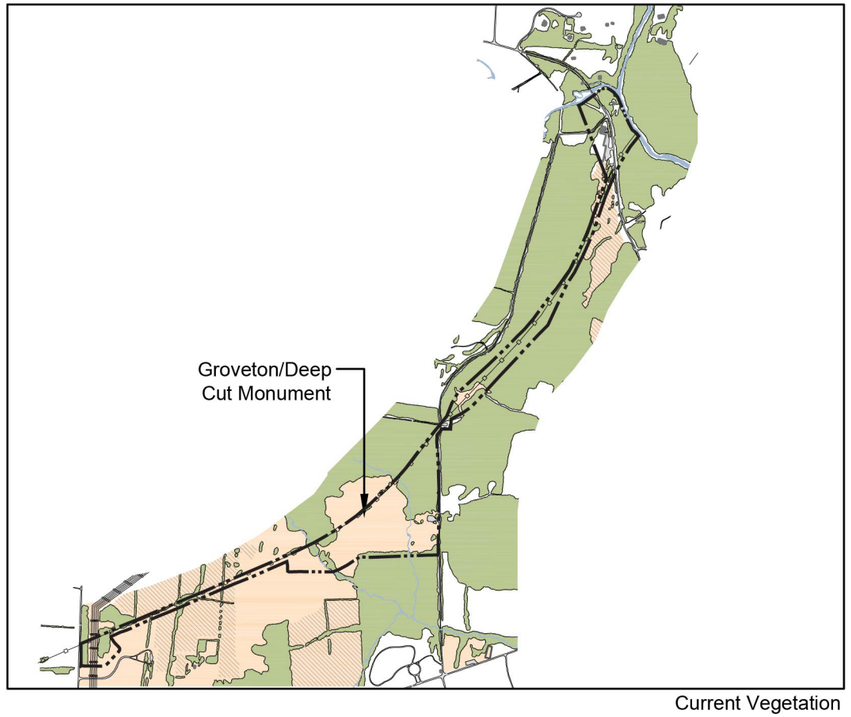
Next page: LA-2: Vegetation Analysis



1861-1869 Vegetation



1920-2006 Vegetation



Current Vegetation

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Landscape Analysis Vegetation

Legend

- Project Boundary
- Unfinished Railroad
- Roads
- Buildings
- Forest, Fencerow Vegetation and Individual Trees
- Successional Forest Growth between 1937 and 2006
- Grassland/Open Field
- Trails
- Fence
- Utility Line

Map Notes and Sources

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013.
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996.
3. Williams, Field Investigations, 2013.
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service.
7. 1862 Map by Warren
8. 1878 Warren Survey Notes

QUINN EVANS ARCHITECTS

NPS | 379
MANA | 114363

LA-2

Circulation

Primary and secondary (public) roads within the project area have remained remarkably consistent throughout the documented periods. Drawing sheet LA-3, Circulation Analysis, illustrates roads and trails present during four time periods including 1724-1853, 1854-1869, 1920-2006, and current conditions. Primary and secondary roads within and near the project area have remained virtually unchanged. The exception is within the Sudley area. Early maps of this location illustrate two fords crossing Catharpin Run and east-west connections between Sudley Road and Featherbed Lane (formerly Groveton/Sudley Road) on both the north and south sides of the creek.[3] The 1878 Warren map is the first indicating that the western ford has been abandoned however, it also indicates the Sudley Church is located to the north of Groveton/Sudley Road (today Featherbed Lane) which is not consistent the majority of sources. A 1901 map of Prince William County shows the double crossing indicated in earlier records as does the 1904 Burr Maneuver map. The later however, shows the connection between the two north-south roads on the north side of the creek as a dashed line, indicating it has been abandoned. This is the most recently dated plan reviewed that includes two road crossings of Catharpin Creek at Sudley. By 1930, the "Sudley Springs" ford (the eastern-most ford, closest to Bull Run) was abandoned, and Sudley Road no longer extended to the north along Bull Run.[4] This alignment was not sufficient for increased traffic and in the 1950s a bridge was added and a portion of the road was realigned, establishing the current configuration.

Although farm roads and driveways in the surrounding area have experienced moderate change, this has had only a minute affect on the project area. The 1863 Hotchkiss map illustrates two farm roads that extend to the northwest from Groveton/Sudley Road (now Featherbed Lane) and cross the Unfinished Railroad corridor. One of these appears again on the 1878 Warren map and the 1904 Burr map of the maneuver grounds. A trace of a road in this location is still apparent.

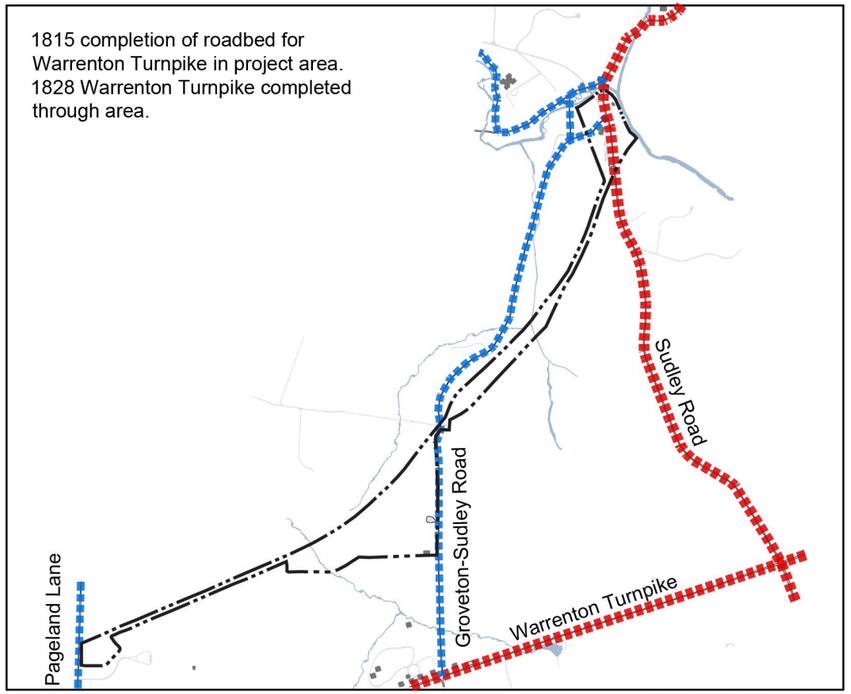
The most important change to a circulation route within the project area is the addition of the Unfinished Railroad alignment in 1854. Although the embankment was never used for train traffic, it played a critical role during the Civil War, as a defensive feature and as a circulation route. Today, the alignment hosts a series of hiking trails that have been added by the National Park Service to provide recreational and interpretive opportunities within the park. These trails are not historically significant, but they are compatible with the park's purpose of protecting and interpreting the historic resources.

Equestrian trails are also present within the project area. The trails are not historically significant and can cause erosion to the rail-bed in locations where they cross the resource. Bridle trails cross the Unfinished Railroad embankment in two locations and intersect with hiking trails in two locations within the project area.

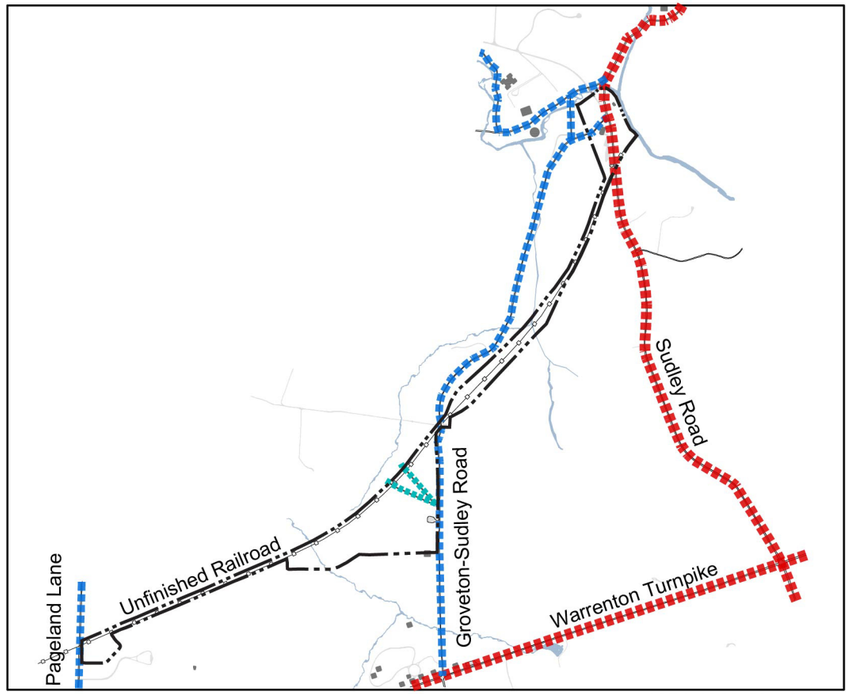
Summary of Integrity related to Circulation

The overall project area retains integrity of location, design, association, and setting related to circulation. Contributing features include historic road traces of Sudley Road and Groveton/Sudley Road, the historic trace of a farm road, the trace of a wagon road at the Quarry, and the alignments of Sudley Road and Featherbed Lane, with the exception of the section of Sudley Road that extends from Featherbed Lane to the north. Along Sudley and Featherbed, adjacent to the Unfinished Railroad alignment, small parking lots have been constructed. These changes and alterations to the right-of-way and pavement of the roads have reduced integrity of materials, workmanship, and feeling.

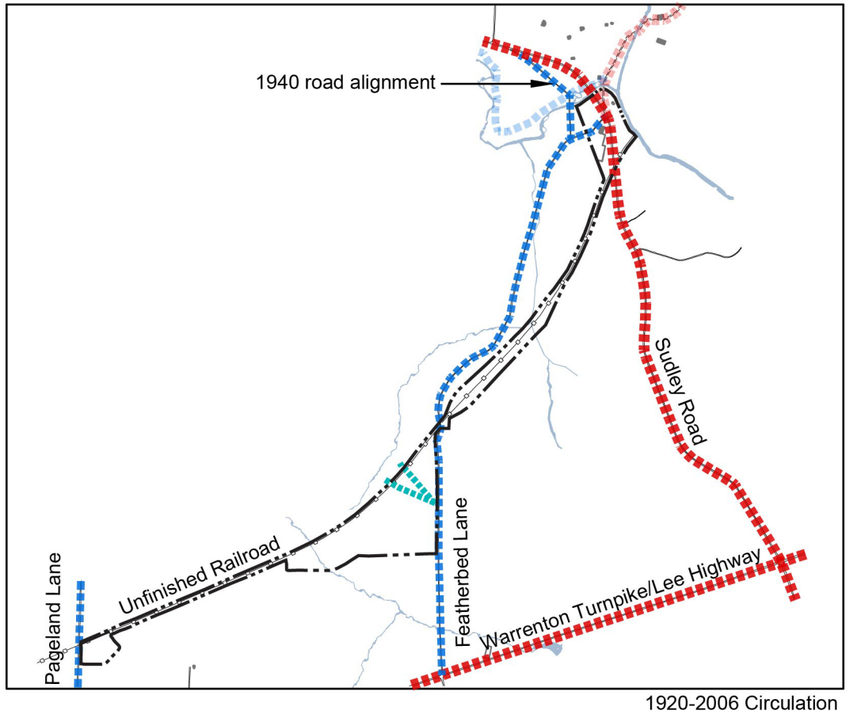
Next page: LA-3: Circulation Analysis



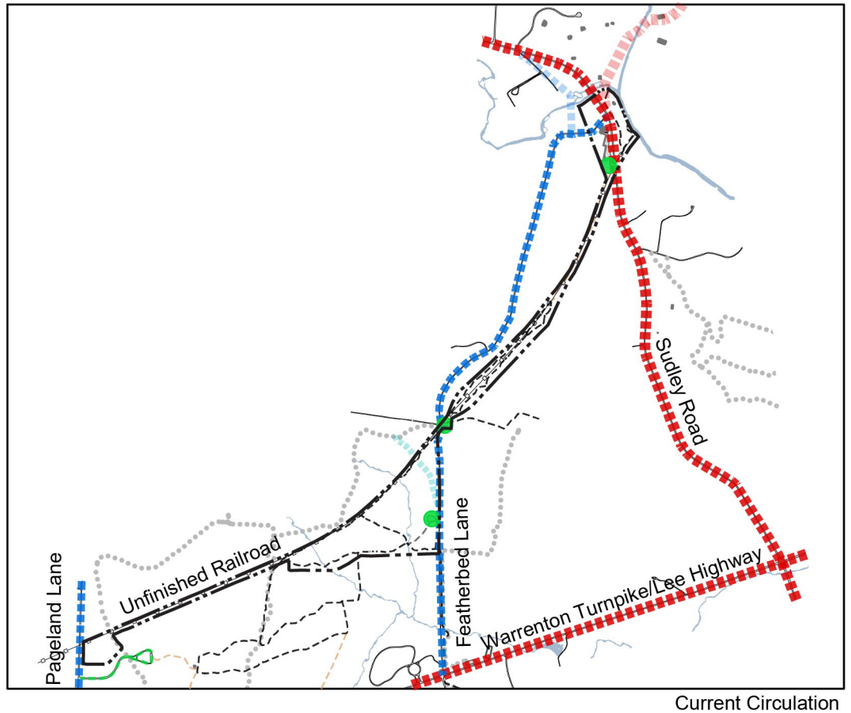
1724-1853 Circulation



1854-1869 Circulation



1920-2006 Circulation



Current Circulation

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Analysis Diagram Circulation

Legend

- Project Boundary
- Unfinished Railroad
- Roads
- Buildings
- Primary Road - Public Road
- Abandoned Primary Road - Public Road
- Secondary Road - Public Road
- Abandoned Secondary Road
- Farm Road / Private Road
- Abandoned Farm Road
- Interpretive Trail
- Connector Trail
- Bridle Trail
- NPS Parking Lot or Road

Map Notes and Sources

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013.
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996.
3. Williams, Field Investigations, 2013.
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service.
7. 1862 Map by Warren
8. 1878 Warren Survey Notes

QUINN EVANS ARCHITECTS

NPS | 379
MANA | 114363

LA-3

Buildings and Structures

The project area includes one historically significant building, the Thornberry House, and two historically significant structures, the Unfinished Railroad embankment and the Groveton/Deep Cut Monument. Locations are identified on drawing sheets EC-1, EC-2, EC-3 and EC-4.

Unfinished Railroad

The 2.7 mile segment of the Manassas Gap Independent Line Unfinished Railroad corridor that lies within the boundary of Manassas National Battlefield Park was created by extensive grading within the 80-foot wide corridor established in 1854. Today, the cuts and fills established by the railroad company are visible reminders of the efforts to improve commercial traffic in the region and the strategic use of the topographic features during the Civil War. Although a few locations have been disturbed (described in Chapter 2) and the fills and cuts have been diminished in scale due to gradual erosion due to natural forces, the Unfinished Railroad is highly intact and retains integrity of location, design, materials and workmanship. The aspects of setting, feeling, and association have been diminished somewhat due to the loss of historic land use and occupation.



Figure 3- 4: The Unfinished Railroad at Deep Cut is a powerful reminder of the role the rail-bed played during the Second Battle of Manassas, despite the fact that it is currently less distinct than it was historically, 2012. (QEA)

Groveton/Deep Cut Monument

The Groveton/Deep Cut Monument was erected by Union troops at the end of the Civil War and is significant as one of the first commemorative features related to the war. Stone for the monument was reportedly salvaged from a culvert along the Unfinished Railroad. The monument was originally decorated with shots and shells found in the surrounding area. A tin box containing relics was placed within the cornerstone of the structure. A cedar fence enclosed the area, including four cedar trees planted near each corner of the monument.[5] Figures 3-5 and 3-6 illustrate the monument in 1865 and 2012. The monument retains integrity related to location, setting, association, feeling, materials, workmanship and design. The cedar trees and decorations are missing, however these changes do not dramatically affect the integrity of the structure. The cedar fence has been replaced with in-kind materials.



Figure 3- 5: Groveton / Deep Cut Monument, 1865.



Figure 3- 6: Groveton / Deep Cut Monument, facing south, 2012 (QEA)

Thornberry House / Sudley Post Office

The building is an excellent example of vernacular architecture representative of rural nineteenth-century dwellings associated with occupants of lower to middle economic status. These types of buildings are relatively rare as they have mostly been removed or altered extensively.

Constructed in the mid-1840s by John Thornberry, the home was occupied by his family until 1871. The property included wheelwright shop on the property and lived in the house with his wife, Martha, and their children. The landscape included gardens and livestock during their occupancy. During the First Battle of Manassas Federal troops used their home as a field hospital and destroyed all of their household possessions and shop.[6]

During the Civil War, several structures occupied the property and were utilized as shelter for Union wounded when the makeshift hospital at Sudley Church was full. The family was heavily impacted by the War and never fully recovered.

The Matthews family occupied the property from 1871 through 1903. The Matthews family used the structure for a residence, post office and store. Elizabeth Matthews operated the Sudley community post office out of the house during this period. Her husband, Carson Matthews ran a family farm on nearby property. From the 1910s through the late 1920s the Davis family lived in the house. Joe Davis was a day-laborer in the community and members of the Davis family continue to live in the Sudley community today. The house was purchased by the Woodward family of Alexandria, Virginia, in the 1930s and used as a vacation home. The NPS rehabilitated the building and it is open for public access during special events.[7]

The building contributes to the significance of the Unfinished Railroad project area and retains integrity of location, design, materials and workmanship. Changes to the vegetation, views, spatial organization and land use have impacted the qualities of setting, feeling and association.

Small Scale Features and Archeological Sites

Small scale features provide detail and diversity within the landscape. They serve both functional and aesthetic roles. Within the project area, there are many small scale features that are related to current use and do not contribute to the historical integrity of the landscape. Archeological sites contain surface and subsurface remnants related to historic or prehistoric use. Tables 2-1 through 2-4 present lists of contributing and non-contributing features and archeological sites within the project area.

Table 2-1: Contributing and Non-Contributing Features and Archeological Sites in the Unfinished Railroad Landscape Character Area

Landscape Feature	*Location/Description*	*Contributing or Non-Contributing*
Interpretive waysides	Signs with interpretive information located along trails. Painted metal post and frame with weatherproof interpretive panels.	Non-contributing
Information/ wayfinding signs	Variety of wood and plastic signs providing information to visitors regarding trail routes, allowed use, and conditions.	Non-contributing
Trails	Trail surfaces include leaf cover, bare earth, rocky surfaces, grass, wood chips and rainbow turf.	Non-contributing
Boardwalks	Boardwalks are wood or recycled timbers constructed in sections and anchored to the ground. Locations of existing boardwalks are illustrated on drawings EC-2 through EC-5 at the end of Chapter 2.	Non-contributing
Trail bridges	Wood trail bridges with handrails provide access along the trail route. Locations of existing trail bridges are illustrated on drawings EC-2 through EC-5 at the end of Chapter 2.	Non-contributing
Trail stairs	Wood stairs constructed into the sideslope or above the grade. Locations of existing trail stairs are illustrated on drawings EC-2 through EC-5 at the end of Chapter 2.	Non-contributing
Benches	Wood benches located along the trail as indicated in drawings EC-2 through EC-5 at the end of Chapter 2.	Non-contributing
Rock pile	Exposed rock at SN 083-084 associated with Second Battle of Manassas.	Contributing
Disinterred graves site	Northeast end of rail corridor, east of corridor between SN 003 and 004. Indentations reported to be disinterred soldiers' graves.	Contributing
Amos Benson House Ruin	Archeological site associated with Benson family occupation (dates) is marked by a pile of rubble stone and brick. A nearby wayside provides interpretive information. Trees are growing within the rubble pile.	Contributing

Table 2-2: Contributing and Non-Contributing Features and Archeological Sites in the Sudley Landscape Character Area

See drawing EC-2 at the end of Chapter 2 for locations of features.

Landscape Feature	*Location/Description*	*Contributing or Non-Contributing*
Historic road trace	Archeological feature is remnant of historic Sudley Springs Road. Extends from Sudley Road to Sudley Springs Ford.	Contributing
Witness tree	Near Thornberry House, white oak *(Quercus alba)*	Contributing
Trails	Trail surfaces include leaf cover, bare earth, rocky surfaces, grass, wood chips and rainbow turf.	Non-contributing
Interpretive waysides	Signs with interpretive information located along trails. Painted metal post and frame with weatherproof interpretive panels.	Non-contributing
Information/ wayfinding signs	Variety of wood and plastic signs providing information to visitors regarding trail routes, allowed use, and conditions.	Non-contributing
Worm fence	Wood worm-style fence on east side of Sudley Road across from Featherbed Lane.	Non-contributing
Metal guard rails	Along edge of Sudley Road	Non-contributing
Utility poles and overhead lines	On right/east side of Sudley Road from Unfinished Railroad to north of Featherbed Lane. Lines cross to west side of road north of Featherbed Lane and extend at a northwest angle.	Non-contributing
Trail bridges	Wood trail bridges/raised boardwalks without handrails provide access along the trail route.	Non-contributing
NPS Sign	"Manassas National Battlefield Park entrance sign, located on the east side of Sudley Road across from Sudley Church.	Non-contributing
Boardwalk	Recycled timber boardwalk at trail near Sudley Springs Ford.	Non-contributing
Thornberry House / Sudley Post Office Site	Archeological site includes privy site, well, and terraced landscape associated with the property.	Contributing

Table 2-3: Contributing and Non-Contributing Features and Archeological Sites in the Groveton/Deep Cut Landscape Character Area

See drawing EC-4 at the end of Chapter 2 for locations of features.

Landscape Feature	*Location/Description*	*Contributing or Non-Contributing*
Historic road trace	Abandoned farm road north of Deep Cut parking lot extends to the Unfinished Railroad. Provided transportation route for farmer prior to the Civil War.	Contributing
Albee Monument / Cedar pole marker	Replica of simple wood sign on cedar post indicating the position of Berdan's Sharpshooters during the Second Battle of Manassas. The original marker was placed by a Union veteran in 1865.	Contributing
Worm fences	On west side of Featherbed Lane and north side of Civil War Trust property.	Contributing
Interpretive waysides	Signs with interpretive information located along trails. Painted metal post and frame with weatherproof interpretive panels.	Non-contributing
Information/ wayfinding signs	Variety of wood and plastic signs providing information to visitors regarding trail routes, allowed use, and conditions.	Non-contributing
Boardwalks	Wood boardwalk on trail near Civil War Trust property.	Non-contributing
Groveton / Deep Cut Monument	Stone monument erected by Union troops in 1865.	Contributing
Stone rubble (possible structure)	Small stone pile is possible remnant of a structure. Located southwest of Groveton/Deep Cut Monument.	Contributing
Stone spring box	Remnant stone feature located on slope above and east of Dogan Branch.	Contributing
Trails	Trail surfaces include leaf cover, bare earth, rocky surfaces, grass, wood chips and rainbow turf.	Non-Contributing

Table 2-4: Contributing Archeological Site in the Quarry Landscape Character Area

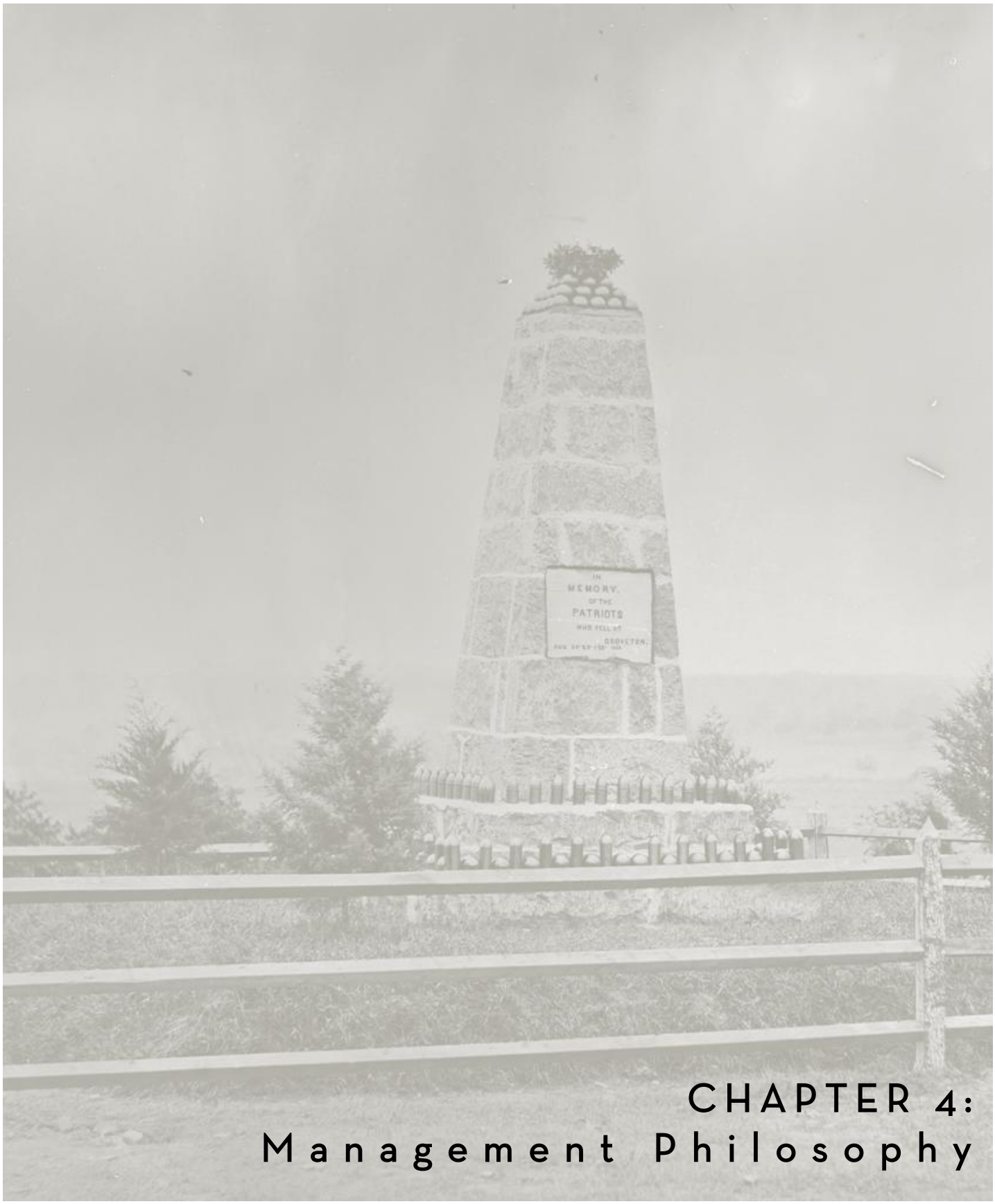
See drawing EC-5 at the end of Chapter 2 for locations of features.

