VALLEY FORGE NATIONAL HISTORICAL PARK

Valley Forge National Historical Park
Project No: VAFO 111555 34

Cultural & Interpretive Landscape Treatment Plan

Phase 1: Overall Park Objectives & Guidelines
Phase 2: Park-wide Cultural & Interpretive Landscape Treatment Plan

July 2011

Prepared by
Heritage Landscapes, Preservation Landscape Architects & Planners
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Valley Forge National Historical Park
Cultural & Interpretive Landscape Treatment Plan

Phase 1: Cultural & Interpretive Landscape Objectives & Guidelines
Phase 2: Park-wide Cultural & Interpretive Landscape Treatment Plan & Detail Zones

Prepared for
National Park Service, Valley Forge National Historical Park, Northeast Region & Denver Service Center

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VALLEY FORGE NATIONAL HISTORICAL PARK
CULTURAL & INTERPRETIVE LANDSCAPE TREATMENT PLAN

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CHAPTER I: INTRODUCTION, WORK SCOPE & METHODOLOGY

A. INTRODUCTION

Valley Forge is an iconic place in American memory and a landscape of great historical significance. This valued landscape, where events took place that shaped the history of the United States, has evolved for more than two hundred years since the months of the 1777-1778 winter encampment of the Continental Army to reach its present character as a national historical park. This report is a study of that evolved commemorative landscape to address landscape treatment and interpretation within the framework set forth in the *Valley Forge General Management Plan/Environmental Impact Statement*, 2007.

The Valley Forge National Historical Park (NHP) property as defined for this *Valley Forge Cultural and Interpretive Landscape Treatment Plan* is an area of some 3,564 acres bounded by Pawlings Road to the north, Audubon Road and Route 422 to the east, the Pennsylvania Turnpike (Interstate I-76) to the south, and the steep, wooded slopes of Mount Misery to the west, including some privately-owned inholdings. Today, the boundary of the park creates a rough oval shape that contains several component landscapes, landforms, vegetation communities, water features, circulation routes, buildings, structures, monuments, and small-scale elements. Historically, the area comprised a variety of land uses including two villages, many farmsteads, agricultural fields, woodlands, and some small-scale industry. The area was temporarily transformed in the winter of 1777-1778 as General George Washington and the Continental Army used the land as the army's winter headquarters. After the encampment, the land quickly returned to its prior uses, and stayed relatively stable for the subsequent century. By the mid-19th century, industrial uses in the village of Valley Forge reached their peak, and the center of the park began to be quarried. The late 19th century saw the beginning of a slow evolution into a commemorative landscape to memorialize the winter encampment, ultimately resulting in the first state park in Pennsylvania.

Valley Forge NHP is significant for several historical associations. Its primary significance is the encampment of General George Washington and the Continental Army during the winter of 1777-1778. Subsequent agricultural, industrial, and recreational use of the lands and decades of commemoration after the encampment also are significant. Overall, the entire property is historically significant for its cultural resources that have been shaped, modified, and managed by a sequence of people and events over time.

The Valley Forge NHP landscape consists of important natural and cultural resources that contribute to the heritage value of the property. This plan describes the overall and contextual landscape and sets forth treatment objectives and guidelines that will enhance the visitor experience and the interpretive sequence throughout the park. Recommendations for landscape treatment and

interpretation are based on previous documentation of the site as well as an interactive process that engaged Valley Forge NHP staff, other National Park Service representatives, preservation landscape architects, and interpretive planners. The final objectives and recommendations follow federal landscape preservation guidance that respects the history of Valley Forge NHP while addressing contemporary and future needs.

B. SCOPE OF WORK & METHODOLOGY

The *Valley Forge Cultural and Interpretive Landscape Treatment Plan* provides a comprehensive summary of previous planning documents and reports as a basis for landscape preservation treatment objectives and guidelines. This document responds to the landscape objectives outlined in the *General Management Plan* (GMP). This *Landscape Treatment Plan* is the result of work occurring between 2006 and 2011 and coincides with the period during which the GMP was finalized.[1]

This planning project began with detailed study of previous planning documents and materials that were gathered from Valley Forge NHP and the Northeast Regional Office conducted by Heritage Landscapes staff. Documents included Cultural Landscape Inventories, Cultural Landscape Plan Parts I and II, the National Register Nomination Update, Valley Forge NHP Land Use Study, Archeology Sensitivity Reports, and Draft General Management Plan. The result was an understanding of the character, features and details of the cultural landscape as it evolved through time. This is presented in Chapter II. Several historical periods of significance, significance associations, and levels of integrity were revealed during this process.

Research in the Valley Forge archives located a series of informative historic images including a comparative study of repeat photography at historic locations conducted by the Historic American Building Survey, photographer Jack Boucher. Limited archival research was conducted online in the Library of Congress collections.

A field review of existing conditions was carried out with particular attention to overall wayfinding and the focused sites for treatment and interpretation identified in the GMP. In the archival research, images including photographs, maps, plans, and aerial photographs revealed the evolution of the landscape through time. The existing conditions field review provided a familiarity with the park and each of the component landscapes and six interpretive zones. The field review also helped to foster a general understanding of spatial relationships, views and vistas, and other character-defining features that are integral parts to the park landscape. These findings are presented in Chapter III.

Understanding this complex landscape within the context of cultural landscape preservation guidance is an important starting point. Federal preservation guidance defines a cultural landscape as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or that exhibits other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes."[2] The history and richness of the expansive, diverse landscape at Valley Forge NHP is blended to exhibit characteristics of three cultural landscapes types—historic site, historic vernacular landscape, and historic designed landscape.

- *Historic Site*—Valley Forge NHP is a historic site, defined as "a landscape significant for its association with a historic event, activity, or person," through its historically important associations with General George Washington, the 1777-1778 Winter Encampment, and training of the army that took place on the grounds. This time period is documented through sketches and maps that reveal the largely rural agricultural character of the landscape that was severely impacted during the Winter Encampment. Some industry was also present during this era, including the forge for which the area was named. Washington chose the site in order to protect Congress in Philadelphia, American refugees from the British, as well as to be near the vital food and military supplies available throughout the countryside. Connections to the natural systems of the land were strengthened as strategic points were selected for clear views, and redoubts were constructed along high points at the edges of the Encampment to establish a network of fortifications with views to the surrounding landscape. The encampment established a strong imprint on the landscape in a short period of time, leaving the landscape stripped of vegetation. Today, the landscape has recovered, although traces redoubts, entrenchments, and other constructed defensive works remain. The events that took place on the grounds at Valley Forge NHP altered the outcome of the Revolutionary War, securing independence for the United States. As a prominent national historical site important to American history, Valley Forge NHP is visited by thousands of visitors each year striving to understand the events and location that forged a unified army.

- *Historic Vernacular Landscape*—The Valley Forge NHP landscape can also be considered a historic vernacular landscape because of the accreted imprint left by agricultural and industrial operations in the past. A historic vernacular landscape is defined as "a landscape whose use, construction, or physical layout reflects endemic traditions, customs, beliefs, or values; expresses cultural values, social behavior and individual actions over time; is manifested in physical features and materials and their interrelationships, including patterns of spatial organization, land use, circulation, vegetation, structures, and objects."[3] After the encampment, the landscape recovered with renewed agricultural and increasing industrial operations. Such human and cultural activities were directly related to natural features of the landscape. Just as General Washington had chosen Valley Forge because of its unusual, yet defensible landform, residents in the area established homes and farms on ridgelines, avoiding the unstable karst dolostone topography for building sites. The low-lying valleys found in the Grand Parade and beyond became open fields and pastures. Active industry grew along Valley Creek and the Schuylkill River, changing spatial organization and relationships within the villages of Valley Forge and Port Kennedy. The establishment of a canal and two railroads along the Schuylkill River spread both agriculture and industry. On the north side, massive rubble walls enclose two siltation basins, part of the nation's first river reclamation project. The Grand Parade was heavily mined for dolostone, creating extensive quarries within the rolling topography. Such responses to the natural systems of the landscape are seen in remnant form today. The villages of Valley Forge and Port Kennedy contain few remaining buildings contributing to a lack of integrity in these areas. Some agricultural buildings remain on ridgelines, while the low-lying karst topography of the Grand Parade remains open with some fence lines, former property lines, and old quarries visible. Remaining field and land use patterns seen within the park today

show the evolution of the historic vernacular landscape during the 18th, 19th, and 20th centuries. The vernacular cultural landscape at Valley Forge may also be defined using the World Heritage definitions for cultural landscapes—a relict evolved landscape that is no longer continuing in its evolution. The former villages, homesteads, agricultural lands, and industrial operations within the park no longer function. Their vernacular evolution ended as the commemorative period began in the late 19th century and progressed into the 20th century. Areas such as Valley Forge village were the first to cease evolution, while Valley Forge Farm continued its evolution well into the mid-20th century. Areas throughout Valley Forge NHP continue to display remnants of vernacular form and former land use patterns, however.

- *Historic Designed Landscape*—Commemoration and memorial interventions at Valley Forge NHP throughout the late 19th and early 20th centuries have added elements of a historic designed landscape. A historic designed landscape is defined as "a landscape consciously designed or laid out by a landscape architect, master gardener, architect, engineer, or horticulturalist according to design principles" with aesthetic values in mind.[4] Beginning with the first centennial of the encampment in 1877, efforts were undertaken to beautify the grounds surrounding Washington's Headquarters. In 1893, the first state park in Pennsylvania was established at Valley Forge, adding an additional layer of history and commemorative efforts though construction of drives, paths, stone walls, and tree allées. Commemorative efforts continued throughout the 20th century as additional lands were acquired and memorial interventions were undertaken, including the construction of the National Memorial Arch, Washington Memorial Chapel, and other monuments such as the statues of Friedrich von Steuben and General Anthony Wayne. Commemorative interventions continued with National Park Service management beginning in the 1970s. Also in the 20th century, Valley Forge Farm and Walnut Hill, gentleman farms and estate landscapes, were modified by designed interventions that added gardens and outbuildings to the formerly modest properties. These combined efforts augmented the landscape character by erasing some vernacular elements and shaping the area into a designed landscape. The result is a historic designed landscape that reflects eras of the first centennial in 1877, state park development from 1893 to 1970s, estate design, and NPS stewardship from 1970s to the present.

Today, the landscape functions as a park with the imprinted commemoration of the encampment strongly evident in its designed commemorative layer and historic site aspects. Though Valley Forge NHP can be considered as a historic site, historic vernacular landscape, and historic designed landscape, aspects of the historic site and historic designed landscape are more visible in the existing landscape. With multiple histories of the Revolutionary War, agricultural, industrial, and commemorative eras, Valley Forge NHP has chosen an interpretive philosophy that respects and interprets all layers of history.

The new GMP for the park calls for the preservation and rehabilitation of six selected interpretive focus areas. This plan provides a framework and guidelines for the selected preservation and rehabilitation approach, to facilitate and enhance interpretation and visitor understanding within each of the six focus areas. To accomplish this objective, this plan is divided into two phases. Phase 1 includes site survey, research summary, and preliminary cultural landscape management objectives

and guidelines, and Phase 2 encompasses the final park-wide *Cultural and Interpretive Landscape Treatment Plan*, including interpretive landscape treatment plans for six interpretive zones.

Based on the previous planning documents, field review, and archival research, a charrette was organized to discuss the framework for potential treatment and interpretive objectives and guidelines. The charrette process and findings are laid out in Chapter IV, while the overall cultural and interpretive landscape treatment plan based upon the charrette findings is set forth in Chapter V, with respect to the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Several additional factors were considered in the treatment and interpretive strategies, including park mission, current visitor uses, annual visitation, visual intrusions, and maintenance and management practices.

CHAPTER I: ENDNOTES

[1] Information embedded herein may contain references to materials, documents, and issues that date to the origin of the project in 2006. The authors strove to update contents to 2011 where possible.
[2] Charles A. Birnbaum, with Christine Capella Peters, *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, (Washington DC, 1996): 5, and Robert R. Page, Cathy A. Gilbert, Susan A. Dolan, *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques,* U.S. department of the Interior National Park Service, Cultural Resource Stewardship and Partnerships, Park Historic Structures and Cultural Landscapes Program (Washington DC: 1998), 12.
[3] Page, Gilbert, Dolan, *A Guide to CLRs*, 12.
[4] *Guidelines,* (1996): 5.

VALLEY FORGE NATIONAL HISTORICAL PARK
CULTURAL & INTERPRETIVE LANDSCAPE TREATMENT PLAN
CHAPTER II: BACKGROUND DOCUMENT SUMMARIES

A. SUMMARY OF CULTURAL LANDSCAPE INVENTORY & CULTURAL LANDSCAPE PLAN PARTS I & II

A1. Cultural Landscape Inventory

The Valley Forge NHP Cultural Landscape Inventory (CLI) was completed in 1999, documenting the known cultural and natural features that contribute to the significance of the park. The CLI process is defined as a "comprehensive inventory of all historically significant landscapes within the National Park System… [which] identifies and documents each landscape's location, physical development, significance, National Register of Historic Places eligibility, condition, as well as other valuable information for park management.[1] One overall landscape and four component landscapes were inventoried and include Port Kennedy, Valley Forge Farm, Washington's Headquarters/Village of Valley Forge, and Walnut Hill.

Each CLI for the overall Valley Forge NHP landscape and four component landscapes is organized in a similar format with four parts. Part 1 includes the general introduction, landscape description, CLI hierarchy description, location map, boundary description, regional context, site plan, chronology, and statement of significance. Part 2 of each CLI discusses the physical history, divided into eras and character-defining features, while Part 3 focuses on the analysis of each landscape. Part 4 of the CLIs contains descriptive and geographic information, National Register information, general management information, condition assessment and impacts. Each CLI contains a list of contributing and non-contributing landscape features.

Overall Landscape Cultural Landscape Inventory

According to the overall CLI, the landscape at Valley Forge NHP is an "amalgam of efforts to restore and interpret the scene of the 1777-1778 encampment at Valley Forge."[2] Over time the landscape acquired additional land uses and spatial patterns, with each period adding layers to the evolution of the land. As a result, the landscape has several overlays, each with its own historic significance, although each significant era may not be equally important in its interpretive value. Today, the overall cultural landscape of Valley Forge NHP most closely resembles its pre-1938, early state park era appearance. Landscape features that remain and exemplify this era include natural and geological features, reconstructed earthworks and huts, tour routes, recreational grounds, and a number of commemorative and memorial elements. Features from the encampment, agricultural, and industrial eras are diminished, but still exist in remnant form today. State park commemorative efforts affected the landscape integrity remaining from earlier periods, by removing most agricultural and industrial elements, and by adding landscape features such as comfort stations, guard stations, a picnic pavilion, parking lots, tour roads, and recreational path systems. Subsequently, the lack of

vegetation management in some areas has allowed important, historically valued views and vistas to become obscured.

Port Kennedy

The component landscape is Port Kennedy is a 350-acre site east of the Grand Parade between the Schuylkill River and the intersection of County Line and Gulph Roads (See Figure II.1). Like much of the landscape of Valley Forge NHP, this area was in agricultural use prior to the encampment. After the encampment, the area underwent significant changes as industrial operations were initiated and railroad and canal transportation systems added. The presence of dolomite supported 19th century quarrying and lime-kiln operations. Few remnants of this intensive industrial past land use and activity are observable today.

The Port Kennedy landscape "reflects past land uses; in evidence are the broad expanses of rolling fields, hedgerows, farm lanes, and residential clusters associated with the site's agricultural heritage. These coexist with numerous large depressions, structural ruins, road and rail line traces, and other ground disturbances that [reflect] the area's industrial past." [3] Several current and historic primary transportation systems are represented in the area—roads, railroad and train station, former canal, and bridge site. Commemorative efforts and park improvements in the 19th and 20th centuries add another layer of history evident in the landscape today. Visitor amenities, parking facilities, an amphitheater, and trails are scattered throughout a park-like setting in the Port Kennedy area. Former industrial areas have been filled and adaptively reused for safety and park use. Views and vistas in the area are altered by adjacent suburban development.

The historical significance for the Port Kennedy component landscape includes:

- 1777-1778 Revolutionary War encampment
- 19th century industrial history
- Early to mid 20th century state park development; and
- Potential for archeological evidence

The CLI concludes, however, that because many of the Port Kennedy industrial features dating to the 19th century have been lost--removed by efforts to the Commonwealth of Pennsylvania--"the landscape does not retain integrity as an industrial village."[4] The CLI also concludes that the area does not retain integrity to the encampment period either, despite a few character-defining features that remain. In conclusion, the CLI states that the site most closely approximates its character during the early state park era, yet more recent construction of park support facilities and other alterations have diminished the integrity of the component landscape for that era. The Port Kennedy landscape, however, contributes to the Valley Forge NHP overall integrity as a Revolutionary War encampment resource and evolved landscape that contains traces of its evolution.

Valley Forge Farm

The CLI component Valley Forge Farm comprises 350 acres near the intersection of Yellow Springs Road and Route 252. This rural open area is characterized by a broad history of land uses ranging from crop cultivation to minor lime quarrying to gentlemen's farm and country estate development. During the encampment, the area may have served as quarters for General Lord Stirling, General Maxwell, General Knox, and General Lafayette. In the late 19th to early 20th centuryies several gentleman's farms were developed. Much of the area was conveyed to the commonwealth as part of the state park in the 1960s, and subsequently to the federal government. The appearance of the Valley Forge Farm landscape today is "predominantly characterized by its long-standing agricultural

heritage and most representative of its late nineteenth and early twentieth century appearance as a collection of gentleman farms and estates."[5] (See Figure II.2)

Current conditions of the component landscape are a medley of 19th and early 20th century estate landscapes, with some features dating to state and federal park development. A layered array of landscape features including ornamental plantings, pleasure garden features and structures, swimming pool, pool house, tennis court, access roads, hiking trails, parking facilities and signage characterize both eras of the landscape history. Other notable characteristics of the Valley Forge Farm component landscape as listed in the CLI include a historic covered bridge spanning Valley Creek, road traces, and a ford site. Modern alterations to the landscape include the establishment of meadows on previously cultivated fields, the addition of tree rows along historic property lines, and the nearby Pennsylvania Turnpike that adds traffic noise and visual intrusions to the experience.

Valley Forge Farm is significant at the local, state, and national levels for a variety of events and associations. Foremost is the association with the Continental Army winter encampment of 1777-1778. Other associations include agricultural and industrial heritage, archeological resources, connections to Philander Chase Knox (U.S. Senator and cabinet member of three presidential administrations), and early conservation efforts to preserve Valley Forge State Park. The area retains a high level of integrity for its late 19th and early 20th century historical associations with gentleman estates and resident Philander Knox, but has lesser degrees of integrity for earlier periods. The CLI found that Valley Forge Farm contributes to the overall integrity of Valley Forge NHP.

Washington's Headquarters/Village of Valley Forge

The component landscape of Washington's Headquarters/Village of Valley Forge comprises approximately 350 acres at the confluence of Valley Creek and the Schuylkill River. The area served as General George Washington's headquarters during the winter of 1777-1778. Prior to and after the occupation of the land by the Continental Army, agricultural fields characterized the upland areas, woodlots managed for charcoal production covered Mounts Joy and Misery, and mill operations dotted the banks of Valley Creek, forming a small industrial village. As agriculture and industry waned, commemorative efforts were started to preserve and present Washington's Headquarters at Valley Forge, eventually resulting in the first state park within Pennsylvania.

The CLI divides the village into four areas:

- Valley Creek corridor
- Mount Misery wooded lower slopes
- Washington's Headquarters area with pastoral landscape
- More densely settled village west of Valley Creek

The Valley Creek corridor includes Valley Creek, Valley Creek Road, remnant industrial mill features and stone walls, and the site of the Valley Forge. The wooded slopes of Mount Misery contain evidence of charcoal production, which was necessary for fuel for the iron forge along the nearby creek. The Washington's Headquarters area is a varied landscape spanning several decades. Most evident are open lawns, native and ornamental trees, visitor amenities, and commemorative and interpretative features from the state park period of development. A 1912 train station and late 19th century railroad and embankment bound the area to the north, indicative of commemoration and transportation. Remnants of industrial activities are limited within this area, but include a canal towpath, road traces, impoundment features, and parts of the former mill races. (See Figure II.3).

The more densely settled Village of Valley Forge is oriented along Valley Forge Road (Route 23) with a variety of residential, commercial, and former industrial buildings. Some residences are privately owned, and the National Park Service has acquired other structures for administrative use.

The CLI found the Washington's Headquarters/Village of Valley Forge landscape significant for associations with the "Revolutionary War-era encampment of the Continental Army during winter and spring of 1777-1778, including the dwelling where General George Washington made his headquarters."[6] It also notes the association with the founding of the first Pennsylvania state park which encompassed a portion of the village at its establishment in 1893. Lesser associations include industrial development, industrial village settlement patters, transportation developments, possible archeological significance, and commemorative activities culminating in the establishment and enhancement of the state park.

According to the CLI, while the village contributes to park integrity, it has changed through time from the agricultural and industrial pre-Revolutionary years to the encampment, industrial development, early commemoration, state park, and national historical park eras. Additionally, recent changes continue to affect the landscape. "Since 1938, many buildings have been razed, parking areas have been enlarged, and the alignments and surface materials of visitor circulation systems have been altered."[7] The landscape most closely resembles the state park period, but due to change over time, exhibits a moderate degree of integrity. Alterations to the agricultural and industrial landscape through removals and commemorative activity have diminished the site's integrity for the encampment and industrial eras.

In summary the CLI states, "The Washington's Headquarters/Village of Valley Forge component landscape is predominantly characterized by the relatively dense settlement patterns that have evolved in response to industrial opportunities presented by local natural resources since the eighteenth century, and by the co-existence of remnant landscape patterns with a public historical park that accommodates increasingly large numbers of visitors." The CLI indicates that the landscape is additive, having evolved through several periods, and exhibits a pastiche of fragments. While evidence of each era remains, fabric from all eras has been lost.

Walnut Hill

The Walnut Hill component landscape is located north of the Schuylkill River on the Perkiomen peninsula, formed by the confluence of the Schuylkill River and Perkiomen Creek. (See Figure II.4). Though evidence of the presence of the Continental Army during the encampment is not fully documented, the CLI notes that it

> is probable that the Walnut Hill landscape was utilized to some degree by the cantonment—guards likely were posted on the property; existing buildings may have been utilized for military or commissary officer housing, storage, and/or administrative functions; agricultural stores likely were appropriated for the troops, the Pawling family mill likely ground grains for flour; timber likely was harvested for fuel and construction materials."[8]

After the encampment, the area retained much of its rural, agricultural fabric and character, evolving into a prominent 19th century farmstead. A towpath for a slackwater navigation system as well as a railroad were built along the shore of the Schuylkill River. In the mid-20th century, conservation

efforts altered the site's relationship with the river edge through the construction of impoundment basins.

Today, the component landscape of Walnut Hill remains similar to its late 19th and early 20th century appearance as a prosperous agricultural operation. As noted in the CLI, the landscape "exhibit[s] a layering of architectural and organizational patterns representative of eighteenth, nineteenth, and twentieth century tastes and practices."

Features exhibited today include broad expanses of open fields, hedgerows, farm lanes, fencing, and outbuildings that are indicative of agricultural use. Other extant features include a towpath, stone retaining walls, remnants of a lock and dam, an abandoned rail line that now serves as a busy trail, and large impoundment basins constructed to remove coal culm deposits and improve water quality of the Schuylkill River. The more recent federal park era has resulted in only limited visitor amenities at the Walnut Hill site, including trails, an access road, and parking.

The CLI is concisely states significance: "Walnut Hill, a component landscape of the park, is significant for its association with the 1777-1778 encampment of the Continental Army, its nineteenth-century agricultural heritage, the architecture of the Wetherill Barn, and for its archeological potential to yield important information about history and prehistory."[9] The level of integrity of the Walnut Hill component landscape varies. The area exhibits integrity for its agricultural associations, but lacks integrity for its encampment associations. Unlike other areas of Valley Forge NHP, Walnut Hill is not significant for associations with early state park development. Nonetheless, the component landscape contributes to the park's overall integrity.

The CLI coverage of the overall park is limited and the four component landscapes of the CLI do not fully coincide with the six interpretive zones outlined in the GMP. This document incorporates existing information and provides guidelines for the park-wide landscape as well as the six interpretive areas.

A2. Cultural Landscape Plan, Parts I & II

A Cultural Landscape Plan was completed in 2002, including both contextual research and cultural landscape documentation for the park. The report thoroughly describes the evolution of the park through the use of narrative description and visual images; develops historic contexts for the park and identifies their associated cultural resources; refines existing conditions documentation previously compiled in the CLI; and evaluates the significance and integrity of the landscape and its features according to National Register criteria. The Cultural Landscape Plan is comparable to a Cultural Landscape Report (CLR).