Landscape Feature	*Location/Description*	*Contributing or Non-Contributing*
Quarry site	Archeological site 44PW299 includes a quarry, two platforms, and wagon tracks associated with route used to transport rock to the Unfinished Railroad bed.	Contributing

Endnotes

[1] Trieschmann, Laura Virginia, Manassas Battlefield Historic District (Amended and Boundary Expansion), National Register of Historic Places Registration Form, 2004.
[2] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," LI, 4-110-111; cites Prince William County DB 23.
[3] The maps are illustrated and described in more detail in Chapter 1: Site History. Although the maps show the arrangement described, they differ quite a bit when examined closely regarding the alignments of the roads and the creek. Alignments illustrated on the Historic Period and Landscape Analysis drawings are conjectural, based on the documentation noted and comparison to current conditions.
[4] 1930 Historical Map of Prince William County, NPS property maps dated 1933-1936 and 1936-1940, and USGS map prepared in 1933 and revised in 1943 show only one crossing.
[5] Joseph, "Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant," 3-18.
[6] Reeves, "Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office, 44PW294," 7.1.
[7] Reeves, "Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office 44PW294."

This page intentionally left blank.



CHAPTER 4:
Management Philosophy

Chapter 4:
Management Philosophy

Within units of the National Park Service, the purpose of a landscape treatment plan is to provide guidelines for preserving and enhancing historic landscape characteristics and features while accommodating current park use.[1] A treatment plan describes the desired future conditions of the landscape; it does not provide construction-level details necessary for implementation. The treatment recommendations herein are based on guidance provided in several documents. The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes and National Park Service Director's Orders 28: Cultural Resources Management Guidelines both provide guidance for preparation of cultural landscape reports.[2] In addition, several planning documents address the landscapes within the project area.

Landscape Management Zones

Note: Locations of landscape management zones are illustrated in drawing LM-1.

Unfinished Railroad Zone

Description: This zone includes the Unfinished Railroad alignment, an 80-foot wide corridor through the project area. It also includes trails that are adjacent to the alignment, but extend beyond the 80-foot wide corridor. The Sudley, Deep Cut, and Quarry Zones are adjacent to this management zone. Within the Unfinished Railroad Zone, a treatment area focused on the resource has been defined as the **Unfinished Railroad Treatment Area (URTA).** This includes the rail-bed, associated cut and fill slopes, and a buffer extending beyond the slopes. Since the extents of the cuts and fills vary throughout the corridor, the width of the treatment area is not consistent but can be determined using the above description.[3] A more detailed description of the zone and treatment recommendations are provided in Chapter 6.

Sudley Zone

Description: The Sudley Area Zone is located at the northeast end of the project area. This area is bounded on the south by the Unfinished Railroad Zone, on the northeast and north by Bull Run and Catharpin Run, and on the west by a line that roughly parallels Sudley Road and is offset from the road approximately three-hundred feet. It includes the Thornberry House/Sudley Post Office, the remnants of the historic road route and Sudley Springs Ford, portions of the Sudley Loop Trail and the Sudley parking lot.

Groveton / Deep Cut Monument Zone

Description: The Groveton/Deep Cut Monument Zone is adjacent to the south boundary of the Unfinished Railroad Zone between stations 067 and 105. This zone includes a roughly triangular area bounded by Featherbed Lane on the east, land owned by the Civil War Trust on the southeast, and the Deep Cut Loop Trail on the southwest. It includes the Groveton / Deep Cut Monument, Deep Cut Parking Lot and interpretive wayside, Cedar Pole Marker, Deep Cut Loop Trail, site of disinterred Civil War graves, remnants of a stone spring box, stone rubble remains of a structure, and portions of Dogans Branch and School House Branch.

Quarry Zone

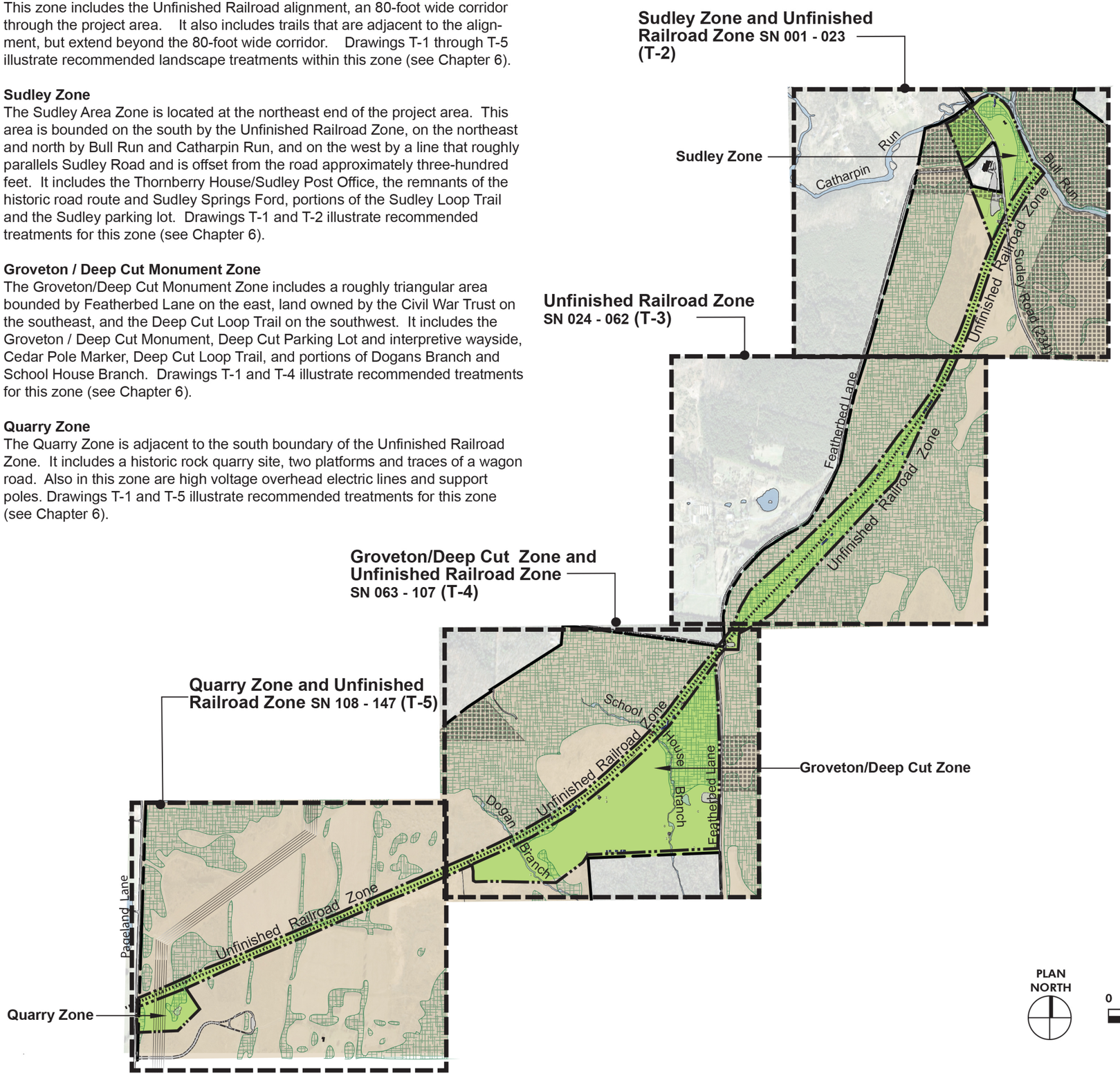
Description: The Quarry Zone is adjacent to the southwest boundary of the Unfinished Railroad Zone. It includes a rock quarry, two platforms and traces of a wagon road. Also in this zone are high voltage overhead electric lines and support poles.

Unfinished Railroad Zone
This zone includes the Unfinished Railroad alignment, an 80-foot wide corridor through the project area. It also includes trails that are adjacent to the alignment, but extend beyond the 80-foot wide corridor. Drawings T-1 through T-5 illustrate recommended landscape treatments within this zone (see Chapter 6).

Sudley Zone
The Sudley Area Zone is located at the northeast end of the project area. This area is bounded on the south by the Unfinished Railroad Zone, on the northeast and north by Bull Run and Catharpin Run, and on the west by a line that roughly parallels Sudley Road and is offset from the road approximately three-hundred feet. It includes the Thornberry House/Sudley Post Office, the remnants of the historic road route and Sudley Springs Ford, portions of the Sudley Loop Trail and the Sudley parking lot. Drawings T-1 and T-2 illustrate recommended treatments for this zone (see Chapter 6).

Groveton / Deep Cut Monument Zone
The Groveton/Deep Cut Monument Zone includes a roughly triangular area bounded by Featherbed Lane on the east, land owned by the Civil War Trust on the southeast, and the Deep Cut Loop Trail on the southwest. It includes the Groveton / Deep Cut Monument, Deep Cut Parking Lot and interpretive wayside, Cedar Pole Marker, Deep Cut Loop Trail, and portions of Dogans Branch and School House Branch. Drawings T-1 and T-4 illustrate recommended treatments for this zone (see Chapter 6).

Quarry Zone
The Quarry Zone is adjacent to the south boundary of the Unfinished Railroad Zone. It includes a historic rock quarry site, two platforms and traces of a wagon road. Also in this zone are high voltage overhead electric lines and support poles. Drawings T-1 and T-5 illustrate recommended treatments for this zone (see Chapter 6).



MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Landscape Management Zones

Legend

- Park Boundary
- Project Boundary
- Unfinished Railroad
- Roads
- Utility Lines
- Existing Buildings
- Forest, Fencerow Vegetation, and Individual Trees
- Park Area
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned or Non-NPS Public Land Within Park Boundary
- Enlargement Sheets (T2 - T5)

Map Notes and Sources

Note: Detailed information for the Sudley, Deep Cut, and Quarry areas is provided on Sheets EC-2, EC-4 and EC-5.

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013.
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996.
3. Williams, Field Investigations 12/2012.
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map.
5. Google Earth Aerial 10/12/2012.
6. Digital base map data provided by National Capital Region, National Park Service.

PLAN NORTH

0 600′ 1200′

1" = 1200′-0"

QUINN EVANS ARCHITECTS

NPS 379
MANA 114363

LM-1

General Management Plan Guidance

The basis for all management decisions regarding resources within the park is provided by the park's enabling legislation and General Management Plan (GMP). Manassas National Battlefield Park was designated on 10 May 1940 because of its "historical importance as the battlefield site of the First and Second battles of Manassas." The property within the park boundaries has been acquired to "preserve the most historically important lands relating to the two battles of Manassas." The current GMP was completed in 2008. The NPS selected alternative stresses a comprehensive understanding of each of the two battles associated with the park and envisions a future condition at the park that focuses on interpreting the two battles of Manassas as distinct military events.[4] The GMP recommendations related to the Second Battle of Manassas include several that affect the Unfinished Railroad project area. These include broad-scale influences as well as some specific changes. The overall goal of the GMP is to present a battlefield landscape to visitors that resembles its wartime appearance by rehabilitating historic vegetation patterns, preserving and re-establishing key interpretive views.[5]

Manassas National Battlefield Park Bypass

At a broad-scale, a proposed plan for the construction of the Manassas National Battlefield Park Bypass will greatly decrease heavy commuter and commercial truck traffic from the portions of U.S. Route 29 and VA Route 234 that run through the park. Controlled access points will further limit through traffic in the park.[6] This will affect the way that visitors experience the Unfinished Railroad project area. Vehicular and pedestrian safety will be improved at road crossings, especially in the Sudley area where the current parking lot is difficult to access for both vehicles and pedestrians.

Brawner Farm Visitor Contact Station

The Brawner Farm Interpretive Center opened at the beginning of the summer in 2010. It provides an increased emphasis on the Second Battle and a more comprehensive understanding of the events and overall landscape associated with it. Although the Brawner Farm is not within the project area, it is adjacent to the Unfinished Railroad and Groveton/Deep Cut character areas. Interpretive tours of the Second Battle begin at the Brawner Farm and extend into the project area, increasing the importance of connections between the project area and the Brawner Farm.

Second Manassas Automobile/Bicycle Tour

The GMP indicates that a major emphasis of the interpretation program for Second Manassas will be the Automobile/Bicycle tour route. The Second Manassas automobile tour has existed for many years. Beginning at the Brawner Farm, the route follows the flow of the battle with stops at the Unfinished Railroad, Deep Cut, Groveton, New York Monuments, Chinn Ridge, and Stone Bridge.[7] Each tour stop includes a small parking area, interpretive display, and a short loop trail to encourage visitors to leave their cars or bicycles and experience the resources on foot.

The existing route is strictly an automobile tour, as bicycling is not encouraged under existing conditions in the park. The park will not be in a position to recommend this route for bicycling until a bypass has been developed to divert the heavy truck and through traffic around the park. There is no intention to develop a separate bicycle tour using trails, as doing so would lead to numerous conflicts with hikers and equestrians on the park's narrow trails.

Second Manassas Self-Guided Hiking Trail

The GMP recommends that the Second Manassas trail be rerouted, subject to further consideration as the GMP is implemented. The GMP proposal includes reconfiguration of the Second Manassas self-guided hiking trail to provide a 5 mile loop beginning at the Brawner Farm and connecting with the Unfinished Railroad Deep Cut, Groveton, New York Monuments and Chinn Ridge. The proposal also recommends the addition of wayside exhibits and other media providing interpretive information along the route, upgrading current trails and interpretive media, and extension of the existing trail where necessary.[8] Bridle trails will continue to traverse the park and will be kept separate from hiking trails.

Landscape Appearance - Vegetation Management

The GMP directs that the function of the landscape is to represent the wartime scene and help visitors better understand the battles and modern intrusions will be minimal. "To help visitors understand the battles and to provide guidance to the management of natural resources, the landscape would be rehabilitated to the 1861-1862 conditions in several key areas through a combination of tree removal, clearing, and reforestation."[9] Also, approximately 20 acres along the north-central portion of Dogan Ridge will be reforested and 3 acres adjacent to Sudley-Manassas Road will be cleared and managed as open fields.

Since the document was completed in 2008, extensive progress has been made toward this goal. The 100-plus acre area northeast of Brawner Farm, including the Deep Cut area, was cleared of forest cover in 2007-08. The park anticipates clearing an additional four acres in 2014. This site is located adjacent to the existing cleared area and borders the land acquired by the Civil War Trust from the owners of the Stonewall Memory Gardens property.

Existing Cultural Landscape Guidance

Based on the *General Management Plan* recommendations, two cultural landscape reports have been prepared that relate to portions of the Unfinished Railroad project area. A recent Cultural Landscape Report addressing fence lines, fields, and forests within the entire park provides a solid precedent for addressing broad-scale landscape features. Also, a cultural landscape report for the Brawner Farm provides guidance for that site, which is adjacent to the Unfinished Railroad.

Relevant guidance from Fence Lines, Fields, and Forests CLR

The 2013 cultural landscape report entitled *Fence Lines, Fields, and Forests* includes general treatment recommendations for vegetation and fencing that pertains to the project area. In addition, the report provides guidance for managing specific sites within the Sudley Zone, Groveton/Deep Cut Monument Zone, and the Unfinished Railroad Zone. The recommendations that relate to the current CLR include removal of forest vegetation to restore open fields in and near the Sudley Area and directly south of the Groveton/Deep Cut Monument Area; removal of worm fence along the Groveton-Sudley Road, just west of the Unfinished Railroad parking area and replacement with single rail, pierced-post fencing; and addition of a new fence on the south side of the Unfinished Railroad just east of the Groveton/Deep Cut Monument.

Relevant guidance from Brawner Farm CLR and Environmental Assessment

A cultural landscape report focused on the Brawner Farm was completed in 2005. Recommendations in the report addressing the view between the Brawner Farm and the Deep Cut area affect portions of the Unfinished Railroad project area. The CLR was followed by the *Brawner Farm-Deep Cut Vista Enhancement Environmental Assessment (*EA). The EA determined a preferred treatment (Alternative 3) that included clearing approximately 140 acres of timber between the Brawner Farm and Deep Cut and maintaining the area in a grassland shrub mix, as illustrated in the Brawner Farm Overall Site Treatment Plan. The area has been cleared and is being maintained as open field.[10]

Preservation Maintenance Plan Guidance

The *Guide to Developing a Preservation Maintenance Plan for a Historic Landscape* provides a framework for a maintenance operations plan that focuses on preserving the character of a historic landscape.[11] "*Preservation maintenance* describes the practice of monitoring change, controlling growth, replacing in-kind, and minimizing disturbance in the landscape to ensure that features, such as vegetation, paths, walls, and other landscape furnishings, are not lost and the character of a place is not compromised."[12]

"Preservation maintenance is carried out to stabilize or protect significant or potentially significant resources before, during and after a treatment decision is made. A treatment decision is based on historical research, inventory and documentation of existing conditions, site analysis and evaluation of integrity and significance."[13]

Sustainable Military Earthworks Management

Although the Unfinished Railroad rail-bed was not originally constructed as a military earthwork, selected guidance related to preservation of historic military earthworks is relevant to the management of this resource. Two documents were especially helpful in developing the guidelines. *Cultural Landscape Currents 05: Sustainable Military Earthworks Management* and the *Guide to Sustainable Earthworks Management* were both consulted in development of recommendations.

Trail Construction and Maintenance Guidance

Trail maintenance is an important aspect of management of the project area. Several documents that provide comprehensive information for constructing and maintain trails were consulted to develop guidance for the trails in the project area. Of particular interest are several USDA Forest Service publication including: *Trail Construction and Maintenance Notebook*, updated in 12/09/2011, *Trails Management Handbook* (FSH 2309.18), *Forest Service Standard Specifications for Construction and Maintenance of Trails* (EM-7720-103), *Forest Service Health and Safety Code Handbook* (FSH 6709.11), and *Bridges and Structures* (FSM 7722 and FSM 7736). Also useful is the Student Conservation Association publication *Lightly on the Land: The SCA Trail-Building and Maintenance Manual* (1996).

Treatment Approach

The United States Secretary of the Interior provides professional standards and guidance for treatments to cultural landscapes listed in or eligible for the National Register of Historic Places.[14] Four approaches to treatment for cultural landscapes are defined, including preservation, restoration, rehabilitation, and reconstruction. Each of these approaches is described herein and discussed in relation to the project area landscape.

Preservation

Preservation includes applying measures to sustain the existing form, integrity, and materials of the contributing features of a historic property. This approach focuses upon stabilizing and protecting extant historic resources, rather than replacing missing elements. It is appropriate when a historic property is intact and does not require extensive repair or replacement and when continuing or new use does not require additions or alterations. Depiction at one particular period of time is not appropriate under this approach.[15]

Preservation has been selected as the most appropriate approach for the Quarry Zone. This location requires preservation through monitoring and minimal vegetation management focused on limiting damage to the archeological resources. The park does not desire to alter the site or to encourage visitors to explore the site independently.

Although preservation could be applied to the Unfinished Railroad, Sudley, and Groveton / Deep Cut Monument Zones, it has not been selected as the most appropriate approach for the following reasons. Within the Unfinished Railroad Zone there are select sites where restoration of small sections of fence present during the period of significance is desirable, some manipulation of vegetation is needed to better reflect historic conditions, and alterations to trails and trail support structures are necessary to improve visitor access and resource protection. In the Sudley Zone improvements to vehicular circulation, parking, and pedestrian circulation are needed to increase visitor safety. In the Groveton / Deep Cut Monument Zone the need to improve the trail from the parking lot to the Cedar Post Monument, restore conditions at the Groveton / Deep Cut Monument, and alter vegetation in selected areas eliminates the applicably of preservation as an appropriate treatment approach.

Rehabilitation

The act or process of rehabilitation allows repairs, alterations, and additions necessary to enable a compatible use for a property, as long as the portions or features which convey the historical, cultural, or architectural values are preserved. This approach is appropriate when depiction at one particular period of time is not appropriate; repair or replacement of deteriorated features is necessary; and alterations or additions are needed for a new use.[16]

Rehabilitation has been selected as the most appropriate overall management philosophy for the historic landscapes within the Unfinished Railroad, Sudley, and Groveton / Deep Cut Monument Zones. This approach has been selected because of the existence of features related to more than one period of significance, the need for alterations to improve visitor safety and enhance visitor experience, and the need to protect the historic resources. This approach will allow for the preservation, restoration and reconstruction of selected features as appropriate for these zones.

Restoration

Restoration is the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period in time. This includes reconstruction of missing features from the restoration period, and removal of features from all other periods. The approach can be considered only when the property's significance during a particular period of time outweighs the loss of extant elements from other historical periods; and when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned.[17]

Although a restoration approach may be suitably applied to select historic landscape features within the project area, it is not the most fitting overall philosophy for any of the management zones. Evidence of conditions during the period of significance is good but not extensive or detailed enough to support a restoration approach. Also, restoration of conditions to the Civil War era will require extensive maintenance efforts and result in soil erosion.

Reconstruction

Reconstruction is the act or process of using new construction to depict a non-surviving site, landscape, building, structure, or object as it appeared at a specific period of time in its historic location. The approach is appropriate only when the property's significance during a particular period of time outweighs the potential loss of extant features that characterize other historical periods. In addition, there must be substantial physical and documentary evidence for the work, and the work must be clearly identified as a contemporary re-creation.[18]

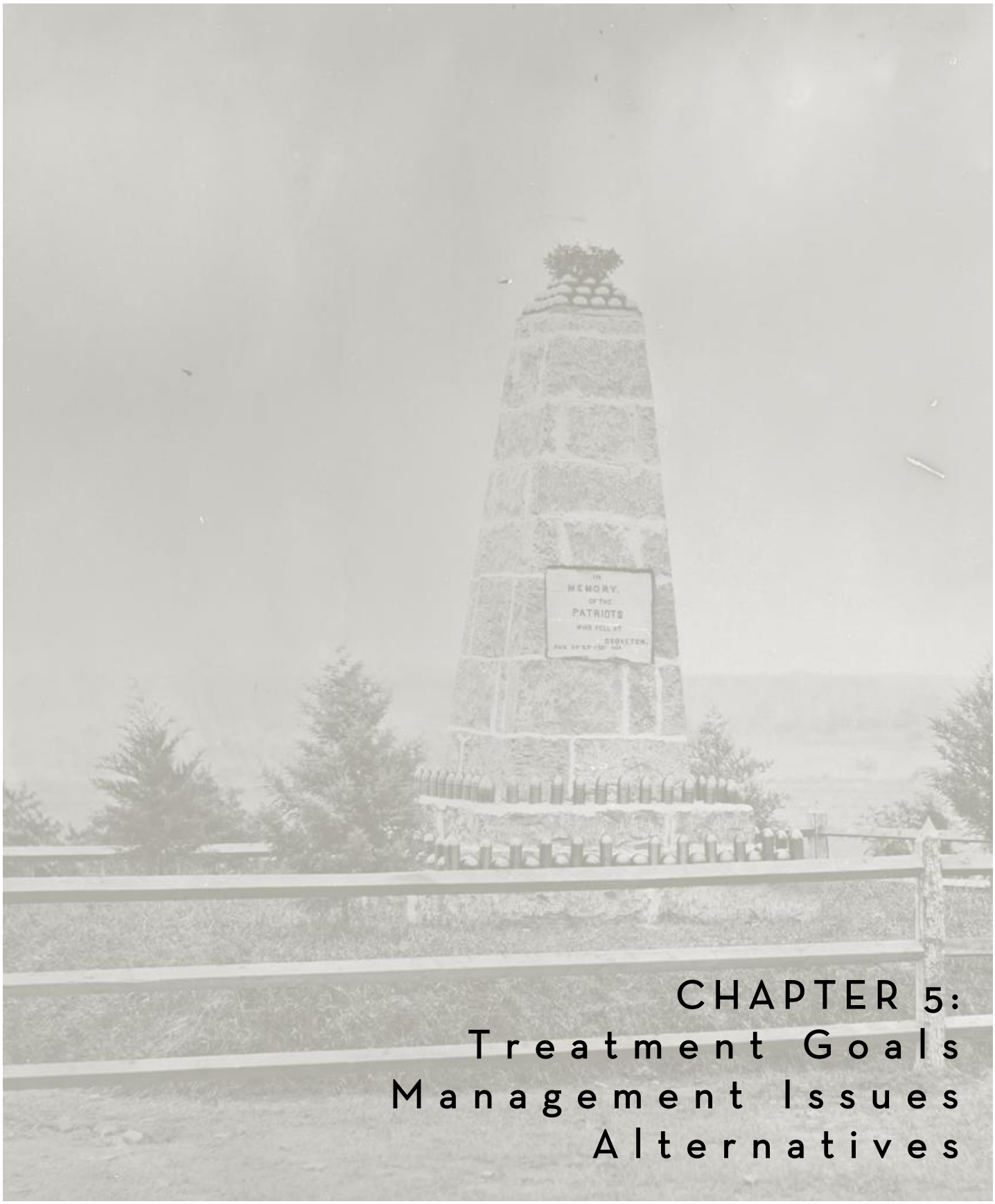
The overall landscape associated with the Unfinished Railroad project area is not eligible for reconstruction because significant extant features relate to more than one historic period, adequate documentary evidence does not exist to reconstruct the property to one period, it would not be feasible to manage the entire area to represent one period, and current use requires features not present during the historic period.