A CLR provides a comprehensive study of the landscape of a historically significant property, serving to document the landscape and form a sound basis in analyzing integrity and selecting treatment. Traditionally a CLR is completed in three parts. Part I addresses history, existing conditions, and analysis of integrity. Part 2 explores the possible applications of preservation treatment to the cultural landscape, selects the most appropriate treatment, and provides guidance for the implementation of that treatment. Part 3 documents the record of interventions undertaken in the landscape.

The Valley Forge Cultural Landscape Plan has two parts. The first volume addresses the park history, existing conditions, and a comparative analysis of integrity. Volume II or Part II discusses the statement of significance and historical contexts of the park. Part III is outlined in the table of contents of the document as the Preservation Treatment Plan, but is noted as "not produced as of May 2002."[10] This document serves as the Cultural Landscape Plan, Part III to address preservation treatment and interpretive guidelines.

Part I of the Cultural Landscape Plan addresses history, existing conditions, and analysis of Valley Forge NHP. The history section outlines the chronological history of the place starting with the Native American period and ending with the period in which the land was transferred to the federal government. A historical narrative also addresses these eras with illustrations and park-wide period plans. The existing conditions discussion begins with a site description of the park based on landforms, geographic areas, circulation, commemoration, and component landscapes. The existing conditions discussion is based on eleven character-defining features, including:

- Patterns of Spatial Organization
- Responses to Natural Features
- Landform and Topography
- Land Uses and Activities
- Vegetation
- Circulation
- Buildings
- Structures
- Cluster Arrangements
- Views and Vistas
- Small-scale Features

Each of these character-defining features is addressed on an overall park scale and then in terms of the four component landscapes as defined in the CLI, or in further detail as needed. Examples of all features were photographed, inventoried, and mapped, and representative features were illustrated through existing condition photographs and highlighted and coded on park maps.

The third section in Part I is the comparative analysis between historic conditions and existing conditions. This analysis used repeat photography, which is a process in which historic photographs are retaken today from the same location and view angle. By comparing the historic and existing conditions photographs, analysis and evolution of change can be determined. A series of 29 photographs were taken as part of the repeat photography process. Using the eleven character-defining features as a framework, the evolution of the Valley Forge NHP landscape is discussed for all eras and periods of significance. The time frame runs from prehistory and early settlement to the National Park Service period. Part I of the Cultural Landscape Plan concludes with appendices of contributing and non-contributing resources and a complete set of maps of all inventoried features.

Part II of the Cultural Landscape Plan discusses the statement of significance, period of significance, and historic contexts within the basis of significance. The purpose of Part II is to form significance statements under the National Register criteria based upon patterns and trends in history and understanding those patterns in the landscape within a broader context of history. As stated in the

Introduction of the CLR Part II, "To determine significance within a historic context, the following aspects must be defined for each property:

- The facet of prehistory or history of the local area, state, or nation that the property represents;
- Whether it is a type of property that has relevance and importance in illustrating the historic context;
- How the property illustrates that history; and
- Whether the property possesses the physical features necessary to convey the aspect of prehistory of history with which it is associated"[11]

To accomplish this, Part II divides the evolution of the land into chronological eras and themes, which were used to form the basis of the historical context and periods of significance. The following are historical contexts addressed in Part II of the Cultural Landscape Plan:

- Native American Landscape
- Early Settlement Landscape, 1681-1777
- Encampment Era Landscape
- Post-Encampment Landscape, 1778-1952
- Architecture
- Commemoration-Folklore and Tradition
- Commemoration-Monuments
- Commemoration-Conservation
- Commemoration-Landscape Architecture
- Commemoration-Recreation
- Commemoration-Interpretation
- Commemoration-Religion & Memorialization

Each context is discussed in detail with statements of significance and National Register criteria as they pertain to the topic addressed. The period of significance comprises multiple overlapping periods that span approximately 250 years. The breadth of this period begins circa 1700 and ends 1952. The year 1952 was selected based upon the 50-year age consideration for the National Register, current at the time the Cultural Landscape Plan was written in 2002. Additional structures may fall into the 50-year National Register consideration today.

Three levels of significance were identified—national significance (1742-1777), state significance (1778-1926), and local significance (1700-1952). Under each level, multiple categories of historic events, features, associations, National Register criteria, and areas are listed as a summary of the significance of the park. The following chart from Part II of the Cultural Landscape Plan summarizes the significance of Valley Forge NHP.[12]

National Significance

Period of Significance	Historic Event, Association, or Feature	Criteria	Areas
1742-1777	Industrial production	A, B, D	Industry, Archeology
1777-1778	Encampment Continental Army, Rev. War	A, B, D	Military, Archeology
1878-1952	Commemoration	A, C	Art (Sculpture), Conservation (Historic Preservation), Landscape Architecture
1914	National Memorial Arch	C	Architecture

State Significance

Period of Significance	Historic Event, Association, or Feature	Criteria	Areas
Late Archaic, Late Woodland	Evidence-prehistoric cultural use, occ.	D	Prehistoric Archeology
1778-1900	Industrial production, village development	A, B, D	Industry, Archeology
1815-1900	Transportation, canal/railroad development	A, D	Transportation
1820-1952	Transition to Scientific Agriculture	A, B, C, D	Agriculture
1826-1845	Vernacular Architecture (Walnut Hill barn)	C	Architecture
1865	Knox Covered Bridge	C	Architecture
1828-1952	Recreation/Park Development	A	Entertainment/Recreation, Community Planning and Development
1903-1926	Restoration Architecture (PK Knox res.)	C	Architecture
	Washington Memorial Chapel	C	Architecture

Local Significance

Period of Significance	Historic Event, Association, or Feature	Criteria	Areas
Late Archaic, Late Woodland	Evidence-prehistoric cultural use, occ.	D	Prehistoric Archeology
1700-1750	European Colonial Exploration/Settlement	A, D	Exploration/Settlement
1700-1815	Transportation, roads, ferries, fords	A, D	Transportation
1750-1820	Subsistence Agriculture	A, D	Agriculture
1730-1780	Vernacular Architecture	C	Architecture
1830-1860	Exotic Revivals, Architecture (Kenn. Man.)	C	Architecture
1900-1952	Gentleman Farming/Suburban Estate Dev.	A	Agriculture

The periods and associations of significance are described in more detail using the National Register Criteria as a framework. Under Criterion A, Valley Forge NHP is significant for the Revolutionary War encampment, commemoration, 18th century iron industry, recreation, industry, agriculture, transportation, environmental remediation. Under Criterion B, of the park is significant for its association with George Washington, Major General Friedrich von Steuben, Philander Chase Knox, John Potts, John Kennedy, and Samuel Wetherill. Criterion C lists the National Memorial Arch, Washington Memorial Chapel, Walnut Hill Barn, Philander Chase Knox Residence, Knox Covered Bridge, Kennedy Mansion, Lafayette's Quarters, Washington's Headquarters, and Stirling's Headquarters. Archeological resources within the park create significance under Criterion D.

As a summary, the Cultural Landscape Plan reviews and expands upon information in the earlier National Register nomination forms, in terms of significance and integrity. Ultimately, the document served as the basis for the National Register Nomination Update (draft, 2007).

B. SUMMARY OF NATIONAL REGISTER NOMINATION UPDATE, LAND USE STUDY & ARCHEOLOGY SENSITIVITY REPORT

B1. National Register Nomination Update

A 100% Draft Submission of the *Valley Forge National Historical Park, National Register Nomination Update* was completed in June 2005 by John Milner Associates as a supplement to previous National Register documentation. Valley Forge NHP was first listed on the National Register in 1961 as a National Historic Landmark. At that time, the nomination encompassed 2,300 acres. In 1966, additional state park property within the park was listed on the National Register. In 1974, the National Historic Landmark nomination was updated to include the previously national register-listed state park lands, totaling 2515 acres. Further updates to the nomination were made in 1976 as the state park became a National Historical Park, and again in 1988. The 2007 update builds upon these previous efforts. As a summary, the 2007 update states

> The historic district encompasses 334 contributing and 103 non-contributing buildings, structures, sites, and objects. Although many of the contributing resources associated with the encampment are archeological sites, there are also many buildings and structures that were present within the Valley Forge landscape at the time of the encampment. Dwellings utilized to house officers, road networks, important views and viewsheds, landform and topography, natural resources such as the Schuylkill River and Valley Creek corridor, and patterns of cultural land uses that were integral components of the encampment and contributed to its locations, as well as archeological evidence of encampment hut sites, earthen fortifications, and features such as bake ovens survive to convey the district's significant 18th century historic association. Important cultural associations of the property relating to pre- and post-encampment industry, transportation, and agriculture, as well as commemoration and memorialization of the Revolutionary War-era encampment since the 19th century as also present within the district landscape and continue to convey their significant associations.[13]

The total of 334 contributing resources includes 119 contributing buildings, 90 contributing sites, 80 contributing structures, and 45 contributing objects. The number of previously listed contributing resources on the National Register was 139.

According to the 2007 update, the district of Valley Forge NHP is significant in history under Criterion A events, B persons, C distinctive type, and D information source. Significant persons listed under Criterion B include: Brigadier General Louis Lebeque Duportail, Major General Nathanael Greene, John Kennedy, Brigadier General Henry Knox, Philander Chase Knox, General Gilbert du Montier Marquis de Lafayette, John Potts, Brigadier General James Mitchell Varnum, Major General Friedrich von Steuben, General George Washington, Brigadier General Anthony Wayne, and Samuel Wetherill.

Areas of significance include agriculture, archeology (prehistoric), archeology, (historic, non-aboriginal), architecture, commemoration, conservation, exploration/settlement, industry, landscape architecture, military, recreation, and transportation. Two periods of significance are listed; the first being circa 10,000 B.P. to circa 1540 and the second being circa 1700 to 1955.

B2. Land Use Study

The *Land Use Study of Valley Forge National Historical Park,* compiled by Ann Rhoads, Douglas Ryan, and Ella Aderman of the University of Pennsylvania, analyzes the overall land patterns, land use, and land cover for 24 parcels of land within Valley Forge National Historical Park. Research addressed the 1700s time period with particular emphasis on landscape features, both before and after the Revolutionary War encampment period. Title searches, deeds, wills, inventories, depredation claims, and other historical documents provided the basis for the findings presented in the report. While the farms studied each had individual differences, all farms exhibited characteristics consistent with broader, regional land uses and patterns. Some landscape patterns and property boundaries were still visible in the late 1980s, marked with tree lines and vegetation representing former fence lines.[14]

According to the study, the area was primarily agricultural in the 18th century, with some industry along the banks of Valley Creek. Limestone geology created nutrient-rich soil, which was conducive to farming and other agricultural activities at that time.[15] Land cover included both fields and forests. Tax records indicate that 59% of land in the area was forested in 1760.[16] During the encampment, however, trees and timber were used heavily by the soldiers and a scarcity of wood resulted.[17] Regrowth began shortly after the end of the encampment, and from 1814 to 1824, about 30% of land was reforested.[18] Species composition of these early forests varied and included hickory, black oak, white oak, Spanish oak, chestnut, chestnut oak, gum, sugar maple, elm, mulberry, sassafras, water beech, walnut, buttonwood, dogwood, and apple.[19]

From 1754 to 1785, farms ranged in size from 95 to 300 acres, with an average farm size of 189 acres.[20] Common crops in the area included wheat, oats, rye, hay, Indian corn, flax, and potatoes, with wheat serving as main cash crop.[21] Other crops included buckwheat, hemp, clover, cabbage, pumpkins, hops, turnips, beans, onions, apples, and peaches.[22] Crop rotation schemes were common and likely used on the farms at Valley Forge. There are several variations of crop rotation schemes, but the 3-field system and 4-field system were the most common in the region. The 3-field system utilized Indian corn, wheat, rye, and rubbish pasture, while the 4-field system used Indian corn, naked fallow, wheat, and pasture.[23] Field sizes ranged from 1 to 8 acres in size, resulting in a small, fenced patchwork of fields across the landscape.[24] Livestock was limited, usually in small quantities, used for domestic purposes. Common livestock included cattle, horses, swine, beehives, and fowl.[25]

Recommendations for the preservation and interpretation of the historic setting also were included in the report.[26] Maintaining and managing visible property lines, creating comprehensive farm exhibits with materials on outbuildings, crops, livestock, impacts of the encampment, and interpreting forested areas were suggestions made in the report.

B3. Archeological Assessment

During 1987 and 1988, an archeological survey and inventory was conducted for Valley Forge NHP. Historical records, informant interviews, surface reconnaissance, and subsurface testing of selected sites provided a basis to identify potential cultural sites within the park. The result of these archeological investigations were two reports entitled, *Archeological Survey and Assessment North of the Schuylkill River, Valley Forge National Historical Park, Valley Forge, Pennsylvania* and *Archeological Inventory and Assessment: The Western Portion, Valley Forge National Historical Park, Valley Forge*

Pennsylvania. Archeological deposits located in both areas were varied and represented many years of human settlement and occupation in the area. Some of the findings included remnants of:

- Prehistoric sites
- Industrial complexes
- Trash middens
- Dwellings and outbuildings
- Farmsteads
- Quarries

Archeological investigations before the 1980s had focused mainly on encampment deposits; however, these investigations focused on all found archeological evidence and deposits, no matter from what era or period it dated. The archeological reports briefly described the scope and methodology of the project, followed by a historical summary of the areas investigated. Findings from the archeological surveys were documented by quadrant and location in subsequent sections with maps, illustrations and photographs. Locations investigated in the western portion included the Village of Valley Forge, Mount Joy and Mount Misery, the Stephens region, and the Philander Knox region. The North Side report focused on the Meadow Grove region, Walnut Hill Estate, Fatland Ford region, and Catfish Island region.

C. SUMMARY OF GENERAL MANAGEMENT PLAN AS RELATED TO CULTURAL LANDSCAPE TREATMENT

The Valley Forge NHP draft *General Management Plan* (2006), sets forth a basic management philosophy and provides a framework for future decision making regarding the park landscape. The general treatment approach for cultural landscape resources as outlined in the GMP is preservation with selected rehabilitation. Rehabilitation is limited with regard to the quality of existing conditions and resources. New and updated interpretive themes and interpretive zones are also outlined "to facilitate participatory activities in the landscape that enable discovery."[27]

The preferred alternative in the GMP proposes combined preservation and rehabilitation for certain areas of the overall park cultural landscape. Two interpretive zones, Muhlenberg's Brigade and the Grand Parade, are to be rehabilitated to their 18th century appearance through site-specific interpretive landscape treatment. Filling quarries to restore historic contours (with the exception of Cave Quarry), removing the maintenance complex and County Line Road, restoring historic vistas, and closing and rehabilitating Gulph Road to a historic trace road also are specified. Other items include renewing existing commemorative plantings, screening from view modern intrusions beyond the park boundaries, and preserving existing patterns of forest, meadow, and open field. The remaining park landscape and the other four interpretive zones would be preserved and respected in their current condition. As a result, the park would reflect and interpret the layers of history from all eras, ranging from the encampment era to agricultural and industrial eras to the commemorative era.

By rehabilitating and preserving the current landscape, there would be "minor to major, long-term, beneficial impacts on the cultural landscape, and would contribute appreciable, beneficial increments to the cumulative impact."[28] All proposed actions would enhance character-defining features and would preserve the integrity of the landscape. Additionally, all proposed preservation and

rehabilitation work will be done in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes.

Interpretive themes and six interpretive focus areas within the overall park landscape were outlined in the GMP. The interpretative approach would transform the current visitor experience by integrating recreational and interpretive opportunities. Different learning styles and visitor interest levels dictate different interpretive methods, including exploration, self-discovery, formal programs, and directed initiatives. Themes presented include the encampment, the American Revolution, other events and eras in the history of Valley Forge, and natural resources of the park. Themes and approaches will utilize a variety of visually unobtrusive methods to portray the history and historic activities at each site to visitors. The overall goal is to create an effective and accessible way of engaging visitors in the place and stories of Valley Forge NHP.

The interpretive sequence begins at the rehabilitated Welcome Center for initial park orientation. Interpretive themes, programs, events, facilities, and opportunities are presented to visitors through a variety of methods, particularly collections-based exhibits. Orientation prepares visitors to experience the park as a "multilayered historic and natural resource" and to give visitors "information and tools with which they could learn to 'read' the many layers of history within the landscape."[29] Cultural visitors and recreational visitors are both targeted. After orientation, the visitor will be encouraged to use their newly acquired information to understand the landscape's layers of land use and commemoration.

The six interpretive zones are key locations in which visitors can gain an understanding of the historical significance of Valley Forge and the Revolutionary War by interacting with interpretive themes. Each of the zones will be the focus of park programming, activities, and tours that begin with overall orientation at the Welcome Center.

The six interpretive focus areas are divided into primary and secondary zones. Primary zones are defined within the GMP as areas of the park that convey the most imperative information regarding the encampment, and could be the basis for a short Valley Forge NHP tour. Primary interpretive zones include Muhlenberg's Brigade, the Grand Parade, and Washington's Headquarters. Secondary interpretive zones are areas of the park that give more detail about the encampment period, as well as other interpretive themes involving subsequent history. Secondary interpretive zones would be included on an extended tour of the park. These areas are Varnum's Quarters and Star Redoubt, Artillery Park, and Walnut Hill (now called by its encampment-era name—Pawling Farm.

A brief history of each interpretive focus zone is necessary to understand its role within the overall park experience. Muhlenberg's Brigade is the area along Outer Line Drive, overlooking the Grand Parade, in which General Peter Muhlenberg and his brigade camped during the encampment. Located on a ridge, Muhlenberg's Brigade is a good location to explain the important relationship between topography and strategic defense, as well as soldiers' domestic lives. The Grand Parade is at the center of Valley Forge NHP, and is the site on which military operations took place. The area is sited within a large valley where views are broad and uninterrupted by modern intrusions. The Washington's Headquarters area is located in the Village of Valley Forge, where General Washington headquartered during the encampment. The structures and resources on the site make it suitable to illustrate Washington's leadership, the political and military context, strategy of the encampment, as well as additional interpretive stories.

Varnum's Quarters and the Star Redoubt are co-located yet represent different themes. Varnum's Quarters can illustrate the effects of the encampment on civilians, and positive impacts of General James Varnum on racial integration in the Continental Army. In contrast, the Star Redoubt is a reconstructed earthwork that emphasizes the necessity of fortifications and perimeter defense during the encampment. Artillery Park, located east of Mount Joy and Mount Misery, was the area where cannons were stored and repaired to defend the encampment. The Schuylkill River separates Walnut Hill from the rest of the park. This area served as the supply center of the encampment, where stores were located and distributed, and civilians brought goods to market.

These six areas will be the prime locations for interventions to achieve the interpretive and visitor experience objectives and philosophies laid out in the GMP. The document lists a framework for interpretive and thematic strategies to guide the visitor experience, establishes objectives for interpretive and visitor experience, and lays out the philosophy for interpretation. Core themes for interpretation involve cultural and natural history, though most emphasis is on the encampment and the Revolutionary War.

The interpretive objectives laid out in the GMP specify that "visitors should have the opportunity to

- Understand the history and significance of the American Revolution and the encampment at Valley Forge
- Understand the symbolic and actual legacy of the revolution and encampment
- Understand the leadership of General George Washington and the roles played by other key figures in the revolution, many of whom continued to lead the country for a generation
- Understand the history and significance of the park's natural resources
- Understand the historic and contemporary connections of the park's cultural and natural resources
- Become intrigued to learn more, though return visits or continued reading, viewing, and participation on their own
- Make intellectual and emotional connections to their own lives and times through experiences and critical thinking
- Appreciate that the understanding of cultural and natural history is dynamic, and that each generation reinterprets the meaning of history"[30]
- Understand the value of both individual and collective action through the examples offered by both the encampment and subsequent stewardship of the cultural and natural resources of the park"

Additionally the visitor experience objectives specify that "the visitor should have the opportunity to

- Feel comfortable and confident in planning their visits and orienting themselves to facilities, features, and participatory activities
- Enjoy themselves, have memorable experiences, and return home with a feeling that their time was well spent
- Develop a sense of appreciation and responsibility that will result in taking action to protect and support the resources of this place
- Continue to learn something new and to deepen their understanding with each visit
- Understand the fragility of cultural and natural resources and the need to treat them with care and respect

- Experience and enjoy the scenery, places of solitude, wildlife, and natural places in the park, and come away refreshed and inspired"[31]

Interpretative principles and the interpretive philosophy were outlined*:*

- ***History First*** – Using the park's history to formulate the basis that supports other interpretive themes
- ***Connection Between Past & Present*** – Using historical events to discuss impacts and consequences and link those events to what is seen in the landscape today
- ***Reality of Artifacts & Place*** – Using the park's authenticity, artifacts, and place as the basis for interpretive stories
- ***Diversity of Opportunities*** – Using interpretive themes in a variety of ways, based on visitor's interests and learning styles.
- ***Multiple Audiences – Use of i***nterpretation to engage all visitors
- ***Complementary Experiences*** –Use of differing interpretation strategies to enhance, inform, and enrich the visitor experience
- ***Engagement and Empowerment*** – Enabling visitors to become participants by actively engaging into the material presented
- ***Dynamic Context*** –Use of interpretation and education to acknowledge evolution in landscapes
- ***Tradition of Stewardship*** – Using the tradition of cultural and natural stewardship through resource protection and land preservation as an interpretive story
- ***Revolutionary War Hub*** – Use of the Valley Forge landscape as a "hub for Revolutionary War interpretation in the United States, helping visitors gain access to additional information and plan their visits to other sites, as well as to understand the events and meanings of the encampment and the historical and geographical context in which it occurred."[32]

Natural resources interpretation is also outlined in the GMP. Following the objectives and philosophies, the document outlines four different styles for interpreting natural resources. These methods are as follows:

- Orientation and introduction to park natural resources at the Welcome Center
- Interpretation of contemporary natural resource assets and management issues at the Welcome Center and selected sites
- Interpretation of park natural resources as they influenced the use of the site for the encampment
- Development of natural resources-focused programs on contemporary and historic issues or stories

Concentration on stewardship and resilience would be the primary focus of natural resources interpretation. Stewardship is based on the long history of preservation and commemoration within the park, started by local citizens in the late 19th century. Resilience will be demonstrated through interpretation of the theme "recovery following devastation," which can be applied to a variety of events including the encampment, industrial use, quarrying, damming of the Schuylkill to create a canal, industrial use of Valley Creek, iron and steel mills in Port Kennedy, coal reclamation in the Schuylkill River, and current issues with white-tail deer and exotic invasive species.

Interpretation of historic and contemporary natural resources is proposed in the GMP as two different activities. In general both are presented to the visitor wherever it is "germane to a visitor's understanding and appreciation of the encampment and the American Revolution."[33] Contemporary natural resource issues are proposed in the GMP as separate interpretive actions with a "style distinctly different from that of historic interpretation in the park" and would be targeted toward the daily users of the park.[34] Ranger-led and volunteer-led interpretive programs would also be developed for contemporary natural resource issues.

D. CULTURAL LANDSCAPE SYNTHESIS & SUMMARY

The following section summarizes the integrity, significance, and proposed treatment of the overall park and each of the six interpretive areas based upon the above documentary review.

Overall Park

- Integrity— Low: Encampment era, 19th century industry
  Moderate: 19th century agriculture, 20th century agriculture
  High: State park/commemorative era
- Areas of Significance—agriculture, archeology (prehistoric), archeology, (historic, non-aboriginal), architecture, commemoration, conservation, exploration/settlement, industry, landscape architecture, military, recreation, and transportation
- Periods of Significance –circa 10,000 B.P. to circa 1540 and circa 1700 to 1955.
- Proposed treatment—Preservation and interpretation of all eras with rehabilitation of Muhlenberg's Brigade and the Grand Parade

Muhlenberg's Brigade

- Integrity— Low: Encampment era,
  Moderate: 19th century agriculture, State park/commemorative era
- Areas of Significance— archeology, commemoration, military
- Periods of Significance –1777 to mid 20th century
- Proposed treatment— Rehabilitation as interpretive vignette

Grand Parade

- Integrity— Low: Encampment era, 19th century industry, 20th century industry
  Moderate: 19th century agriculture, State park/commemorative era
- Areas of Significance—agriculture, archeology, industry, military
- Periods of Significance –1700s to mid 20th century
- Proposed treatment—Rehabilitation as interpretive vignette

Washington's Headquarters

- Integrity— Low: Encampment era, 19th century industry, 19th century agriculture
  Moderate: State park/commemorative era
- Areas of Significance—agriculture, archeology, architecture, commemoration, conservation, exploration/settlement, industry, military, recreation, and transportation
- Periods of Significance –1700s to mid 20th century
- Proposed treatment—Preservation and interpretation

Varnum's Quarters and Star Redoubt

- Integrity— Low: Encampment era
  Moderate: 19th century agriculture, State park/commemorative era
- Areas of Significance—agriculture, archeology, architecture, commemoration, military
- Periods of Significance –1777 to mid 20th century
- Proposed treatment—Preservation and interpretation

Artillery Park

- Integrity— Low: Encampment era
  Moderate: State park/commemorative era
- Areas of Significance—archeology, commemoration, military
- Periods of Significance – 1777 to mid 20th century
- Proposed treatment—Preservation and interpretation

Walnut Hill

- Integrity— Low: Encampment era, State park/commemorative era
  Moderate: 19th century agriculture
- Areas of Significance—agriculture, archeology, architecture, exploration/settlement, military, and transportation
- Periods of Significance – 1777 to mid-20th century
- Proposed treatment—Preservation and interpretation

The six interpretive zones outlined in the GMP do not correspond to the four component landscapes listed in the CLI and Cultural Landscape Plan. The CLI and Cultural Landscape Plan address the landscape in terms of component landscapes—Port Kennedy, Washington's Headquarters/Village of Valley Forge, Valley Forge Farms, and Walnut Hill. Two of these areas are included in the six interpretive zones as outlined in the GMP. These areas are Washington's Headquarters and Walnut Hill. Other interpretive areas in the GMP are nestled within the component landscapes of the CLI. For example, the eastern portion of the Grand Parade is encompassed with the Port Kennedy component landscape. However, the majority of the interpretive zones are not included in the CLI or Cultural Landscape Plan. Areas not addressed in these documents are Muhlenberg's Brigade, Varnum's Quarters and Star Redoubt, Artillery Park, and the larger portion of the Grand Parade. The above listing of integrity and significance was inferred from the existing documentation and previous reports, with limited discussion of the six interpretive zones in terms of integrity and significance.

Because of this disjuncture between the documents, the CLI, Cultural Landscape Plan, and GMP are lacking in certain areas. The CLI and Cultural Landscape Plan more fully address the entire history and evolution of the park from the prehistory and early settlement areas to the National Park Service era, which reflects the interpretive approach accepted by the park. The interpretive areas identified in the GMP focus mainly on the areas used during the Revolutionary War Winter encampment, rather than the overall evolution and history of the place. For example, areas such as the Valley Forge Farm and Port Kennedy are not included as interpretive zones, but offer a unique perspective on other aspects of Valley Forge history. The decision of the park to interpret all layers of history can be explored through the landscape. While the six component landscapes chosen are highlighted, other areas of the park landscape offer a variety of interpretive themes. The park

landscape can capture a full spectrum of interpretive opportunities addressing the encampment period and all the other times and themes embedded within the park landscape.

Interpretive themes outlined in the GMP comprise two categories—cultural history and natural history. In accordance with the reason for which the park was designated, the primary cultural history themes address the encampment and Revolutionary War. The overarching theme is stated as

> The American Revolution created the United States. Today, we regard it as the embodiment of the values and ideals of the American People. Yet the historic record reveals a rich story of people who were divided by geography, culture, and class and torn by internal strife and uncertainty.

Natural resource themes are broader. The overarching theme is stated as

> The landscape of Valley Forge presents a pastoral appearance. Yet the landscape and its natural resources have been devastated numerous times from the overwhelming effects of war, industry, and agriculture. The recovery reflects the resilience of the resources and also the significance of the place to generations of Americans.

The histories of civilians, transportation, industry, conservation, and resilience nest under one or both of these themes and can be represented at many places in the park

The GMP selects rehabilitation for only Muhlenberg's Brigade and the Grand Parade. Washington's Headquarters is currently undergoing a rehabilitation and commemorative design project to alter circulation routes, improve visitor experience, and create an additional layer of commemorative history. Though the GMP lists preservation for the area to keep and interpret all layers of history and landscape evolution, as in the case of Washington's Headquarters, areas may need some level of rehabilitation to achieve the desired visitor experience and interpretive sequence.

The documents reviewed for this project form the basis for cultural landscape treatment and interpretation considerations. Treatment and interpretation considerations are also underpinned by field review and archival research. The previous work of Heritage Landscapes at Washington's Headquarters, Valley Forge NHP is also a resource as is the previous efforts of interpretive planners, Main Street Design, which are addressed elsewhere in this document.

CHAPTER II: ENDNOTES

[1] National Park Service, *Cultural Landscapes Inventory, Valley Forge Landscape, Valley Forge National Historical Park,* Part 1 (1998): 1.
[2] National Park Service, *Cultural Landscapes Inventory, Valley Forge Landscape, Valley Forge National Historical Park,* Part 3a (1998): 1.
[3] National Park Service, *Cultural Landscapes Inventory, Port Kennedy, Valley Forge National Historical Park,* Part 1 (2000): 5.
[4] National Park Service, *Cultural Landscapes Inventory, Port Kennedy, Valley Forge National Historical Park,* Part 1 (2000): 5-6.
[5] National Park Service, *Cultural Landscapes Inventory, Valley Forge Farms, Valley Forge National Historical Park,* Part 1 (2000): 6.
[6] National Park Service, *Cultural Landscapes Inventory, Village of Valley Forge, Valley Forge National Historical Park,* Part 1 (2000): 5.
[7] National Park Service, *Cultural Landscapes Inventory, Village of Valley Forge, Valley Forge National Historical Park,* Part 3a (2000): 1.
[8] National Park Service, *Cultural Landscapes Inventory, Walnut Hill, Valley Forge National Historical Park,* Part 1 (2000): 5.
[9] National Park Service, *Cultural Landscapes Inventory, Walnut Hill, Valley Forge National Historical Park,* Part 1 (2000): 5.
[10] Susan Maxman Architects, John Milner Associates, Inc., and OCULUS, *Valley Forge National Historical Park Contextual Documentation and Cultural Landscape Plan*, Vol. I, (May 2002): xi.
[11] Susan Maxman Architects, John Milner Associates, Inc., and OCULUS, *Valley Forge National Historical Park Contextual Documentation and Cultural Landscape Plan*, Vol. II, (May 2002): 493.
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[13] John Milner Associates, Inc., Valley Forge National Historical Park: National Register Nomination Update, Draft Submission, (June 2007): 5.
[14] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 23.
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[16] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 32.
[17] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 68.
[18] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 32.
[19] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 33.
[20] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 40.
[21] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 40.
[22] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 40.
[23] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 56.
[24] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 43.
[25] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 41.
[26] Ann F. Rhoads, Douglas Ryan, Ella W Aderman, *Land use Study of Valley Forge National Historical Park*, (Philadelphia, PA: March 1989): 189.
[27] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (Janurary 2007).

[28] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (Janurary 2007):4-14.
[29] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (Janurary 2007): 2-6.
[30] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (Janurary 2007): 2-3, 2-4.
[31] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (Janurary 2007): 2-4.
[32] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (Janurary 2007): 2-4, 2-5.
[33] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (Janurary 2007), 2-13, 2-14.
[34] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (Janurary 2007), 2-13, 2-14.

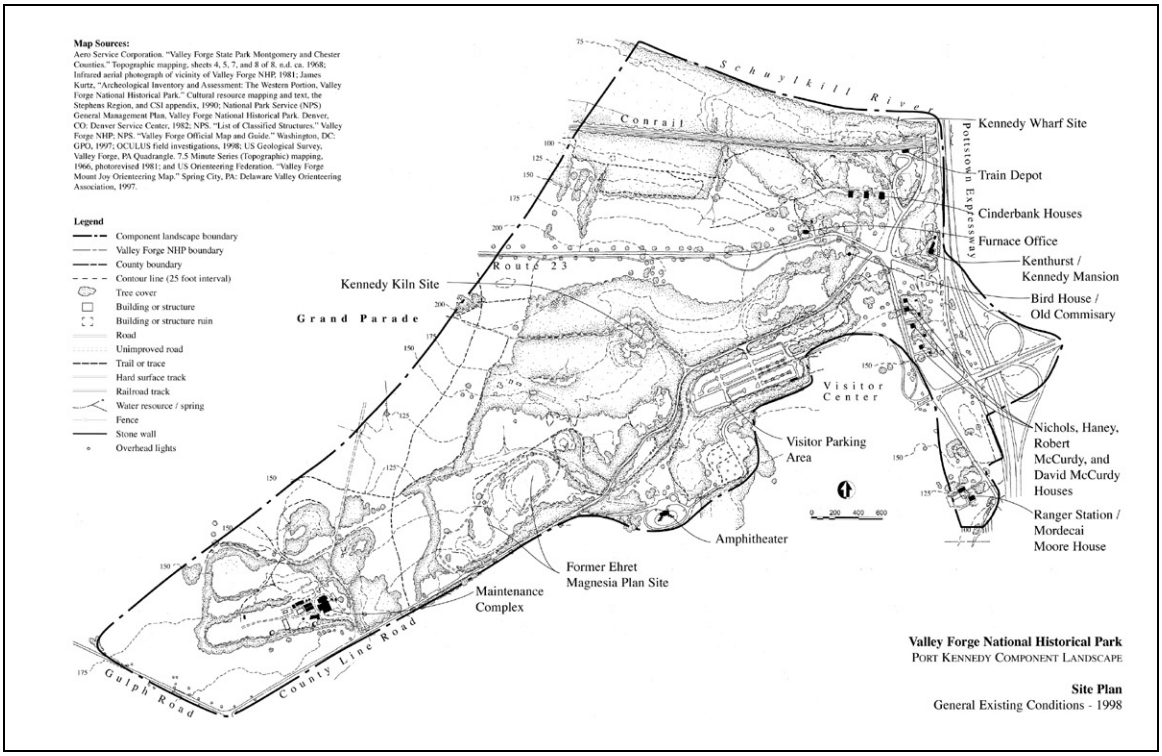

Figure II.1. 1998 site plan of the Port Kennedy component landscape, as included in the Cultural Landscape Inventory.

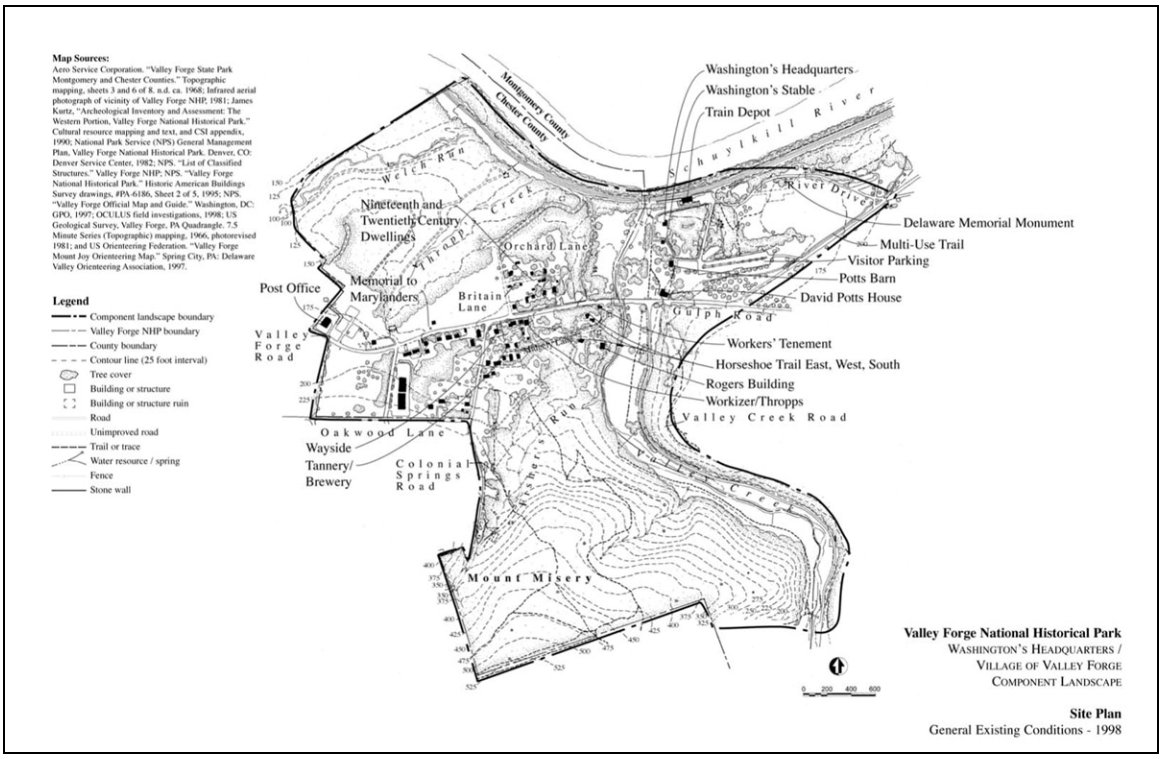

Figure II.2. 1998 site plan of the Washington's Headquarters/Village of Valley Forge component landscape, as included in the Cultural Landscape Inventory.

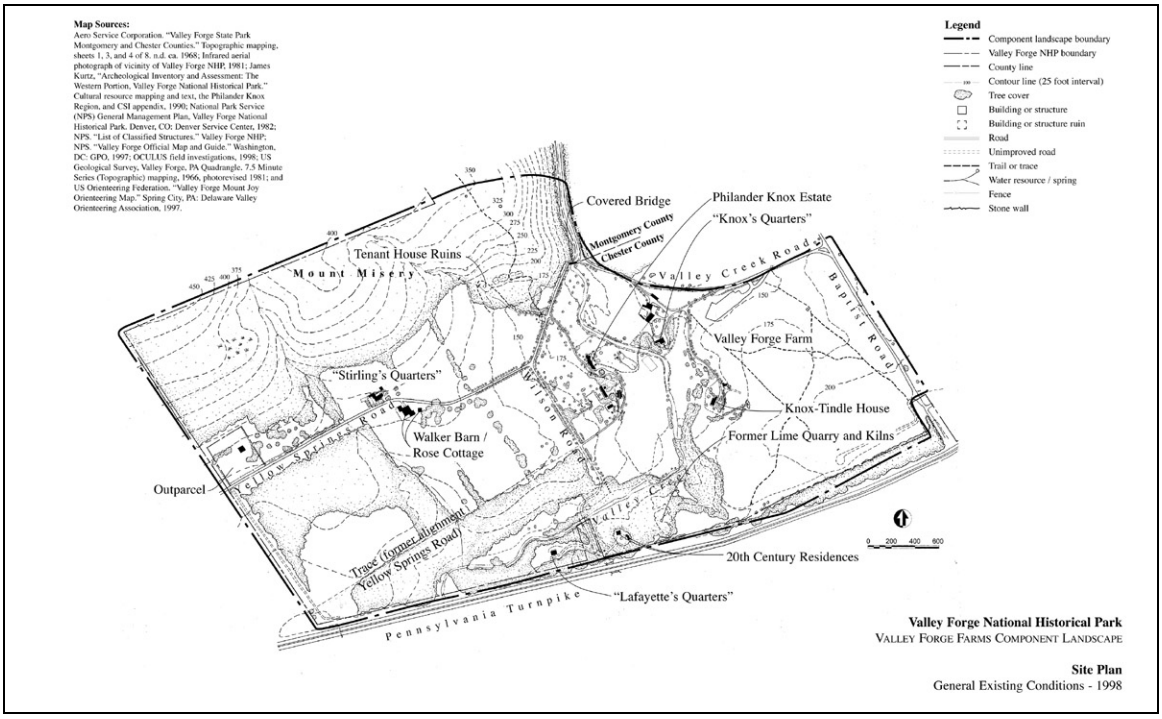

Figure II.3. 1998 site plan of the Valley Forge Farms component landscape, as included in the Cultural Landscape Inventory.

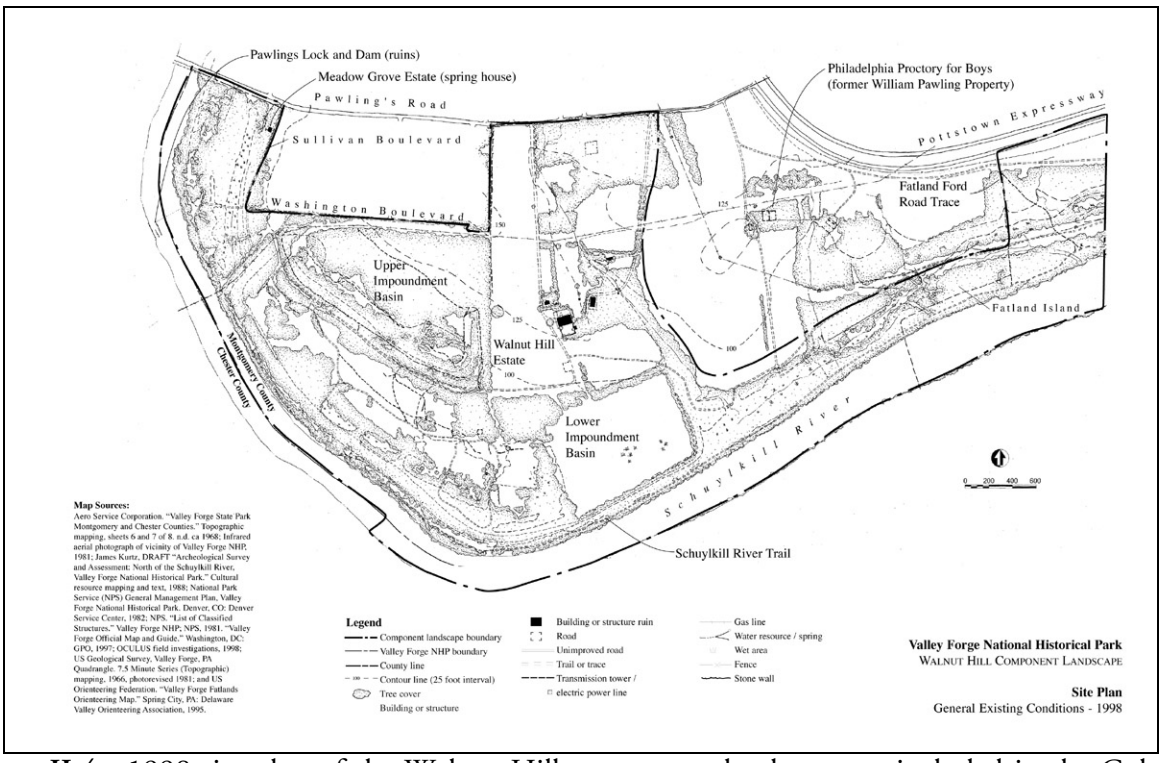

Figure II.4. 1998 site plan of the Walnut Hill component landscape, as included in the Cultural Landscape Inventory.

VALLEY FORGE NATIONAL HISTORICAL PARK
CULTURAL & INTERPRETIVE LANDSCAPE TREATMENT PLAN
CHAPTER III: SITE SURVEY & RESEARCH SUMMARY

A. SUMMARY OF VALLEY FORGE NATIONAL HISTORICAL PARK FIELD REVIEW

Heritage Landscapes conducted a field review of Valley Forge NHP in November 2006. The field review team overviewed the entire park and focused more specifically on each of the six interpretive areas as well as the four component landscapes. Each interpretive area was visited and examined through on-foot field investigations and existing conditions photographic documentation. A total of 270 digital photographs were taken to document and record the existing landscape condition. Each interpretive area has a unique character that was immediately discernable upon arrival to the site. The following sections outline the existing character of the overall park as well as each interpretive zone:

Overall Valley Forge NHP
South Side

- Open and commemorative landscape character
- Expansive and screened views across site
- Some views of adjacent land development
- Gently rolling topography, Mount Joy and Mount Misery
- Commemorative plantings, individually scattered trees, tree groves, native meadow vegetation, turf grass
- Tour routes, commuter roads, parking lots, trails, pedestrian paths
- Buildings, outbuildings, fences, monuments, interpretive panels, signage

North Side

- River-related, open and old field, forest, with numerous intrusions of residential development and utility and highway corridors

Muhlenberg's Brigade

- Long, narrow, linear spatial organization
- Open views to part of Grand Parade
- Screened views to former quarries and dump sites
- Screened views of adjacent park land development
- Tree allées along Outer Line Drive with native meadow groundplane vegetation
- One-way drive for traffic with small parking lot
- Narrow asphalt path for pedestrians/bikes, dirt path linking huts
- Wood huts, monuments, interpretive panels, Virginia worm fence

- Two redoubts, two redans

Grand Parade

- Expansive views to surrounding areas
- Rural in character
- Low-lying topography screens adjacent land development
- Remnants of former quarrying operations pose safety concerns for visitors
- Trees screen former quarries with native meadow groundplane vegetation
- Quarry trees cut Grand Parade in half and appear to reduce the extent of the space
- Edged by Gulph Road, Outer Line Drive, Route 23, with 20th century vegetation muddying the edge on the east

Washington's Headquarters/Village of Valley Forge

- Commemorative landscape character
- Screened views to Valley Creek, Schuylkill River, and western portion of Village of Valley Forge
- Gently sloping topography toward the west with steep Railroad embankment to the north
- Bordered by Valley Creek, rail road embankment, and Schuylkill River beyond
- Spring house and spring channel that served as water source
- Individual trees over a mixed turf grass groundplane
- Edged by Route 23, two large asphalt parking lots, Village Lane remnant
- Concrete and asphalt pedestrian circulation paths
- Train station, life guard huts, springhouse, interpretive panels, commemorative plaques, fences

Varnum's Quarters and Star Redoubt

- Expansive views over the Grand Parade
- Screened views to adjacent land development
- Individual scattered trees over a turf grass groundplane
- Redoubt with native meadow groundplane vegetation
- Site divided by Route 23, heavy traffic
- Bordered by asphalt parking lot and Inner Line Drive to the west
- No clear border to the east
- Narrow, asphalt pedestrian paths
- Monuments, interpretive panels, benches, low stone walls, foundation remnants, picnic area

Artillery Park

- Screened views to Grand Parade
- Commemorative setting
- Level and gently sloping topography at the base of Mount Joy
- Individual scattered trees over a mixed turf grass and native meadow groundplane
- Inner Line Drive, large, dominating, asphalt parking lot, historic road trace
- Narrow, asphalt pedestrian paths
- Monuments, interpretive panels, low stone walls, cannons

- Adjacent Redoubt #3 currently being reconstructed
- Base of Mount Joy is only clearly defined border

Pawling Farm

- Open and screened views toward Schuylkill River
- Rural, agricultural estate character
- Open meadows and former agricultural fields with trees scattered along fence lines and at river edge
- Remnants of formal garden plantings, boxwood
- Limited circulation routes/access
- Pedestrian and horse dirt trails
- Large stone barn, tenant house, interpretive signs, chain link fence, estate house in ruins
- Over 100 acres of former siltation basins, bordered by immense rubble walls

As treatment and interpretation guidelines are set forth and refined, the objective is to enhance the character of each interpretive zone for more effective and engaging presentation to park visitors through a coherent interpretive sequence and experience.

B. SUMMARY OF VALLEY FORGE NATIONAL HISTORICAL PARK ARCHIVAL REVIEW

Heritage Landscapes completed 1-1/2 days of archival research pertaining to the cultural landscape of the Valley Forge NHP. Collections were reviewed at the Valley Forge archives and the online Library of Congress Archives, Prints and Photographs Division. A wide variety of documentary materials including historic photographs, sketches, engravings, plans, maps, surveys, and aerial photographs were sought and obtained to provide evidence of the Valley Forge landscape character, features, conditions, and land uses over time. A review of the archival materials housed at Valley Forge National Historical Park was conducted in November 2006 in conjunction with the field review, while the Library of Congress image search was conducted earlier in the fall of 2006.

Images, photographs, surveys, military maps, and plans pertaining to the Valley Forge cultural landscape were examined. The search yielded historic aerials, photographs, and images that illustrate landscape change throughout the park. Images pertaining to the overall park and the six interpretive areas were located and scanned. A series of nine 1930s aerial oblique photographs were located and scanned, proving useful for showing overall landscape change over the last 70 years. Images of the six interpretive areas were also scanned; however, the number of images for each interpretive area varied. The area of Washington's Headquarters and the Village of Valley Forge yielded the most photographs, while areas such as Muhlenburg's Brigade and Walnut Hill yielded few images.

The archival image search conducted using the online database of the Library of Congress, Prints and Photographs Division, yielded high-quality black and white archival photographs taken for Historic American Buildings Survey (HABS) documentation. The photographs were downloaded from the website for several of the buildings located within the six interpretive zones. The number of gathered and scanned images at the Valley Forge NHP archives and the Library of Congress is as follows:

- 217 Total number of images
- 1 Image of Muhlenberg's Brigade
- 8 Images of the Grand Parade
- 98 Images of Washington's Headquarters/Village of Valley Forge
- 21 Images of Varnum's Quarters and the Star Redoubt
- 18 Images of Artillery Park
- 1 Image of Walnut Hill

Other images were also gathered that were not part of the six interpretive zones. These images include photographs of the Observation Tower, Memorial Arch, Memorial Chapel, Inner Line Drive, Outer Line Drive, Lafayette's Quarters, Lord Stirling's Headquarters, Knox's Quarters, and other views of unidentified buildings, roads, and views within the Valley Forge NHP landscape.