Endnotes

[1] Robert R. Page, Cathy A. Gilbert, and Susan A. Dolan, *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques* (Washington, D.C.: National Park Service, 1998), 81.
[2] Charles A. Birnbaum, and Christine Capella Peters, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes,* (Washington, DC: Department of the Interior, National Park Service, 1996); and NPS DO 28, 1997.
[3] Note that this does not include the entire 80' right-of-way for the railroad. Since the rail line was never completed, the ROW was not ever maintained. Therefore it would be misleading, expensive, and environmentally irresponsible to maintain the entire width of the corridor.
[4] *Manassas National Battlefield Park, Final General Management Plan/Environmental Impact Statement.* 2008. Washington, DC: Department of the Interior, National Park Service, iv-v.
[5] Ibid.
[6] Ibid.
[7] Ibid., 53.
[8] Ibid.
[9] Ibid.
[10] *Brawner Farm-Deep Cut Vista Enhancement Environmental Assessment,* no date. United States Department of the Interior, National Park Service, Manassas National Battlefield Park, 6.

[11] Margaret Coffin and Regina M. Bellavia, *Cultural Landscape Publication No. 7: Guide to Developing a Preservation Maintenance Plan for a Historic Landscape* (Boston, Massachusetts: Olmsted Center for Landscape Preservation, National Park Service, 1998 Revised Edition), 3.
[12] Ibid.
[13] Ibid.
[14] Birnbaum and Peters, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, 3-5.
[15] Ibid., 17-18.
[16] Ibid., 47-48.
[17] Ibid., 89-90.
[18] Ibid., 127-129.

This page intentionally left blank.



CHAPTER 5:
Treatment Goals
Management Issues
Alternatives

Chapter 5: Treatment Goals, Management Issues and Treatment Alternatives

This chapter provides an overview of the landscape management goals and objectives for the project area. Landscape management issues are described, along with general management recommendations. This is followed by a brief summary of alternative treatment approaches that were considered for the project area. The management issues and general recommendations in this chapter provide a foundation upon which the treatment recommendations presented in Chapter 6 are based.

Landscape Treatment Goals

a. Document the historic development of the physical landscape within the project area.
b. Evaluate the integrity of the landscape within the project area.
c. Provide guidance for future management of the landscape within the Unfinished Railroad project area in the form of general management guidelines for the overall property.
d. Provide specific treatment recommendations to resolve management issues associated with the project area.

Landscape Treatment Objectives

a. Preserve the contributing characteristics within the project area.
b. Provide guidance for vegetation management within the project area.
c. Provide guidance for protecting and preserving the landscape characteristics that contribute to the significance of the project area.
d. Provide guidance for maintaining the trails within the project area.
e. Provide recommendations for design and materials of structures associated with trails including bridges, steps, and boardwalks.
f. Determine a management approach that enhances the legibility and aesthetic qualities of the Unfinished Railroad.
g. Provide recommendations for enhancing the existing interpretive program associated with the Unfinished Railroad.
h. Preserve and protect the Unfinished Railroad by nurturing a healthy vegetative cover.
i. Provide treatment recommendations for views within the project area.
j. Determine a management approach that is sustainable.
k. Improve visitor safety, especially related to pedestrian crossing of busy roads, and vehicular circulation and parking within the project area.
l. Evaluate the potential for providing a universally accessible route within the project area.
m. Coordinate recommendations for the Unfinished Railroad landscape with those in the Brawner Farm CLR and the Fence Lines, Fields, and Forests CLR.

Overall Project Area
Management Issues and General Recommendations

Vegetation Issues, Overall Project Area

1. **Issue:** Clear direction for vegetation management within the project area is needed.
   Recommendation: The CLR should identify locations for open (grassland) and forest cover to be established or maintained within the project area. Also specific guidance should be provided regarding preservation of historic vegetation.

2. **Issue:** As woodlands are cleared, the land will be temporarily destabilized, a condition under which invasive plants can easily become established and soil erosion may occur.
   Recommendation: Engage an interdisciplinary team to analyze the site in advance of clearing to ensure that resources are protected and that future maintenance is fully addressed. The team may include a plant ecologist, forester, native plant specialist, soil scientist, archeologist and historical landscape architect. (BFCLR, 144)

Trails Issues, Overall Project Area

3. **Issue:** The park needs guidance for maintaining existing trails in the project area to ensure preservation of the resources and visitor safety.
   Recommendation: The CLR should provide treatment recommendations for repairs and maintenance of trails including new surface treatments where necessary.

4. **Issue:** A variety of types of bridges, boardwalks, and stairs are located along the trails in the project area. Some are in need of repair or replacement.
   Recommendation: The CLR should provide standards for appropriate structures to support trails.

Interpretive Features Issues, Overall Project Area

5. **Issue:** Existing interpretive features within the project area include waysides, interpretive markers, monuments and fences. Treatments proposed in the Fences, Fields and Forests CLR and Brawner Farm CLR include the addition of fences in specific historic locations, where multiple sources provide a definitive basis for this treatment.
   Recommendation: The CLR recommends the addition of interpretive fences in the locations indicated in the Fences, Fields and Forests CLR.

Archeological Resources Issues, Overall Project Area

6. **Issue:** The project area has potential to reveal information about the Civil War era and other time periods.
   Recommendation: Preserve the known archeological sites that contribute to the significance of the Manassas NBP landscape. Undertake measures to identify and preserve areas of potential archeological significance. Undertake archeological investigations prior to any proposed ground-disturbing activities. Perform data recovery investigations and monitoring during any excavations, recovering artifacts that may provide new data. Include archeological monitoring

when undertaking improvements (including trail construction) to identify and analyze potential archeological resources.

7. **Issue:** Limited archeological surveys have been conducted in the wooded portions of the project area including archeological investigations and analysis in the Sudley Zone and limited archeological observations at the Quarry Zone. It is likely that other locations within the project area contain features related to the battle (artifacts, battlefield burials, and other features). It is also probable that prehistoric archeological resources exist. These locations should be investigated prior to disturbance.
   Recommendation: Prior to any woodland restoration, an archeological identification and evaluation study should be conducted. Consultation with the Regional Archeologist and the concurrence of the Virginia State Historic Preservation Officer (SHPO) are necessary in determining the extent of this investigation. (BFCLR, 144)

8. **Issue:** The archeological resources throughout the project area should be monitored to document changes to conditions and trigger stabilization/repair when necessary.
   Recommendation: Monitor the condition of the archeological resources in the project area. A trained resource manager should visit known archeological sites on a regular basis (as recommended by the regional archeologist) and document the conditions observed.

Vehicular Circulation and Parking Issues, Overall Project Area

9. **Issue:** According to the current GMP, a major emphasis of the interpretation program for Second Manassas will be the Automobile/Bicycle tour route.
   Recommendation: Develop parking area recommendations including the following elements for each tour stop: parking area, interpretive display, bicycle racks, short loop trail to encourage visitors to leave their cars or bicycles and experience the resources on foot. Where necessary, include alterations to improve vehicular and pedestrian safety.

Unfinished Railroad Zone
Management Issues and General Recommendations

Rail-bed Preservation Issues, Unfinished Railroad Zone:

10. **Issue:** The Unfinished Railroad is a significant historic resource in need of a treatment plan to help guide the park in efforts to manage and interpret it. General impacts that should be addressed include those resulting from hiking trails, bridle trails, vegetation, erosion, compaction and intrusions to the rail-bed.
    Recommendation: Implement treatment recommendations focused on protection of the rail-bed as a historic resource provided in Chapter 6.

11. **Issue:** The Unfinished Railroad is a resource that is not readily visible to park managers as they go about their day-to-day work. Without a routine monitoring plan, maintenance issues may go unnoticed and develop into impacts.
    Recommendation: Implement a monitoring plan that includes a visual inspection of the Unfinished Railroad on a regular schedule. Consider using an inspection form to record conditions surveyed at least twice a year, noting surface cover, land cover, damage and impacts observed as well as work needed. Consider coordinating the inventory with the park FMSS (facilities management software system).

12. **Issue:** Mowing has the potential to contribute to erosion and gradual degradation of the resource.
    Recommendation: Mowing of the Unfinished Railroad should be restricted to locations where it is necessary for visitor safety or interpretation. Limit mowing to once or twice per year. Mowing heights should be as high as possible to minimize potential gouging of the surface of the resource. Refer to SOPs in Chapter 6 for guidance regarding mowing.

13. **Issue:** Large trees present on the resource pose a serious threat caused by windthrows. When trees fall and pull up their roots, this pulls away layers of earth and rock that are integral parts of the resource. Also, trees that fall upon the resource can gouge out sections and expose bare earth to erosion.
    Recommendation: Refer to SOPs in Chapter 6 for guidance regarding trees in the URTA.

14. **Issue:** The growth of undesirable woody plant species on cleared areas can cause problems in that they do not provide good year-round erosion control and they may shade out desirable grasses and forbs. Species including Japanese Honeysuckle (*Lonicera japonica*), Blackberry (*Rubus allegheniensis*), Chinese Privet (*Ligustrum sinense*), and Common Buckthorn (*Rhamnus cathartica*) can cause significant problems.
    Recommendation: Control undesirable woody plant species in cleared areas by mowing and burning according to a regular maintenance schedule. In areas where these species become established, remove them by cutting and treating with approved herbicide (see SOPs for invasive species within the URTA).

15. **Issue**: Burrowing can be a significant problem for military earthworks but has not been a wide-spread problem related to the Unfinished Railroad. Burrowing occurs in locations where the earthwork has been disturbed.
    Recommendation: In locations where burrowing is occurring, trap and remove the animals (generally groundhogs) from the area. Also, in all areas where the earthwork has been disturbed, monitor the sites to ensure that burrowing does not become established.

16. **Issue:** Although the center of the rail-bed and the 80' right-of-way are clearly documented, the edges of the grading done to construct the rail-bed are not recorded. Preservation of the resource includes all of the graded areas and recommendations refer to these edges, which are not always apparent in the field.
    Recommendation: Establish a clear definition of the treatment area that is easy to follow in the field. Refer to SOPs in Chapter 6 for a definition of the Unfinished Railroad Treatment Area (URTA) and guidance for field activities.

Vegetation Issues, Unfinished Railroad Zone

All vegetation issues and general recommendations for the overall project area (listed above) apply to the Unfinished Railroad Zone, unless indicated otherwise in Chapter 6.

Trails Issues, Unfinished Railroad Zone

17. **Issue:** In general, the presence of trails upon military earthworks is discouraged, as impacts from trails are highly damaging to the resources. The Unfinished Railroad was constructed as a carefully engineered rail-bed and is much more resilient than typical military earthworks. The materials, layering, and compaction used for the construction of the rail bed result in its ability to absorb much more abuse than a typical military earthwork. Extensive trails have been present upon the rail bed for decades. Associated foot traffic has resulted in inconsequential damage described as a "shallow groove into the surface" of the rail bed. It has even been postulated that the foot traffic, by continuing compaction of the resource, may contribute slightly to the longevity of the resource.[1] The Unfinished Railroad at Manassas provides a unique opportunity for use and interpretation, however, the need to protect the resource from trampling, erosion, and intrusions, is still present.
    Recommendation: Refer to treatment recommendations and SOPs in Chapter 6.

Interpretive Features Issues, Unfinished Railroad Zone

All interpretive features issues and general recommendations for the overall project area (listed above) apply to the Unfinished Railroad Zone, unless indicated otherwise in Chapter 6.

Archeological Resources Issues, Unfinished Railroad Zone

All archeological resources issues and general recommendations for the overall project area (listed above) apply to the Unfinished Railroad Zone, unless indicated otherwise in Chapter 6.

Vehicular Circulation and Parking Issues, Unfinished Railroad Zone

18. **Issue:** The surface, layout, signs, fences, and trail heads associated with the Unfinished Railroad parking lot are in need of improvement. A site design to

improve the parking lot has been prepared by the U.S. Department of Transportation, Federal Highway Administration, Eastern Federal Lands Highway Division in Sterling, Virginia.
Recommendation: Implement the improvements recommended for the parking lot by the U.S. Department of Transportation, and the changes to the fence recommended by the Fencelines, Fields and Forests CLR. Consider improving the trail heads near this parking lot to improve visibility of the trail locations and connections to the Unfinished Railroad to the south and north (see Chapter 6).

Specific Issues, Unfinished Railroad Zone

Specific issues related to the Unfinished Railroad Zone conditions are described in this section according to station numbers (SN).[2] Station numbers cited are illustrated on drawings T-1 through T-5 (see Chapter 6). Treatment recommendations addressing these issues are provided in Chapter 6. Existing conditions issues are based on field observations by Quinn Evans Architects / Louis Berger Team, 2012-2013 and CR-GIS Survey of the Unfinished Railroad, 2011-2012.

Northeast end of Unfinished Railroad adjacent to Sudley Area:

(SN 001 through SN 008) Drawing sheet: T-2

a. **SN 001:** The northeast end of the Unfinished Railroad ends in a 50-foot drop-off above Bull Run. Below this, an indented shelf experiences moderate erosion. There are dead trees lying across the cut in this area, but no permanent barrier is present. Also, there is not any explanation of the relationship of this location to the broader extension of the Unfinished Railroad to the northeast or to the trail extending to the northwest toward the Thornberry House/Sudley Post Office.
b. **SN 002.5:** There is a wayside at the Amos Benson House Ruin, but the rubble pile is not clearly visible and trees are growing through it, impacting this archeological feature.
c. **Between SN 002 and SN 003:** Water pools in the cut in this area in wet seasons.
d. **Between SN 003 and SN 004**: The park needs a formal management policy related to the disinterred grave sites.
e. **Between SN 004 and 007**: Trail on rail-bed, moderate compaction, some leaf litter and grasses present.
f. **Between SN 006 and SN 007**: There is vegetation in this disturbed area.
g. **SN 007:** The trail head at Sudley Road is not easy to identify or access.
h. Between **SN 007 and SN 008:**
    i. Rail-bed impacted by Sudley Road right-of-way grading and utility maintenance. Ground is heavily disturbed, surface is compacted with bare earth and visible erosion.
    ii. There is no pedestrian crossing aid between the parking lot at Sudley Road and the trail head.
    iii. The pedestrian crossing location is dangerous, due to high congestion and limited sight lines.
    iv. The vehicular access to the Sudley Parking Lot is dangerous, due to high congestion and limited sight lines.
i. Sudley Parking Lot addressed in Sudley Area Zone section.

Unfinished Railroad between Sudley Road and Featherbed Lane: SN 008 through SN 063/064

a. **SN 008:**
    a. Ground disturbed adjacent to Sudley Road. Grading for road right-of-way has impacted the Unfinished Railroad resource.
    b. Trail between rail-bed and parking lot has worn a groove in the embankment.

b. **Between SN 008 and SN 014:**
    a. Trail is on top of rail-bed (fill).
    b. Foot traffic has worn a bare groove into the surface.
    c. Row of cedars atop of rail-bed indicates old fence line.
    d. Trees are at base of embankment on north side.

c. **Between SN 014 and SN 017:**
    a. Trail is on top of rail-bed (cut).
    b. Foot traffic has worn a groove into the surface in some locations, others are compacted but not bare.
    c. Clump of cedars on west/north side of rail-bed.
    d. Surface is grass, some leaf litter, and wood chips.

d. **Between SN 018 and SN 021:**
    Trail is adjacent to rail-bed on south side. This is a level section of the rail-bed (no cut or fill) and the resource is not visible. Encroaching undergrowth vegetation obscures the resource. Ground between SN 018 and 019 has been disturbed by agricultural activities.

e. **Between SN 021 and SN 026:**
    Sudley Connector trail on top of rail-bed fill. Woody scrub vegetation on resource. At SN 026, resource has been disturbed by agricultural activities.

f. **Between SN 026 and SN 027:**
    Trail runs along rail-bed cut. Mixed forest and woody scrub vegetation on resource in this marshy area.

g. **Between SN 028 and SN 030:**
    Trail runs along rail-bed cut. Severe disturbance caused by construction for underground gas pipeline. Low area collects water. Mixed forest, woody scrub and grassland on resource.

h. **Between SN 030 and SN 032:**
    Trail is on boardwalk over marshy ground. Mixed forest and woody scrub vegetation on resource.

i. **Between SN 033 and SN 036:**
    Trail is on rail-bed fill. Mixed forest and woody scrub vegetation on resource. Bare patches in compacted trail (not enough leaf cover). At SN 035 a social trail descends from top of fill forming an erosion groove down the front of the berm. Stairs are located off to the side of the fill.

j. **Between SN 036 and 040:**
    Trestle 1 location. Two trails are present, one along the railroad alignment and one to the south. Each trail includes small footbridges over intermittent streams, the south trail has a section of boardwalk. The area is low and wet with some sheet erosion occurring. Mixed forest vegetation.

k. **SN 040:**
Wood steps are built into the nose of the rail-bed fill. Their construction intruded upon the resource and erosion is occurring between the water-bar type steps. A wood railing is adjacent to the north side of the steps. Mixed forest vegetation is on the resource, including a few large deciduous trees.

l. **Between SN 043 and SN 064:**
Trail splits and leaves rail-bed to run on both sides resource between SN 043 and SN064. Cut area is slightly boggy. Ground cover is native grasses, leaf litter, and some rock outcrops. Good views into cut from trails on either side between 043 and 045. Between SN 045 and SN 055 woody vegetation between the rail-bed and the north trail alignment screens views of the rail-bed. Between SN 049 and SN 057 the south trail veers further away from the rail-bed over marshy ground on boardwalk sections, losing direct views of resource. Woody vegetation has been removed from the rail-bed but is still present on sideslopes in some locations.

m. **Between SN 048 and SN 058:**
Layers of fill were left in various stages of construction, providing insight into construction techniques.

n. **SN 049:**
Row of four large cedars on resource (former fence line).

Unfinished Railroad adjacent to Groveton/Deep Cut Monument Zone (SN 063/064 through SN 107)

a. **Between SN 066 and SN 067:**
No visible trace of rail-bed. Area is disturbed by parking lot and road grading. Compaction, erosion, and bare earth near parking lot. Wood worm fence and gate at parking lot entrance. A trail marker indicating the location of the Unfinished Railroad loop trail is set back away from the parking lot at the edge of the trail. The marker is barely visible from the parking lot and trail head.

b. **SN 067:**
Trail on rail-bed cut is wet and compacted. Worm fence on south side of cut above slope. Beyond fence trail turns to south, leaving rail-bed and climbing steps over the sideslope.

c. **Between SN 068 and SN 074:**
Trail is adjacent to and south of the rail-bed. Cut has seasonal standing water/drainage. Water drains down rail-bed to road. Large trees on sideslopes of cut.

d. **Between SN 074 and SN 075:**
Trail is adjacent to and south of the rail-bed which transitions from cut to fill. Rail-bed is in good condition. Trail ground is wet and two foot bridges provide access over a low wet area likely created by the historic road that crossed through this area.

e. **Between SN 077 and SN 079:**
Social trail on rail-bed is causing compaction. At SN 079 the social trail descends the nose of the fill causing compaction. Trail is adjacent to rail-bed on south side with a long boardwalk extending over the low area. Woody vegetation is on the fill.

f. **Between SN 080 and SN 084:**
Stairs built above surface lead trail to top of fill. Trail surface on rail-bed fill is gravelly and compacted with large chunks of rock scattered along the rail-bed in some locations. Scattered trees on rail-bed and sideslopes. Interpretive wayside is located in the middle of the trail.

g. **Between SN 085 and SN 089:**
At Deep Cut the trail parallels the rail-bed on the south side. The rail-bed and sideslopes contain thick stands of native grasses and seasonal standing water. Many stumps are present from recent removal of trees. Rock outcrops are prevalent.

h. **Between SN 091 and SN 094:**
Trail is south of rail-bed but the resource is not visually apparent. Trail surface is rocky and uneven and seasonally wet. Boardwalk sections at SN 092 are uneven and not anchored to ground.

i. **Between SN 094 and SN 095:**
Seasonally running water from a vernal pools drains under boardwalk that crosses over the rail-bed.

j. **Between SN 095 and SN 098:**
Trail parallels rail-bed cut on north. Rail-bed has vernal pools with seasonally deep standing water. Mixed forest vegetation with many trees on the resource.

k. **Between SN 097 and SN 098:**
Trail descends sideslope of fill on north causing serious compaction and erosion. At the end of the fill animal burrows are impacting the resource.

l. **Between SN 105 and SN 106:**
Deep Cut Loop Trail joins Unfinished Railroad Trail. Wood steps are built into the south sideslope of the fill. Their construction intruded upon the resource and erosion is occurring between the water-bar type steps. No railing.

Unfinished Railroad between Groveton/Deep Cut Area and Quarry Area: (SN 107 through SN 141)

a. **SN 107:**
Trail on rail-bed fill. Groove worn into surface which is seasonally wet. Surrounding vegetation is grassland/open field. Woody scrub vegetation is encroaching where recently removed.

b. **Between SN 107 and SN 115:**
Bridle trail crosses level section of rail-bed between SN 107 and SN 108. Some compaction. Trail verges to the north and runs adjacent to the rail-bed from 108 to 115. Thick native grasses and seasonal standing water. Woody scrub vegetation is encroaching where recently removed.

c. SN 115:

End of trail on rail-bed. Trail crosses rail-bed to continue to the south toward the Brawner Farm. Witness tree on rail-bed.

Unfinished Railroad adjacent to Quarry Area (SN 141 through SN 147)

a. **Between SN 143 and SN 146:**
    i. Power line right-of-way. This section was damaged and repaired by utility company. Invasive shrubs, burrowing, and a deer trail are apparent.

Sudley Zone
Management Issues and General Recommendations

Vegetation Issues, Sudley Zone

All vegetation issues and general recommendations for the overall project area (listed above) apply to the Sudley Zone, unless indicated otherwise in Chapter 6.

Trails and Pedestrian Circulation Issues, Sudley Zone

19. **Issue:** Pedestrian access to the east side of Sudley Road requires crossing the busy road without the aid of crosswalks, signs, traffic-calming features, or other assistance.
    Recommendations:
    a. Consider providing a parking lot on the east side of Sudley Road.
    b. Implement the GMP recommendations to divert traffic from the park, which will greatly reduce vehicular use of the road and improve pedestrian safety.
    c. If "a" and "b" are not accomplished, add traffic calming measures. Consider adding speed humps, crosswalks, and signs warning drivers to be alert to pedestrian crossings.

Interpretive Features Issues, Sudley Zone

All interpretive features issues and general recommendations for the overall project area (listed above) apply to the Sudley Zone, unless indicated otherwise in Chapter 6.

Archeological Resources Issues, Sudley Zone

All archeological resources issues and general recommendations for the overall project area (listed above) apply to the Sudley Zone, unless indicated otherwise in Chapter 6.

Vehicular Circulation and Parking Issues, Sudley Zone

20. **Issue:** Vehicular and pedestrian circulation in the Sudley area is dangerous and inadequate. Sight lines at the entrance to the Sudley parking lot are short and intense traffic is common.
    Recommendation: CLR to provide recommendations for parking in the Sudley Zone.

Groveton / Deep Cut Monument Zone
Management Issues and General Recommendations

Vegetation Issues, Groveton / Deep Cut Zone

All vegetation issues and general recommendations for the overall project area (listed above) apply to the Groveton / Deep Cut Monument Zone, unless indicated otherwise in Chapter 6.

Trails Issues, Groveton / Deep Cut Zone

21. **Issue:** The trail from the Deep Cut parking lot is uneven and difficult to navigate.
    Recommendation: Construct a barrier free trail from the Deep Cut Parking Lot to the Cedar Pole marker.
22. **Issue:** There are currently no barrier-free trails within the project area.
    Recommendation: Construct a barrier free trail from the Deep Cut Parking Lot to the Cedar Pole marker. Also, consider extending the trail along the west side of School House Branch to the Unfinished Railroad.

Interpretive Features Issues, Groveton / Deep Cut Zone

All interpretive features issues and general recommendations for the overall project area (listed above) apply to the Groveton / Deep Cut Zone, unless indicated otherwise in Chapter 6.

Archeological Resources Issues, Groveton / Deep Cut Zone

All archeological resources issues and general recommendations for the overall project area (listed above) apply to the Groveton / Deep Cut Zone, unless indicated otherwise in Chapter 6.

1. **Issue:** Several known archeological features are present within this zone and it is probable that unknown resources are also present.
   Recommendation: Conduct archeological investigations to determine the extent of resources within this zone. Determine a management strategy for preserving archeological resources.

Vehicular Circulation and Parking Issues, Groveton/Deep Cut Zone

All vehicular circulation and parking issues and general recommendations for the overall project area (listed above) apply to the Groveton / Deep Cut Zone, unless indicated otherwise in Chapter 6.