All images are coded with image file names that consist of a series of codes that track the source, archival number, and date of each photograph. Scan file names, dates, source information, titles, authors, captions, and descriptions for all images and documents are entered on an accompanying spreadsheet to the degree available. Entries are also sorted chronologically, printed, and assembled into a white three-inch three-ring binder. The images gathered serve as a reference and guide analysis of landscape change at Valley Forge, and may be useful in designing interpretive and educational materials for visitors of Valley Forge NHP.

C. ANALYSIS OF EXISTING MAPPING & RECOMMENDATIONS FOR FUTURE MAPPING

Using the base plan for the park, park GIS information was exported into an AutoCAD format. Information regarding topography, vegetation communities, soil groups, tour roads, pedestrian paths, structures, and buildings were included in the GIS and CAD mapping. Mapping appears to be fairly complete. Because Valley Forge NHP encompasses 3,500 acres, the location of many small-scale elements is not readily apparent on the overall park maps. Mapping from the CLI was also obtained; however, the site plans were initially hand drawn and could only be obtained in jpeg or pdf formats. No CAD drawings exist of these plans. The available mapping therefore has some limitations in terms of application to detailed treatment and interpretive planning. Within this project the mapping issue will be as needed to communicate the treatment and interpretation concepts. As the recommended treatment and interpretation initiatives proceed toward implementation additional site scale mapping may be required to carry out the intended work.

VALLEY FORGE NATIONAL HISTORICAL PARK
CULTURAL & INTERPRETIVE LANDSCAPE TREATMENT PLAN
CHAPTER IV: CHARRETTE SUMMARY

A. CHARRETTE PROCESS

Based upon the summary of background documents, previous reports, site survey, and research summary, the project team gathered for a focused one-day session at Valley Forge National Historical Park in April 2007. Fourteen individuals participated in this intensive effort including Michael Caldwell, Barbara Pollarine, Deirdre Gibson, Kris Heister, Bill Troppman, Ronald Gimmillaro, Robert Fudge, Ajena Rogers, Jeff Kangas, and Lewis Rogers of Valley Forge National Historical Park, Shaun Eyring of the National Park Service Northeast Regional Office, Tevere MacFadyen of Main Street Design, and Patricia O'Donnell and Carrie Mardorf of Heritage Landscapes.

Prior to the charrette, Heritage Landscapes sent charrette participants copies of draft materials of the *Cultural & Interpretive Landscape Treatment Plan* for Valley Forge NHP. Materials included a draft table of contents and draft Chapters I through III for review and comment. Materials were distributed and reviewed by charrette participants to provide a foundation for charrette discussion on treatment and interpretive objectives and guidelines.

Heritage Landscapes also prepared additional materials for the charrette, which included a packet of bound reference documents including a detailed charrette agenda, interpretive zone descriptions, summary of historical significance and associations, a series of four worksheets addressing charrette goals, reviewed background materials, cultural landscape management objectives, cultural landscape management guidelines, and selected historic maps and images. Three plans were also provided showing internal and external viewsheds, vegetation cover, and interpretive and commemorative features. After a thorough examination of the materials and in-depth discussion, the participants were able to articulate directions that became the basis for the Valley Forge NHP *Cultural & Interpretive Landscape Treatment Plan*, which presents each step in the process and the recommended future courses of action for the park.

As an overview of the charrette process and goals, the purpose of Valley Forge NHP was stated as to "educate and inform present and future generations about the sacrifices and achievements of General George Washington and the Continental Army at Valley Forge, and the people, events, and legacy of the American Revolution; preserve the cultural and natural resources that embody and commemorate the Valley Forge experience and the American Revolution; and provide opportunities for enhanced understanding." With this background, participants confirmed the prescriptions laid out in the General Management Plan to respect the evolution and layers of history within the park.

From there, participants collaborated to modify the cultural landscape management objectives in terms of natural and cultural resources, current and future uses, public access, visitor experience, and wayfinding and interpretive approaches, among other conceptual directions. Once conceptual directions were identified and agreed upon, physical and tangible elements within the park were addressed within the framework of management guidelines. Specifically, views and vistas, vegetation typology, and commemorative and interpretive features within each of the six interpretive zones were discussed. The detailed outcomes of the charrette are presented in the following sections.

B. CHARRETTE GOALS

The goal of the charrette was to clarify the overall prescriptions laid out in the General Management Plan (GMP) for Valley Forge NHP and what directions should be undertaken within the overall park landscape. The interpretive objectives, interpretative philosophy, interpretive considerations, and visitor experience objectives discussed in the GMP were broad conceptual ideas for future park direction. Using these initial findings as a foundation, charrette participants collaborated to gain an understanding of the information presented and confirm or modify the treatment within the GMP to fit the needs of the six interpretive zones of the park landscape. Each prescription was confirmed or modified to form a consensus on objectives for interpretation and management of the overall park landscape and for each focus area. Other site and landscape issues were identified as needed.

Additionally, it was recognized that the Washington's Headquarters interpretive zone is the primary zone and already is under rehabilitation. Similar levels of development are not necessary or appropriate for the remaining five interpretive areas for improved visitor experience. A more modest interpretive approach is needed for the remaining areas.

The charrette provided consensus on overall objectives and guidelines for long-term management, preservation, and interpretation of Valley Forge NHP, while beginning discussion of interpretive objectives for the six focus areas, which will be more fully developed within Phase 2 of this *Cultural & Interpretive Landscape Treatment Plan.*

C. INTERPRETIVE DIRECTION, OVERALL PARK

During charrette discussions, participants examined the existing landscape typology, visitor sequence and tour route and wayfinding approach at Valley Forge NHP and found that future approaches should increase visitor recognition of Valley Forge as a place, decrease visitor confusion in wayfinding, and link the Welcome Center to the broader park landscape. For this process, Heritage Landscapes partnered with Main Street Design, a firm that has worked with Valley Forge NHP on interpretive planning and design initiatives, ranging from new visitor center exhibits to the GMP and a long range interpretive plan. A desire to improve the overall quality of the visitor interpretive experience at Valley Forge NHP and to extend that experience more effectively across the park-wide landscape through more varied and more robust interpretive options for all park visitors was identified.

These new directions should be accomplished within the interpretive themes laid out in the park's draft Long Range Interpretive Plan. A listing of interpretive themes was presented at the charrette as outlined in the GMP. Two basic themes of history and natural resources were addressed, which are

explored in additional detail in the following chapter. While these themes may be interpreted effectively at a range of locations around the Park, certain stories can logically be best expressed at particular locations. With such a wealth and diversity of landscape-based interpretive resources, charrette participants agreed to a place-based approach where visitors are encouraged and enabled to explore and discover the many stories of Valley Forge *in situ* and not in a visitor center or museum. All exterior interpretive messaging in the Park must be place-based or place-driven; that is, it should directly relate to where visitors are when they are encountering and experiencing it. This interpretation *of* the landscape, not simply interpretation *in* the landscape, should be coupled with cultural landscape treatment to provide a more in depth visitor experience. The relationship between the two—interpretation and treatment—is explored in detail in the following chapter with efforts to help visitors understand the place that is Valley Forge and how it has changed over time.

D. PRELIMINARY INTERPRETIVE DIRECTION, SIX INTERPRETIVE ZONES

A preliminary framework for the interpretive direction for each of the six interpretive zones was initially discussed during the charrette. Although the individual interpretive zones are the focus of Phase 2 of this project, the following narrative describes the issues and initial outcomes agreed upon for each zone. Interventions were addressed based on fostering visitor recognition of each zone, decreasing visitor confusion, and linking the broader park landscape to visitor experience.

D1. Muhlenberg's Brigade

Muhlenberg's Brigade is the area along Outer Line Drive, overlooking the Grand Parade, in which General Peter Muhlenberg and his brigade camped during the encampment. A series of replicated huts marks the site, which is adjacent to where the outer line of defense was located. Located on a ridge, this is the interpretive area closest to the Welcome Center. There is some 21st century landscape clutter of views to adjacent development. Topics discussed during the charrette included:

- Potential interpretive themes
    - Encampment era—site of outer line of defense, soldiers' domestic lives
    - Natural resources—relationship between topography and strategic defense, natural systems, geology and quarrying
- Connect area to Welcome Center and next tour stop in tour sequence
- Open views toward Grand Parade; screen views to adjacent development
- Reconsider vehicular and pedestrian visitor arrival sequence from Welcome Center,
- Reconsider density of huts and hut construction to increase understanding of the larger context
- Remove contemporary distractions such as adjacent amphitheater, maintenance area, former quarries
- Clarify parking areas

D2. The Grand Parade

The Grand Parade is at the center of Valley Forge NHP, and is the site on which large-scale military operations took place. Prior to the encampment, this valley was agricultural fields with crops and pasture. Afterward, part of the area was mined and quarried for subsurface geological minerals.

These quarries and the trees that grew up around them now split the valley in half. This enclosed area is characterized by broad views, and no modern intrusions are present. The Maurice Stephens House sits at the edge of the Grand Parade. Topics discussed during the charrette included:

- Potential interpretive themes
    - Encampment era—site of military operations, drills, training celebrations, punishment
    - Cultural resources—18th century agriculture, sense of farmstead at Maurice Stephen's house to discuss agricultural history
    - Natural resources—geology and topography, sinkholes, wetland (overlooking Grand Parade), meadow management
- Consider views and visual relationships for visitor experience
- Attempt to immerse visitors within the cultural landscape to give people a sense of encampment era landscape character
- Reconsider visitor approach from east from parking lot at Welcome Center through pines for sense of enclosure and controlled views
- Incorporate historic road trace (Baptist trace road) to west for public access
- Future of the pine plantation
- Restore valley as one space

D3. Washington's Headquarters

Washington's Headquarters is the area located in the Village of Valley Forge along the banks of Valley Creek and the Schuylkill River where General Washington headquartered during the encampment. The group of historic structures and the landscape resources on the site make it suitable to illustrate Washington's leadership, the political and military context, and the strategy of the encampment, as well as additional interpretive stories. The Washington's Headquarters area was not discussed during the charrette, as implementation on cultural landscape treatment is already underway.

D4. Varnum's Quarters and the Star Redoubt

Varnum's Quarters and the Star Redoubt is an area located northwest of the Grand Parade and west of the Washington Memorial Chapel, along historic PA 23. Varnum's Quarters, an 18th century farmhouse with adjacent springhouse, was occupied by General James Varnum during the encampment. The Star Fort is an earthwork that protected the river ford (Fatland Ford) and Sullivan's Bridge, and that emphasizes the necessity of fortifications and perimeter defense during the encampment. Topics discussed during the charrette included:

- Potential interpretive themes
    - Encampment era (Varnum's Quarters)— civilian impact of encampment, history of Stephens family from 1730 to 1930
    - Encampment era (Star Redoubt)— racial integration within army, Rhode Island Regiment
    - Natural resources—geology and topography, sinkholes, wetland (overlooking Grand Parade), meadow management
- Reconsider visitor approach from west for shift in Varnum's Quarters orientation and for views over Grand Parade
- Facilitate safe visitor access across Route 23

- Incorporate historic road trace (Baptist trace road) to west
- Potential access to northern lands across Schuylkill River via pedestrian bridge near former Sullivan's Bridge site

D5. Artillery Park

Artillery Park is located at the edge of the Grand Parade east of Mount Joy. It was centrally located within the encampment and was the site of artillery storage and repair, with several portable forges. Today the area contains replicas of the cannons, which are laid out as if in line for battle against a defensive attack—a tight configuration for the winter encampment. Topics discussed during the charrette included:

- Potential interpretive themes
    - Encampment era—artillery storage and repair
    - Commemorative era—overlooks memorial arch area, commemorative plantings
    - Landscape stewardship—native vs. planted forest, meadow management
- Creation and development of visitor interpretive story at parking lot
- Definition of the area as a key interpretive site
- Use of interpretive themes not being explored elsewhere in the park
- Potential need to reorganize views and access for improved visitor experience

D6. Pawling Farm

The sixth interpretive zone is Pawling Farm (called Walnut Hill in the 19th and 20th centuries), located in the northern section of Valley Forge NHP, separated from the south side of the park by the Schuylkill River. This area served as the supply center of the Encampment where stores where located, supplies were distributed, and civilians brought goods to market. After the encampment period, the area became an estate farm engaged in scientific farming. A major conservation project on the Schuylkill River in the 1950s improved river water quality and established important animal and vegetative habitat. Topics discussed during the charrette included:

- Potential interpretive themes
    - Encampment era— supply and logistics of army, training of combat army in fields, commissary responsible for providing food, transport and stores for soldiers
    - Natural resources—conservation, environmental history, desilting basins, water and habitat quality
    - Cultural resources—scientific farming, ruins/archeological resources, land and building as witness to encampment
- Enhance cohesion of north and south lands of Valley Forge NHP
- Provide adequate site access and site identify
- Reveal compelling interpretive stories
- Accommodate local audience as current users
- Control the visual experience within park land
- Delineate vehicular and pedestrian access and use

E. INTERPRETIVE PLANNING CHARRETTE

On November 12, 2008, members of the project team assembled for a second charrette to address interpretive planning in some detail for the George Washington Headquarters landscape and at a conceptual level of the other five selected areas. VAFO superintendent and team members, Pacific Studio and Daniel Quan Design, Interpretive Planners, and Heritage Landscapes, met to coordinate the landscape treatment and interpretive exhibit design at Valley Forge NHP.

Detailed discussion of the Washington Headquarters targeted the landscape themes, sequence and interpretive panels locations and was held in a conference room with materials prepared by the interpretive planners focusing the discussion. The Washington's Headquarters area construction work was underway and a field review of the interpretive proposal was a useful exercise for all preset to visualize the intent. The field review of potential interpretive treatments continued at the five landscape focus areas. The outcomes of this 2008 meeting are incorporated into the treatment recommendations presented in Chapter VI.

VALLEY FORGE NATIONAL HISTORICAL PARK
CULTURAL & INTERPRETIVE LANDSCAPE TREATMENT PLAN
CHAPTER V: PARK-WIDE CULTURAL & INTERPRETIVE LANDSCAPE OBJECTIVES & GUIDELINES

A. INTRODUCTION

This park-wide cultural and interpretive landscape treatment plan integrates the existing resources and landscape character of Valley Forge NHP and the concepts outlined during the charrette findings into general landscape treatment recommendations. The objectives and guidelines presented here integrate the present landscape condition with the desired goals to provide future direction for the park. This approach respects and preserves existing landscape character and stewards sustainability, demonstrating an essential respect for the cultural and historic landscape at Valley Forge. At the same time, contemporary needs, public safety, and resource limitations require holistic incorporation to shape realistic recommendations and guidelines that can be implemented with park resources and modest future projects. This multi-faceted integration targets a sustainable, maintainable, accessible landscape that respects park resources, presents historic and cultural resources to visitors and supports learning and enjoyment for diverse users. These efforts to enhance the visitor experience and improve landscape function are important directions toward fulfilling the mission of the National Park Service at Valley Forge NHP.

In this narrative, objectives are set forth, followed by guidelines. This framework identifies and presents action-oriented strategies. They serve to direct decision-making about landscape management, physical interventions, and incorporation of new interpretation and wayfinding elements into the future. As landscape interventions of treatment and interpretation proceed, stewardship responsibility directs the safeguarding and conservation of this unique landscape in terms of both tangible and intangible resources. Graphic references for this narrative are presented as fold-out plans at the end of the chapter. These references are:

- Ex dwg1 *Existing VAFO NHP External Viewshed Diagram*
- Pr dwg 2 *Proposed VAFO NHP External Viewshed Diagram*
- Ex dwg 3 *Existing VAFO NHP Internal Viewshed Diagram*
- Pr dwg 4 *Proposed VAFO NHP Internal Viewshed Diagram*
- Ex dwg 5 *Existing VAFO NHP Vegetation Diagram*
- Pr dwg 6 *Proposed VAFO NHP Vegetation Diagram*
- Ex dwg 7 *Existing VAFO NHP Commemorative & Interpretive Features Diagram*
- Pr dwg 8 *Proposed VAFO NHP Commemorative & Interpretive Features Diagram*

These cultural landscape guidelines yield an integrated approach that can be effectively applied to protect and enhance both natural and cultural resources of the park while addressing treatment and interpretation objectives.

Interpretive landscape objectives and guidelines consider the evolution of the Valley Forge NHP landscape from 1773 to present. The chronological eras include:

- Isaac Potts ownership, 1773 to 1790: Family resides or rents or leases the property beginning in 1773 and leases the house and surrounds to General Washington during the Revolutionary War winter encampment of 1777-1778. The Potts family owns the Washington's Headquarters parcel through 1790.
- James Jones ownership, 1826 to 1878: Rural village setting with agricultural uses and adjacent industrial functions take advantage of Valley Creek water power. Larger-scale mill industries, increased populous of mill workers, and an agricultural surrounding characterize the landscape.
- Valley Forge Centennial and Memorial Association, 1878 to 1893: First commemorative period. The Valley Forge Centennial and Memorial Association acquires Washington's Headquarters at Valley Forge in 1878 to memorialize and commemorate the events associated with General Washington and the Revolutionary War. The landscape is characterized by abandoned mill industries, centennial memorialization efforts and continued agricultural land use.
- Valley Forge State Park, 1893 to 1976: In 1893, the first state park in Pennsylvania is established at Valley Forge, adding an additional layer of history and commemorative efforts though construction of drives, paths, stone walls, and tree allées. In 1905, the Washington's Headquarters property becomes part of Valley Forge State Park. State park stewardship transitions the memorial landscape to public care under the Valley Forge Park Commission. (See Figures V.1 to V.6.)
- National Park Service, 1976 to present: In 1976, Valley Forge National Historical Park is formed under the management of the National Park Service with continuous stewardship of landscape to the present day. The landscape is characterized by National Park Service memorialization and presentation of the site to the public.

B. OVERALL CULTURAL LANDSCAPE MANAGEMENT OBJECTIVES

Clear cultural landscape management objectives can assist in the formulation of landscape guidelines for a high quality, engaging visitor experience that highlights the history and commemorative values while incorporating natural resources and the full diversity of interpretive themes. Based on the research, field review, previous planning documents, and charrette outcomes, these objectives can be enumerated. The overarching objective for any intervention at Valley Forge NHP is to respect this unique place, preserving and interpreting its history and resources. Conservation and preservation of cultural and natural resources and appreciation of scenic landscape beauty is inherent in any treatment initiative. Each intervention must also be cognizant of ongoing landscape evolution, in relation to historic events and traces of the past that foster interpretation. Recognition of diverse commemorative use, daily recreational uses, and landscape maintenance capabilities are important to factor into a grounded, appropriate approach to interventions. All initiatives should also address sustainability principles and best practices to the greatest possible extent. In summary, the list of objectives includes:

- Respect the Valley Forge landscape
- Effectively engage the visitor with park resources
- Recognize and accept landscape evolution
- Value both natural and cultural resources in an integrated manner
- Incorporate appreciation of scenic beauty
- Address landscape sustainability
- Frame realistic expectations for landscape maintenance levels

Integration of these multiple values and diverse resources within the Valley Forge landscape is the overall cultural landscape management objective.

B1. Valley Forge NHP Uses & Public Access

Park users and visitors are essential to Valley Forge NHP, providing an impetus for educational programs and interpretative efforts. With commemorative visitors and daily users, this park has vitality, functioning as a cultural place of national heritage and environmental value. Defining current and future park visitor use and public access is an important step in determining future directions for the landscape. Knowing how users interact with this place today is an important factor. Understanding all the relevant park user factors forms a user baseline for recommendations.

The GMP clearly articulates that all park visitors are served through enhanced interpretation and education of the park. Current use of Valley Forge NHP consists of a mix of two main user groups. Approximately 20% of current park users are destination visitors or "once in a lifetime" visitors, while the remaining 80% of park users are local, recreational users who may frequent the park on a regular basis. Destination visitors come to the park seeking an experience of that pivotal revolutionary history, learning about General George Washington, the Continental Army, and the 1777-1778 winter encampment. These visitors typically include families, couples, tour groups of all ages, and school groups. The local visitors use the park more frequently as a recreational facility for walking, jogging, biking, horseback riding, wildlife watching, and picnicking, among other activities. For these visitors, the park trails, paths, and open spaces are invaluable resources. Through numerous public involvement interactions over the years, however, these users have strongly expressed their sense of connection to the park's cultural and natural history, and that they do not want to be thought of only as "recreational" visitors.

The percentages noted above do not include commuters who use the park as a transportation route. Thousands of commuters drive through the park on a daily basis. These users travel along thoroughfares including PA 23, PA 252, Pawlings Road and Gulph Road. In contemporary life, park roads have become a commuter route of choice because of the scenic, picturesque qualities along the route and because for some, there are no other convenient alternatives. The substantial numbers of commuters create conflicts with park destination users trying to navigate tour routes, turn into oncoming traffic, and cross busy intersections. Commuters do not experience the rich, interpretive opportunities the park has to offer. The daily commuting patterns are an opportunity to capture and engage commuter attention to give these indirect users a more definitive impression of this historical park.

Visitors access the park through a variety of vehicular and pedestrian transportation modes. Traveling to the park is typically by private automobile with destination visitors arriving in small

groups or by tour or school bus, characterized by larger groups arriving at one time. The network of park roads provides visitor access, but is also used by local and regional traffic. At certain hours of the day and in fine weather, traffic congestion is an issue causing delays and impatience. Multiple transportation modes are accommodated within the park roads by provision of pedestrian, equestrian, and bicycle trails, used by walkers, joggers, riders, and bikers. Segments of trail systems are discontinuous at a limited number of points and can be treated for improved circulation.

B2. Conservation & Preservation of Cultural & Natural Resources

Cultural and natural resource management safeguards and stewards imbedded values and important character-defining features of a landscape. These resources reveal the history and evolution of a property to site visitors and embody environmental quality. Valley Forge NHP contains complex and interrelated cultural and natural resource values in both tangible and intangible forms. The recognition, valuing, and presentation of cultural and natural resources are not dichotomous or mutually exclusive. Instead, both types of resources are part of an intertwined whole, woven together and influencing each other to variable degrees. The park's fundamental goal of managing cultural and natural resources together effectively is at the core of Valley Forge NHP landscape treatment, management, and interpretation guidance.

The variety and quality of park natural resources has enabled the site to become a de facto wildlife refuge for the same reason that it attracts people: it is a rare, large acreage of open space, an expanse of green in the suburban Philadelphia area. In terms of habitat, the basin areas of Pawling Farm boast healthy numbers of amphibians, reptiles, and other animals, while many species of songbirds nest in the park meadows and woodlands. Additionally, the extensive open space allows for opportunities to foster resident populations and to protect rare and endangered plant and animal species and enhance the diversity of wildlife habitat. An increasing population of white-tailed deer inhabits all areas of the park and poses issues of deer population pressure. Control of the white-tailed deer population is underway. Additional efforts are ongoing to enhance natural resource values include improving water quality, suppressing invasive species, and remediating hazardous waste sites.

As the historical values are at the core of this park, natural resources were not a focus for interpretation. Set aside to commemorate the Continental Army's winter encampment, past interpretive emphasis was placed on the encampment, army training and related Revolutionary War. However, the GMP sets forth diverse interpretive themes. Interpreting both cultural and natural resources allows visitors to understand the relationship these natural resources have to the cultural resources and the value and fragility of natural resources. Adding natural resources themes and places to park interpretation, as outlined in the GMP, increases the interpretive options for specific areas of the landscape. This inclusion of natural resources interpretation will foster richer educational opportunities to promote a deeper understanding of the park beyond simple enjoyment of scenery and wildlife. Supporting opportunities for repeat visitors to learn something new through park visits to different areas with varied interpretive themes enhances understanding and engagement with the park landscape. An important objective is to develop a sense of stewardship responsibility among visitors that aids in protecting and stewarding the resources of the park into the future.

Treatment and management approaches for cultural resources respond to federal preservation standards and guidelines. Federal cultural landscape preservation guidance is found in:

- Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes
- A Guide to Cultural Landscape Reports: Contents, Process, and Techniques
- National Park Service Director's Order #28: Cultural Resource Management
- NPS Preservation Brief 36: Protecting Cultural Landscapes
- National Register Bulletin 18: How to Evaluate and Nominate Designed Historic Landscapes
- National Register Bulletin 30: Guidelines for Evaluating and Documenting Rural Historic Landscapes

Options set forth in these documents include a range of interventions from Preservation, Restoration, Reconstruction, and Rehabilitation, which are defined as follows:

- Preservation, the baseline in stewardship, addressing repair and stabilization that exhibits respect for the landscape as inherited from the past and underlies all other treatments
- Restoration, an intensive intervention that returns a degraded landscape to the character and details of a documented, historically significant time period
- Reconstruction, a highly intensive approach that recaptures authentically to a target time period and character of an entire landscape or more frequently applies to specific elements of the landscape
- Rehabilitation respects historic features and character while accommodating current and future use, maintenance, and sustainability

The cultural landscape treatment approach laid out for Valley Forge NHP is rooted in preservation, which respects the inheritance of the past and conservation that values natural resources and habitat. Conservation and Preservation with Rehabilitation to accommodate current and future uses are the overriding treatment selection. Basic preservation interventions include actions to repair, stabilize, and manage this historic landscape and its remaining character-defining features. Likewise, basic conservation respects, stewards and sustains natural resources. A unique aspect of landscape treatment at Valley Forge addresses interpretation alongside landscape preservation and conservation in an integrated manner. This holistic stance, with interpretation, preservation, and conservation as equal partners, could potentially include targeted restoration and reconstruction of specific features or character elements as tools to support interpretation and provide a quality visitor experience. This appropriate landscape treatment approach considers the historic place of Valley Forge NHP in concert with the range of contemporary issues, to include interpretation, sustainability, and maintainability. Therefore, this complex treatment target will respect, retain, and safeguard the remaining historic landscape patterns and features and natural resources, while it bolsters historic character where practical and achievable, adapts to contemporary needs and resources, and incorporates overall maintenance considerations, to highlight the visitor experience through interpretation.

The selection of a hybrid, nontraditional approach for this historic, commemorative park respects remaining historic landscape features and character and the natural resources of this land, wetland, creek, and river property, while enhancing experiences of this unique place. Overall park cultural landscape guidelines pertaining to views and visual relationships, vegetation, and interpretive and commemorative elements are presented in the following sections.

B3. Preservation of Scenic Qualities & Beauty

At Valley Forge NHP, visitation for appreciation of scenery has been a component of the commemorative history. Scenic beauty is an important factor in the design of the park, particularly during the state park era. In developing the park, landscape design decisions were intentionally focused to create a beautiful and scenic landscape with commemorative aspects that were of aesthetic value for future generations. Over a century of commemorative actions to honor historic events and people have shaped the landscape into one of great beauty. In addition to the preservation of cultural resources and presentation of interpretive elements, the scenic beauty of the park should also be preserved and considered in future landscape treatment interventions.

B4. Landscape Interpretative Objectives

In general, future interpretative measures at Valley Forge NHP should enhance the link between remaining tangible landscape features and intangible defining historical events that influenced national history. The landscape offers an opportunity for visitors to witness the story of this place over time through engaging interpretive approaches. A series of detailed objectives, philosophies, and considerations were outlined and listed in the GMP for overall interpretation of both natural and cultural resources to enhance visitor experience and create a visible and accessible history at Valley Forge NHP.

Interpretive objectives encompass a broad range of goals for visitor understanding of Valley Forge as a historic place. Some objectives within the GMP relate directly to cultural landscapes; these objectives can be directly addressed through place-based interpretation. Those interpretive objectives listed in the GMP and their potential application to the park landscape and its cultural and natural resources are enumerated in the following chart:

GMP Interpretive Objectives[1]	Application to Cultural Landscape
▪ Understand history, significance, and legacy of the American Revolution and the encampment	▪ Enhance the visitor experience and choreograph visitor sequence for a park landscape immersion; interpret encampment and American Revolution at key locations using place-based interpretation
▪ Understand symbolic and actual legacy of the encampment and Revolution	▪ Not applicable to physical interventions in the cultural landscape
▪ Understand the leadership of General George Washington and roles played by other key figures	▪ Not applicable to physical interventions in the cultural landscape
▪ Understand the history and significance of the park's natural resources	▪ Conserve and protect natural resources as character-defining features; interpret natural resources as an additional theme
▪ Understand the historic and contemporary connections between park cultural and natural resources	▪ Enhance and interpret influences and responses of culture to natural systems over time
▪ Become intrigued to learn more, through return visits or continued reading, viewing, and participation on their own	▪ Landscape engagement can cue interests sparking further investigation and exploration

▪ Make intellectual and emotional connections to their own lives and times through experiences and critical thinking	▪ Enable the experience of scenic beauty, which is a key element of the commemorative landscape, to evoke emotional connections to the place
▪ Appreciate that understanding cultural and natural history is dynamic and that each generation reinterprets the meaning of history	▪ Provide and interpret visible layers of history from encampment, agricultural, industrial, and commemorative eras that are easily read in the VAFO landscape
▪ Understand the value of individual and collective actions through stewardship of the cultural and natural resources	▪ Interpret visible remnants of past stewardship stories/actions, i.e. state park era, commemorative tree allées, Schuylkill River basins at Pawling Farm

The range of interpretive objectives offers opportunities for visitors to understand these concepts by engaging in Valley Forge NHP as a place. In shifting the visitor experience away from Visitor Center and toward the expanse of the entire park, the interpretation themes encompass all those in the GMP. Even though a selection of objectives applies directly to physical interventions within the cultural landscape, landscape interpretation opportunities are varied. Physical interventions should be accompanied by interpretive measures to address the:

- Evolved history of each unique place within the overall park
- Connections between past and present
- Authenticity and values of artifacts and place
- Dynamics of continuity and change in the landscape
- Tradition of stewardship

These interpretive aspects can be addressed through the themes outlined in the GMP and the diverse opportunities and complementary experiences that can be plumbed for the multiple audiences. Authenticity of landscape elements and features is an important consideration in interpretation. Visitors should be directed to the authentic traces of the physical resources and the authentic history and stories of the intangible resources using the landscape in place based interpretation. Informing visitors about historically authentic features and reconstructed elements is part of the presentation of the real stories imbedded in the place. Both authentic and reconstructed elements of landscape should be interpreted as part of the encampment and in line with the other interpretive themes that address landscape change over time, attitudes toward preservation and stewardship and so forth. Education and access foster a sense of appreciation, responsibility, and stewardship.

Actions to achieve interpretive objectives and concepts laid out in the GMP will respect the existing landscape and consider global objectives of making the landscape legible, while remaining uncluttered. The design of interpretive features should not impair the visitor experience. The design of the interventions cannot be more important than the historic place of Valley Forge NHP. Scale, placement, color, materials, visibility, and well-suited location within the environment will be considered when designing and placing new interpretive features within the landscape. A high quality experience will be achieved through providing multi-sensory experiences and fostering visitor memories through place-based interpretation. Visitor experience is first and foremost, while site interpretation acts as a balanced complement.

B5. Cultural Landscape Sustainability

In applying preservation treatments and interpretive approaches to cultural landscapes, sustainability is inherently a component. The baseline of the preservation treatment of historic resources is having respect for what remains while adapting as required, using best practices. Relevant practices include on-site resource management and protection, adaptive reuse, soil management, composting and compost use, stormwater management, water conservation and potable water recycling, energy conservation, procurement of local materials, use of durable native and traditional planting, invasive species suppression, establishment of clear maintainable landscape types for low resource input, and use of low impact machinery for landscape construction and maintenance, among others.

Integration of sustainable management practices can reduce required maintenance. At Valley Forge NHP, some of these sustainable practices have already been implemented in the establishment of native meadow grasses throughout many areas of the park. Meadow establishment has reduced maintenance efforts in terms of limiting mowing of turf grass. Research and project monitoring have confirmed that native grasses aid in storm water management and water quality filtration by holding more water within their root systems compared to traditional turf grass. Continuation of these sustainable practices to reduce maintenance should occur as treatment and interpretive interventions are implemented.

Additionally, as cultural landscapes are renewed there are a number of factors to consider in terms of sustainable implementation approaches. These include an array of opportunities to apply new and emerging technologies and to incorporate green design and green construction techniques. An increasingly important component of preserving and sustaining cultural landscapes is the application of green principles and decreasing project carbon footprints as awareness of global climate change increases. For example, using local materials cuts down fuel and transportation costs and reduces the amount of carbon dioxide emitted into the atmosphere. Managing woodlands toward maturity tends to enhance carbon dioxide/oxygen exchange. Planting additional trees, where appropriate, adds plants to the park that convert more carbon dioxide in the air to more available oxygen. Sustaining cultural landscapes of heritage value is one part of the global solution to the complex problems of climate change and the related objective of reducing human carbon footprint. In fact, the approximately 3,500 acres of Valley Forge NHP is a green space that already performs important carbon sequestering functions. For specific details of best management practices and the sustainability elements of those practices, reference Chapter VII.

C. RELATIONSHIP BETWEEN INTERPRETATION & TREATMENT

Interpretation of a cultural landscape "is the process of providing the visitor with tools to experience the landscape as it existed during its period of significance, or as it evolved to its present state," which can be accomplished using a variety of methods from providing clues and routes that focus visitor attention on existing features to the addition of new interpretive markers and elements.[2] Cultural landscape interpretation can be thought of as a continuum of options based on the evident changes within a landscape and the integrity of the landscape to the historic period. Understanding the degree to which the landscape communicates the character-defining features from the period of significance, in other words the level of integrity, aids in developing interpretive foci. It follows that landscapes with limited remaining historic features and character that depict a target historic period

will require a more intensive or inventive approach to interpretation than those with high integrity where directing attention and aiding perception are more successful. When overriding patterns and significant features of a landscape are intact, interpretation of those elements can be direct, with simple clues, tour narrative, markers, or signs. However, when crucial elements of the landscape are missing, fragmented, or have evolved over time beyond recognition, a more creative or elaborate interpretive approach is needed to give visitors tangible means to access that missing historic character within the landscape. Significant change from the historically important time, changed visual relationships, and altered key character-defining features warrant a more creative and intensive interpretive approach employing a variety of media and messages. At Valley Forge, evolution is accepted within the context of this important historic site of the 1777-1778 winter encampment and its commemoration over time. The foci for interpretation while centering on the encampment also includes cultural resources related to commemoration and natural resources related to this landscape today. The extant or missing character-defining features of the cultural landscape predict the effective range of interpretive approaches of its history, while extant natural resources offer engaged interpretation toward those themes.

Within Valley Forge NHP, some areas display their cultural or natural resources in more legible, readily discernable ways than others. For example, the interpretation of natural resources, present today, can use an approach that focuses on observation and explanation. In contrast, directing visitor attention to a changed cultural landscape may rely on perceiving more subtle clues to the historic character or attention to a specific text that describes the former character. Due to the varying levels of readability within the landscape, interpretation and treatment alternatives are considered together.

The GMP states that the interpretive objective of the park is to accept all landscape changes as evidence of layered history over time. Within this construct of history, evolution, and commemoration, this *Cultural & Interpretive Landscape Treatment Plan* addresses aspects of landscape treatment and interpretation with regard to those GMP interpretive objectives and themes. The ability to represent the interpretive themes of historic cultural and natural resources and tie them to individual focus areas is related to the existing conditions of each place. Together, the landscape history, evolution over time, existing conditions, and interpretive approaches inform cultural landscape treatment interventions undertaken within each of the six interpretive zones.

Interpretive orientation can be discussed in terms of two related levels of landscape experience and perception:

- Wayfinding sequence and experience of the park to reach the six interpretive zones
- Visitor arrival sequence at each individual interpretive zone

Both wayfinding and site specific interpretation comprise the sequence and details of the visitor experience of place. The first aspect of visitor experience encompasses overall wayfinding and navigating from one interpretive site to the next within the park, while the second focuses on specific aspects of interpretive site experience of views, vegetation, and commemorative and interpretive elements, and so forth. For instance, at Washington's Headquarters, the arrival and interpretive sequence have been changed in the recently completed project to incorporate a new point of arrival, new pedestrian approach, new place and means of orientation, and new sequence around the site.

At the other five interpretive zones, limited intervention and fewer substantial changes are anticipated but an improved visitor experience is desired. Visitors will need additional information to understand the park landscape as it is today and the cultural and natural resources unique to each area. The overarching goal is to enhance the visitor experience through improved interpretation. These visitor experience objectives will be achieved through creative cultural landscape preservation, commemoration and interpretive planning for each area, and the development and dissemination of appropriate "advance organizer" information, which aids visitors in locating, understanding, exploring, and appreciating the designated interpretive zones. This can be accomplished through a variety of means that can be visitor selected. Access to interpretation on site can be potentially augmented by web and digital media. The range includes:

- Print and digital download publications
- Web-based pre-arrival visit planning resources
- Visitor Center informational exhibits
- On-site printed tour guides
- Site specific interpretive markers and waysides
- Tour trolley ride with tour guide
- Self-guided tour brochures
- Downloadable self-guided tours with text, graphics and soundtracks

The determination of site-specific interventions for interpretation and cultural landscape treatment of the park interpretive zones are addressed in the following chapters. Guidance is presented for wayfinding and cultural landscape management for views and visual relationships, vegetation, and commemorative and interpretive elements.

D. INTERPRETIVE THEMES & APPROACH

The overall interpretive approach to Valley Forge NHP uses a model in which the visitor has options to select the areas, stories, and interpretive themes to experience according to his/her own interests. Themes fall into two basic categories—history and natural resources.

The GMP lists the following overarching themes and subthemes within the category of history:

- **History Overarching Themes**
  American Revolution—The American Revolution created the United States. Today we regard it as the embodiment of the values and ideals of the American people. Yet the historical record reveals a rich history of people who were divided by geography, culture, and class and torn by internal strife and uncertainty.

  Valley Forge During the Encampment Period—The 1777–1778 winter encampment at Valley Forge represents a microcosm of the American Revolution, with its range of people and personalities. Valley Forge reflects the representative conflicts, complexities, and contradictions of the American Revolution and the War for Independence.

  Valley Forge After the Encampment Period—After the encampment of 1777–1778, Valley Forge came to symbolize redemption through suffering by commemorating the sacrifice and

hardship that characterized the early Encampment Period, and evolved into a prime symbol of American ideals and identity. Its pastoral setting belies the complexities, contradictions, and uncertainties of the Revolutionary period.

- **History Component Themes**

  American Revolution—Americans' individual motivations and decisions about involvement in the American Revolution and War for Independence ranged from the ideals of the Enlightenment, loyalty, and religious conviction to practical issues such as daily survival, the promise of freedom and a secure economic future.

  Valley Forge—The stories of the military and civilian participants of the Philadelphia Campaign and the Valley Forge encampment reflect a spectrum of motivations and actions.

  American Revolution—How did the colonists defeat the most powerful empire in the world? As the War for Independence progressed, George Washington's strategy focused on staying in the game: holding the army together and turning it into an effective fighting force.

  Valley Forge—By placing the 1777 – 1778 winter encampment at Valley Forge, so close to the main British Army in Philadelphia, Commander-in-Chief General George Washington consciously chose a strategic position enabling him to monitor the British while keeping a safe distance. He used the encampment to refine and reform the organizations and systems necessary to support and professionalize the Continental Army.

  American Revolution—More than any other factor, it was George Washington's character – his leadership skills, political savvy, and personal integrity – that was the basis for the cohesion of the army and ultimate victory of the American cause in the Revolution and the War for Independence.

  Valley Forge—At the Valley Forge encampment, Commander-in-Chief George Washington faced severe challenges to his leadership and organization, yet assumed and retained the responsibility to hold the army together.

  American Revolution—The American Revolution is often considered an internal struggle of the British Empire; but it was not only a civil war but also a war that triggered conflict on a global scale as power an influence shifted, new alliances were created and opportunities seized to even old scores.

  Valley Forge—The story of the Valley Forge encampment provides a window to the global scale and foreign involvement in the War for Independence through such factors as the French Alliance and the foreign volunteers and participants on both sides.

  American Revolution—The American Revolution forged an American identity that united both individuals and states around the ideals expressed in the Declaration of Independence; this, despite the paradox and tension inherent in subordinating individual liberties and state interests to common goals and the common good.

  Valley Forge During the Encampment Period—Despite the inherent drama of deprivation, disagreement, intrigue over leadership, personal animosities, factions of despondency and

pessimism as well as the uncertainty of the outcome, a stronger, more disciplined, organized and professional national army emerged from the Valley Forge encampment with a renewed sense of confidence and identity.

Valley Forge Commemorating the Encampment—Despite the complexities of encampment, the Valley Forge story became symbolic shorthand for subsequent generations as they contributed to the evolving, pastoral landscape set aside to celebrate heroic suffering and sacrifice and to instill a sense of gratitude, inspiration, and patriotism.

The GMP lists the following overarching themes and subthemes within the category of natural resources:

- **Natural Resources Overarching Theme**
  The landscape of Valley Forge depicts a pastoral setting. Yet the landscape and its natural resources have been devastated numerous times from the overwhelming effects of war, industry, and agriculture. The land's recovery reflects the resilience of the resources and also the significance of this place to generations of Americans.

- **Natural Resources Component Theme**
  Commemorative Landscapes—Citizens have sought to preserve Valley Forge since the mid 19th century. Each generation has assumed the responsibility to actively defend this ground. Each generation has redefined the meaning of commemoration: and the landscape of the Park reflects the imprint of these ideas, including reconstruction, beautification, active recreation, and naturalization. This important tradition continues today.

  Habitat Diversity—The park protects a variety of habitat types, each of which supports an impressive diversity of native wildlife. What is an appropriate definition of natural conditions in this highly developed region? Protection requires constant choices.

  Global Meaning—The preservation of abiotic and biotic conditions at Valley Forge is a globally shared conflict between the protection of the resources and their use. The conflict goes beyond the boundary of the park.

While these themes and subthemes may be interpreted effectively at a range of locations around the park, certain stories can logically be best expressed at particular locations. Not all park locations can carry every theme or the same themes, which reflects the place-based interpretation strategy selected for the cultural landscape.

In general, each interpretive zone should carry, evoke, and hold the primary message conveyed, with supplemental information conveyed through a secondary theme. Each of the interpretive zones is proposed to present at least two interpretive stories:

- One primary theme of the winter encampment history
- One secondary theme of landscape evolution over time and its resources today

These themes will vary with each interpretive zone. As an event of national importance, the encampment story will be pre-eminent. A subsequent story of landscape evolution or important character or quality of place that is visible today will also be presented. This combination will

illustrate the dynamic history of Valley Forge NHP by presenting a story of a specific point in time or the "then" at the time of the encampment, followed by a story of the continuum across time or another point in time as the "later then" of years after the encampment. As an example, the primary interpretive themes at Pawling Farm may include the use of the property as the commissary and strikeforce location for the Continental Army and the secondary theme would address environmental protection and natural resource conservation illustrated through the desiltation basins and habitat quality along the Schuylkill River. Other interpretive themes could be presented to visitors via digital file transfer.

In the search for interpretive themes throughout the park, visitors should be prompted to inquire:

- How do I know when I'm in the correct location?
- What is different at this location?
- What can I learn from this place?

The answers to these questions would be found in landscape. The proposed treatment interventions and interpretive strategies will use text, graphics, sounds, etc. through signs, waysides, and markers. It is anticipated that park visitors can access digital interpretive information on personal mobile devices to enrich the visitor experience.

E. VISITOR ORIENTATION

Visitor orientation and visit planning is a key interpretive consideration laid out in the GMP. The overall intent of visitor orientation is to inform, educate, and provoke thought through multi-media strategies of personal and digital orientation. Without an initial orientation to Valley Forge NHP, visitors may get lost, confused, or misinterpret vital information pertinent to understanding the place as a Revolutionary war encampment site. Current orientation does not explicitly or effectively address either the park-wide landscape or the six interpretive zones, and does not enable visitors to understand the scale and complexity of the cultural landscape of Valley Forge NHP.

Site orientation and information gathering is changing with the development of new technologies. Traditionally, park visitors gathered information regarding the place when they arrived at the Visitor Center. Although a physical contact station for information is important and useful, more visitors are organizing their visits in advance by gathering web-based information prior to actually arriving at the park. The movement toward advance organizing is an opportunity to provide diverse pre-visit information.

Visitor orientation continues to be enhanced through additional website information and accompanying Visitor Center orientation activities, to give visitors effective orientation before they begin active exploration of the park. This can occur in advance of their visit, via a well-developed menu of web-based resources, in the Visitor Center, or both. The more information a visitor knows about what to look for and how to find it prior to the visit, the less physical presence is required on the site and the visit will meet informed expectations.

F. OVERALL PARK WAYFINDING & INTERPRETATION

Wayfinding is recognized by the park as a challenge due to the large scale and size of the area within a complex setting of roads. Current road alignments often lead to visitor confusion in terms of direction, location, and understanding of the Visitor Center in relationship to the six interpretive zones. While navigation from the Visitor Center to Muhlenberg's Brigade is somewhat straightforward due to the short distance between the two, navigating to sites farther away, such as Washington's Headquarters, is more difficult. The current map in the park brochure is helpful and shows different areas of the park; however, it lacks a sense of topography and an accurate perception of the landscape, which leads to visitor confusion. Wayfinding can be enhanced using a combined approach that provides site layout maps in each interpretive location and in the Visitor Center; cues visitors to large-scale landscape patterns like views and commemorative trees; and places clear simple destination signs that anticipate upcoming elements along tour routes. Together these techniques will foster visitor success in navigating the park and reaching their destinations.

Existing wayfinding at Valley Forge NHP is associated with the encampment tour sequence, which is sequentially numbered along a variable one-way and two-way route. This approach is partially successful but does not facilitate a multi-experiential program for visitors. A shift away from a sequential route could focus on the six interpretive areas and their locations. These areas could be repeated on every map to reinforce understanding of their locations. By also labeling or depicting landscape patterns on the site locator map, visitors can be provided landscape pattern clues. Knowing that an area is forested, open meadow, or lined with commemorative trees, can help visitors keep track of their location. In addition, the marking of important views and providing selected viewing locations along park drives also orients visitors. In addition, directional signs with simple names can be used and stacked together where appropriate. Basic place names paired with a directional arrow would suffice for quick wayfinding clues. For advance notice for cars, sign placement should cue drivers to upcoming destinations at perhaps about 1200 feet and then repeat near the turning, using about 10 car lengths or about 200 feet before turning for a sign with destination name and directional arrow. The proposed wayfinding tools are intended to make locating and destination arrival easier for visitors. The recommended approaches should be tested and refined in order to achieve the target results.

As technology continues to expand, digital interpretation offers another level of wayfinding as well as interpretation, which limits physical landscape clutter and frees up interpretive opportunities and alternatives with lack of potential funding. At the same time, this approach provides challenges to interpretation in finding suitable strategies that complement the park landscape rather than compete with it. Today, many visitors to historic sites are bombarded with too much information and multi-sensory clutter, in which memories are difficult to create. Technological advances now afford the park means to offer in depth interpretation without visual clutter of "sign pollution" by relying on a range of digital media, from cellular phone "hotspot" areas to downloadable webcasts or podcasts of personalized, topic-specific pedestrian or vehicular tours. Digital devices with menus of primary themes allow visitors to select interpretive themes they want to hear through new methods. Perhaps shorter messages provided by digital devices could be reserved for more secluded places to decrease interference with other visitors. This approach may be worth testing at Washington's Headquarters as a pilot project before implementation throughout the park.

The role of personal mobile devices is expanding. Traditional graphics and signs will continue to play an important part in the visitor experience, however. In developing and designing these systems

(as well as any corollary new media offerings), the goal is to achieve the greatest possible interpretive impact with the least apparent intervention in the landscape, and maximum efficiency and ease of access for visitors.

Similarly, if fixed graphics installed in the park landscape reliably provide a consistent quality and depth of interpretation and always direct visitors to sources for additional information, then these graphic elements can potentially be both fewer in number and smaller in scale because they are supplemented by access to digital files as well as the physical features within the park landscape. Rather than serving as the only sources of interpretation, these signs can instead function as "portals" which lead to more in depth information available through virtual media or at other locations.

Signage is a crucial element of site identification, especially within the large landscape of Valley Forge NHP. Typically, some sort of fixed sign or graphic is used along the tour route as the first clue to key people into that they are located in the right place. Today, the park setting offers a variety of wayfinding and interpretive signs, without a cohesive system in place. Each sign group or element may be of a different vintage, with some dating to the 1930s. A few existing site identification signs are confusing. Straightforward, clean interventions with minimum visual intrusions to the park environment are recommended. A unified, highly legible, and evocative site identification system is needed. The development of a system of wayfinding, locator and interpretive signs that provide access to digital information will enhance the experience of Valley Forge.