Quarry Zone
Management Issues and General Recommendations

Vegetation Issues, Quarry Zone

2. **Issue:** The Quarry Zone currently is wooded, but would have been open during active use. The woody vegetation provides cover and buffers environmental impacts to the site as well as screening it from the public. Tree roots may be disturbing archeological resources.
   Recommendation: Consult with the regional archeologist to determine a recommended treatment for vegetation at this site aimed at preserving the archeological resources.

Trails Issues, Quarry Zone

3. **Issue:** There are no formal pedestrian trails in the Quarry Zone.
   Recommendation: Do not develop formal pedestrian trails in the Quarry Zone.

Interpretive Features Issues, Quarry Zone

4. **Issue:** There are no interpretive features at the Quarry Zone, and the park Interpretive Prospectus does not identify the Quarry Zone as a site for interpretation.
   Recommendation: Do not add interpretive features to the Quarry Zone.

Treatment Alternatives

Three approaches to treatment of vegetation within the URTA were considered. These include a range of maintenance approaches including a very high level of maintenance, moderate maintenance, and minimal maintenance requirements. The alternatives focus on treatment to vegetation while other changes would remain the same in each option. These include revisions to hiking trails and trail support structures, alterations to bridle trail routes, improvements to parking lots and vehicular circulation, changes to fences and guardrails (as recommended by the Fences, Fields and Forests CLR), and recommendations for archeological resources. Each of the alternatives is described briefly below. The moderate level is described in more detail as the recommended treatment in Chapter 6.

Alternative A: (highest level of maintenance)

Alternative A involves the highest level of maintenance and focuses on the entire eighty-foot wide railroad right-of-way throughout the entire corridor. This option would include clearing all woody vegetation from the right-of-way, in addition to clearing vegetation to open selected views in the Sudley and Groveton/Deep Cut areas. This approach would make the railroad corridor visually apparent, and would reduce impacts caused by woody vegetation. It would require the highest level of initial and on-going maintenance efforts and funding. Removal of the trees within the entire eighty-foot wide corridor would eliminate the positive effects of protective canopies and leaf cover on the ground surface.

Alternative B: (moderate level of maintenance-preferred approach)

In this alternative the **Unfinished Railroad Treatment Area (URTA)** includes the rail-bed, associated cut and fill slopes, and a buffer extending beyond the slopes. Since the extents of the cuts and fills vary throughout the corridor, the width of the treatment area is not consistent but can be determined using the above description.[3] Within the URTA, the majority of the woody vegetation is removed and ground cover is established with native grasses or leaf cover. At stream crossings vegetation will either be removed selectively or not at all. In three locations remnants of fencerow vegetation are preserved within the URTA. Chapter 6 provides more detail regarding this alternative.

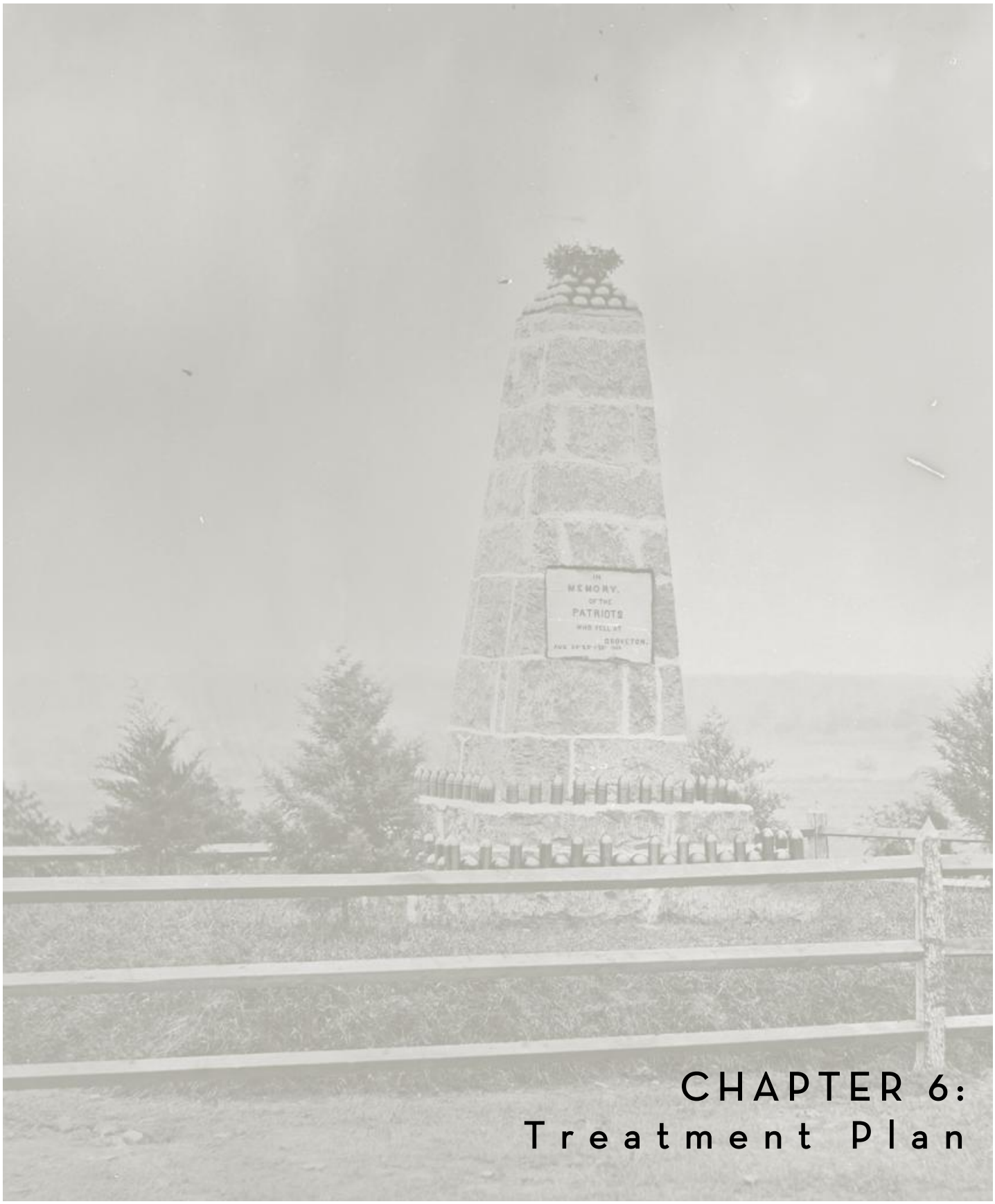
Alternative C: (Minimized level of maintenance)

This alternative represents the minimal level of vegetation treatment considered acceptable. Woody vegetation would be cleared from the rail-bed and fill embankments and within a five foot wide buffer zone extending beyond the outside edge of filled areas. In cut areas woody vegetation would be removed from the rail-bed within a twenty-foot wide corridor centered on the rail-bed. Other vegetation would be monitored and hazard trees would be removed.

Endnotes

[1] Lowe, 2013, vii.
[2] Station numbers follow the protocol established by Lowe's *Unfinished Railroad Resource Survey*, 2013.
[3] Note that this does not include the entire 80' right-of-way for the railroad. Since the rail line was never completed, the ROW was not ever maintained. Therefore it would be misleading, expensive, and environmentally irresponsible to maintain the entire width of the corridor.

This page intentionally left blank.



CHAPTER 6:
Treatment Plan

Chapter 6 – Treatment Plan

Overview

This chapter includes landscape preservation treatment recommendations for the project area including general recommendations for vegetation, fencing, and archeological resources within the overall project area and specific recommendations addressing management issues for the Unfinished Railroad Zone, Sudley Zone, Groveton/Deep Cut Monument Zone, and Quarry Zone. Standard operating procedures (SOP) for the Unfinished Railroad treatment area are also provided to help guide long term maintenance and preservation of the resource. The standard operating procedures are at the end of the chapter, followed by the treatment drawings (T-1 through T-5).

Overall Project Area General Treatment Recommendations

Note: GTR refers to General Treatment Recommendations

General Vegetation Treatment, Overall Project Area

GTR 1. Continue to maintain the open pastoral character of the landscape through hay harvesting and mowing (Task 1 in *Fence Lines, Fields and Forests CLR (FFF CLR))*.[1]

GTR 2. Restore areas of second-growth forest to grassland as directed by the *General Management Plan* and *Fence Lines, Fields, and Forests CLR*.

GTR 3. When restoring second-growth forests to grasslands, follow the guidelines established in the *Brawner Farm-Deep Cut Vista Enhancement Environmental Assessment* (Task 4 in *FFF CLR*).

GTR 4. Maintain newly restored grasslands through expanded hay harvesting or, when necessary, mowing (Task 2 in *FFF CLR*).

GTR 5. When necessary, consider alternate means of vegetation management, including goat grazing and prescribed fire (Task 3 in *FFF CLR*).

GTR 6. In locations where removal of woody vegetation is recommended near streams and drainage swales, follow guidance regarding watershed protection. Maintain buffers of undisturbed vegetation along edges of stream and drainage channels unless historic views are impacted by the presence of woody vegetation. For instance, along the section of Schoolhouse Branch that is in the Deep Cut/Groveton Zone, maintain the established grassland and low shrubs to preserve the historic view.

GTR 7. Consult with the regional archeologist regarding the preservation of archeological resources prior to implementing vegetation management strategies.

Trails Treatment, Overall Project Area

GTR 8. Repair, resurface, or re-route existing trails that are in poor condition, as indicated in association with each treatment zone.

Fences Treatment, Overall Project Area

GTR 9. Maintain and preserve existing fencing within the park, unless otherwise noted (Task 5 in *FFF CLR*).

GTR 10. Restoration of historic fence lines should focus on additional field fencing rather than road fencing, only as indicated in the *Fences, Fields, and Forests CLR* (Task 7 in *FFF CLR*).

GTR 11. Preserve historic fencerows unless other direction is provided (Task 8 in *FFF CLR*).

GTR 12. Use worm fencing as the default fence type for restored fences within the park only in locations indicated in the *Fences, Fields, and Forests CLR* (Task 9 in *FFF CLR*).

GTR 13. Where historic documentation based on multiple sources is available, restore fences to their historic fence type, only as indicated in the *Fences, Fields and Forests* CLR (Task 10 in *FFF CLR*).

GTR 14. Replace worm fences in non-historic locations with compatible single rail pierced-post fences or, in limited instances, a smooth wire steel post fence only as indicated in the *Fences, Fields, and Forests CLR* (Task 11 in *FFF CLR*).

Archeological Resources Treatment, Overall Project Area

GTR 15. Consult with an Archeologist at least 120 days before any proposed ground disturbance (Task 12 in *FFF CLR*).

GTR 16. Develop a formal management policy related to the disinterred grave sites within the project area.

Unfinished Railroad Zone
General Treatment Recommendations

Note: GTR refers to General Treatment Recommendations

Rail-bed Treatment, Unfinished Railroad Zone

GTR 17. In locations where there is no trail on the rail-bed, establish or maintain a ground cover of native grasses or duff as described in the SOPs for the Unfinished Railroad Treatment Area (URTA).

Vegetation Treatment, Unfinished Railroad Zone

GTR 18. Follow SOPs for the URTA for vegetation treatment.

Trail Treatment, Unfinished Railroad Zone

The Manassas National Battlefield Park (MNBP) staff members are satisfied with the existing trail routes in the project area. The current trail route fulfills the park's goals for the project area and does not need to be realigned. Over the last few years, the park has eliminated several social trails that were not directly related to the park's interpretive program. Also, the park staff is comfortable with the current waysides in the project area

and does not require recommendations for improvements, additions or alterations to these elements.

GTR 19. Where trails are on the rail-bed, use crushed fines of stone for a trail surface unless trail support structures are indicated (see SOPs).

GTR 20. Use wood chips as a trail surface within the URTA in locations where the trail is not on the rail-bed and does not require trail support structures (see SOPs).

GTR 21. Monitor and maintain existing trail support structures that are in good condition. As these structures reach their life-span, replace with new structures as recommended in the SOPs. Recommendations for existing structures that need treatment immediately are included in the section titled "Specific Issues Treatment, Unfinished Railroad Zone."

GTR 22. Add new trail support structures necessary to correct trail problems indicated in the specific issues section.

Vehicular Circulation and Parking Treatment, Unfinished Railroad Zone

See recommendations under specific treatments.

Specific Issues Treatment, Unfinished Railroad Zone

Note: these recommendations correlate to the specific issues described in Chapter 5.

Northeast end of Unfinished Railroad adjacent to Sudley Area: (SN 001 through SN 008) Drawing Sheet T-2

Task1. At SN 001implement improvements (see Figure 6-1).

Task 1a. Relocate a short section of trail at SN 001, setting it back from the steep slope above Bull Run. Obliterate traces of the old trail and repair the ground surface.

Task 1b. Add a double rail pierced post fence set back at least ten feet from the edge of the drop-off.

Task 1c. Consider adding an interpretive wayside explaining the relationship between the Unfinished Railroad in the park and its extension beyond the park.

Task 1d. Retain forest vegetation on steep slope above Bull Run to help stabilize the slope. Apply SOPs for monitoring vegetation and erosion, and remove hazard trees.

Task 1d. Consider selectively pruning vegetation to open views from SN 001 to the west (and the graded portion of the Unfinished Railroad on the opposite bank of Bull Run).

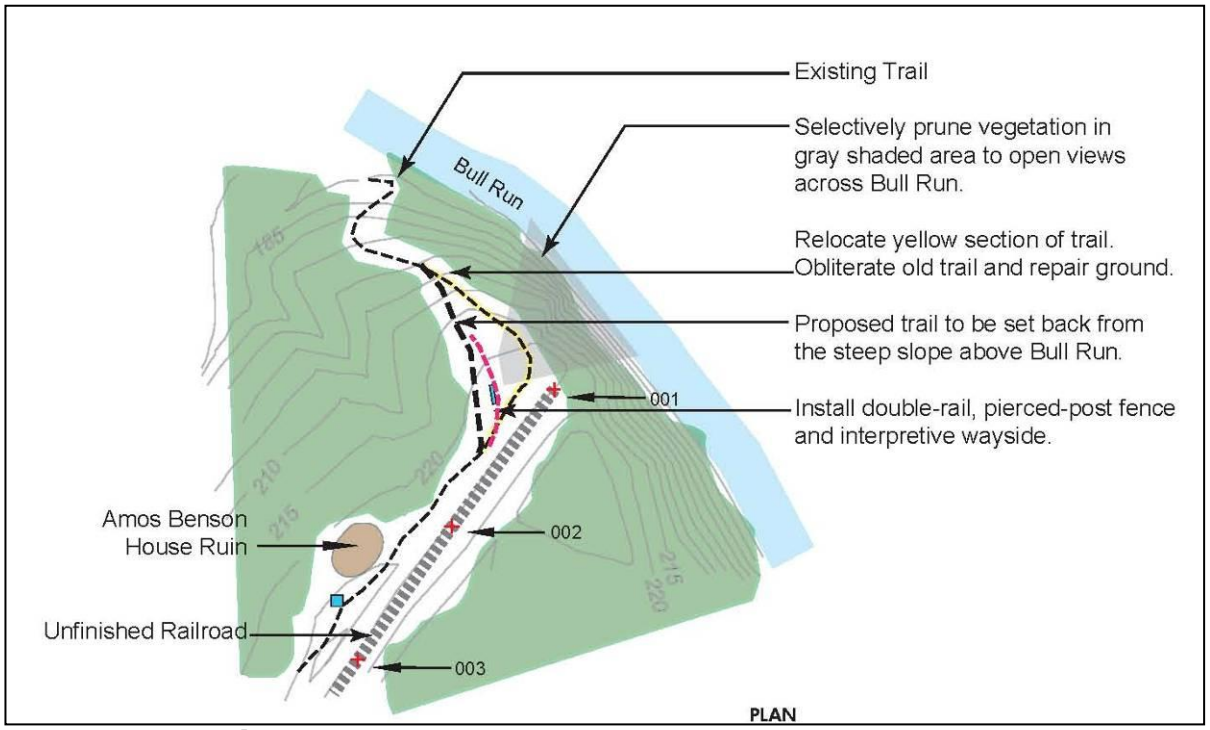


Figure 6- 1: Task 1: Improvements at SN 001



Figure 6- 2: View on trail at SN 002 looking toward SN 001. The trail is on the left and the Unfinished Railroad cut is on the right.

Task 2. At SN 002.5, remove woody vegetation that is growing on the Amos Benson House Ruin. Cut trees at the base and do not attempt to remove trunks from the soil and rocks that surround them.

Task 3. Between SN006 and 007, do not remove vegetation within the railroad grade between SN006 and Sudley Road. Leave as a buffer between the resource and the road in this disturbed area.

Task 4. At SN 007, if the Sudley parking lot remains in its current location, add signs at the intersection of the trail and Sudley Road clearly identifying the Unfinished Railroad and trial location. Also, add a crosswalk and signs on Sudley Road to the north and south of the crosswalk, warning drivers of the pedestrian crossing. If the Sudley parking lot is relocated, consider options for improved trail access to the section of the Unfinished Railroad that is east of Sudley Road.

Task 5. Between SN 007 and 008 plant native grasses in bare areas as described in the SOPs.

Unfinished Railroad between Sudley Road and Featherbed Lane SN 008 through SN 063

Task 6. At SN 008 add stairs over the railroad slope to gain access from the Sudley Road Parking Area according to SOPs.

Task 7. Between SN 008 and SN 014, retain cedars on top of fill and monitor condition. Remove any hazard trees according to SOPs and do not replace. Consider providing interpretive information explaining that the cedars represent a historic fence line.

Task 8.Between SN 014 and SN 017, retain cedars and monitor condition. Remove any hazard trees according to SOPs and do not replace. Consider providing interpretive information explaining that the cedars represent a historic fence line.

Task 9. Between SN 018 and SN 021: Remove undergrowth vegetation and establish native grasses. Monitor ground surface to document any further disturbance.

Task10. Between SN 021 and SN 026: Remove woody scrub vegetation on the rail-bed fill and establish native grasses. Monitor ground surface to document any further disturbance (current condition is result of disturbance from previous agricultural activities).

Task11. Between SN026 and SN027: Remove woody vegetation on the resource and establish native grasses or leaf cover (if vegetation is sufficient). Install boardwalk to avoid damage to the resource in this wet area.

Task12. Between SN 028 and SN 030: Remove woody vegetation on the resource and establish native grasses or leaf cover (if vegetation is sufficient). Install puncheon or supported boardwalk to avoid damage to resource in this wet area. Monitor area damaged previously and consult with regional archeologist if repairs are needed.

Task13. Between SN 030 and SN 032: Remove woody vegetation on the resource and establish native grasses or leaf cover (if vegetation is sufficient). Maintain boardwalk.

Task14. Between SN 033 and SN 036: Remove woody vegetation on the resource and establish native grasses or leaf cover (if vegetation is sufficient). Repair damage from social trail (trail descends from top of fill forming an erosion groove down the front of the berm at SN 35) and establish native grasses or leaf cover. Fence damaged area until acceptable ground cover is established.

Task15. Between SN 036 and SN 040: Install puncheon or supported boardwalk. Remove woody vegetation on the resource and establish native grasses or leaf cover (if vegetation is sufficient).

Task 16. At SN 040: Repair damage caused by steps and railing built into resource. Replace these steps with new steps according to SOPs for stairs. Remove woody vegetation from the resource and establish native grasses.

Task17. Between SN 043 and SN 064: Remove woody vegetation on the resource and establish native grasses or leaf cover (if vegetation is sufficient). Maintain trails and interpretive markers on both sides of the resource.

Task 18. Between SN 048 and SN 058: Consider interpreting the rail-bed construction techniques that are visible in this area.

Task19. At SN 049, retain cedars and monitor condition. Remove any hazard trees according to SOPs and do not replace. Consider providing interpretive information explaining that the cedars represent a historic fence line

Unfinished Railroad adjacent to Groveton/Deep Cut Monument Zone (SN 063 through SN 107)

Task 20. Between SN 063 and SN 064: Establish a barrier free route between the Unfinished Railroad parking lot and the wayside "Attacks on Jackson's Line." The existing route slopes gently and only minor adjustments to the surface are needed to ensure it is level. Install rainbow turf as indicated in the SOPs to provide a barrier-free surface along the route. Relocate the interpretive wayside "Attacks on Jackson's Line," moving it about eight feet to the southwest along the trail so that it is located at the base of the slope that rises toward SN 063. This location provides a good view into the cut and relates well to the content of the wayside.

Task 21. Between SN066 and SN 067: Improve the Unfinished Railroad parking lot. In addition to the alterations prescribed by the U.S. Department of Transportation, and the Fencelines, Fields and Forests CLR, improve orientation, wayfinding, and pedestrian safety in this location (see figure 6-3).

- Task 21a. Adjust the location of the trail marker signs on the trail, so that they are more visible from the trail alignment and the parking lot.
- Task 21c. Add pedestrian crossing signs on Featherbed Lane to the north and south of the Unfinished Railroad parking lot to improve visitor safety.

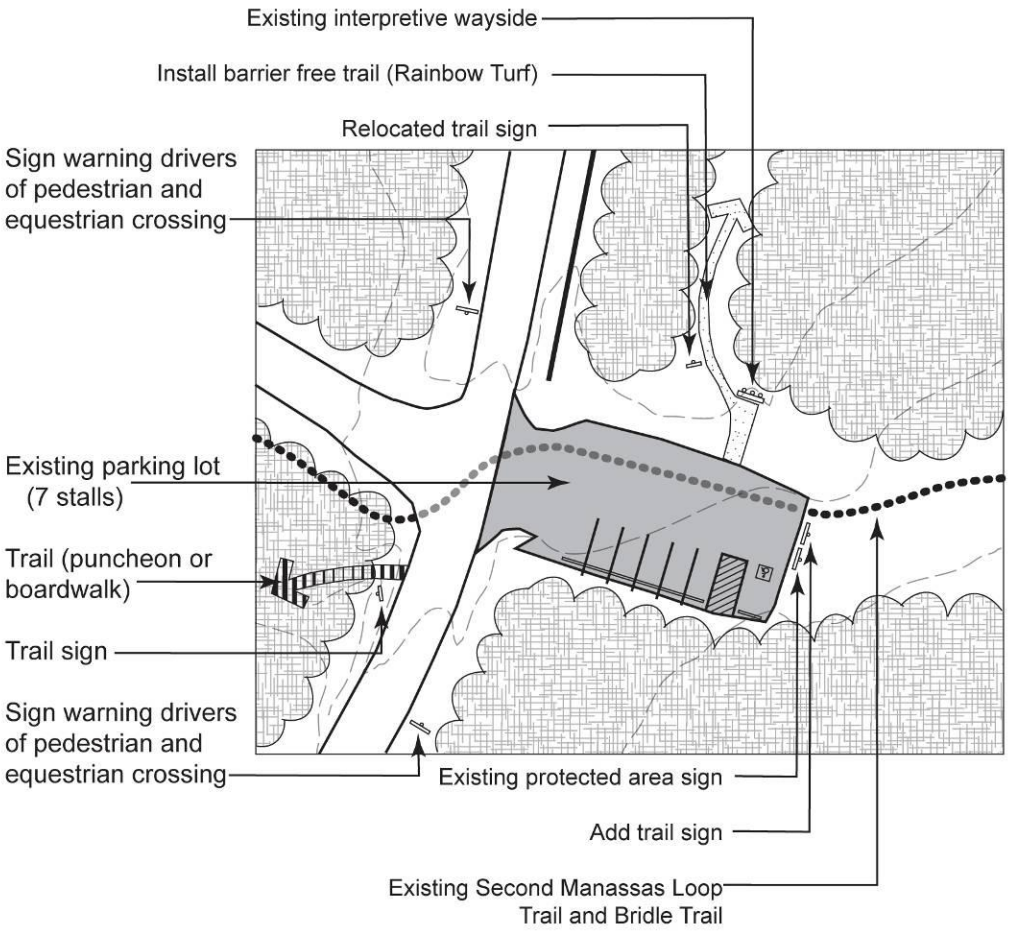


Figure 6- 3: Task 21 at Unfinished Railroad Parking Lot

Task 22: Remove fencing along the Featherbed Lane (Groveton-Sudley Road), just west of the Unfinished Railroad, and replace the portion near the Unfinished Railroad parking area, and trailhead with single rail, pierced-post fencing (Task 30.2 in *FFF CLR*).

Task 23. Between SN 067 and SN 074:

Task 23a. Remove woody vegetation on the resource and establish native grass or leaf cover (if vegetation is sufficient).

Task 23b. Between 067 and 068, on the west side of Featherbed Lane, adjust the trail so that it intersects with Featherbed Lane (rather than the private road) and install a boardwalk from Featherbed Lane to the existing stairs at Unfinished Railroad SN 068. The boardwalk will help to protect this low wet are from further erosion due to foot traffic, and will provide a safer trail surface for visitors.

Task24. Between SN 074 and SN 075: Conduct archeological investigations to determine approximate width of historic road, add puncheon or boardwalk spanning entire road width and connecting bridges to improve trail conditions and reduce impacts to historic resources.

Task 25. Between SN 077 and SN 079: Remove social trail. Add soil and plant native grasses. Temporarily fence repaired area until new ground cover is established. Remove woody vegetation on the resource and establish native grasses.

Task 26. Between SN 080 and SN 086: Remove woody vegetation on the resource and establish native grasses. Consider relocating the interpretive wayside so that it is not in the middle of the trail. Add a section of worm fence running parallel to the Unfinished Railroad (see Task 47).