It is also important to recognize that unlike at a museum or inside the Visitor Center, visitors exploring the Valley Forge NHP are moving *through* the landscape. They are active, not static, proceeding from one location to another. Visitors encounter the landscape in a random order. This is the converse of a destination experience where visitors arrive at one location and stay there to conduct their exploration. Appropriate navigational support should be provided at both the vehicular and pedestrian levels through the Valley Forge NHP landscape so key interpretive zones and sites are identified and visitors continue to move through the landscape along their selected tour route. In particular, if roadside signage identifying park sites or resources also expressed some indication of the activities available and interpretive themes featured there, visitor decision-making could be measurably facilitated.

Within the overall Valley Forge NHP, scenic driving is a primary element of the experience of place, as it has been throughout the commemorative eras. However, today the sense of place between tour stops is fragmented with continuity disrupted, and the complexity of road systems adding potential visitor confusion. One such example is the intersection of Route 252 and Yellow Springs Road, where sight lines are limited as Route 252 turns north and visitor attention is directed toward the picturesque covered bridge on Yellow Springs Road. Confusion at the intersection causes visitors to cross the covered bridge, drawing people out of the park. Similarly, commemorative tree allées along park roads create a sense of momentum; however sections where the allées are in decline or have been removed decrease the continuity of the experience of place. Keeping the continuity and sense of place along park roads, as well as conceptual and physical connectivity between interpretive zones, is important for visual control, park wayfinding, and ultimately a greater quality of experience.

Increasing connectivity and continuity along the interpretive route can be improved through a variety of measures. These include improving the views and visitor approach sequence between interpretive stops, addressing views to each interpretive zone from multiple directions, enhancing

views through viewshed management, understanding successes and failures of circulation routes, and adding features that add to connectivity and continuity. In addition, future cultural landscape management efforts should focus on evoking the scenic qualities of park roads. A combination of interventions, aimed toward an experience opposite that within the Visitor Center, is desired. The approach to the visitor experience, focusing on the park landscape and the specific destinations, is a unified one. Moving through the park landscape with adequate wayfinding and interpretation provides a more inclusive sense of place than traveling to the next tour stop.

With interpretive objectives, themes, considerations, and conceptual orientation and wayfinding strategies, broad treatment recommendations can be addressed within this framework to enhance site characteristics and qualities that will lead to a memorable visitor experience. Through experience selection, choreographed sequence, and other site-specific interventions, visitors to Valley Forge NHP can become witnesses to the cultural and natural environment and have a multi-sensory experience of place, which is transferred into memory. Unique places create memories.

Different tour routes based on varying interpretive themes could be digitally prepared in PDF format and posted to the park website available for download. Visitors can then chose the interpretive themes they want to learn about, download the bulletin, and print it out. A "design your own tour" option could also be available for visitors to customize their own tour routes. Therefore, a visitor interested only in natural resources and another visitor interested in agricultural and civilian life before, during, and after the encampment could design a completely different tour—each tour specifically tailored to visitor needs and interests. These customized tours would potentially be created on the internet at the park website and printed out prior to the park visit. This pre-visit effort would ease navigation through the park, as visitors would have set destinations in mind and data to aid wayfinding. Tours could also be searched, downloaded, designed, and printed at the Visitor Center.

Most importantly, whatever wayfinding and interpretive methodologies are employed, the success of the visitor experience of the overall park and the interpretive zones will depend in large part on the park's efforts to inform guests about the system, its importance, and its location and its use.

G. OVERALL CULTURAL LANDSCAPE MANAGEMENT GUIDELINES

In order to achieve the concepts outlined above, overall guidelines for managing the cultural landscape of the Valley Forge NHP are addressed. Future landscape interventions should reference these guidelines in terms of vistas and visual relationships, vegetation typology, and commemorative and interpretive features. These aspects of the landscape are considered in relationship to each other; that is, views relate to vegetation, vegetation relates to commemorative features, and commemorative features relate to views. Overall park landscape management guidance is formulated with visitor experience and interpretation in mind. Specific recommendations follow in subsequent chapters.

G1. Vistas & Visual Relationships

Views and visual relationships at Valley Forge NHP are shaped by topography, vegetation and circulation, and continue to assert an important role in visitors' experience of the landscape. Today,

the landscape is accepted as an evolved composition with a circulation sequence strongly influenced by the hilly topography from which visitors enjoy views internal to the park and expansive views to distant features outside of the recognized perimeter. The development of these views and park-wide recommendations for visual relationships are discussed in this section.

Over the centuries, the visual character of Valley Forge transformed parallel to changes on the land. The Colonial period led to increased settlement activity including farming and establishment of the forge. Clearing of woodland for these purposes opened views over many areas including what would become the Grand Parade. During the Encampment Period, visual character was crucial to site selection by General George Washington and site use for military training and defense. Rolling topography with high ridgelines provided long views across open farm fields to afford a visual survey of oncoming British forces. Forts, redoubts, and roadways were constructed at high points and along ridges to further fortify the area, providing lookouts. As today, the Valley Forge ridgeline and hill and valley landscape was perceived in segments related to topography.

After the American Revolution, the agglomeration of multiple tracts influenced vegetation and visual relationships. During the Commemorative period, long and broad vistas with open views between or among features were factors in the layout of park roads and tour routes. Scenic vistas from drives that paralleled the Revolutionary era defensive lines were modified with the planting of ornamental trees and the regeneration of woodland vegetation. In addition to deer browse and natural maturation of vegetation, contemporary land use and landscape management regimes further altered iterations of commemorative plantings, field rows, and woodland patches within the park. This vegetation alternately focused, directed, concealed and revealed views of varying breadth and depth. Outside of the park, incremental suburban and commercial development changed the character of the skyline and park perimeter over time. Continuity and change have been consistent factors in the creation of views and the multi-layered perception of the landscape at Valley Forge.

In recent years, hundreds of trees have been planted along Outer Line Drive, Inner Line Drive and selected park roads, strengthening selected historic commemorative planting patterns and the visual sequence. These rhythmic allées of trees create a repetitive pattern of linear views along both straight and curving drives. Where drives are unplanted, broad views are obtained. Specific, undesigned visual sequences are present throughout the park. There is no documentation to indicate that that the pattern of linear and grove plantings, open areas and woodlands was designed under a comprehensive plan. Rather, these elements allow a spontaneous choreography of varying visual characteristics. As one moves through the landscape, the visual sequence unfolds the park scenery by exposing the viewer to various positions in relation to circulation, topography, and vegetation. The replanting of commemorative trees and management of fields and woodlands has strengthened the ability for visitors to perceive visual patterns within the landscape.

Today visual relationships display continuity and change within the park and beyond toward intensive contemporary land uses. These views can be identified by observing topographic, circulation, and vegetation patterns in plans and aerial photographs. A series of four plans are used to illustrate existing and recommended visual relationships. The existing and recommended external views of note are shown on *Ex dwg 1, 2009 VAFO NHP External Viewshed Diagram,* and *Pr dwg 2, Proposed VAFO NHP External Viewshed Diagram*, respectfully. The existing and recommended internal views of note are shown on *Ex dwg 3, Existing VAFO NHP Internal Viewshed Diagram,* and *Pr dwg 4, Proposed VAFO NHP Internal Viewshed Diagram*, respectfully.

A number of existing external views have been identified on *Ex dwg 1*. A 2004 aerial photograph serves as the base for the plan with overlaid topography. The six interpretive zones are numbered in red. External views of surrounding development are shown in yellow. Key views are identified on the plan as follows:

A Views from Route 23 northeast to suburban development on surrounding hills
B Views from Outer Line Drive to suburban development on surrounding hills
C Views from Outer Line Drive to PA Turnpike and rest stop
D View from crest of Outer Line Drive near Wayne statue to boundary of park
E View from Baptist Trace Road and Joseph Plumb Martin Trail east across park (Development beyond somewhat visible)

External park views and vistas focus on areas of broad surrounding development beyond park boundaries. The increase in development density along park boundaries impacts viewsheds of historically open lands, now directing views to adjacent residences to the south and office buildings to the east. Visual access to the King of Prussia area to the east results in a diminished site experience in some park areas, particularly along the high points at the edges of the Grand Parade and at Muhlenberg's Brigade. Views in areas along the south edge of the park are also affected by adjacent residences and the Pennsylvania Turnpike. Though to some degree, evergreens screen the visual impact of the adjacent residences, this vegetation is in decline, allowing a more visually permeable edge.

Views A, B, C, and partially View E are significant viewsheds over larger portions of the park and also over the distant but evident development of residences, commercial buildings, and the interstate outside the park boundary. These views detract from the experience of Valley Forge NHP and should be managed to decrease the perception of adjacent modern development.

Internal park views at Valley Forge NHP have varying levels of spatial openness and enclosure that are created and enhanced by topography and vegetation. Both topography and vegetation can generate edges or boundaries to extend and elongate views or can act as a screen to obstruct views. Within Valley Forge NHP, several internal expansive park views currently exist, mainly within the Grand Parade, near the southern park boundary, along the Schuylkill River at Washington's Headquarters, and on the Pawling Farm, as shown on *Ex dwg 3*. Though areas of the park landscape have spatially changed over time, internal park views provide a sense of the multi-layered, evolved historic landscape, both of the encampment and commemorative eras, with few modern intrusions. Other areas, with some degree of view and vistas management, can offer views to heighten the visitor experience. For example, vegetation along the Schuylkill River creates an enclosed edge with episodic views through tree canopy to the river. Though these partially screened views were not present during the encampment, they offer scenic glimpses of the nearby river and can be managed and choreographed to enhance visitor experience. Similarly, other scenic views, both historic and contemporary, can be managed and sequentially arranged. These views offer great opportunities for visitor interpretation.

Several existing internal views have been identified on *Ex dwg 3*. As with *Ex dwg 1*, a 2004 aerial photograph serves as the base for the plan with overlaid topography. Internal expansive park views are highlighted in orange. Key views are identified as follows:

A Views of Grand Parade from Route 23 and surrounding roads
B Views from Outer Line Drive to Redoubt 2 and Muhlenberg Brigade
C View from County Line Road to Outer Line Drive and former Brigade Encampments
D View from National Memorial Arch to Redoubt 3, Artillery Park, and Grand Parade
E Views through entry passage on Baptist Road
F View from Gulph Road to Redoubt 3 and Artillery Park
G View from Redoubt 3 east across park (All forts visible from this location during encampment era)
H Views from Inner Line Drive to Grand Parade
I View from Battery 1 to Varnum's Quarters, West Inner Line, and Schuylkill River
J View from Stoney Battery south to hillsides and northwest to Schuylkill River (Beautiful, unimpaired view)
K View from Route 23 to Washington's Headquarters
L View from Railroad Station Platform to Valley Forge Village and Valley Creek
M Views from GW Headquarters Entry, River Road, Chapel Trail to Schuylkill River
N Internal views on Pawling Farm and North Side

Most of these views offer unimpaired views of the park with minimal intrusion although evolution of park vegetation is evident. Woodland succession is apparent along the Schuylkill River margins and on the valley slopes. Mount Joy and Mount Misery have enclosed formerly open areas in woodland. Former quarries and other recently disturbed but unmanaged areas are in biotic release with early successional and invasive species abounding. Some ornamental and commemorative era plantings are in decline or have been removed, which affects the visual quality and experience along park roads. Some interior park views and vistas remain internal, and are not affected by adjacent development, such as those within the low-lying area of the Grand Parade where sloping topography blocks disruptive views. In certain cases the potential to improve views within the park boundary exists. Specifically at View G, all redoubts and forts constructed by the Continental Army were visible from this point during the Encampment Period. Today, increased vegetation blocks views to some of these redoubts, but provides a good opportunity to recapture historic views across the park lands to the redoubts. Other potential views that could be enhanced through view and vista management include the view of the Grand Parade from Muhlenberg's Brigade, the view of the Schuylkill River from the Star Redoubt, and the view of the Grand Parade from Varnum's Quarters.

Park internal and external visual relationships have a direct relationship to the quality of the visitor experience. Identifying and understanding views is an important step to shaping a richer experience of this landscape and fostering compelling visual memories. Views to contemporary low-rise and high-rise buildings and other recent development detract from the historic landscape and can diminish the quality of the experience of the place. Internal views that minimize modern-day landscape intrusions and technologies offer a more serene setting in which to experience Valley Forge and fully understand the landscape occupied by the Continental Army during the encampment period. Views and vistas also change seasonally as partial views may be screened by tree canopy during summer, but are fully visible during winter. Such seasonal differences should be taken into consideration when crafting management strategies for views and vistas at Valley Forge NHP.

The goal for both internal and external park vistas and visual relationships is to reinforce and shape the ability of a visitor to become immersed within the park. Controlled existing views can form the foundation of an immersion experience. In this process, visitor experience is heightened by visually enclosing the park so visitors experience park scenery, not views of adjacent development. However, to strengthen the existing visual sequence throughout the park, selected views should be enhanced, aspects of some should be diminished, and others should be created. Alterations within the visual sequence can be made by enhancing foreground and midground views to decrease distracting background features. View management may consist of adding additional vegetation for screening or pruning or removing vegetation for important views.

External views after proposed management are depicted on *Pr dwg 2, Proposed VAFO NHP External Viewshed Diagram.* The plan shows that views to surrounding development are partially mitigated by screening vegetation. The strategic reinforcement of plantings can buffer views from many obtrusive focal points. The resulting views result in changed descriptions:

A Partial views from Route 23 northeast to suburban development on surrounding hills
B Partial views from Outer Line Drive to suburban development on surrounding hills
C Partial views from Outer Line Drive to PA Turnpike and rest stop
D View from crest of Outer Line Drive near Wayne statue to boundary of park
E Partial view from Baptist Trace Road and Joseph Plumb Martin Trail east across park (Development beyond somewhat visible)

Internal views are preserved and enhanced with proposed viewshed management. These views are depicted on *Pr dwg 4, Proposed VAFO NHP Internal Viewshed Diagram* with commemorative and screening vegetation. To accomplish the improvement of both external and internal views, the following guidelines are proposed for addressing the general management of vistas and viewsheds throughout the park:

- Manage views as entire entities, considering topography, vegetation, circulation routes, available distance seen, other character-defining features as necessary
- Enhance visitor experience and shape key views to inform, provoke thought, and educate
- Manage existing vegetation to enhance internal park views and decrease external park views to adjacent development through pruning and selectively removing some trees
- Remove and control invasive species and hazardous trees within viewshed corridors
- Renew planting along southeast park boundary to block views to adjacent residences
- Selectively prune and remove trees at Internal View G for views to all redoubts
- Select appropriate interpretation method for views and vistas that limit signs and other visual clutter in the landscape
- Control vegetation and manage views toward the Schuylkill River and adjacent development
- Selectively prune or remove trees where appropriate and sustainable to afford river views
- Stabilize slopes as a component of selected tree pruning or removal to maintain erosion free slopes

G2. Vegetation Typology

Vegetative cover at Valley Forge NHP strongly influences visitor experiences of the historic landscape and its embedded messages. Remnant hedge rows, allées, groves, woodland patches, and open fields indicate the transitional character of the park. A description of the evolved character of historic park vegetation and park-wide suggestions for its enhancement are discussed in this section. The Vegetation Communities Figure 3-5 from the GMP is included for reference as Figure V.7.

A patchwork of fields, groves, tree rows, hedgerows, and forest fragments characterized the park landscape from pre-encampment era and continue to influence the landscape of today. Agricultural fields and some woodlands, including woodlots for charcoal production, were the dominant land cover types prior to the encampment era. During the encampment, parts of fields were turned into campsites and mustering grounds. Woodlands, individual trees and hedgerows were felled for firewood, shelter, and defenses, creating a more open landscape. Within a few years after the encampment, the landscape rejuvenated with woodland, tree and hedgerow growth and a return to agricultural fields. In the 19th century, industrial usage led quarry development and some fields were mined for minerals. The CLR Part 1 addressed the landscape boundaries of the encampment era showing a 1897 land ownership map for the encampment-era and the features inventoried in 1999.[3] These two images are used to show the remaining property boundary features and potential hedgerows that can aid in defining this aspect of the Valley Forge landscape using historic boundaries. (See Figures V.8 and V.9). As an alternative to mowing, the existing boundary features can be managed hedgerows, while the potential ones selected could reinforce the pre and post encampment land divisions. Recapture of former property lines as hedgerows would add a legible layer of boundaries in areas where they do not appear to conflict with the commemorative features.

Following the establishment of the state park in 1893, commemorative vegetation, including features like the dogwood grove along Inner Line Drive, broadleaf evergreen plantings on Mount Joy, and tree allées along tour routes, were planted to honor the efforts of General George Washington and the Continental Army and to supplement existing native vegetation. Continued evolution of the landscape and additional commemorative efforts throughout the state park and National Park Service eras further blurred historic property lines and augmented vegetation typologies. Other plantings, such as the pine plantations, were added in the mid 20th century to screen views to adjacent properties. Indicating strong evidence of landscape renewal in the present day, over 600 trees have been planted in recent years to augment important tree rows and groves throughout the park.

The layered evolution of vegetation is evident today with open fields, ornamental tree groves, hedges, woodlands, and developed lands. This patchwork of existing vegetation cover is shown on *Ex dwg 5, Existing VAFO NHP Vegetation Diagram.* Meadow, grasslands, and woodlands comprise most of the vegetation within the center of the park. A few ornamental tree groves and tended lawn areas exist around the Visitor Center and the intersection of Gulph Road and Inner Line Drive. Intact and remnant tree allées, which now include trees aged five to over 100 years old, continue to line the tour routes of the park. Developed areas, such as roads, parking lots, former quarries, and historic building clusters are scattered throughout the park, while more intensely developed areas are located at the park boundaries. Meadows and grasslands are remnants of former agricultural lands located north of the Schuylkill River. The combination of existing vegetation types alludes to the history of the park and contributes to the visitor experience.

Vegetation shapes scenery, provides habitat for wildlife, influences park views, and increases visitor understanding of landscape evolution through such features as commemorative plantings and former field and property boundaries. Over time, however, natural growth and other alterations of vegetation can blur the stories told by the Valley Forge landscape. In some cases, visual clues revealed through vegetation are obscured, resulting in a diminished visitor experience. Excessive deer browse, for example, alters the composition of vegetation and significantly decreases the rate of woodland renewal. Indeed, regeneration of trees and shrubs that form historic hedgerows are reduced due to this pressure. Addressing these issues with trees, commemorative vegetation, and meadows can shape a discernable and enriching experience for visitors as they interact with the overall park and its interpretive zones.

Proposed vegetation for the park is depicted on *Pr dwg 6, Proposed VAFO NHP Vegetation Diagram*. This plan reveals larger spatial patterns than *Ex dwg 5*. For example, post-encampment era vegetation and remnant mining operations are removed from the Grand Parade. Screening vegetation is also proposed to control views and enclose interior areas.

Several management techniques are available for improving vegetation at a variety of scales across the site. Vegetation within the park should be augmented, selectively removed, and otherwise controlled to engage the visual foreground, midground, and background, providing a sense of space and depth. In many locations, the landscape is limited in this aspect of visual diversity. This condition allows visitors to survey and evaluate the landscape very quickly, which limits the possible depth of experience. Layered elements present in the landscape will foster longer visitor examination to gain a sense of the intricacy and details of the scene. Elements within the foreground and midground can be more evocative to engage visitors within the place and ultimately create a memorable experience. Increasing the breadth and detail of the foreground and midground also lessens the visual presence and importance of potentially distracting elements of the visual background. This is particularly relevant with external park vistas to adjacent development. Increasing the level of engagement in the foreground and midground areas can diminish the presence of distant unwanted intrusions in the park landscape even when direct screening is not feasible. In other cases, additional vegetation should be added for screening, such as in the case of the Glen Hardie property, southeast of the park. Management of vegetation at one given location can enhance visitor experiences at multiple scales across the park.

Vegetation can be used to make the landscape more readable in terms of the cultural history of past events. For example, historic field and property boundaries of the pre- and post-encampment eras are in remnant form today. Agricultural landscapes are readily read through field divisions, but with limited clues visitors are not able to fully comprehend the scene at the time of the encampment. A number of options are available to redefine the encampment era landscape. Though most property boundaries and delineations of former agricultural fields of the Grand Parade have been lost over time, a patchwork of different meadow management techniques can be used to illustrate historic property ownership and historic fields as an interpretive opportunity. Control of deer by organized hunts can be successful in promoting the regeneration necessary for the renewal of hedges and field rows. Existing, native hardwoods including gray dogwood (*Cornus racemosa)*, northern catalpa (*Catalpa speciosa*), black cherry (*Prunus pennsylvanica*), black locust (*Robinia psuedoacacia*), sassafras (*Sassafras albidum*), and northern red oak (*Quercus rubra*) can be renewed in this way. Various meadow management techniques will also contribute to increased habitat and integrate the past cultural resources story with the ongoing natural resources story, a directive within the GMP. This can be carried out by altering the mowing regimes of the meadow areas. Each meadow area can be

mowed at intervals, from one to three years, to illustrate a different property holding or field boundary and create visual distinctions in the appearance of meadows. Over time, research has shown that different mowing regimes enhance specific plant and animal communities.

Vegetation features added during the commemorative eras are important to understanding the layers of historic events and their commemoration at Valley Forge NHP. Commemorative vegetation is identified in light green on *Ex dwg 5* and *Pr dwg 6*. Commemorative vegetation such as the dogwood grove and tree allées along park roads were planted to honor General George Washington and the Continental Army. (See Figures V.5 and V.6.) Legend holds that Washington's favorite tree was the dogwood. As historic sites associated with Washington began to be commemorated, social groups and patriotic organizations planted dogwoods at Washington sites around the nation. Today, this vegetation is in decline or removed, which alters interpretation of the commemorative layer of park history. Because of the story and tradition behind the dogwood grove, it is advisable to continue to care for remaining commemorative plants, while establishing a replanting program for those that have been lost. Lost dogwoods within the commemorative grove should be replaced along with allée trees that have been lost. Renewal of this commemorative vegetation provides a visible layer of history to be interpreted. Additional commemorative vegetation may also be added to some areas for both memorial purposes and for visual screening. At Washington's Headquarters, planting new memorial trees to enclose the space at the edge of slope along Route 23 and a new memorial grove on the ridge near upper parking will aid in screening views to Route 23. New commemorative plantings and screenings foster the development of the interpretive story of stewardship. Overall vegetation guidelines for Valley Forge NHP include:

- Establish woodland management program to foster regeneration and enhance environmental quality
- Suppress woodland invasive species using long term management strategies
- Prune and open tree canopy to enhance internal park views
- Selectively remove some trees to create open internal park views
- Prune and minimize hazardous branches and trees
- Selectively remove hazardous trees that have potential to damage adjacent cultural resources
- Use vegetation to make landscape more readable in terms of cultural history and former events
- Engage foreground and midground vegetation to detract from unwanted external views where screening is not feasible
- Establish meadow management plan to maintain existing meadows, suppress invasive species, enhance habitat quality, increase plant and animal species diversity, and illustrate patchwork of former property and field boundaries for interpretive purposes
- Renew existing screening along southeast property line
- Preserve, repair, and interpret remnants of commemorative vegetation, i.e. tree allées, dogwoods
- Recapture lost commemorative trees through a replanting program
- Plant new commemorative plantings where appropriate

G3. Commemorative & Interpretive Features

Commemorative and interpretive elements in Valley Forge NHP are important for understanding the evolution of landscape and reflecting meanings and values related to the independence of the

United States. These features improve visitor education and enhance interpretation by communicating multiple meanings of this cultural landscape. A complex network of commemorative and interpretive features exists as a cultural overlay throughout the park. These material features include memorial markers, interpretive waysides, and signs—recognizable features that visitors interact with most frequently. Interpretive signage draws visitor attention, and iconic monuments such as the National Memorial Arch and the Washington Memorial Chapel leave impressions within their minds. Other commemorative and interpretive features are those built or placed during post-encampment eras that engage visitors, but may not necessarily recognize as commemorative elements. The network of tour roads and tree allées throughout the park are two such examples that visitors experience and see, but may not know are commemorative elements of the cultural landscape. A description of commemorative and interpretive features and guidelines for augmenting commemorative value are discussed in this section.

Landscape features of commemoration and interpretation listed by character-defining features include:

- Land use, potential
- Views, potential
- Topography, existing
- Memorial trees, existing and potential
- Commemorative tour route drives, existing
- Buildings, Washington's Chapel, existing
- Statues, including sculpture plaques, existing
- Archaeological Sites, existing and potential

Commemorative and interpretive features are important because they convey meanings such as values, stories, and beliefs to which visitors can relate. Some of the meanings elicited by landscape features include stories like the role of Valley Forge in winning the Revolutionary War, values such as General George Washington's honor or leadership, and qualities such as beauty and scenic character as a goal of prior park stewards. Tangible resources, like drives and trees, are the vessel of meaning for communicating this intangible heritage. For the visitor, material resources are a touchstone that provokes thought and lends additional layers of significance to the landscape. Understanding the intangible aspects of commemorative features also provides insight into the values and beliefs of previous generations. Commemorative features are products of specific and incremental decisions that have occurred over decades of honoring this place. In most cases, these interventions have respected successive cultural landscape changes while adding new layers. Recognition of the meanings and values associated with existing and potential commemorative interpretive features can support a better interpretation of Valley Forge.

Existing commemorative and interpretive elements are shown on *Ex dwg 7, Existing VAFO NHP Commemorative & Interpretive Features Diagram.* Site specific features are indicated with purple dots and linear features are indicated by light green lines. Existing commemorative and interpretive features are scattered across the landscape in relatively sparse clusters. In this scattered arrangement, they do not effectively serve as an organizing element of the park.

The proposed concentration of commemorative and interpretive elements is depicted on *Pr dwg 8, Proposed VAFO NHP Commemorative & Interpretive Features Diagram.* Augmented by existing commemorative features and vehicular parking and pedestrian routes, the diagram shows proposed features for the six interpretive zones. Color-coded dots identify eight types of proposed interpretive elements:

- Historic Building
- Live Interpreter
- Object/Sculpture/Building
- Interpretive Exhibit
- Site Locator Map
- Wayside
- Interpretive Marker
- View Marker

The interpretive elements show a change from a dispersed to a more clustered arrangement of features across the site. The diagram also highlights interpretive and commemorative roads and allées, proposed pedestrian routes, and vehicular parking areas within the six interpretive zones. The spatial arrangement reveals interpretive diversity within a pattern of visual cohesion. Pedestrian and vehicular connections join clusters of interpretive elements that can be envisioned for the future of the park.

Primary classes of interpretive landscape features are vegetation, circulation elements, and site specific elements like monuments and markers. As elements of commemoration, plantings from past commemorative eras should be protected and maintained, while lost commemorative trees in tree allées and the dogwood grove should be considered for cyclic renewal and management. Existing interpretive or commemorative tree allées and roads are shown in green on *Ex dwg 7 and Pr dwg 8*. Additional commemorative vegetation may also be added in some areas if appropriate. For example, new tree plantings are proposed for Washington's Headquarters that evoke the historic patterns of small orchard blocks.

Several roads in the park are commemorative elements that have been carefully added to the landscape by management authorities. Laid out by the State Park Commission along the outer and inner line defenses, the roads that comprise the contemporary tour route provide visitors with a visual experience and sequence of scenic qualities. Today these routes offer similar experiences with circuitous drives through woodland and meadow presenting a series of unfolding views and scenes. These inherent qualities of commemorative circulation routes should be preserved, along with key character-defining features of these circulation routes, including alignment, topography, adjacent vegetation, pavement material, drive width, etc.

Monuments, memorials, and markers within the park landscape offer visible and tangible links to the commemorative efforts of the late 19th and 20th centuries. These tributes are themselves artifacts, revealing the significance of Valley Forge to Americans over the course of time. Many monuments and statues exist within the park, such as the Von Steuben statue, the New Jersey monument, the Patriots of African Descent Monument, and the many state brigade markers. Large scale monuments have also been erected including the National Memorial Arch, Pennsylvania Columns, and the equestrian statue of General Wayne. The Washington Memorial Chapel (a viable church

and not owned by Valley Forge NHP) was erected as a monument and continues to have a strong commemorative mission. The National Memorial Arch and Washington Memorial Chapel are iconic structures that physically embody sizeable commemorative efforts of the past. These broadly visible structures also aid in navigating through the park as the openness of the Grand Parade offers sweeping views to both of these monuments. Views to large commemorative monuments and structures should be preserved to reveal the commemorative layers of the cultural landscape. The more modest monuments and markers throughout the park also demonstrate respect and hold commemorative stories; they, too, will be preserved. Overall, commemorative and interpretive guidelines for Valley Forge NHP include:

- Define commemorative landscape in terms of values and interpretive themes
- Preserve commemorative circulation routes (Outer Line Drive and Inner Line Drive) and inherent character-defining features, such as topography, vegetation, material, width, etc.
- Accommodate multiple modes of transportation—cars, buses, bikes, pedestrians to experience the commemorative landscape
- Reduce traffic flows through the park and conflicts between vehicular and pedestrian users
- Preserve open views of iconic monuments and extant historic sites
- Protect and preserve monuments and memorials to reveal commemorative layer of cultural landscape

H. CULTURAL LANDSCAPE INTERPRETATION & MANAGEMENT OBJECTIVES & GUIDELINES CONCLUSION

The cultural landscape treatment objectives and guidelines in this chapter follow a conceptual framework laid out in the GMP. Objectives and guidelines previously discussed aim to reveal the layers of historical evolution within the overall Valley Forge NHP cultural landscape through specific interventions that help guide decisions about visitor orientation, wayfinding and interpretation, views and visual relationships, vegetation, and commemorative and interpretive features. Each guideline respects existing conditions of the park, preserves what remains, and then makes broad, generalized recommendations to increase visitor experience of this unique place.

Sustainability, as one component of the cultural landscape objectives, is an increasingly important concept within the traditional construct of preservation treatment. Because the environment is ever-changing and the selected continuum approach for Valley Forge NHP interpretation allows all layers of history to be presented, this approach is considered as part of the holistic guidelines for the cultural landscape. Each guideline was formulated as a basis to more clearly communicate the rich history of Valley Forge that is not visible today. As future decisions are made about ongoing management and physical interventions for the entire park and the six interpretive zones, these objectives and guidelines act as the underlying structure for future interventions. Specific actions and recommendations for the entire park landscape and the specific interpretive zones are discussed in the following chapter.

CHAPTER V: ENDNOTES

[1] Interpretive Objectives, *Valley Forge National Historical Park, Draft General Management Plan/Environmental Impact Statement*, p 2-3, January, 2007.
[2] Charles A. Birnbaum, *Preservation Briefs 36, Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes*, National Park Service, (1994): 12.
[3] Oculus, for Susan Maxman Architects and John Milner Associates, *Valley Forge National Historical Park Contextual Documentation and Cultural Landscape Plan*, Volume II of III, CLR Part 1, May 2002, fold outs after page 545 and page 569.

Figure V.1. This contemporary aerial presents the overall Valley Forge National Historical Park landscape circa 2011. Courtesy Google Maps. (VF-GoogleMaps-Overall-c2011.jpg)

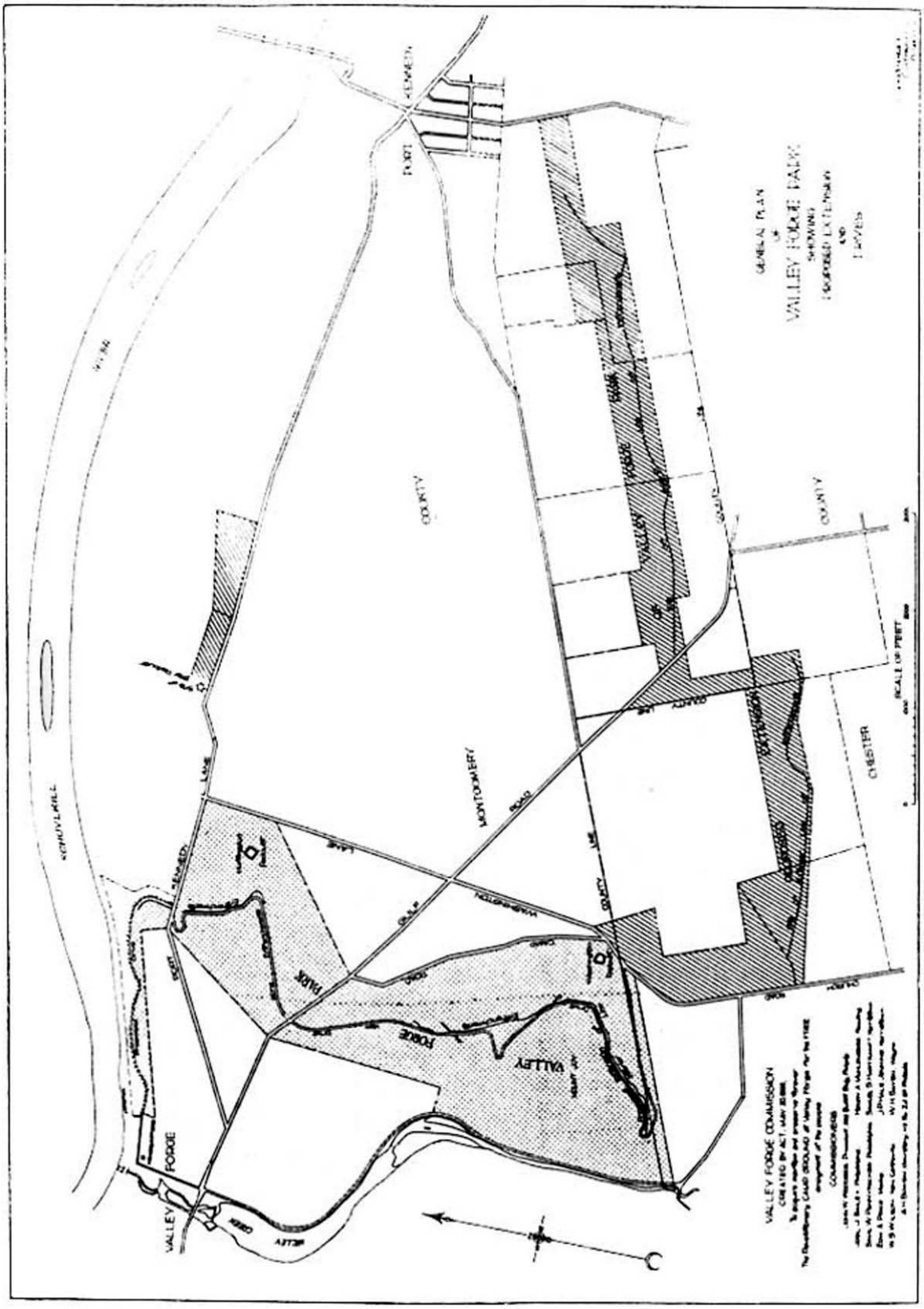

Figure V.2. This plan for the first expansion of Valley Forge Park, c. 1902, shows early land holdings during the Valley Forge Park Commission era, including lands along Valley Forge creek, the village, and the forge. (R-VF-map-c1902.jpg)

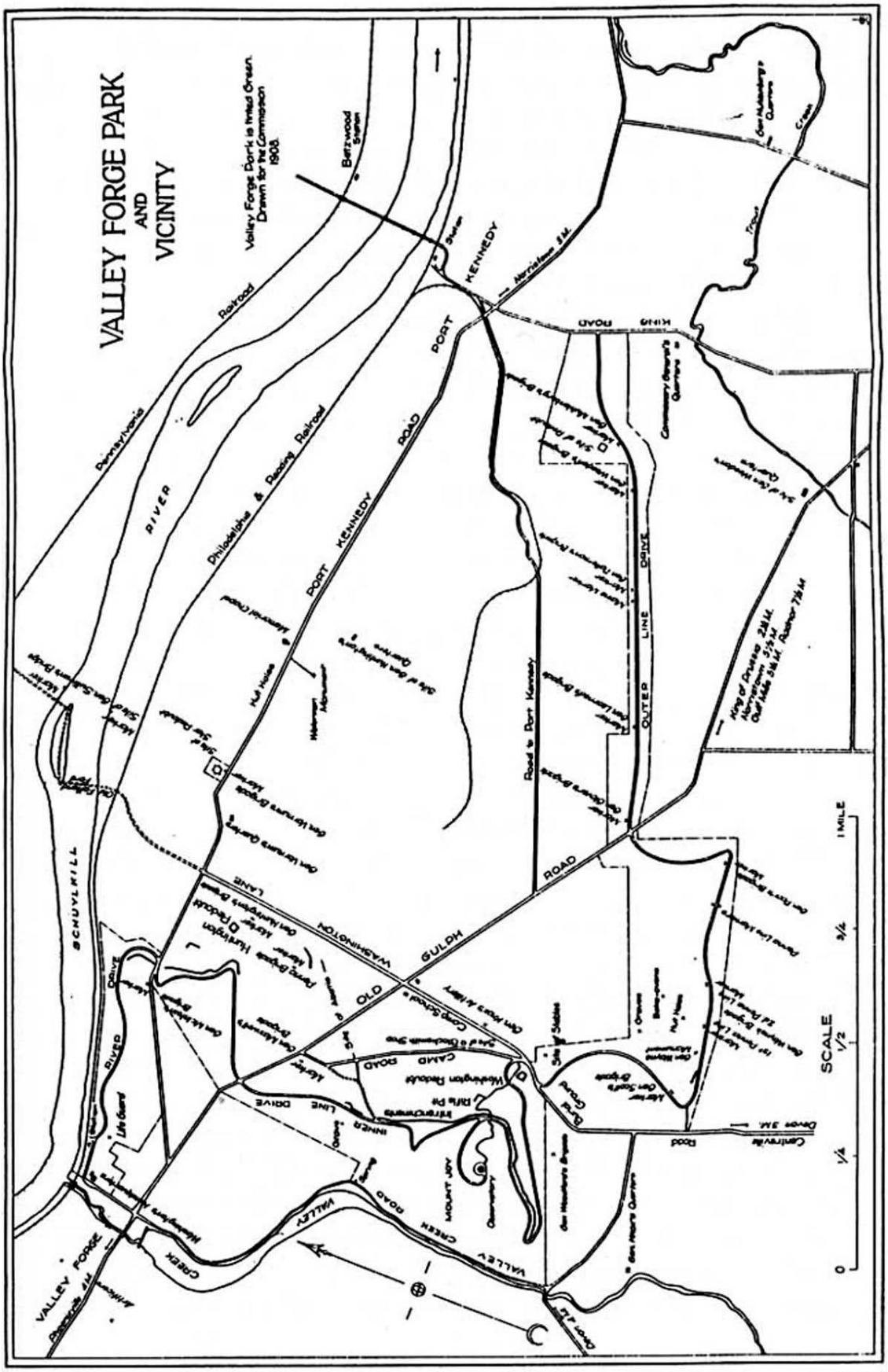

Figure V.3. This 1908 map of Valley Forge State Park was originally printed in the 1910 park commission report. R(-VF-map-1908.jpg)

Figure V.4. The Valley Forge Daughters of the American Revolution commissioned a monument to the unknown dead at Valley Forge, shown here at the 1911 dedication ceremony. The location was then thought to be an unmarked burial ground for Revolutionary soldiers. Courtesy Lorett Treese, *Valley Forge: Making and Remaking a National Symbol*, University Park: The Pennsylvania State University Press, 1995. (R-VF-DAR-dedication-1911.jpg)

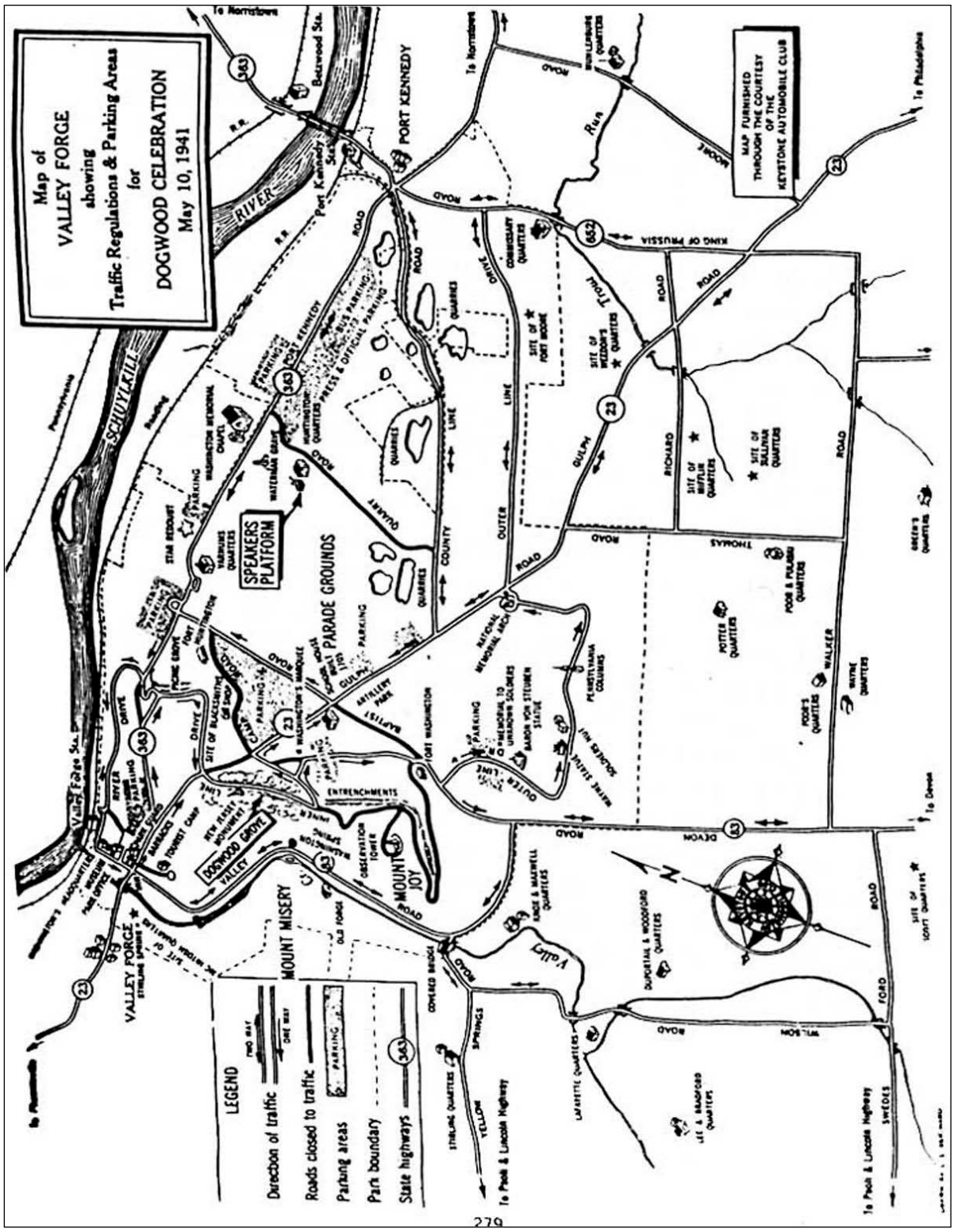

Figure V.5. This map shows traffic regulations and marking areas for the May 10, 1941 Dogwood Celebration at Valley Forge. (R-VF-map-1941.jpg)

Figure V.6. Automobiles tour Valley Forge in the 1940s and pass by flowering dogwoods, believed to be Washington's favorite tree. Social groups and patriotic organizations planted commemorative dogwoods at historic sites associated with Washington around the nation. Courtesy Lorett Treese, *Valley Forge: Making and Remaking a National Symbol*, University Park: The Pennsylvania State University Press, 1995. (R-VF-touringroad-1940s.jpg)

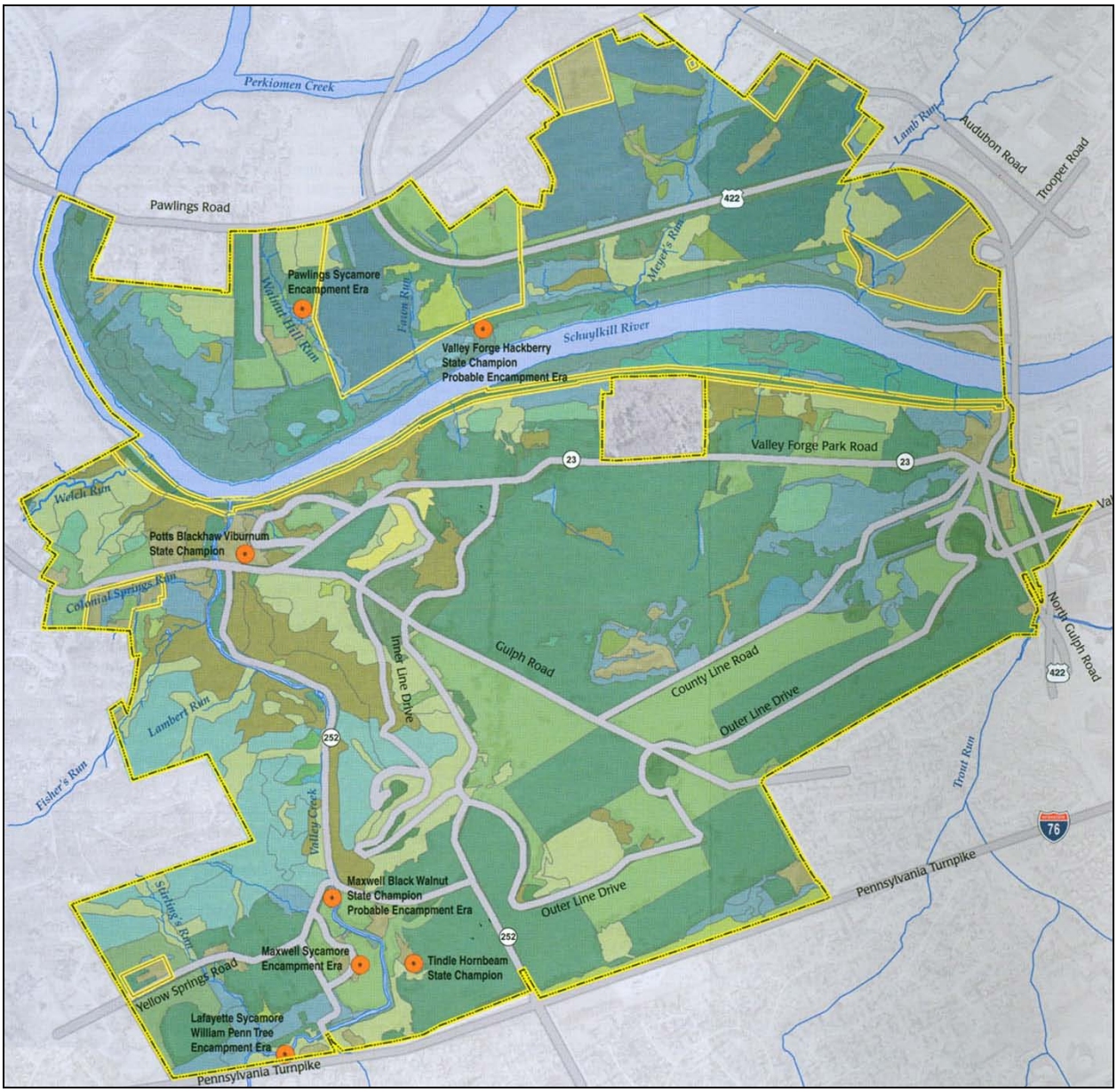

Figure V.7. This graphic presents the vegetation communities at Valley Forge NHP as depicted in the GMP (mapping prepared by Vanasse, Hangen, Brustlin, Inc.) Commemorative plantings are included, and individual trees are shown as orange circles. The legend for this map is presented in greater detail in Chapter 7. (VF-GMP-VegCommunities-crop.jpg)