Task27. Between SN 085 and SN 089: Measure width and depth of cut and monitor changes due to erosion. Keep surface clear of woody vegetation. As trunks rot, monitor for burrowing and animals. Keep trail in current location. Consider providing additional interpretive information about the cut and military activities that occurred here. It is difficult to see into/understand the cut with the tall grasses present, consider planting short native grasses or cutting more frequently than in other areas. Alternately, consider installing small visual cues to help visitors recognize the location of the cut.

Task28. Between SN 091 and SN 094: Replace existing boardwalk with puncheon as indicated in SOP. Extend boardwalk from 091 to 095. Monitor vegetation and maintain grassland. In this area, cut vegetation on rail-bed alignment on a regular schedule during the growing season to make the corridor more visible and to help visitors recognize the location of the rail-bed.

Task29. Between SN 094 and SN 095: Replace existing boardwalk with supported boardwalk to allow water to flow under trail.

Task30. Between SN 095 and SN 098: Remove woody vegetation on the resource and establish native grasses. Coordinate with resource manager to ensure protection of sensitive vernal pool.

Task31. Between SN 096 and SN 098: Relocate trail, moving it slightly north and off the rail-bed to avoid continuing onto the fill area. Repair damage to side-slope at SN 098. In this area, cut vegetation on rail-bed alignment on a regular schedule during the growing season to make the corridor more visible and to help visitors recognize the location of the rail-bed. Monitor for burrowing animals and follow integrated pest management protocols for removing animals that are impacting the resource. Repair damaged areas.

Task32. Between SN 105 and SN 106: Repair damage caused by steps built into resource. Replace steps with new stairs according to SOPs.

Task33. Between SN 107 and SN 108: Eliminate the bridle trail crossing at the west end of the Deep Cut Loop trail and repair damage to trail.

Task34. At SN 107: Add puncheon to reduce impacts and provide a better trail surface in this seasonally wet area. Remove woody vegetation on the resource and establish native grasses.

Unfinished Railroad between Groveton/Deep Cut Area and Quarry Area: (SN 107 through SN 141)

Task35. Between SN 108 and SN 115: Install puncheon or supported boardwalk in this location that has seasonal standing water. Remove woody vegetation on the resource and establish native grasses.

Unfinished Railroad adjacent to Quarry Area (SN 141 through SN 147)

Task36. Between SN 143 and SN 146: Remove woody vegetation on the resource and establish native grasses. Prior to establishing grasses, inspect the damaged section and document the current conditions. Monitor for increased deterioration.

Sudley Zone Treatment Recommendations

Vegetation Treatment, Sudley Zone

Task37. Preserve the white oak to the west of the Thornberry House, which is believed to be a witness tree (Task 27.0 in *FFF CLR*).

Task38. Restore the open fields to the landscape surrounding the Thornberry House (Task 27.1 in *FFF CLR*).

Task39. Clear woods primarily to the west of the Unfinished Railroad to open up the "Rocky Knoll" (Task 27.2 in *FFF CLR*).

Archeological Resources Treatment, Sudley Zone

Refer to the *Fencelines, Fields and Forests Cultural Landscape Report* and Views of a *Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office* for recommendations for interpretive features within the Sudley Zone.[2]

Vehicular Circulation and Parking Treatment, Sudley Zone

Task40. Consider replacing contemporary guardrails in the Sudley Zone with steelbacked timber guardrails as indicated in Task 6 of the *FFF CLR*.

Task41. Explore partnership opportunities off park property for an improved parking lot to serve the Sudley Area. Possible locations include the southern end of the Sudley Church parking lot, on the north side of Featherbed Lane near Sudley Road, at the historic road entrance to the Sudley Post Office / Thornberry House, or on the east side of Sudley Road between the NPS sign and the Unfinished Railroad alignment.

See Task 4 for additional recommendations in this location.

Interpretive Features Treatment, Sudley Zone

Task42. Restore the historic picket, post-and-rail, and worm fence at the Thornberry House (Task 28.0 in *FFF CLR*).

Groveton / Deep Cut Zone Treatment Recommendations

Vegetation Treatment, Groveton / Deep Cut Zone

Task43. In consultation and partnership with the Civil War Trust, clear woods in Dogan Farm tract and convert to open fields (Task 20.0 in *FFF CLR*). This includes woods on the south east border of the Groveton/Deep Cut Zone. As indicated above, when restoring second-growth forests to grasslands, follow the guidelines established in the Brawner Farm-Deep Cut Vista Enhancement Environmental Assessment (Task 4 in *FFF CLR*).

Trails Treatment, Groveton / Deep Cut Zone

Task44. Revise the trail that extends from the Deep Cut parking lot to the Cedar Pole marker so that it is barrier free. Use rainbow turf for the trail surface in dry areas. Use a supported boardwalk in wet areas and provide a bridge to cross School House Branch. Do not exceed a slope of 4.5% at any point along the trail.

Task45. Consider establishing a barrier free loop trail from the Deep Cut parking lot to the Unfinished Railroad at SN 080, along the Unfinished Railroad to SN 075, and back to the parking lot along the route of the historic farm road trace (see drawing T-4).

Task 45a. Extend the barrier free trail from the Cedar Pole marker along the base of the slope (roughly parallel to School House Branch) to the Unfinished Railroad at SN 080. Use barrier-free surface (crushed fines of stone or other preferred surface) for the trail surface in dry areas and puncheon or supported boardwalk in wet areas. Do not exceed a slope of 4.5% at any point along the trail.

Task 45b. Ensure that the trail surfaces and trail structures between SN 080 and SN 075 are barrier free.

Task 45c. Establish a barrier free trail from SN 075 to the Deep Cut parking lot along the historic farm road trace. Use barrier-free surface (crushed fines of stone or other preferred surface) for the trail surface in dry areas and puncheon or supported boardwalk in wet areas. Do not exceed a slope of 4.5% at any point along the trail.

Task 46. Repair damage / rutting and maintain the trail caused by vehicular use. Resurface in damaged areas with top soil and sow seed to re-establish ground cover. Restrict use by maintenance vehicles. Do not allow use by wheeled vehicles during wet periods.

Interpretive Features Treatment, Groveton/Deep Cut Zone

Task47. Between SN 080 and 086, add a section of worm fence running parallel to the Unfinished Railroad, on the south side of the resource (approximately 300 linear feet) (Task 21 in *FFF CLR*).

Task48. At the Groveton/Deep Cut Monument, implement recommendations provided in the *Fence Lines, Fields, and Forests Cultural Landscape Report*.

Archeological Resources Treatment, Groveton/Deep Cut Zone

Task 49.Monitor the condition of the historic road trace, disinterred grave sites, stone spring box and stone rubble.

Task 50.Consider removing large trees and other woody vegetation from the alignment of the historic road trace (see T-4).

Quarry Zone Treatment Recommendations

Preserve the historic resources in the Quarry Zone. Do not establish trails in this area.

Task 51.

Task 51a.Monitor the condition of the archeological resources within the Quarry Zone. A condition assessment of the archeological resources will be performed at least once every five years by a professional archeologist. Park staff will be made aware that this is a sensitive area and encouraged to report any evidence of entry.

Task 51b.Limit vehicular access to this site and allow only small maintenance vehicles when absolutely necessary. Prior to accessing the location with any vehicle, consult with the cultural resource manager.

Unfinished Railroad Landscape Standard Operating Procedures

Overview

The ultimate goal of landscape treatment for the Unfinished Railroad Zone is to achieve and maintain "Good" conditions for all resources within the management zone. Good condition is defined as continuous sustainable conditions that require a minimum of maintenance or manipulation and a rail-bed and associated earthworks that have no clear evidence of disturbance—environmental or human—that would result in erosion or other impacts to the resource.[3] In order to assist resource managers in achieving good condition for the Unfinished Railroad Zone, Standard Operating Procedures have been developed by adapting protocols for Sustainable Military Earthworks Management and federal standards for sustainable trails in natural areas.[4]

The primary threat to the rail-bed and associated earthworks is soil erosion, which "transports grains of the earthworks away from the resource, thereby degrading its form."[5] Soil erosion is caused by rainfall, uprooting trees, trees falling, wind, recreational activities (including trails) and maintenance procedures that disturb the protective cover and places the resource in danger of degradation due to exposure of bare soil to the erosion process.[6]

Although the Unfinished Railroad is not a typical military earthwork, studies focused on landscape management of earthworks are helpful in considering how to preserve the resource. The main difference between the Unfinished Railroad and other military earthworks is that the deliberate construction of the Unfinished Railroad as a long-lasting structure resulted in a more durable structure than typical military earthworks that were built hastily to last only a short time.[7] As a result, the Unfinished Railroad has proved more resilient to impacts. Still, deterioration has occurred and will continue if not addressed.

Research focused on landscape management of earthworks indicates that to limit erosion, it is critical to maintain a healthy vegetative cover with as little human intervention as possible. Use of native grasses is recommended to provide this cover, as native species adapt more readily to climate change, require the least human intervention (once established) and discourage trampling. Studies also point out that earthworks in forested conditions display the least amount of erosion and retain the highest degree of integrity.[8]

Therefore, to achieve good condition, is it recommended that native grasses be established on the resource in open areas and that forest cover be retained where this does not conflict with historic views. Also, all trails on the resource should be designed to minimize impacts to the rail-bed and side slopes and to provide a variety of opportunities for visitors. The following Standard Operating Procedures are for the **Unfinished Railroad Treatment Area (URTA)** which includes the rail-bed, associated cut and fill slopes, and a buffer extending beyond the slopes. Since the extents of the cuts and fills vary throughout the corridor, the width of the treatment area is not consistent but can be determined using the above description.[9]

General

SOP 1. Train maintenance personnel regarding the extents of the Unfinished Railroad Treatment Area (URTA) and preservation maintenance procedures.

a. Provide copies of the CLR to maintenance personnel.
b. Initially, a resource manager knowledgeable about the Unfinished Railroad should walk the corridor with maintenance personnel to explain the treatment area and approach.
c. Trained staff should walk the corridor and explain the treatment area and approach to new maintenance personnel who will work within the URTA.

SOP 2. Prepare a routine maintenance and monitoring schedule that is realistic given staff and funding.

a. Inspect/monitor the Unfinished Railroad Zone on a routine basis, no less than twice a year or as needed after storm events.
    i. A staff member or volunteer who is familiar with the CLR recommendations and SOPs should walk the corridor and document conditions and necessary treatments on a regular schedule (for instance, once in March, July, and October).
    ii. Consider utilizing a standard monitoring approach using a form approved by resource managers and the regional archeologist. An example of a form format is illustrated in Figure 6-4 and an active form is provided with the digital version of this report in Appendix A.

Manassas National Battlefield Park, Unfinished Railroad Inspection **Sheet _ of _#**

Inspected by: **date:**

Station No.	Cut/Fill/Level	Right Relief (#')	Left Relief (#')	Grass	Leaf litter	Earth	Gravel	Other	Deciduous Forest	Mixed Forest	Evergreen Forest	Woody Scrub	Pasture/Grasses/Forbs	Other	None	Erosion	Compaction	Intrusion	Digging	Tree throw	Other	Comments	Further Diagnosis Needed (y/n)	Work Needed (X) Critical Work(*)	Action Completed (date)
Railroad resource				**Surface Cover**					**Land Cover**						**Damage/Impacts Observed**										

Figure 6- 4: Sample Unfinished Railroad Treatment Zone Monitoring Form

SOP 3.Minimize all actions that expose bare earth and create the potential for erosion within the URTA. When repairs or maintenance activities are necessary, follow recommendations herein to minimize impacts.

a. Ensure that minor repairs are carried out in a manner that does not compromise adjacent resources, and are subtly distinguishable through archeological evidence. Avoid use of mechanical equipment on the railroad grade.
b. Ensure that major repairs are documented, and are distinguishable through archeological evidence, through contrasting maintenance regimes, or through presentation programming. At a minimum, it should be possible for a specialist to distinguish repairs from original materials and forms.

SOP 4. Establish an earthworks-education program that targets the public to convey information about the architecture of the earthworks, adverse natural and human impacts, and management practices used to reduce those impacts.

a. Encourage visitors to stay on trails and areas designated for waysides. Provide information to visitors explaining that walking, climbing, and digging are not allowed, as they damage the resource.
b. Consider designating discovery areas away from sensitive resources for visitors to explore.

SOP 5.Establish a railroad grade education program for park staff to convey information about the architecture of the earthworks, adverse natural and human impacts, and management practices used to reduce those impacts.

a. Orient personnel responsible for maintenance of battlefield terrain and earthworks and emphasize their value.
b. Include them in the process of decision-making about treatment.
c. Train staff in appropriate methods for maintenance.
d. Use least-damaging tools and techniques.[10]
e. Provide information to maintenance staff explaining that use of equipment, vehicles, and activities that compact or gouge the rail-bed or side slopes which can potentially cause long-term impacts to the resource.
f. Provide information to leases who cut hay that clearly identifies the locations of the Unfinished Railroad resource near their leased areas and explain that they are to avoid cutting near the resource.

SOP 6. Implement a pilot study in a small area and monitor changes for intended results before undertaking a new strategy on an entire area.

SOP 7.Don't start what you can't finish or maintain in the long term. Think through the future implications of the proposed change and be sure that what is proposed can be sustained in the long term within the human and financial capacity of the park.

SOP 8.Monitor the URTA for destructive actions from burrowing animals. Currently, impacts from burrowing are rare within the URTA. They are most common in areas where previous damage has occurred. When burrowing occurs, follow park Integrated Pest Management procedures for removing animals. Fill the holes as soon as possible.

SOP 9.Maintain or establish good ground cover throughout the URTA (see vegetation section).

Vegetation

Wooded Areas

SOP 10. Monitor woody plants and conduct removal maintenance as indicated below at least every three years throughout the URTA.

SOP 11. Unless indicated otherwise, remove all woody vegetation from the rail-bed and associated cut and fill slopes (this does not include the buffer that completes the URTA—see SOP 12). Please see specifics provided previously for each landscape management zone for locations where woody vegetation is not to be removed from the rail bed. (3 year cycle)

a. Use low impact tree removal techniques to remove woody vegetation.
    i. Take extreme care when dropping and/or lifting trees, in order to avoid scarring the resource or disturbing the protective ground cover.
    ii. Remove tree branches that may impale the ground before the tree is felled.
    iii. When possible without impacting the URTA, use cranes stationed off the rail bed to lift large trees away from inaccessible areas.
    iv. Rather than hauling trees out of the site, consider chipping the debris and reusing the mulch on trails.
    v. Cut trees flush with the grade.
    vi. Cut smaller woody vegetation and treat with herbicide to reduce occurrence of new sprouts.

SOP 12. Using low impact tree removal techniques described above, remove all trees larger than 12”dbh within the URTA buffer zone in locations where trails are present (SN 001 through SN 116). (3 year cycle)

SOP 13. Until desired condition has been established, prioritize tree removal within the URTA as follows (unless indicated otherwise in specific treatment sections):

a. Initially, identify and remove all hazard trees located upon the rail-bed and associated cut and fill slopes. Identify hazard trees based on NPS Hazard Tree Guidelines (http://na.fs.fed.us/fhp/hazard_tree/pubs/misc/nps.htm).
b. Next, remove all trees 12” dbh or larger from the rail-bed and associated cut and fill slopes (exceptions are addressed in the following tasks: GTR 6 and GTR 11, Tasks 1, 3, 7, 8 and 19).
c. Subsequently, remove remaining woody vegetation from the rail-bed and associated cut and fill slopes in locations where trails are present (SN 001 through SN 116). Exceptions are addressed in the following tasks: GTR 6 and GTR 11, Tasks 1, 3, 7, 8 and 19.
d. Next, remove all trees 12” dbh or larger from within the buffer zone of the URTA in locations where trails are present (SN 001 through SN117). Exceptions are addressed in the following tasks: GTR 6 and GTR 11, Tasks 1, 3, 7, 8 and 19.
e. Finally, remove remaining woody vegetation from the rail-bed and associated cut and fill slopes in locations where no trails are present (SN 117 through SN 147). Exceptions are addressed in the following tasks: GTR 6 and GTR 11. See Task 36 for treatment in the area between SN 143 and SN 146, including the site that was damaged by utility work.

f. In all locations where woody vegetation is removed, establish ground cover as quickly as possible using techniques described below.

SOP 14. In specific areas identified, manage resources in forest cover (still removing all large canopy trees within the URTA).

a. Maintain a buffer of woody vegetation along the alignment of Dogan Branch, in locations where the vegetation will not conflict with historic view management (see drawing T-4).
b. Maintain a buffer of woody vegetation along portions of the alignment of Schoolhouse Branch, excepting the section that is shown as open on drawing T-4. To maintain a buffer of woody vegetation, refrain from removing woody vegetation in the area shown as "forest, fence row vegetation and individual trees" on drawing T-4. On the same drawing, in locations where forest is not indicated, maintain the established grassland and low shrubs to preserve the historic view between the Groveton/Deep Cut Monument and Featherbed Lane (see also GTR 6).
c. Maintain a buffer of woody vegetation along the alignment of Bull Run. Refrain from removing woody vegetation within a fifty foot wide buffer zone on either side of the stream channel (see drawing T-2).

SOP 15. Maintain or establish leaf cover on the URTA in forested areas.

a. Monitor leaf cover and document areas that do not have adequate (minimum 4") cover.
b. Observe the surrounding area to determine if adequate canopy exists to provide leaf cover for the resource and/or trails. If not, establish native grass cover as described in SOP 19 and SOP 20.
c. Mark and remove individual trees that are deemed hazardous to the safety of visitors and/or the preservation of the resource.
d. Remove downed (dead) trees within the URTA.
e. Selectively limb up trees to ensure a minimum eight foot clearance above trails.
f. Retain trees that are healthy, vigorous, and tolerant of shady conditions.

SOP 16. Reduce impacts to the resource from tree wind-throw.

a. Remove large trees within the URTA as indicated above (see SOP 10-13).
b. Virginia pine, *Pinus virginiana*, are particularly susceptible to uprooting. Target this species for removal from the rail bed and associated cut and fill slopes.
c. Until large trees can be removed, monitor conditions noting size, crown shape, position on slope, soil depth and wetness, tree rooting habits, and the presence of root pathogens to identify and prioritize removal of trees most likely to cause damage to the resource (see Figure 6-5).
    i. Trees growing on the side slopes of the cut and fill areas, where roots can grow in four directions, are the least susceptible to uprooting.
    ii. Trees located on the top of earthworks send roots out in three directions and may be more susceptible to uprooting.
    iii. Trees located on the nose slope of the earthwork send roots out in only two directions, making them the most prone to uprooting.

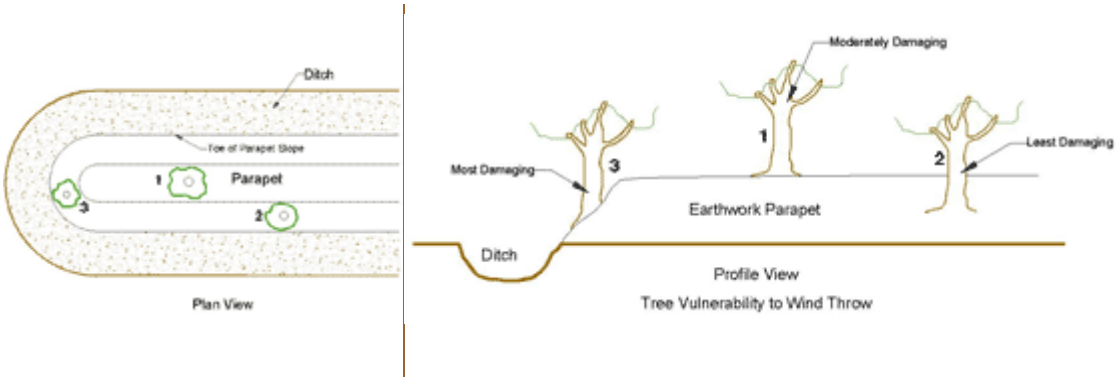


Figure 6- 5: Tree location on earthworks vulnerability diagram (source: Cultural Landscape Current 05: Sustainable Military Earthworks Management)

d. When a tree whose trunk is within the URTA is uprooted, stabilize the surface condition as quickly as possible.
   i. Notify park cultural resource manager of the situation.
   ii. Photograph the fallen tree and surrounding area that is affected.
   iii. Using equipment that will not impact the Unfinished Railroad cut and remove the parts of the tree that are within the URTA, except the portions that are still connected to the ground. Use good judgment to determine the amount of material that should be left to avoid additional damage to the resource.
   iv. Consult with the park cultural resource manager to determine an appropriate approach to stabilize the surface. Consider the following approach. Cut off the trunk at the ground level, leave parts still in the ground and remove uprooted portions. Consult with archeologist or cultural resource manager to examine materials in root mass to determine if any archival elements are present. Fill hole remaining hole with topsoil and seed as indicated below.

SOP 17. In locations where trees within the URTA represent historic fence rows, consider preserving and interpreting the historic meaning of the trees (see GTR 11 and Tasks 7, 8 and 19).

SOP 18. In locations where woody vegetation is helping to stabilize slopes that are susceptible to erosion, consider (on a case by case basis) maintaining shrubs and trees that are less than 12” dbh.

Open Areas / Grass Cover

SOP 19. Manage open condition upon the resource and in other identified areas by planting sustainable native grass cover to prevent erosion and enhance visibility and legibility of the resource. Establish and/or perpetuate native grass cover on the rail bed and associated cut and fill slopes in open areas.

a. Repair bare areas larger than 12" x 12" square. Priority should be given to those areas close to trails and areas of heavy visitor or staff traffic, since these areas are more vulnerable to erosion and compaction, and less likely to recover naturally.
    i. Scarify compacted bare soil. Add appropriate topsoil mix to bring grade of damaged area to a level with adjacent soil.
    ii. Hand broadcast seed over flat and gently sloping terrain (less than 5% slope) with a diverse herbaceous seed mix.
        1. Seed mix designed specifically for the local conditions in which natives grasses predominate.
        2. Consult with the local agricultural extension service to test soil and determine soil type and nutrient value to inform seed mix determination.
        3. Consider using a mix that is dominated by native perennials and includes twenty to thirty percent fast-germinating native annuals, such as partridge pea. The annuals will help to provide sufficient cover while the perennial seeds germinate.
    iii. Mulch seeded areas with hay straw.
    iv. On slopes greater than 5%, prepare area plus three inches all around as directed and pin sod to bare soil. Alternately, hydroseed these areas with a slurry of seed and straw mulch.
    v. Water thoroughly and fertilize seed as necessary for good germination.
    vi. As the grass establishes, mow twice a season and water in times of drought.
b. For bare areas greater than five square feet, fence repair area with temporary barrier fence. Allow new grass established by seed to thicken and mature prior to cutting.
c. Inspect regularly to ensure sod remains in place and seed is germinating.
d. If seed fails to germinate sufficiently, consider using sod.
e. Discontinue all mowing during dormant season.
f. In areas that are not bare, but have thin grass cover, broadcast warm season grass seed annually as advised for specific species selected.

SOP 20. Maintain good native grass cover.

a. Cut machine accessible areas with even ground surfaces and slopes of less than 5% using a bush hog every 1-2 years to maintain the vista and the grasslands.
b. In locations with even ground surfaces and slopes of greater than 5% and less than 20% mow using boom mowers or specially designed self-leveling mowers to reduce the physical impact to the earthworks.[11] Mow no lower than 6 to 8 inches and no more than twice a year.

c. Consult with natural resource managers to carefully select mowing times while native grasses area being established. Select mowing times that favor seed development for specific species present.
d. In areas with uneven surfaces, slopes greater than 20%, exposed rocks and other irregularities, consider alternate means of vegetation management, including goat grazing and prescribed fire (This section is an excerpt from the FFF CLR).[12]
    i. From a cultural landscape perspective, goat grazing would be an excellent option for maintaining the open character of the landscape. Livestock grazing was historically abundant within the park boundary and was the principal land use that created the park's pastoral character. Goat grazing could produce other benefits as well, such as clearing brush that reduces the intensity of forest fires, and creating and maintaining a browse line under trees, which would have been historically present.[13]
    ii. Prescribed fire is a second viable option for keeping difficult to maintain areas open, although it has more potential drawbacks than goat grazing. Prescribed fires are resource intensive, and have short term negative effects on air quality and visibility. Prescribed fires may also leave fire scars along the trunks of trees. Additional prescribed fire concerns include potential effects to park archeological sites, including military artifacts and munitions, and potential property and safety concerns among park neighbors and inholders. At a minimum, it would require an Environmental Assessment to begin conducting prescribed fires at Manassas. Nevertheless, prescribed fires would be an effective tool to maintain the open character of the landscape.
    iii. Following the initial clearing of woodlands, the cleared area is likely to contain woody debris and stumps that may prohibit immediate hay harvesting or mowing. In these instances, both goat grazing and prescribed fires may be useful as temporary measures to maintain the landscape until the restored grassland is in a condition where hay harvesting or mowing are viable options.
    iv. Alternately, hand cut woody vegetation.

SOP 21. Do not use land for hay lease within the graded portion of the Unfinished Railroad.

Invasive Species

SOP 22. Apply intensive management of invasive species in areas where mowing, cutting, burning, and/or grazing is not effective in controlling invasive plants. Follow the invasive species removal protocol previously established for the Battlefield Park.

Trails

SOP 23. Monitor trail conditions on a regular schedule. Combine with overall monitoring of the URTA as described above.

SOP 24. Maintain good trail conditions using preferred trail surfaces in appropriate conditions. Maintain trail width of four-feet unless indicated otherwise.

SOP 25. Consider establishing a consistent approach to treatment of trails to help visitors recognize when they are on the rail-bed. For instance, consider using crushed fines of limestone for simple trail surfaces upon the rail-bed and wood chips in locations where simple trails are within the URTA but not on the rail-bed. Continue to use puncheons, boardwalks, bridges, and steps in locations where they are required, regardless of whether or not they are on the rail-bed.

SOP 26. Minimize impacts to the URTA in locations where bridle trails cross the resource.

a. Whenever possible, re-route bridle trails to avoid crossing the URTA.
b. In locations where bridle trails cross the URTA, monitor surface and maintain good conditions at all times.

Bare Ground

Bare ground can be an acceptable trail surface in well-drained areas with appropriate soil conditions, but is not recommended in locations susceptible to erosion or compaction. Within the URTA bare ground is not recommended as a trail surface. Although the rail-bed was constructed to withstand intense use and compaction, its surface was never completed and does not have any protective layer. Gradual erosion and compaction will eventually impact the resource and should be avoided.



Figure 6- 6: Existing bare ground trail adjacent to cut near "Attacks on Jackson's Line" wayside. Foot traffic is not on the rail-bed or the cut slope, but gradual compaction and erosion will eventually impact the resource.

Wood Chips

Wood chip trails are inexpensive, easy to establish, do not require excavation into the ground surface, help visitors understand where it is appropriate to walk, provide a safe surface and reduce compaction and erosion on the ground surface. In addition, if trees removed are chipped on site, the material can be stored or used immediately for trail surfaces, reducing the expense of removing woody plant material from the site. One drawback to use of wood chips for trail surfaces include increased routine maintenance compared to bare earth, puncheons, and boardwalks. Wood chip trails require renewal on a one to two year basis. Another disadvantage is that wood chips are not an approved barrier-free surface treatment and may not be utilized on trails meant to be universally accessible. When considering use of wood chips within the URTA, aesthetics should also be considered. While wood chips are appropriate in locations that are within the buffer beyond the rail-bed and cut and fill slopes, as well as trails beyond the URTA, their visual appearance may be considered incongruent with the rail-bed itself, especially in areas of fill.



Figure 6- 7: Wood chip trail at Effigy Mounds National Monument helps visitors to understand where it is appropriate to walk, and provides a safe surface for trails that reduces compaction and erosion. (QEA)

Crushed Fines of Stone

Crushed fines of stone are widely used for trails in locations that require stabilization and protection from compaction and erosion. Although not as inexpensive as wood chips, stone fines are an affordable solution for trail surfaces. Similar to wood chips, this surface clarifies for visitors where it is appropriate to walk and provides a safe, accessible surface. In addition, they are easy to install and maintain and do not require excavation of the ground surface to establish. Limestone fines provide a barrier free surface the appearance of which is consistent with the character of the rail-bed, especially where it is located on fill. Figure 6-8 illustrates a crushed stone trail. Figure 6-9 provides a detail for installing a crushed fines of stone trail.



Figure 6- 8: Crushed fines of stone on trail on top of Monks Mound at Cahokia World Heritage Site. The limestone is used to protect the resource from compaction, erosion, and visitor trampling. (QEA)

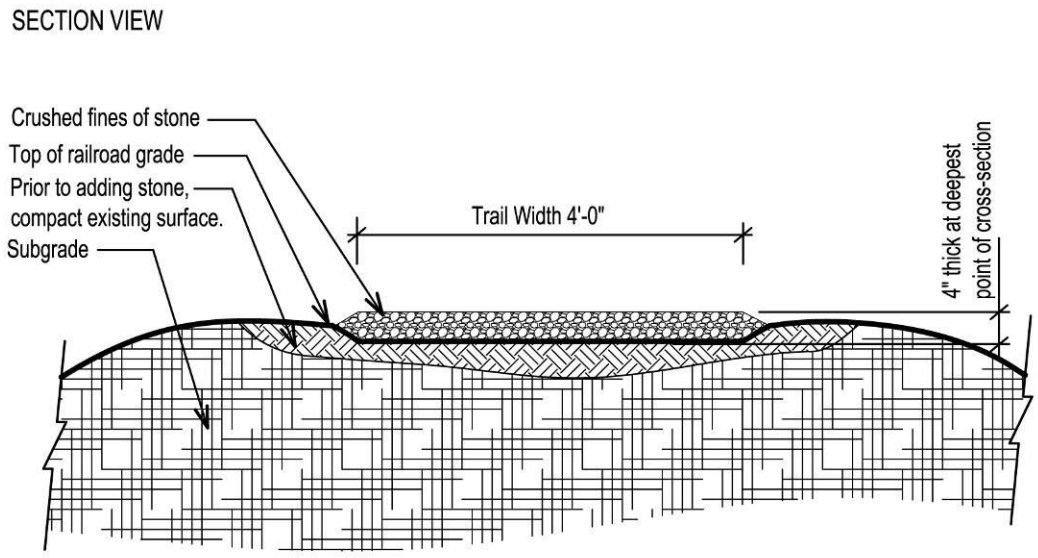


Figure 6- 9: Typical application of crushed fines of stone for trail surface.

Leaf Cover

Although leaf cover is an excellent ground cover for protecting the Unfinished Railroad resource, it is not an ideal trail surface. Leaf cover can be slippery when wet and may obscure trail locations, resulting in visitors straying from the desired trail route. Leaf cover should be used as a trail surface only in locations that are relatively dry and where the trail location is clearly obvious. Continue to use leaf cover as a trail surface in areas where it is used currently, unless indicated otherwise in the treatment recommendations.



Figure 6- 10: Trail with leaf cover between SN 075 and 076. The trail is within ten feet of the fill slope (right of image). While fairly easy to recognize the trail location in this winter image (taken in December), during the fall the trail may be difficult to see. Rocks protrude from the trail creating tripping hazards and leaves are slippery in wet conditions. (QEA)

Consolidated Rubber Mulch

Consolidated rubber mulch is preferred by the Battlefield Park staff as a surface for barrier free trails. The shredded rubber provides an accessible surface that is easy to install. Preparation of the base layers and proper compaction (according to manufacturer's specifications) is imperative to ensure the stability of the surface and its longevity. Figure 6-7 provides a detail of the manufacturer's installation approach recommended for Rainbow Turf, a shredded rubber type product.

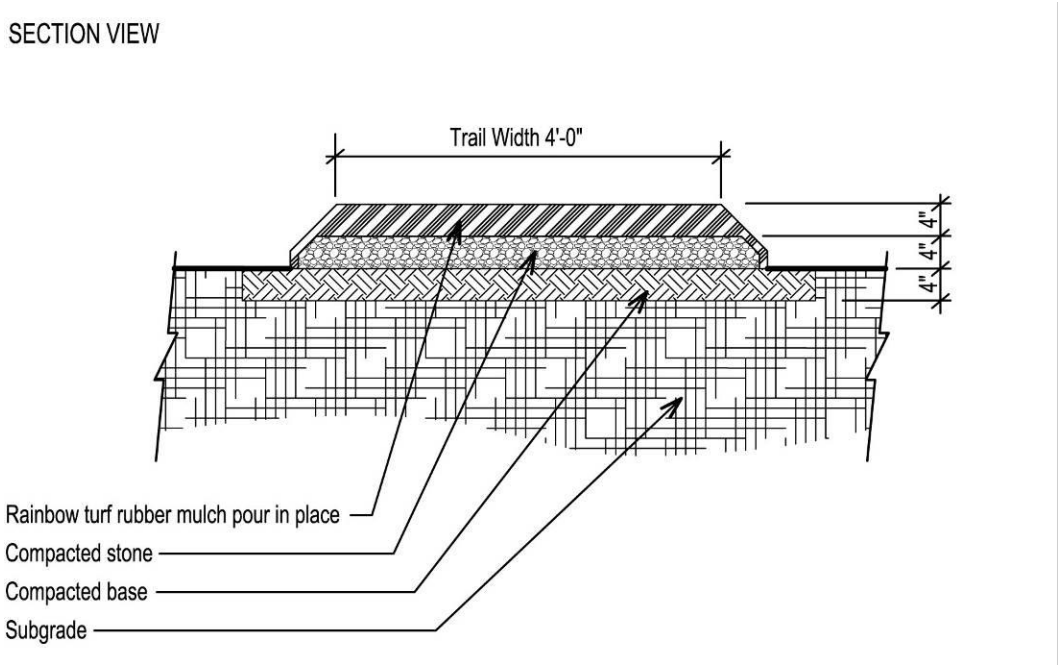


Figure 6- 11: Typical Rainbow Turf Trail Surface Detail (follow manufacturer's specifications regarding site preparation, compaction, and binder).

Trails in Wet Areas

A variety of approaches are available to deal with trails in wet areas, however many require some type of excavation to construct. In order to avoid impacting the URTA by digging, turnpikes, ditches, and other techniques that require digging are not recommended. Instead, re-routing trails or installing puncheons or boardwalks are the preferred approaches.

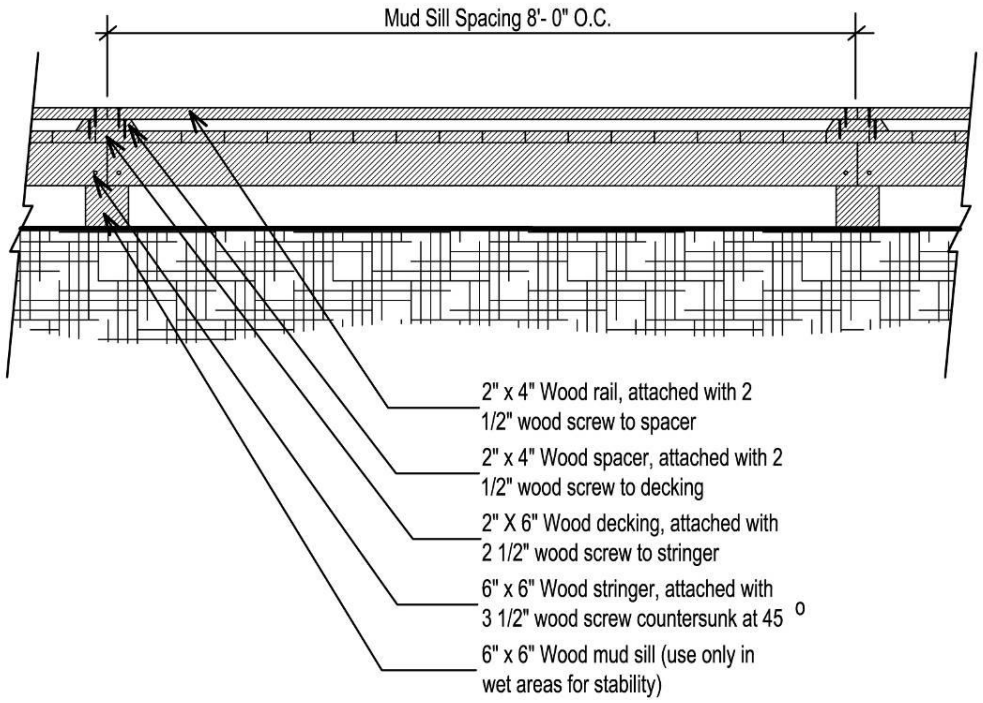
Re-route Problem Trails

Consider re-routing trails in wet or boggy areas as an inexpensive approach to resolve problems due to wet conditions. Make sure the new route avoids wet areas and does not adversely impact park resources.

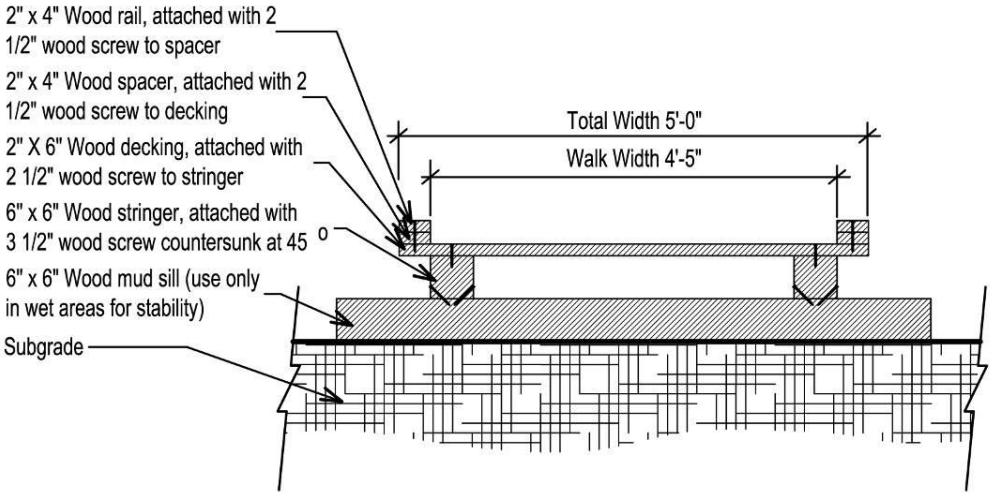
Puncheon

In situations where trails are frequently wet and there is not a good way to drain the trail, a puncheon may be used (see Figure 6-12). This is a wooden walkway that can be used to cross bogs, boulder fields, or small streams. It consists of a deck or flooring of sawed, treated timber or native logs placed on stringers to elevate the trail across the wet or uneven area. The entire structure must extend to solid soil so soft spots do not develop at the ends. The adjoining trail should be straight for at least ten feet as it approaches the puncheon. Puncheon designs vary from very simple structures to more elaborate constructions. The United States Forest Service (USFS) endorses use of preservative-treated lumber for puncheon as the sustainable design approach, as it avoids impacting onsite trees. Also, puncheon constructed of preservative-treated lumber lasts longer on site (see Figure 6-12). All types of puncheon are designed to be high enough above the ground surface to provide little interference with the movement of flood water. Figure 6-12 illustrates details for constructing puncheons.

ELEVATION VIEW



SECTION VIEW



Note:
Puncheons located in sensitive or wet areas where trail needs to lay directly on ground. Otherwise use boardwalks for areas from 12" to 18" or bridges for more than 18" above grade.

Figure 6- 12: Typical Puncheon Detail

Boardwalks

Boardwalks are useful solutions for trail surfaces in wet areas or locations with soft ground conditions. Boardwalks can be flush with the adjacent grade or supported slightly above the grade to allow drainage to pass underneath. Currently, boardwalks within the URTA include those constructed of wood and others constructed of recycled plastic lumber. Although the park has indicated a desire to eventually replace all wood boardwalks with recycled plastic lumber boardwalks, observance in the field gives reason to carefully consider this approach. Recycled plastic lumber boardwalks observed in the Sudley area appear to be warping. It is not clear if this is due to the construction technique, recent flooding, or the inherent quality of the material. It is suggested that a section of boardwalk be constructed with recycled plastic lumber and stringer supports similar to those visible in Figure 6-14 and installed in a sample location (see Figure 6-15 for details). Monitor the condition of this sample over at least one year to determine if the material will compare favorably to wood lumber in the long run. Regardless of the material used, all boardwalks need to be anchored to the ground in order to maintain a level surface and keep sections from shifting.



Figure 6- 13: Existing supported wood boardwalk at SN 078. (QEA)



Figure 6- 14: Recycled plastic lumber boardwalk in the Sudley Area. (QEA)

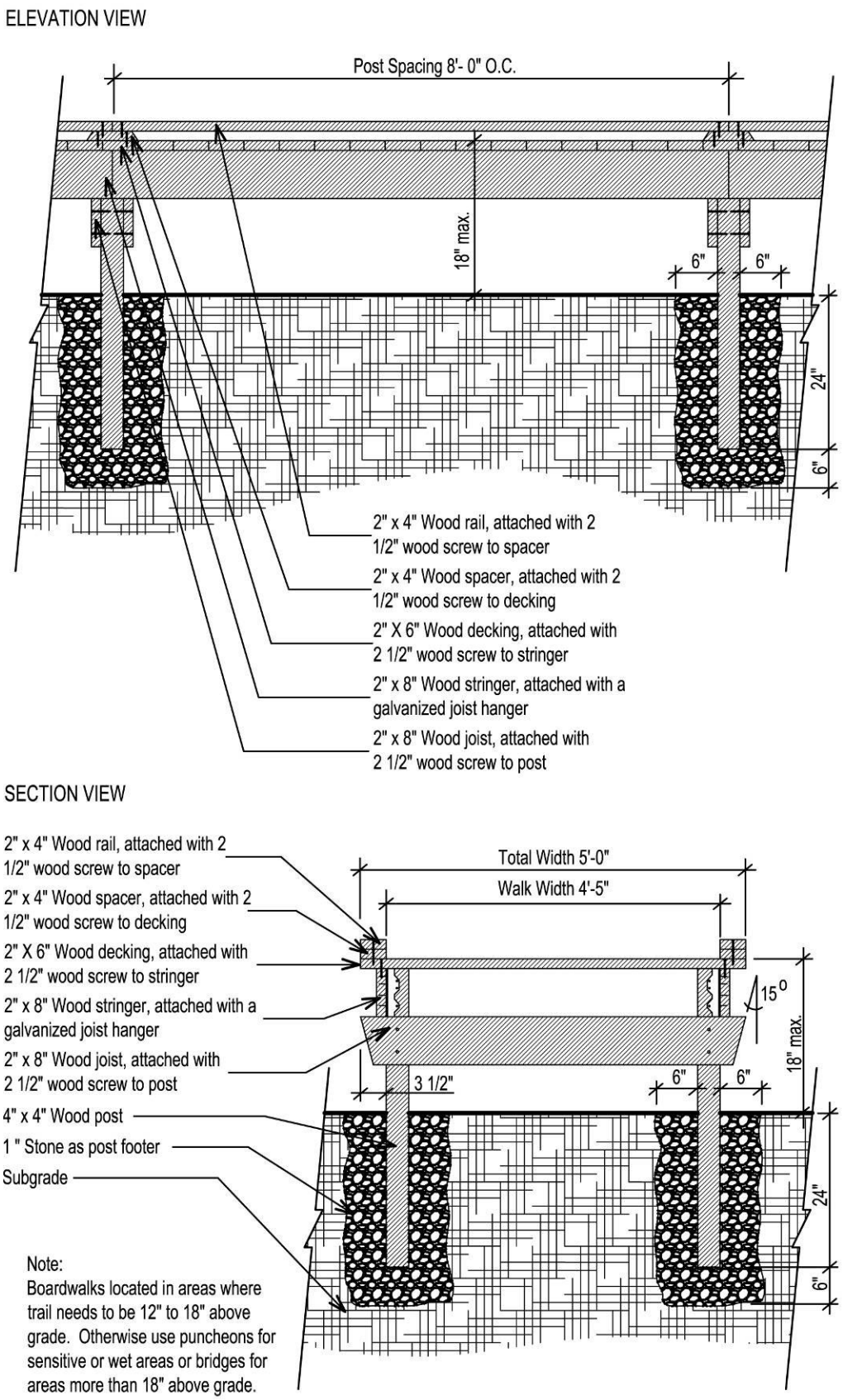


Figure 6- 15: Typical Boardwalk Detail

Trail Bridges

Use trail bridges in locations where it is necessary to cross streams or long spans of uneven or sensitive surface conditions. Trail bridges require site specific design for each use. Currently, bridges within the URTA include trail bridges with and without handrails.[14]



Figure 6- 16: Existing trail bridge with handrail at SN 079. (QEA)

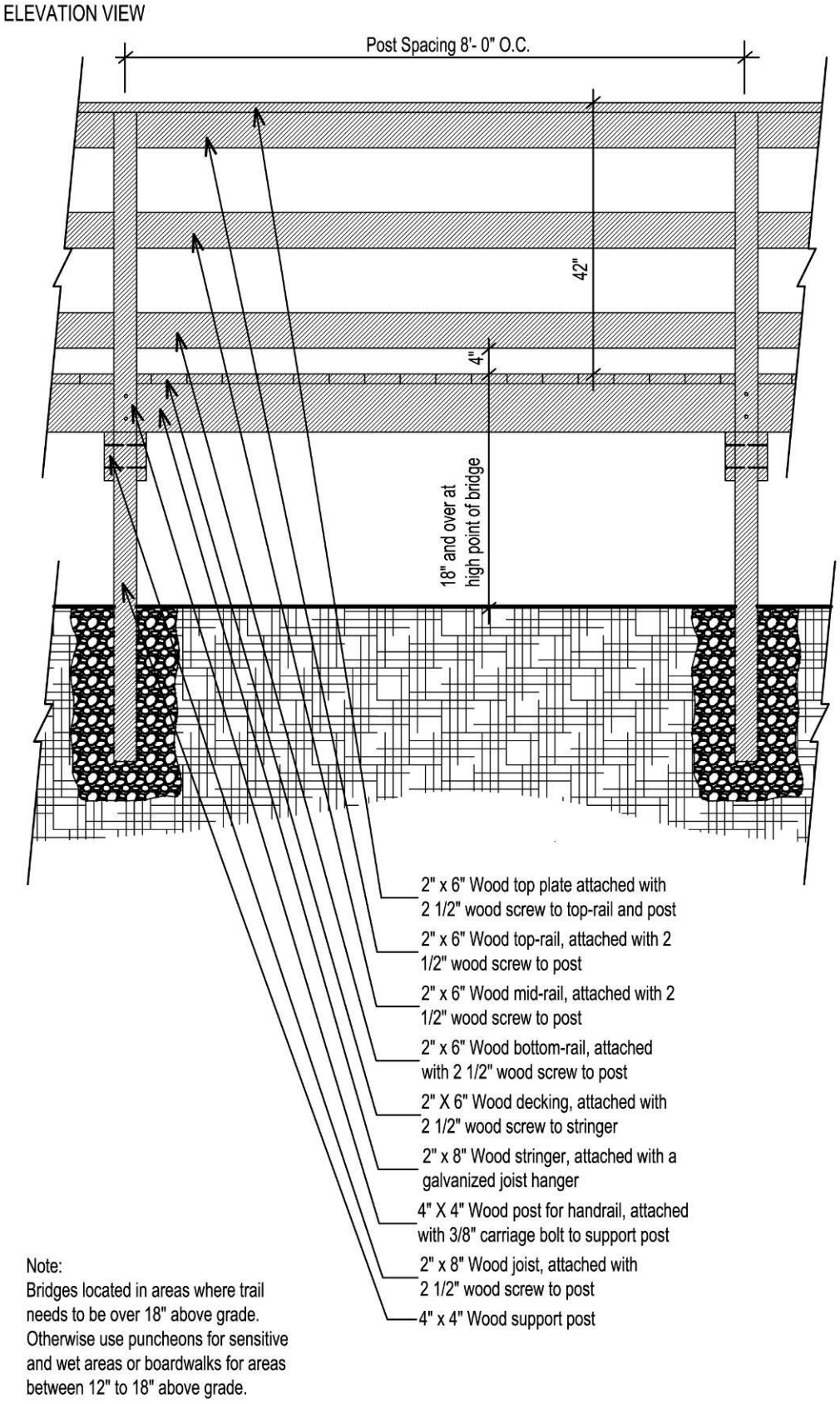


Figure 6- 17: Typical Trail Bridge Elevation

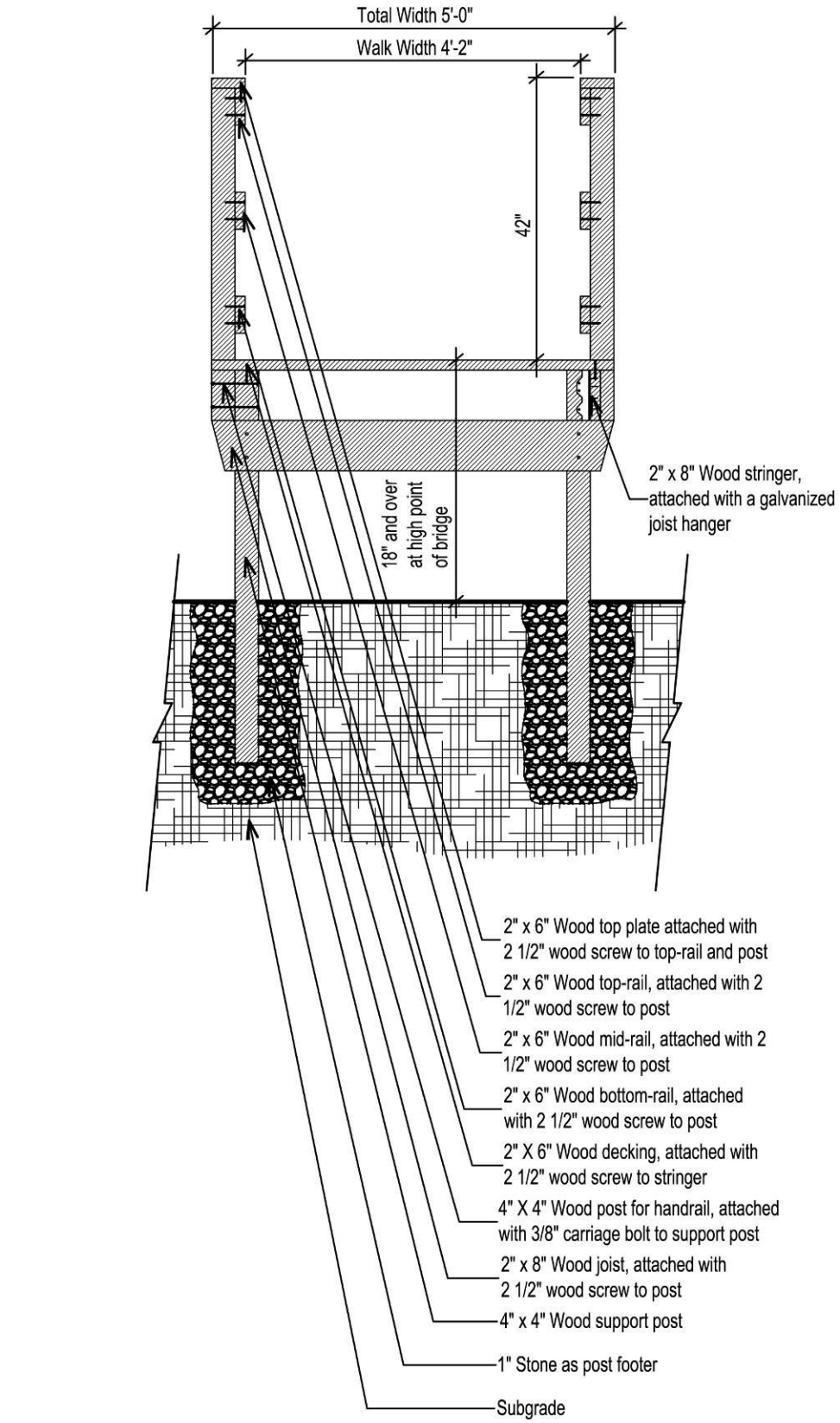


Figure 6- 18: Typical Trail Bridge Section

Stairs

Although there are numerous approaches to providing stairs on trails, many are not appropriate within the URTA as they included extensive excavation into the slope of the railroad grade to construct the stairs. Manassas National Battlefield Park has devised an approach to building stairs to minimize the impacts to the resource and provide a safe route for visitors.

Stairs are constructed of a combination of wood support parts and recycled plastic lumber for treads. The stairs are supported at the top and bottom by horizontal recycled plastic lumber sections that are anchored to the ground and attached to the stair stringers. The remainder of the structure is suspended above the resource grade and supported by the stringers. Railings are simple post and rail construction (see Figure SOP 11). It is recommended that this approach continue to be utilized for stairs within the URTA and all non-compliant stairs should be replaced using non-destructive construction techniques.



Figure 6- 19: Existing wood and recycled material steps at SN 080. (QEA)

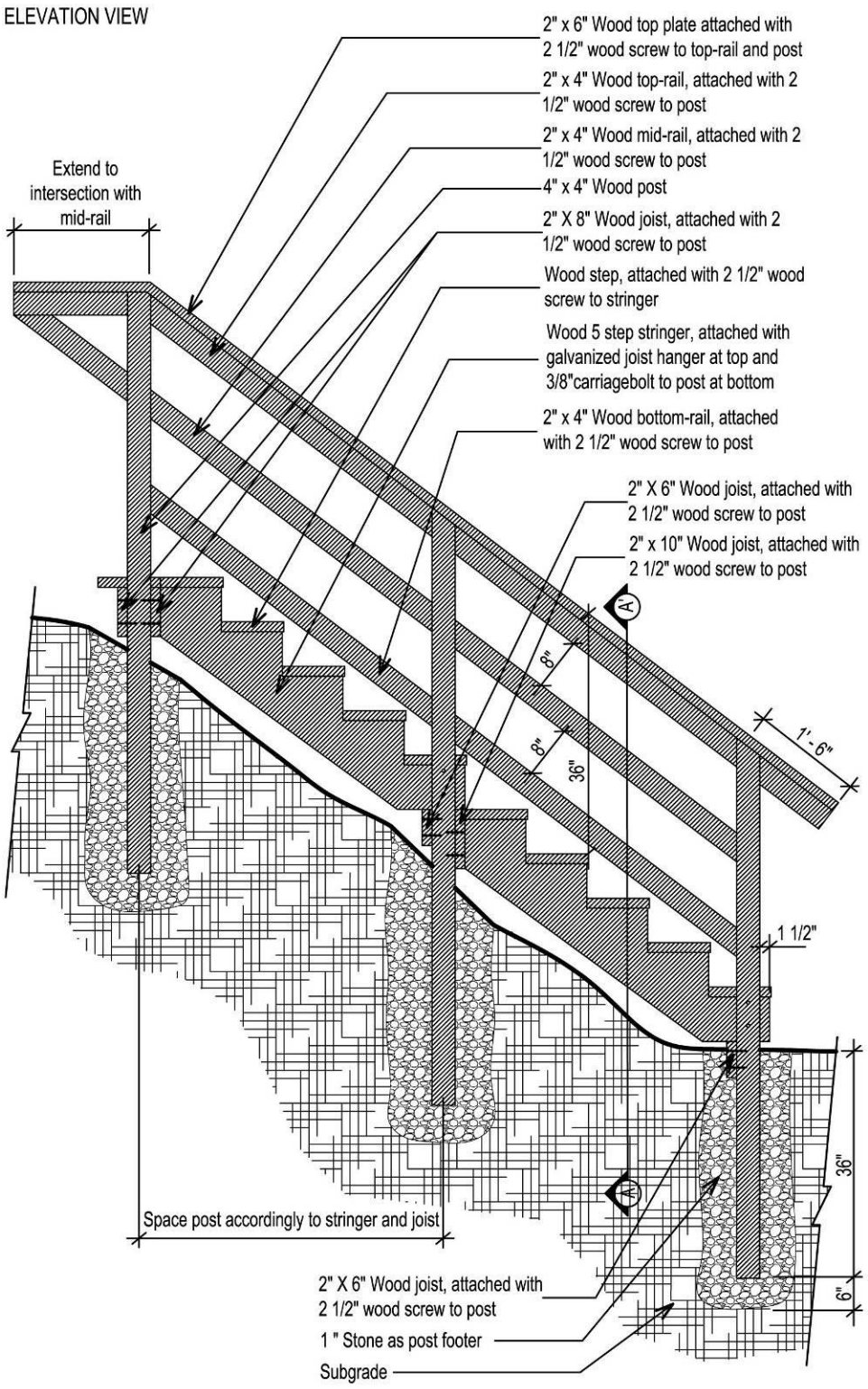


Figure 6- 20: Typical Trail Steps Elevation

SECTION VIEW

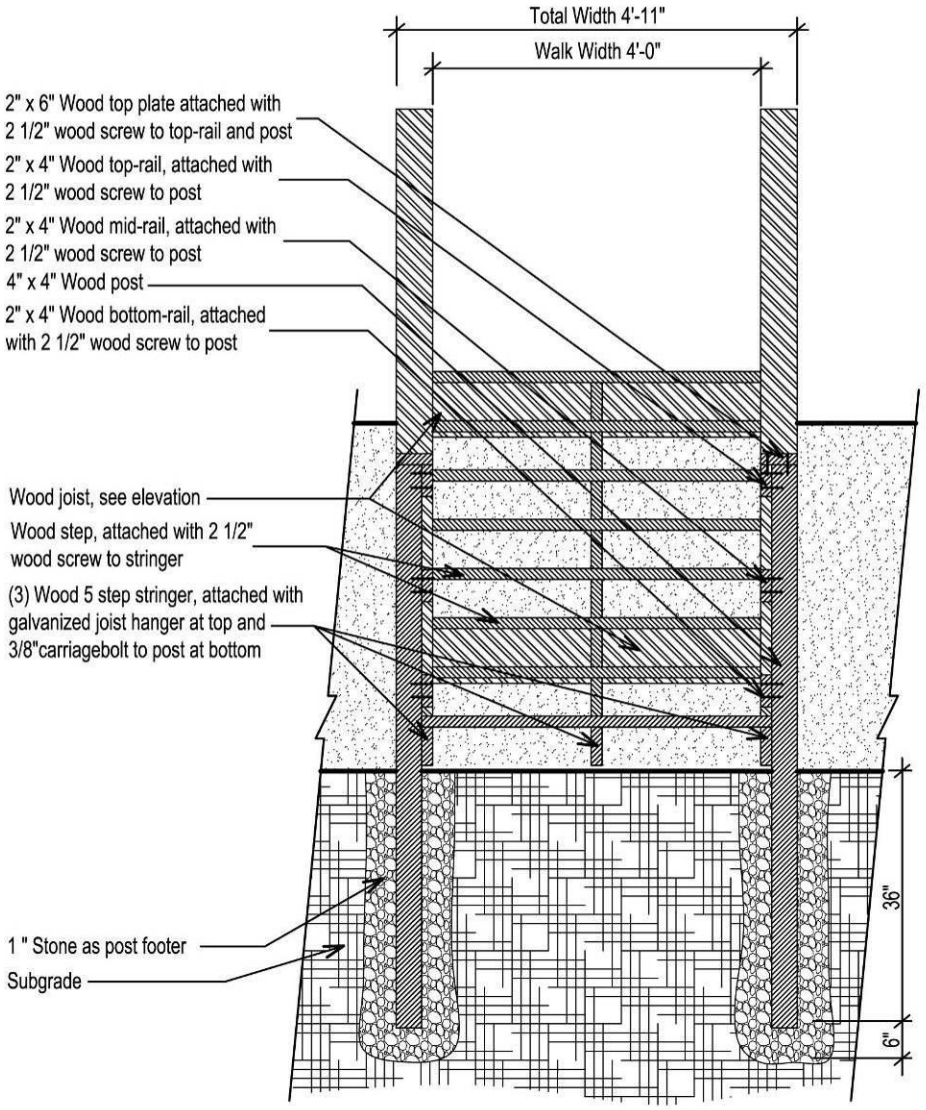


Figure 6- 21: Typical Trail Steps Section

Endnotes

[1] Daniel Schaible, *Fence Lines, Fields, and Forests Cultural Landscape Report* (Washington, D.C., National Park Service, National Capital Region, Cultural Resources Program, 2013).
[2] Schaible; and Matthew B. Reeves, *Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office.* (Washington, D.C., National Park Service, Occasional Report No. 14, Regional Archeology Program, National Capital Region, 1998).
[3] Adapted from: United States Secretary of the Interior, National Park Service, Cultural Landscapes Initiative, *Cultural Landscape Currents 05: Sustainable Military Earthworks Management.* http://www.nps.gov/hps/hli/currents/earthworks/decision_intro.htm
[4] United States Secretary of the Interior, National Park Service, Cultural Landscapes Initiative, *Cultural Landscape Currents 05: Sustainable Military Earthworks Management.* http://www.nps.gov/hps/hli/currents/earthworks/decision_intro.htm; Shaun Eyring and Lucy Lawliss, *Preserving Battlefield Terrain: Technologies for Earthworks Management*, 2000. APT Bulletin, Vol. 31, No. 4, Managing Cultural Landscapes, 13-19.
[5] Shaun Eyring and Lucy Lawliss, *Preserving Battlefield Terrain: Technologies for Earthworks Management*, (APT Bulletin, Vol. 31, No. 4, Managing Cultural Landscapes, 2000), 13.
[6] Ibid.
[7] David W. Lowe and CRGIS. "Unfinished Railroad Resource Survey, Manassas National Battlefield Park," (National Capital Region, WASO National Park Service, Washington, DC, 2012), v. See Chapter 2, Existing Conditions, in this CLR for more information on the construction of the resource.
[8] Eyring and Lawliss, *Preserving Battlefield Terrain: Technologies for Earthworks Management*, 13; Andropogon Associates, *Earthworks Landscape Management Manual* (Washington, D.C.: National Park Service, 1989); United States Secretary of the Interior, National Park Service, Cultural Landscapes Initiative, *Cultural Landscape Currents 05: Sustainable Military Earthworks Management.* http://www.nps.gov/hps/hli/currents/earthworks/decision_intro.htm.
[9] Note that this does not include the entire 80' right-of-way for the railroad. Since the rail line was never completed, the ROW was not ever maintained. Therefore it would be misleading, expensive, and environmentally irresponsible to maintain the entire width of the corridor.
[10] Vimy Declaration for the Conservation of Battlefield Terrain (draft, 2000).
[11] Eyring and Lawliss, *Preserving Battlefield Terrain: Technologies for Earthworks Management*, 18. Self-leveling mowers reduce damage that can be inflicted by standard lawn mowers upon the surface of earthworks. The mower includes a deck that adjusts to the slope. It is a driving mower that travels on the earthwork, with large, air-filled rubber tires that disperse weight, causing less damage to the earth's surface. It provides a safe way to reach steep slopes on earthworks.
[12] Schaible, *Fence Lines, Fields, and Forests Cultural Landscape Report* , 85-86.
[13] A browse line is the open space created under the canopy of a tree from grazing animals.
[14] The USDA Forest Service *Trail Bridge Catalog* provides specific guidance on design of single-unit laminated timber bridges and can be found at: http://www.fs.fed.us/eng/bridges/types/single.htm.

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Proposed Treatment Overall Project Area

Vegetation Treatment, Overall Project Area

Task 1 - Continue to maintain the open pastoral character of the landscape through hay harvesting and mowing (Task 1 in FFF CLR).

Task 2 - Restore areas of second-growth forest to grassland.

Task 3 - When restoring second-growth forests to grasslands, follow the guidelines established in the Brawner Farm-Deep Cut Vista Enhancement Environmental Assessment (Task 4 in FFF CLR).

Task 4 - Maintain newly restored grasslands through expanded hay harvesting or, when necessary, mowing (Task 2 in FFF CLR).

Task 5 - When necessary, consider alternate means of vegetation management, including goat grazing and prescribed fire (Task 3 in FFF CLR).

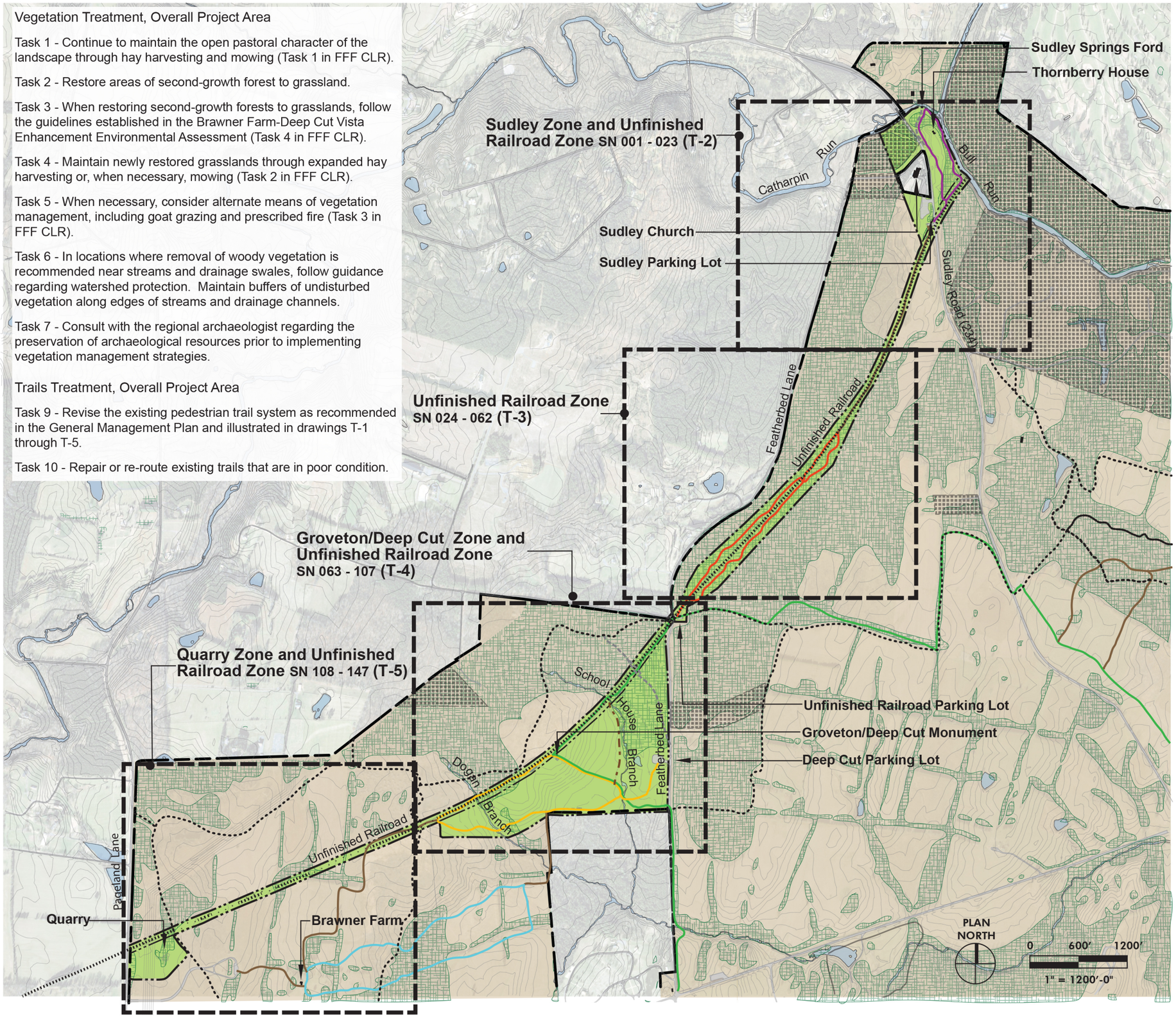
Task 6 - In locations where removal of woody vegetation is recommended near streams and drainage swales, follow guidance regarding watershed protection. Maintain buffers of undisturbed vegetation along edges of streams and drainage channels.

Task 7 - Consult with the regional archaeologist regarding the preservation of archaeological resources prior to implementing vegetation management strategies.

Trails Treatment, Overall Project Area

Task 9 - Revise the existing pedestrian trail system as recommended in the General Management Plan and illustrated in drawings T-1 through T-5.

Task 10 - Repair or re-route existing trails that are in poor condition.



Legend

- Legislative Boundary
- Project Boundary
- Unfinished Railroad
- Roads
- Utility Lines
- Worm Fence
- Existing Buildings
- Forest, Fence Row Vegetation, and Individual Trees
- Park Area
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned or Non-NPS Public Land Within Park Boundary
- Contours
- Enlargement Sheets (T2 - T5)
- Existing Sudley Loop Trail
- Existing Unfinished Railroad Loop Trail
- Existing Second Manassas Loop Trail
- Existing First Manassas Loop Trail
- Existing Deep Cut Loop Trail
- Existing Brawner Loop Trail
- Existing Connector Trails
- Existing Bridle Trails
- Historic Road Trace
- Proposed / Revised Trail

Map Notes and Sources

Note: Detailed information for the Sudley, Deep Cut, and Quarry areas is provided on Sheets EC-2, EC-3 and EC-4

1. Lowe and CRGIS, Unfinished Railroad Resource Survey, 2013
2. Joseph, Cultural Landscape Inventory, Northwest Quadrant, Manassas National Battlefield Park, 1996
3. Williams, Field Investigations 12/2012
4. Manassas National Battlefield Park, Park Map, Hiking Trail Map, Bridle Trail Map
5. Google Earth Aerial 10/12/2012
6. Digital base map data provided by National Capital Region, National Park Service

QUINN EVANS ARCHITECTS

NPS 379
MANA 114363

T-1

Task 1 - At SN 001: Add a double rail pierced post fence and an interpretive wayside.

Task 2 - At 002.5: Remove woody vegetation that is growing on the Amos Benson House Ruin.

Task 3 - Between SN 006 and SN 007: Do not remove vegetation between SN 006 and Sudley Road. Leave as a buffer between the resource and the road in this disturbed area.

Task 4 - At SN 007: If the Sudley parking lot remains in its current location, add signs at the intersection of the trail and Sudley Road clearly identifying the Unfinished Railroad and trail location. Also, add a crosswalk and signs on Sudley Road to the north and south of the crosswalk, warning drivers of the pedestrian crossing. If the Sudley parking lot is relocated, consider options for improved trail access to the section of the Unfinished Railroad that is east of Sudley Road.

Task 6 - At SN 008: Add stairs over slope according to SOPs.

Task 7 - Between SN 008 and SN 014: Retain cedars on top of fill and monitor condition. Remove any hazard trees according to SOPs and do not replace. Consider providing interpretive information explaining that the cedars represent a historic fence line.

Task 8 - Between SN 014 and SN 017: Retain cedars and monitor condition. Remove any hazard trees according to SOPs and don not replace. Consider providing interpretive information explaining that the cedars represent a historic fence line.

Task 37 - Preserve the white oak west of the Thornberry House.

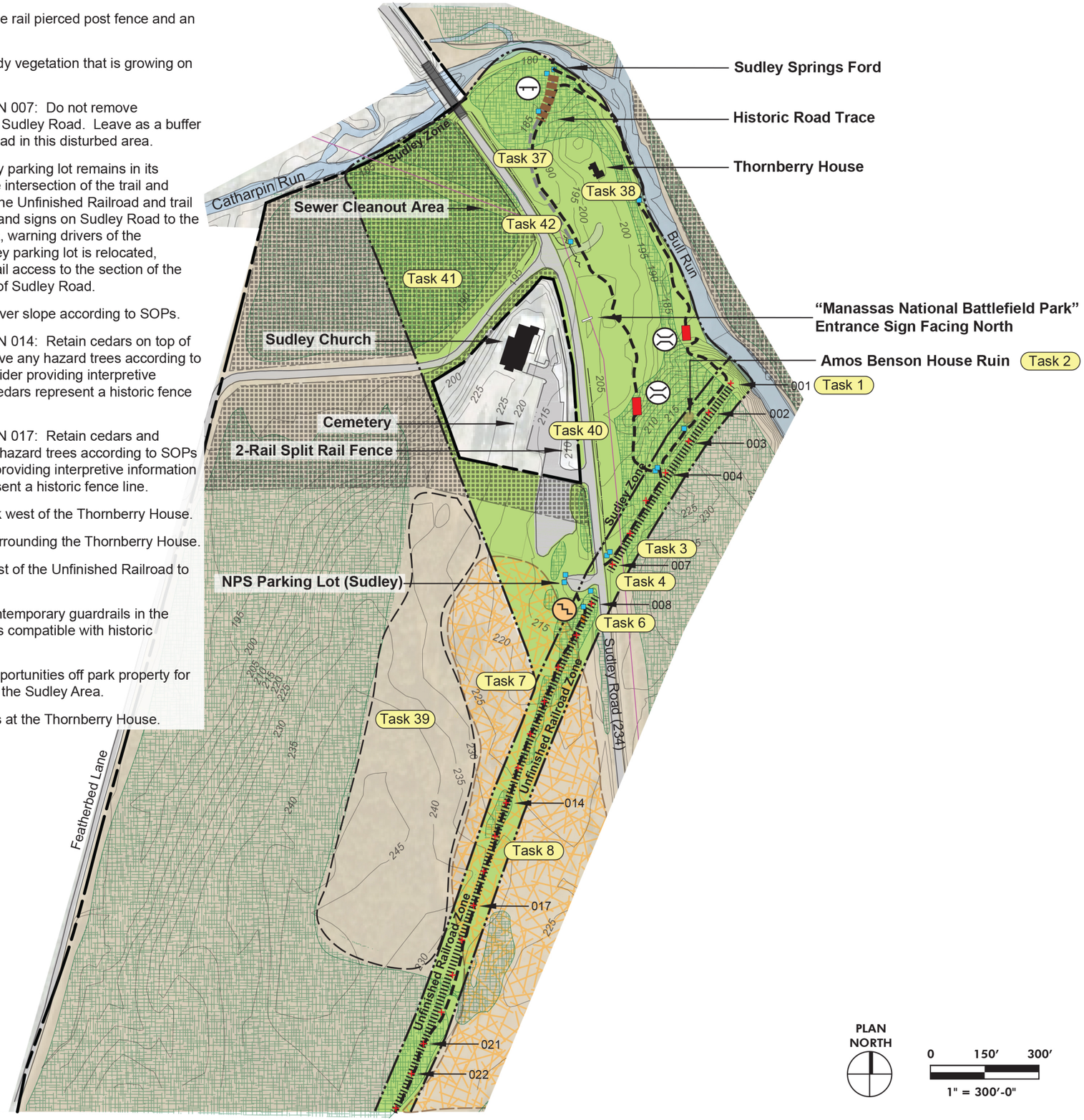
Task 38 - Restore open fields surrounding the Thornberry House.

Task 39 - Clear woods to the west of the Unfinished Railroad to open up the “Rocky Knoll”.

Task 40 - Consider replacing contemporary guardrails in the Sudley Zone with a design that is compatible with historic character (Task 6 in FFF CLR).

Task 41 - Explore partnership opportunities off park property for an improved parking lot to serve the Sudley Area.

Task 42 - Restore historic fences at the Thornberry House.



PLAN NORTH

0 150′ 300′

1" = 300′-0"

MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Proposed Treatment Sudley Zone and Unfinished Railroad Zone SN 001-023

Legend

- Legislative Boundary
- Landscape Management Zones
- Unfinished Railroad
- Existing Roads
- Existing Buildings
- Forest, Fence Row Vegetation, and Individual Trees
- Grasslands/Open Field
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned or Non-NPS Public Land Within Park Boundary
- Existing Utility Line
- Existing Worm Fence
- Contours
- Existing Interpretive Trails
- Historic Road Trace
- Existing Boardwalk / Proposed/Replaced Boardwalk
- Existing Trail Bridge / Proposed/Replaced Bridge
- Existing Stairs / Proposed/Replaced Stairs
- Existing Interpretive Sign or Wayside
- Hay Lease
- Existing Guardrail

Map Notes and Sources

1. See Existing Conditions Plans (EC Sheets) for information on base map sources.
2. A complete description of recommended treatment tasks related to the project area is provided in the Chapter 6 narrative. Tasks labeled on this sheet include abbreviated identification of specific actions that are related to locations illustrated.

QUINN EVANS ARCHITECTS

NPS | 379
MANA | 114363

T-2

Task 11 - Between SN 026 and SN 027: Install puncheon or supported boardwalk to avoid damage to resource in this wet area.

Task 12 - Between SN 028 and SN 030: Install puncheon or supported boardwalk to avoid damage to resource in this wet area.

Task 14 - Between SN 033 and SN 036: Remove woody vegetation on the resource and establish native grasses or leaf cover (if vegetation is sufficient). Repair damage from social trail and establish native grasses or leaf cover. Fence damaged area until acceptable ground cover is established.

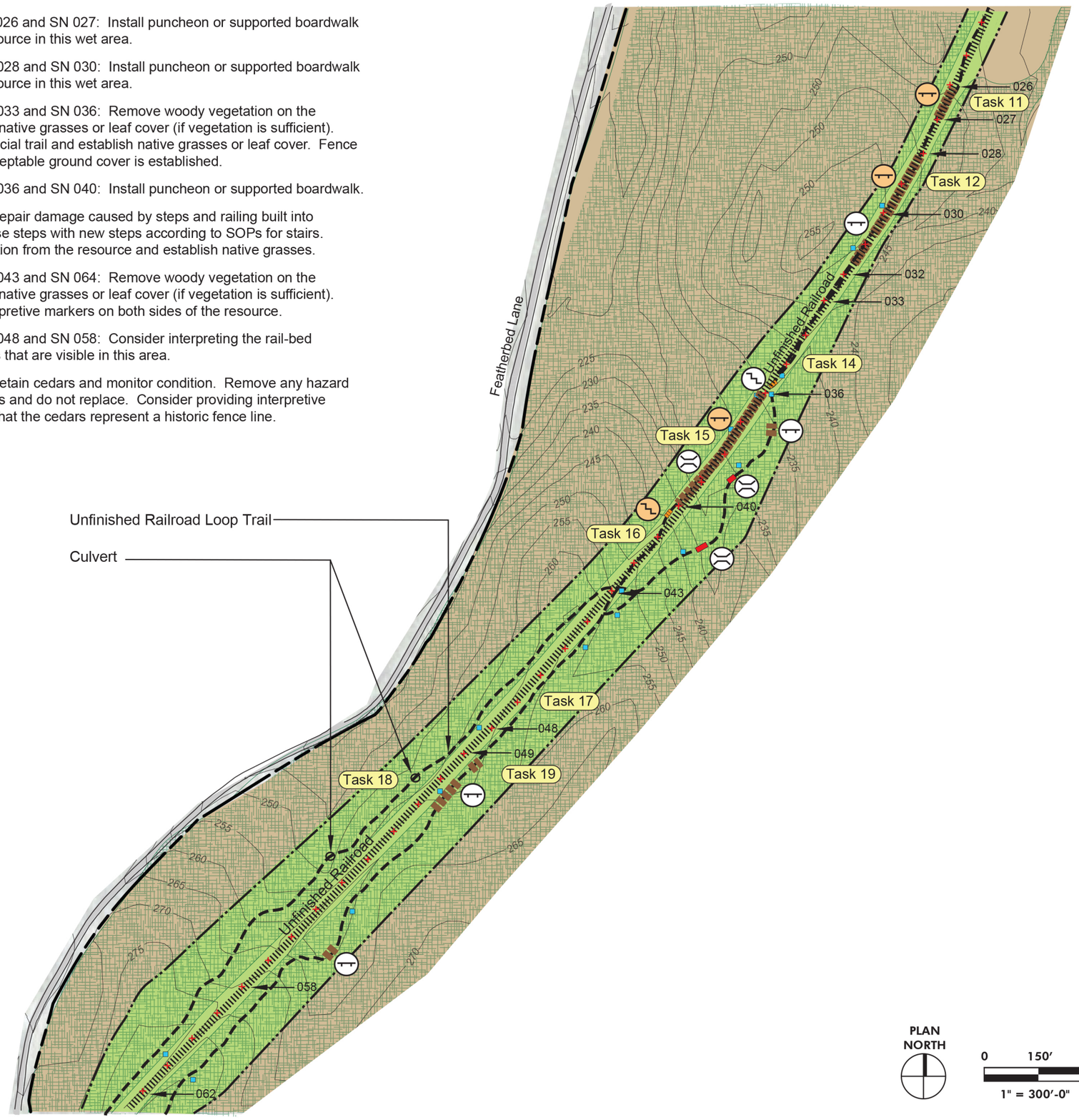
Task 15 - Between SN 036 and SN 040: Install puncheon or supported boardwalk.

Task 16 - At SN 040: Repair damage caused by steps and railing built into resource. Replace these steps with new steps according to SOPs for stairs. Remove woody vegetation from the resource and establish native grasses.

Task 17 - Between SN 043 and SN 064: Remove woody vegetation on the resource and establish native grasses or leaf cover (if vegetation is sufficient). Maintain trails and interpretive markers on both sides of the resource.

Task 18 - Between SN 048 and SN 058: Consider interpreting the rail-bed construction techniques that are visible in this area.

Task 19 - At SN 049: Retain cedars and monitor condition. Remove any hazard trees according to SOPs and do not replace. Consider providing interpretive information explaining that the cedars represent a historic fence line.



MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Proposed Treatment
Unfinished Railroad Zone SN 024 - 062

Legend

- Legislative Boundary
- Landscape Management Zones
- Unfinished Railroad
- Existing Roads
- Forest, Fence Row Vegetation, and Individual Trees
- Grasslands/Open Field
- Project Area
- Privately Owned Land Outside Park Boundary
- Contours
- Existing Interpretive Trails
- Existing Boardwalk / Proposed/Replaced Boardwalk
- Existing Trail Bridge / Proposed/Replaced Bridge
- Existing Stairs / Proposed/Replaced Stairs
- Existing Interpretive Sign or Wayside

Map Notes and Sources

1. See Existing Conditions Plans (EC Sheets) for information on base map sources.
2. A complete description of recommended treatment tasks related to the project area is provided in the Chapter 6 narrative. Tasks labeled on this sheet include abbreviated identification of specific actions that are related to locations illustrated.

PLAN NORTH

0 150′ 300′

1" = 300′-0"

QUINN EVANS ARCHITECTS

NATIONAL PARK SERVICE Department of the Interior

NPS 379
MANA 114363

T-3

Task 20 - Between SN 063 and SN 066: Establish a barrier-free route between the Unfinished Railroad parking lot and the wayside after relocating the interpretive wayside about eight feet to the southwest.

Task 21- Between SN 066 and SN 067: Improve orientation, wayfinding, and pedestrian safety near the Unfinished Railroad parking lot. Adjust the location of the trail marker signs near the parking lot. Screen the former trail location at the northeast side of the parking lot. Add pedestrian crossing signs on Featherbed Lane (see figure 6-3).

Task 22 - Remove fencing along Featherbed Lane and replace the portion near the Unfinished Railroad parking area and trailhead with single rail, pierced-post fence.

Task 23 - Between SN 067 and SN 068: Adjust the trail so that it intersects with Featherbed Lane (rather than the private road) and install a boardwalk from Featherbed Lane to the existing stairs at Unfinished Railroad Station 068.

Task 24 - Between SN 074 and SN 075: Add puncheon or boardwalk spanning road width and connecting bridges to improve trail conditions and reduce impacts to historic resources.

Task 25 - Between 077 and SN 079: Remove social trail.

Task 26 - Between SN 084 and SN 085: Consider relocating interpretive wayside.

Task 27 - Between SN 085 and SN 089: Monitor conditions within the cut and consider providing additional interpretive information.

Task 28 - Between SN 091 and SN 094: Replace existing boardwalk with puncheon as indicated in SOP. Extend boardwalk from SN 091 and SN 095. Monitor vegetation and maintain grassland. In this area, cut vegetation on rail-bed alignment at least once a month.

Task 29 - Between SN 094 and SN 095: Replace existing boardwalk with supported boardwalk.

Task 31 - Between SN 096 and SN 098: Relocate trail to the north so that it does not go onto the fill. Repair damage at SN 098.

Task 32 - Between SN 105 and SN 106: Repair damage caused by steps built into resource. Replace steps with new stairs according to SOPs.

Task 33 - Eliminate the bridle trial crossing at the west end of the Deep Cut Loop trail.

Task 34 - At SN 107: Add puncheon.

Task 43 - In partnership with the Civil War Trust, clear woods in Dogan Farm tract and convert to open fields.

Task 44 - Revise the trail that extends from the Deep Cut parking lot to the Cedar Pole marker so that it is barrier free. Add a bridge at School House Branch.

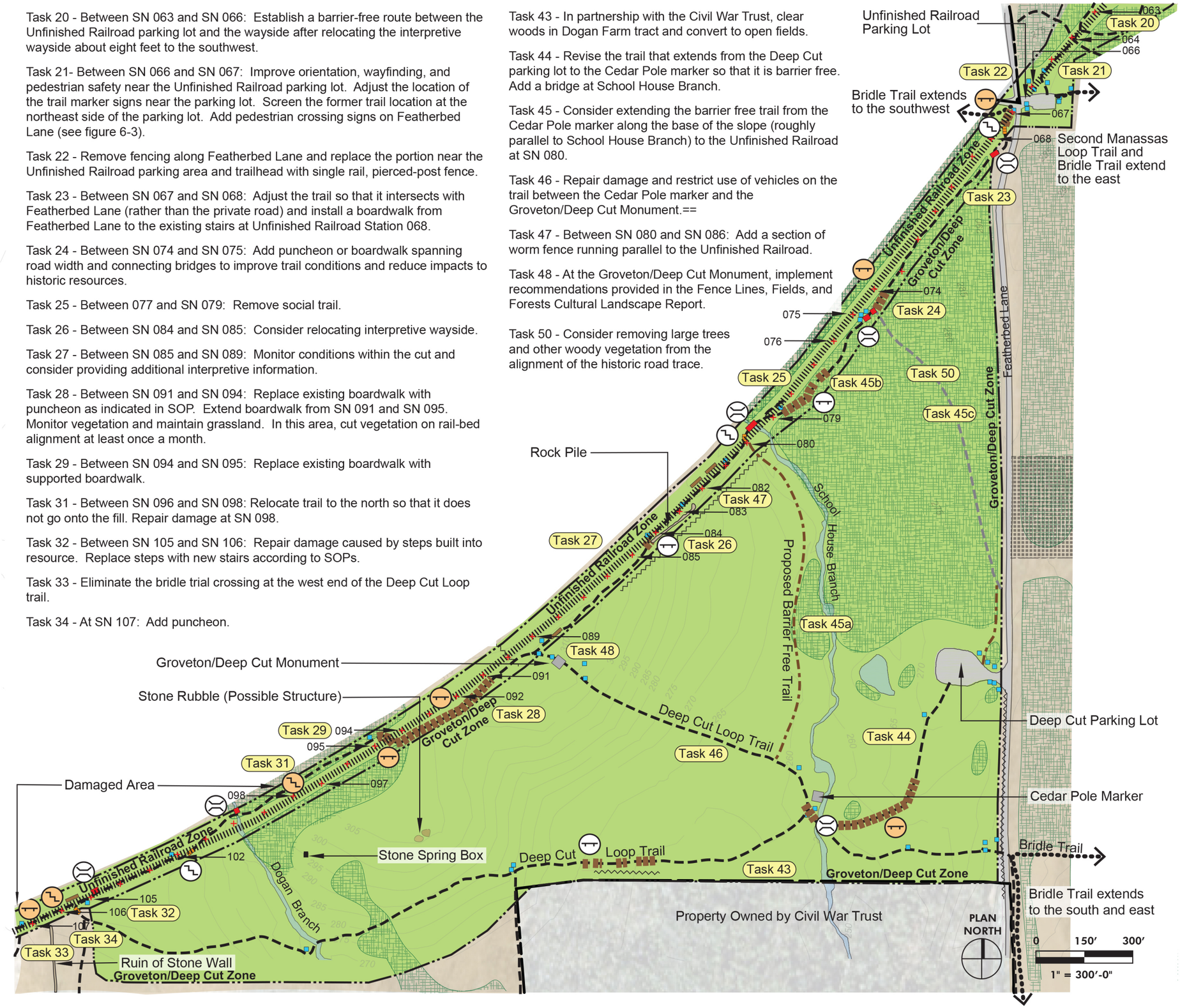
Task 45 - Consider extending the barrier free trail from the Cedar Pole marker along the base of the slope (roughly parallel to School House Branch) to the Unfinished Railroad at SN 080.

Task 46 - Repair damage and restrict use of vehicles on the trail between the Cedar Pole marker and the Groveton/Deep Cut Monument.==

Task 47 - Between SN 080 and SN 086: Add a section of worm fence running parallel to the Unfinished Railroad.

Task 48 - At the Groveton/Deep Cut Monument, implement recommendations provided in the Fence Lines, Fields, and Forests Cultural Landscape Report.

Task 50 - Consider removing large trees and other woody vegetation from the alignment of the historic road trace.



MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Proposed Treatment Groveton / Deep Cut Zone and Unfinished Railroad Zone SN 063 - 107

Legend

- Legislative Boundary
- Landscape Management Zones
- Unfinished Railroad
- Existing Roads
- Existing Buildings
- Forest, Fence Row Vegetation, and Individual Trees
- Grasslands/Open Field
- Project Area
- Privately Owned Land Outside Park Boundary
- Privately Owned Land Within Park Boundary
- Proposed Worm Fence
- Contours
- Existing Interpretive Trails
- Proposed Interpretive Trails
- Existing Bridle Trail
- Existing Boardwalk
- Proposed/Replaced Boardwalk/Puncheon
- Existing Trail Bridge
- Proposed/Replaced Bridge
- Existing Stairs
- Proposed/Replaced Stairs
- Existing Interpretive Sign or Wayside
- Historic Road Trace

Map Notes and Sources

1. See Existing Conditions Plans (EC Sheets) for information on base map sources.
2. A complete description of recommended treatment tasks related to the project area is provided in the Chapter 6 narrative. Tasks labeled on this sheet include abbreviated identification of specific actions that are related to locations illustrated.

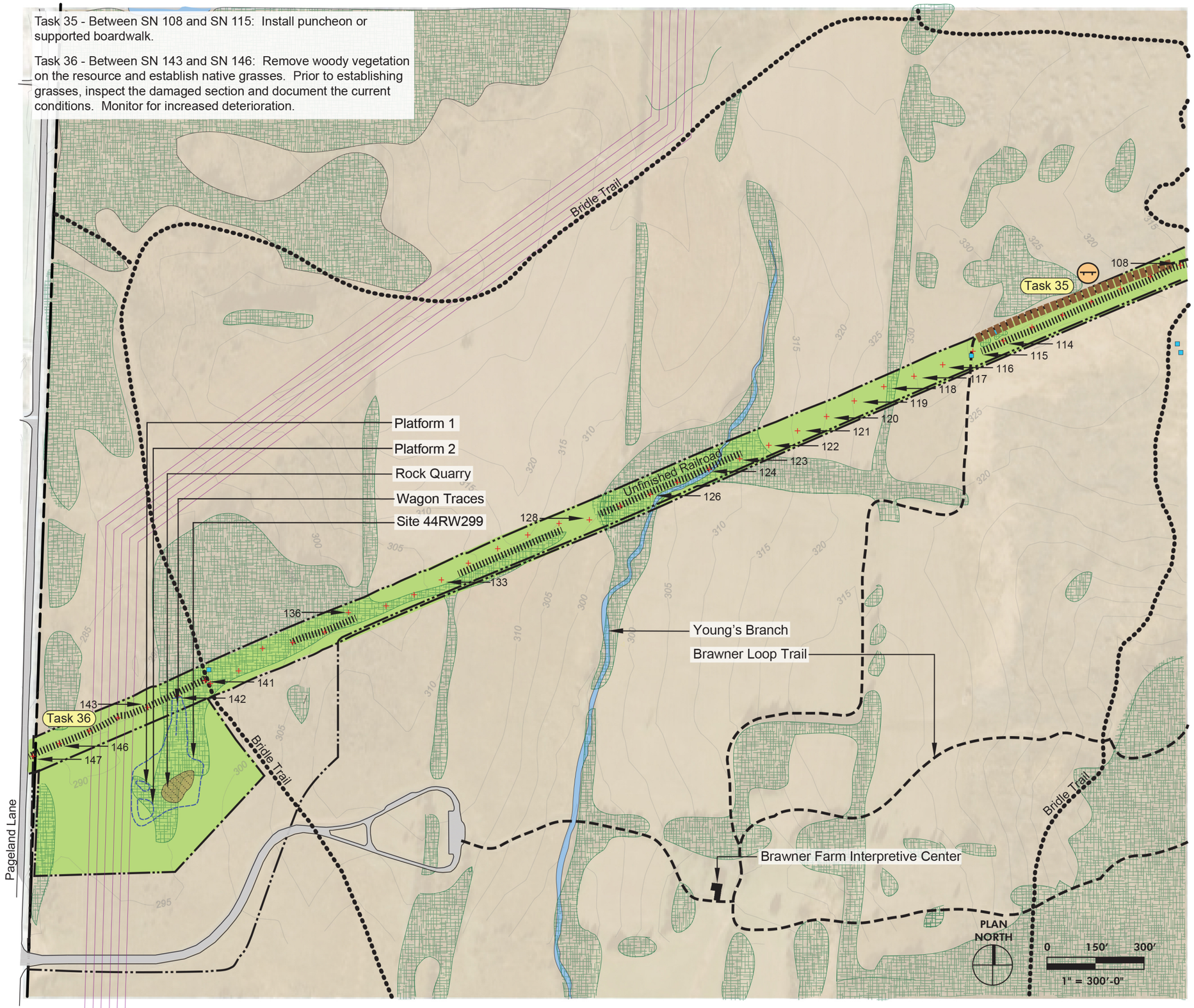
QUINN EVANS ARCHITECTS

NPS | 379
MANA | 114363

T-4

Task 35 - Between SN 108 and SN 115: Install puncheon or supported boardwalk.

Task 36 - Between SN 143 and SN 146: Remove woody vegetation on the resource and establish native grasses. Prior to establishing grasses, inspect the damaged section and document the current conditions. Monitor for increased deterioration.



MANASSAS UNFINISHED RAILROAD

Cultural Landscape Report

Proposed Treatment Quarry Zone and Unfinished Railroad Zone SN 108 - 147

Legend

- Legislative Boundary
- Project Boundary
- Unfinished Railroad
- Existing Roads
- Existing Buildings
- Forest, Fence Row Vegetation, and Individual Trees
- Grasslands/Open Field
- Project Area
- Privately Owned Land Outside Park Boundary
- Existing Utility Line
- Existing Worm Fence
- Contours
- Existing Interpretive Trails
- Existing Bridle Trail
- Existing Boardwalk
- Proposed Puncheon or Boardwalk
- Existing Interpretive Sign or Wayside

Map Notes and Sources

1. See Existing Conditions Plans (EC Sheets) for information on base map sources.
2. A complete description of recommended treatment tasks related to the project area is provided in the Chapter 6 narrative. Tasks labeled on this sheet include abbreviated identification of specific actions that are related to locations illustrated.

QUINN EVANS ARCHITECTS

NPS | 379
MANA | 114363

T-5



BIBLIOGRAPHY

Bibliography

Bedell, John, 2012. *Context statement for the Unfinished Railroad, Manassas National Battlefield Park* (unpublished).

Bedell, John, 2013. *Summary of Second Battle of Manassas related to Unfinished Railroad* (unpublished).

Birnbaum, Charles A. and Christine Capella Peters, 1996. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes.*(Washington DC: Department of the Interior, National Park Service).

Coffin, Margaret and Regina M. Bellavia, 1998. *Cultural Landscape Publication No. 7: Guide to Developing a Preservation Maintenance Plan for a Historic Landscape* (Boston, Massachusetts: Olmsted Center for Landscape Preservation, National Park Service).

Dogan, Lucinda, 1871. *Henry Dogan Estate War Claim* (Southern Claims Commission, Prince William County, No.21237).

Dogan, Mary, 1871. *John C. Brawner War Claim* (Southern Claims Commission, Prince William County, No. 1335).

Earley, Judith and Kay Fanning, 2005. *Cultural Landscape Report, Brawner Farm, Manassas National Battlefield Park* (United States Department of the Interior, National Park Service, National Capital Region).

Eckenrode, James Hamilton, 1996. *The Political History of Virginia During the Reconstruction,* rev. ed. (Gloucester, MD: Peter Smith).

Eyring, Shaun and Lucy Lawliss, 2000. *Preserving Battlefield Terrain: Technologies for Earthworks Management* (APT Bulletin, Vol. 31, No. 4, Managing Cultural Landscapes).

Fleming, G. P. and J.T. Weber, 2003. *Inventory, classification, and map of forested ecological communities at Manassas National Battlefield Park, Virginia* (Natural Heritage Tech. Rep. 03-7. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond. Unpublished report submitted to the National Park Service).

Fogel, Heidy P., Ph.D., and John Bedell, M.A., 1994. *Phase 1 Archaeological Survey at the Waverley Farms and Squire Tract, Prince Williams County, Virginia* (Fairfax, Virginia: Engineering-Science, Inc.).

Howe, Ronald D. and Richard Sacchi, 1999. *Manassas Gap Railroad Independent Line National Register Nomination* (Washington, D.C.: U.S. Department of the Interior, National Park Service).

Joseph, Maureen, 1996. *Cultural Landscape Inventory, Manassas National Battlefield Park: Northwest Quadrant* (United States Department of the Interior, National Park Service).

Joseph, Maureen, nd. *1850 United States Agricultural Census Manuscript summary table* (prepared from National Archives, Non-Population Schedules, Agricultural Census, Prince William County, VA.).

Lowe, David W. and CRGIS, 2013. *Unfinished Railroad Resource Survey, Manassas National Battlefield Park* (Washington, D.C.: National Capital Region, WASO National Park Service).

McElfresh, Earl, 2011. *Unfinished Railroad Cut at Second Manassas* (Originally published by *Civil War Times*. Accessed 5 October 2011, http://www.historynet.com/unfinished-railroad-cut-at-second-manassas.htm).

Orrence, Karen L. and Dr. Stephen R. Potter, 2010. *Assessment of Damage to Archeological Resources at the Unfinished Railroad (Site 44PW299) on the Brawner Farm, Manassas National Battlefield Park, Manassas, Virginia, Case Incident Number 09-00195* (United States Department of the Interior, National Park Service, National Capital Region, Regional Archeology Program).

Page, Robert R., Cathy A. Gilbert, and Susan A. Dolan, 1998. *A Guide to Cultural Landscape Reports:*
Contents, Process, and Techniques (Washington, DC: U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Park Historic Structures and Cultural Landscapes
Program).

Reeves, Matthew B., 1998. *Views of a Changing Landscape: An Archeological and Historical Investigation of Sudley Post Office (44PW294), Manassas National Battlefield Park, Manassas, Virginia, Occasional Report No. 14* (Washington, D.C.: Regional United States Department of the Interior, National Capital Region, National Park Service, Regional Archeology Program).

Schaible, Daniel, 2013. *Fence Lines, Fields, and Forests Cultural Landscape Report* (Washington, D.C., National Park Service, National Capital Region, Cultural Resources Program).

Thomas, J.E., J.P. Campbell, T.J.B. Carruthers, W.C. Dennison, B. Gorsira, M. Lehman, and M. Nortrup, 2011. *Manassas National Battlefield Park natural resource condition assessment: National Capital Region. Natural Resource Report NPS/NCRN/NRR—2011/414* (Fort Collins, Colorado: National Park Service).

Trieschmann Laura Virginia, 2004. *Manassas Battlefield Historic District (Amended and Boundary Expansion) National Register of Historic Places Registration Form* (Washington, D.C.: U.S. Department of the Interior, National Park Service).

Turner, Ronald Ray, 1999. *Prince William County Virginia 1805-1955 Businesses* (http://www.pwcvirginia.com/documents/Business1805-1965.pdf).

Tyler, R.W., 1866. *Letter to Colonel M.J. Ludington, 28 March 1866.* (Transcription of letter on file at MNHP library file.)

United States Department of Agriculture, nd. *USDA Forest Service Trail Bridge Catalog* .

United States Department of the Interior, National Park Service, 2008. *Final General Management Plan/Environmental Impact Statement, Manassas National Battlefield Park*.

United States Secretary of the Interior, National Park Service, Cultural Landscapes Initiative, *Cultural Landscape Currents 05: Sustainable Military Earthworks Management.*

Vimy Declaration for the Conservation of Battlefield Terrain (draft, 2000).

Vose, George L., 1857. *Handbook of Railroad Construction for the Use of American Engineers* (Boston and Cambridge: James Munroe & Co).

Washington Star, 1866. *The Union Dead on the Battle-Fields of Virginia* (8 April 1866, copyright *The New York Times).*

Zenzen Joan M., 1998. *Battling For Manassas: The Fifty-Year Preservation Struggle at Manassas National Battlefield Park* (Pennsylvania State University Press).

This page intentionally left blank.



Appendix A: Inspection Form

Inspected by: **date:**

Station No.	Cut/Fill/Level	Right Relief (#')	Left Relief (#')	Grass	Leaf litter	Earth	Gravel	Other	Deciduous Forest	Mixed Forest	Evergreen Forest	Woody Scrub	Pasture/Grasses/Forbs	Other	None	Erosion	Compaction	Intrusion	Digging	Tree throw	Other	**Comments**	Further Diagnosis Needed (y/n)	Work Needed (X) Critical Work(*)	Action Completed (date)
Railroad resource				**Surface Cover**					**Land Cover**						**Damage/Impacts Observed**										

This page intentionally left blank.

National Park Service
U.S. Department of the Interior



Manassas National Battlefield Park
6511 Sudley Road
Manassas, VA 20109