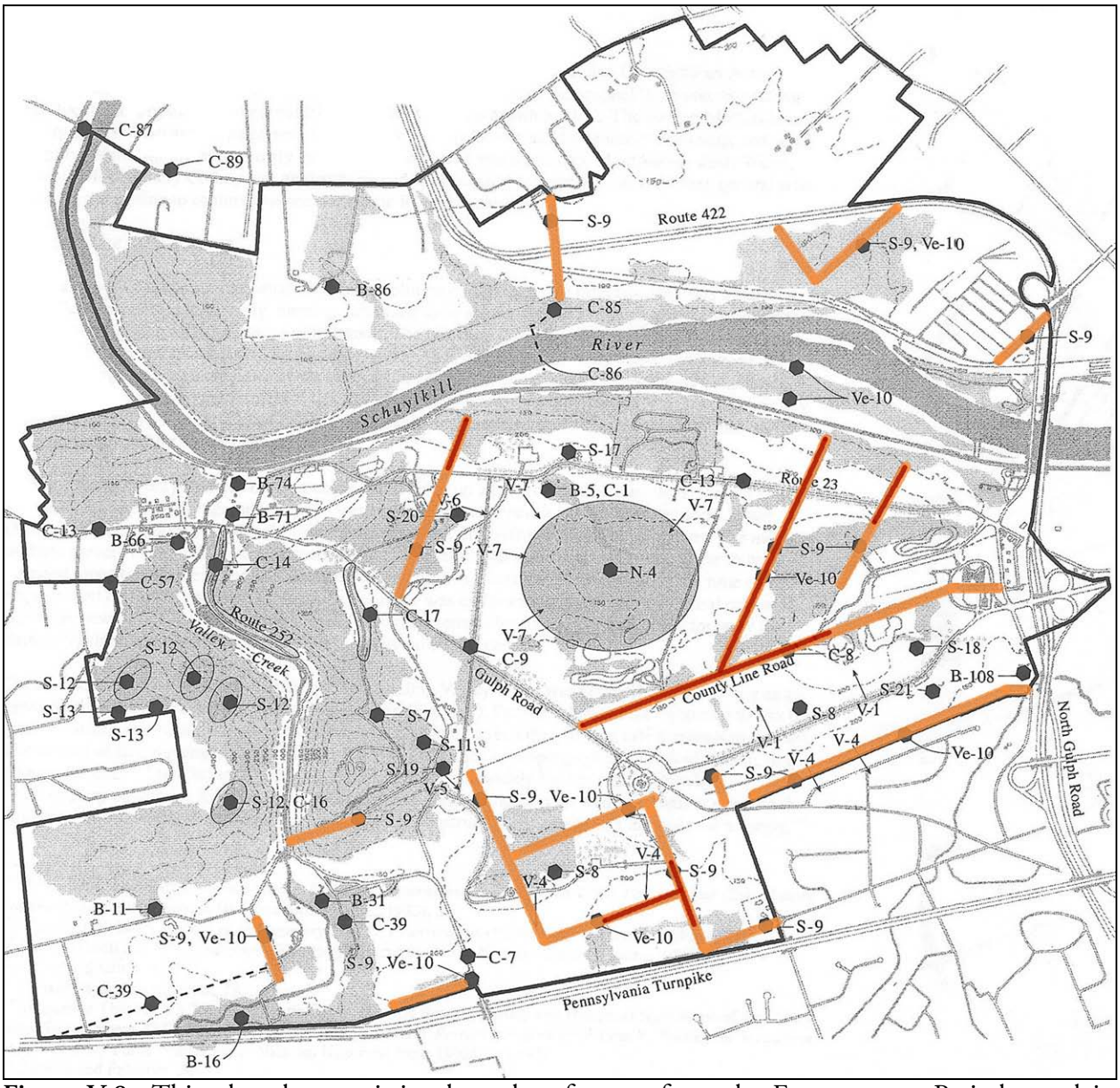

Figure V.8 This plan shows existing boundary features from the Encampment Period toned in beige. Dark red overtones highlight existing boundary features that could be managed as hedgerows without conflicting with other commemorative features or proposed vegetation. The background image is "Encampment Landscape Context Historic Resources (draft)" by Oculus, for Susan Maxman Architects and John Milner Associates, *Valley Forge National Historical Park Contextual Documentation and Cultural Landscape Plan*, Volume II of III, CLR Part 1, May 2002. (R-VAFO-CD-CLP-2of3-EncampmentHR-May2002)

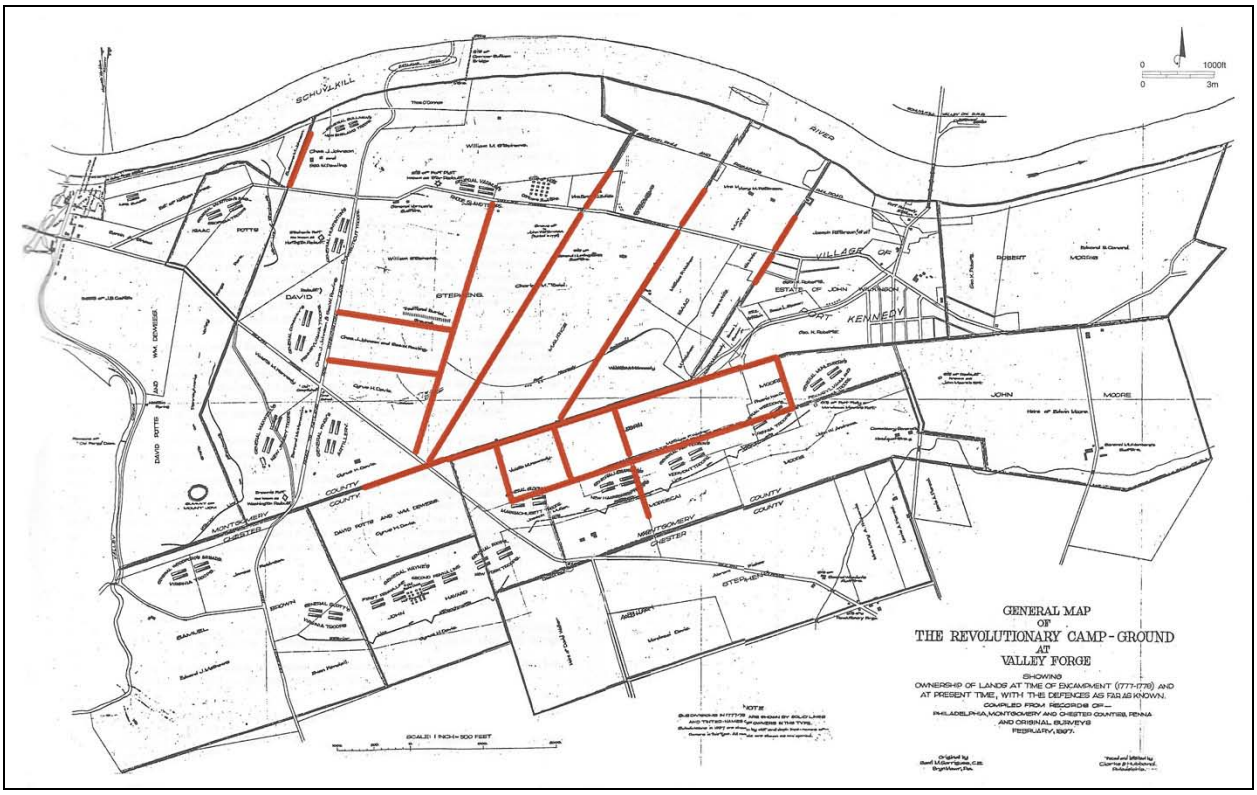

Figure V.9 This plan shows property boundaries from the Encampment Period in dark red that could be managed as hedgerows. Reestablishment of these features would provide the impression of the land divisions that existed before and during the encampment. The background image is "General Map of the Revolutionary Camp-Ground at Valley Forge, Showing Ownership of Lands at the Time of the Encampment (1777-1778), and at the Present Time..." by Samuel M. Garrigues, 1897; Valley Forge National Historic Park Archives; in Figure 9, *Valley Forge National Historical Park Contextual Documentation and Cultural Landscape Plan*, Volume II of III, CLR Part 1, May 2002. (R-VAFO-CD-CLP-2of3-EncampmentOwnership-May2002b)

VALLEY FORGE NATIONAL HISTORICAL PARK
CULTURAL & INTERPRETIVE LANDSCAPE TREATMENT PLAN
CHAPTER VI: INTERPRETIVE AREAS TREATMENT RECOMMENDATIONS

A. INTRODUCTION

Using the overall park-wide guidelines set forth in the previous chapter, this chapter focuses on site-specific recommendations and guidelines concerning cultural landscape interventions. Effective interpretation and sustainability initiatives are addressed in recommendations addressing the six interpretive zones:

- Muhlenberg's Brigade
- Grand Parade
- Washington's Headquarters
- Varnum's Quarters & Star Redoubt
- Artillery Park
- Pawling Farm

The overall objective of these treatment recommendations is to ensure a vibrant future for Valley Forge National Historical Park (NHP). An increasingly important component of preserving and sustaining heritage places is the baseline principle of preservation, which seeks to safeguard a valued place and limit site disturbance in any undertaking. By incorporating preservation with best management practices of today, the two transform a historic landscape into a more useful, safe, aesthetically pleasing place. In response to the needs of cultural landscapes for thoughtful implementation through contractor, staff, and volunteer project initiatives, the following text establishes protocols for landscape typologies and the six interpretive areas. Within each area, the recommendations and overall philosophy are summarized with bulleted recommendations and projects.

As the Valley Forge cultural landscape is renewed, multiple project goals must be reconciled during implementation. For example, establishing protection measures as projects begin will limit adjacent landscape damage as implementation work proceeds. While in many cases degraded aspects of the landscape are replaced in-kind with historic materials, there is also an opportunity to apply new technology, best management practices, green design, and sustainable construction approaches. The selected landscape management of the 3,500-acre Valley Forge landscape has the potential to be a standard-bearer for the National Park Service and contribute to the broader sustainability movement.

The General Management Plan (GMP) integrates aspects of sustainability into site-wide management and interpretation. This important planning document recognizes and accepts

widespread landscape evolution, from the agricultural and industrial pre-Revolution years, to the Encampment, and over time by the private and public owners, to the present. This awareness carries implications for treatment and interpretation of the historic, evolved landscape. The GMP lays out the most relevant interpretive themes for each zone as part of a comprehensive interpretive story. Aligned to the GMP, treatment recommendations in this chapter address how the interpretive themes are brought forward to the visitor at each site. The objective is to engage and educate visitors in their exploration of the park. As stated in the GMP, visitors are intended to "have the opportunity to become active participants in the interpretive process, making choices, asking questions, and directing their own inquiry into the past: visitors learn through experiences."[1]

There are many conduits for effective interpretation. One interpretive media option includes using overall and detailed area park maps with "You-Are-Here" annotation at each of the six primary interpretive areas and at the Visitor Center. This orientation sign would reinforce these locations as destinations aiding in park navigation by visitors. Other options, some of which are in effect, include basic park brochure, traditional waysides, ground markers at interpretive stations, view-directing interpretive panels and, a recent addition, downloadable smart phone digital tours. The overall park map provides basic content for gaining an understanding of historic Valley Forge and the events that took place there. A useful addition would be a brochure focusing on the six interpretive areas, presenting the basic themes and site-specific features to visitors. The same content could be posted to the park website for pre-visit planning and site orientation.

In addition, interpretive messaging beyond that identified in the GMP may be considered for site-specific interpretation. At the Grand Parade, for example, visitors can be directed to field patterns, property lines, roads, and other landscape patterns that were in place in the 1770s are still evident today. Landscape features such as these offer valuable interpretive opportunities for visitors.

Interpretive tour sequence and routes are provided for each of the six focus areas. These pre-schematic diagrams depict the proposed locations of vehicular parking areas, pedestrian routes, and the types of interpretive features. The accompanying reference plans include:

- Pr dwg 9 *Proposed VAFO NHP Commemorative, Visual & Vegetation Features Diagram*
- Pr dwg 10 *Muhlenberg Brigade Proposed Treatment Diagram*
- Pr dwg 11 *Grand Parade Proposed Treatment Diagram*
- Pr dwg 12 *George Washington's Headquarters Proposed Treatment Diagram*
- Pr dwg 13 *Varnum's Quarters and Star Redoubt Proposed Treatment Diagram*
- Pr dwg 14 *Artillery Park Proposed Treatment Diagram*
- Pr dwg 15 *Pawling Farm Proposed Treatment Diagram*

With any treatment recommendation, stewardship to protect, sustain, and renew natural and cultural resources for future generations is an integral component. The sections below provide the information and tools necessary to integrate preservation and landscape management practices, consulting the best contemporary practices and adhering to federal guidelines. In accordance with NPS guidelines, these treatment recommendations are based on the following principles.

- Design in accord with existing cultural and natural resources and implement designs that are responsive to both park conditions and surrounding context.

- Protect existing cultural and natural resources by doing no harm and making no interventions that will degrade the specific area or surrounding environment. To limit impacts on potential archeological resources, future projects would, to the degree possible, be located in places where previous disturbance or development has occurred or planned and positioned so that below grade disturbance is minimized.

Applying these principles consistently will aid in shaping projects that are grounded in the purpose and guiding documents of the Valley Forge National Historical Park.

B. MUHLENBERG'S BRIGADE

The area of Muhlenberg's Brigade offers many opportunities to implement specific treatment recommendations to enhance the visitor experience. Designing and installing a clearer site identification sign and more visible parking signs in advance to say "You are here" has helped alleviate visitor confusion. A distance of five to 10 car lengths, about 100 to 200 feet, can be used for pre-notice, giving visitors advance identification of the destination, so that they can make timely decisions on parking and access. A simple sign placed at the 5 to 10 car length distance, noting Muhlenberg's Brigade Parking Area with an arrow to the left would suffice for those arriving by car from the Visitor Center.

As the distance is quite short, the park promotes walking from the Visitor Center to Muhlenberg's Brigade along the trail system. A path from the Visitor Center provides access to interpretive site. The park can continue to mow this path through the meadow for access, and can to change path as needed by mowing different routes. Additionally, the paved eight-foot wide Joseph Plumb Martin Trail, parallel to Outer Line Drive, is wide enough to accommodate visitor groups. Together, the mown path and asphalt trail systems facilitate pedestrian access to Muhlenberg's Brigade.

Improvements to the site itself can be employed. The number of existing huts does not currently convey the hundreds of soldiers who bivouacked on the site. The density of huts would be increased to convey the density present during the Winter Encampment. Plan *Pr dwg 10* shows several blue dots to indicate additional huts and tents. These can be added in the spaces between the existing structures. New huts would infill the current hut spacing. As hut construction costs approximately $25,000 each for materials, consideration can be given to only partially constructing new huts, as examples of construction methods. These partially built huts in various stages of completion would communicate an interpretive message of tool shortages and complexities of building with available resources. Free standing frame of huts would be another approach, using fewer materials, while communicating density. To convey the encampment density, huts would be placed within the existing double row with a few huts scattered at the edges. Doors of existing huts would be reoriented to the south, as historically, so that soldiers would fall into the line of nearby trenches. The huts, with narrow spaces between them, would be interpreted as a line of defense.

Between the huts and the Visitor Center is a reconstructed redoubt on a high point of ground. This is a reconstructed feature that can be incorporated into site interpretation and presented in educational sessions for school groups. The diamond-shaped redoubt offers good views of surrounding terrain, which was a key factor in the selection of the encampment site. Identifying and opening the redoubt to visitors would create an opportunity for a first-hand experience of earthworks. The structure of the redoubt could also be exposed through a cut-away section to reveal

construction techniques and the underlying structure. Erosion control measures would need to be undertaken if this recommendation were carried out.

Broader landscape views from Muhlenberg's Brigade to the Grand Parade and beyond can be improved by enhancing interior views and screening views beyond the park. The scale of landscape at this key location is important for visitor comprehension of the area and number of soldiers who encamped here. Plan *Pr dwg 9* indicates views, screening vegetation, hedgerows allow historic property divisions, and the commemorative allée at Muhlenberg's Brigade. As proposed, opening views from the brigade across to the Washington Chapel would foster visitor appreciation for the breadth of landscape that the huts along Outer Line drive protected. Views, topography, and the connection between the landscape and outer line of defenses are other interpretive messages that can be explored.

Some screening of views to modern development beyond the boundary is appropriate, as well as framing of interpretive views across the park landscape. Tree species present during the encampment era, such as oak, sycamore, ash, and hickory, are appropriate to plant for screening purposes.

Existing NPS interpretive signs date to the 1980s. They are constructed of fiberglass, which has deteriorated from UV exposure. Annual maintenance of washing and carnauba waxing has extended the useful life of the signs, however, the current conditions make them of limited visitor use and replacement with improved materials and interpretive content would be an important addition to Muhlenberg's Brigade. The traditional NPS wayside template for interpretation may be expanded for multiple uses and purposes.

In summary, recommendations and projects for Muhlenberg's Brigade include:

- Connect area to Visitor Center and next stop in tour sequence
- Open views toward Grand Parade
- Screen views to adjacent development by focusing interpretive views toward internal park landscape to a greater degree and by planting trees in clumps at some high points and along the boundary Maintain pedestrian routes from the Visitor Center
- Increase the number of huts, as replicas or simple frames, to provide a block of huts that will enhance visitor understanding of the density of the encampment
- Incorporate the adjacent redoubt into the interpretation of Muhlenberg's Brigade
- Remove contemporary distractions from adjacent areas by addressing the amphitheater, maintenance area, former quarries
- Clarify parking areas that serve Muhlenberg's Brigade
- Install new site identification, wayfinding, and interpretive signs

C. THE GRAND PARADE

As the historically significant training site and the largest potential interpretive area within the park, recommendations for the Grand Parade are founded in rehabilitation of the area. Overall, as outlined in the GMP, the Grand Parade will be rehabilitated to suggest its late 18th century landscape character and breadth,. Former quarry sites and other topographic irregularities remaining from 19th and 20th century activities are being filled and graded, using historic contours as a guide. Working in

partnership with local and regional agencies, contractors are providing clean fill from nearby road construction projects for use in refilling the quarries of the Grand Parade. Views across the Grand Parade are proposed for reopening to reflect the 18th century appearance, once the historic mining and manufacturing waste remediation is completed. Removing selected trees along County Line Road will open views while reducing invasive species within the park interior. The amphitheater and the deteriorated concrete walk to the structure are also slated for removal. Once these intended changes are achieved, restoring the gently bowled topography of Grand Parade will recapture the characteristic historic form, grading out the undulations remaining from quarrying operations. Reopening the Grand Parade, both visually and physically, will enforce the interpretive message of this bowl-shaped landscape as a training and defensive ground.

It is the practice of the park that natural topographic features within the Grand Parade, such as sinkholes, are not filled unless they pose a threat that cannot be reduced in another manner. The karst geology of the Grand Parade is a distinctive phenomenon in this region. Valley Forge is part of the Great Valley, starting to the east of the park and running to the west through Lancaster County. While the Great Valley is an expansive area with numerous sinkholes, the Grand Parade is the only location where sinkholes are preserved.

The topography and geology of the area offers a strong interpretive message to visitors. Plan *Pr dwg 11* reveals this topographic diversity. Even the underlying, unseen geology of the area can be interpreted through the local building materials, such as shale, sandstone, and limestone, that were quarried to build farm houses that remain in the park, as well as exported from the site as fertilizer and building materials. Another story could be the shift in park philosophy regarding the sinkholes. While the sinkholes and natural history of the area are preserved today, park maintenance staff filled the sinkholes in the past, which resulted in a patchwork of soil types and individual trees growing in isolated locations throughout the Grand Parade. A further interpretive theme could be the story of the impact of the topography and geology on the built environment and placement of buildings and structures on the edges of the Grand Parade. Buildings were located near available water throughout of the low-lying karst geology of the Grand Parade. These additional themes could be used to supplement the story of the Grand Parade as a training ground for soldiers.

Meadow will continue to be the predominant vegetative cover within the Grand Parade. Clusters of volunteer and invasive trees around former quarry sites are proposed for removal as the quarries are filled, to recapture the expansive views across this valley. As seen on plans *Pr dwg 6* and *Pr dwg 9*, Former hedgerows and field lines can be augmented with plantings of trees native to the park, to make these historic field divisions more visible for visitors. The historic landscape divisions would be partially recaptured, with the intent of discerning, to a degree, the spatial patterns the soldiers encountered at the time of the encampment. Specific techniques and planting lists for enhancing former fencerows are discussed in Chapter VII.

Because the Grand Parade is a place of great importance within the park, visitor access to it will be enhanced. The area is within easy walking distance from the Visitor Center via a former quarry road that leads directly to the Maurice Stephens House and the center of the Grand Parade. The connection between the Visitor Center and the quarry road is currently difficult, as visitors must navigate through the lower parking lot. The park is working on clarifying the route from the Visitor Center and Lower Parking Lot, along the old quarry road and through a 1960s pine plantation established during the state park era as depicted on Plan *Pr dwg 9*. The pine plantation should be preserved as screening and habitat although it does not align to the 18th century landscape.

The mature plantation provides habitat to a number of woodland species, is a historical layer within the evolution of the park, and provides visitors with a sense of enclosure as they progress to the more open Grand Parade. The pine plantation is in decline with tree losses noted. As this decline continues, renewal of this area as a diverse native woodland community, rather than a monoculture plantation, is recommended. Plantation renewal is addressed in detail in Chapter VII.

The existing Maurice Stephens parking lot also will be used as a trailhead. The parking lot may be retained as is, or preferably reorganized for fewer cars and buses and regarded for improved access and drainage. The area around the Maurice Stephens House provides infrastructure and utilities, such as electric and fiber optic services, providing access to feeds for interpretive exhibits at this location. This house is proposed by the GMP to be used for passive exhibits about the cultural and natural history of the Grand Parade.

Upon entering the open Grand Parade grassland, the bowl-like topography of the area conceals modern buildings and intrusions. This enables visitors to focus on interpretive themes without visual distractions. To enhance this effect and increase access, multiple paths can be mown through the Grand Parade landscape depending on visitor interest and usage. Like the current mown path at Muhlenberg's Brigade, the mown paths of the Grand Parade can be flexible and adjusted over time to direct visitors to move through different areas of the landscape. Mown paths could connect to the Baptist Trace road along the west edge of the Grand Parade to create a continuous circuit of paths.

In summary, recommendations for the Grand Parade include:

- Restore valley landscape as one expansive space; open views toward Grand Parade
- Continue to restore historic topography by filling former quarries
- Remove volunteer trees around former quarries
- Continue topreserve existing and future sinkholes
- Retain and preserve locations of former sinkholes marked by different soils and isolated trees for interpretive value
- Augment former fence rows with trees or shrubs to be more visible
- Improve views and visual relationships for visitor experience
- Immerse visitors within the cultural landscape to give people a sense of Encampment Era landscape character
- Improve visitor approach from the lower parking lot at Visitor Center through the pine plantation for a sense of enclosure and controlled views
- Consider alternate visitor approach from Maurice Steven's parking lot
- Reconfigure Maurice Stephens parking lot for more efficiency and less pavement
- Renew pine plantation as a more diverse woodland
- Continue the system of mown paths for pedestrian access to the core of the Grand Parade
- Install site identification, wayfinding, and interpretive signs as needed

D. WASHINGTON'S HEADQUARTERS

The Washington's Headquarters area in Valley Forge village is the first area set aside for commemorative purposes and the subject of the earliest commemoration. The earliest photographs date to 1861 and show a relatively open area around the Potts house, spatially divided by fences and shaded by a few trees. In 1878 the Centennial and Memorial Association purchased the house opening it to the public. Commemorative changes to the landscape were undertaken through the transfer to state park land in 1905 continuing through to 1976. In the early 1970s a large parking lot was constructed to the south of the headquarters in a historic paddock, pasture and orchard area. In 1977, transfer to the National Park Service was completed. The National Park Service received an historic site that had been altered by nearly a century of commemorative actions.
Recognizing the need to continue to commemorate General Washington's leadership and to improve visitor access, VAFO secured funding for rehabilitation. A cultural landscape report addressing the treatment of the area was prepared in September 2006 and detailed planning toward construction documents followed. The project included parking lot removal and regrading, new parking lot, visitor access paths and ramps, river overlook, restored train station with interpretive exhibits, train platform, and commemorative grove. The interpretive sequence uses the upper path, train platform overlook and walk along the village lane to the commemorative grove for a modest group of waysides. The landscape and interpretation project was completed in 2011.

This project included the majority of the landscape changes envisioned in the preservation treatment and interpretation plan. (See Figure VI.1.) A series of photographs captures aspects of the headquarters landscape today, starting with the upper path from the new parking lot, proceeding to the downhill path, on to the train platform viewing the headquarters building and immediate surrounds, to the commemorative grove around the Washington bronze statue and the view back toward the train station. (See Figures VI.2, VI.3. VI.4, VI.5, and VI.6)

The Washington Headquarters area is completed and in visitor use. Some additional aspects of the landscape treatment plan may be considered in the future. Plan *Pr dwg 12* shows the proposed treatment diagram with interpretive symbols after the implementation of the recent renewal project. The research findings noted a number of interesting historical facts that may enrich the experience of the village. Nineteen possible interpretive messages were anticipated ranging from the description of the Isaac Potts property a few years before the encampment to the details of the Bronze Washington statue. However, that many waysides would create a degree of visual clutter in the landscape. And, there may be opportunities for additional interpretive panels and markers which could be positioned at key points without cluttering the pedestrian route. Other interpretive objects could be considered, such as in-ground markers that limit landscape clutter and provide visitors with recognizable elements that clue them to interpretive messages. Messages may be presented within village buildings. For example, a story about the stable could be presented in that structure through exhibits and written excerpts regarding animals and livestock. These additional interpretive messages may be presented in a downloadable cell phone tour.

The fabrication and installation of Washington's marquee can add another interpretive dimension to the cultural landscape. Located directly south of the Washington's Headquarters building, the marquee can offer a contrast between this campaign tent and the house as part of Washington's leadership image. Options for the design of the marquee are varied. It could be a historic reproduction of Washington's original tent or a more modern tent that provides a canvas roof and a mustering space and shade. Either design can provide a degree of flexibility, depending on the

interpretive message and feeling desired. The marquee can be erected and taken down as needed, likely becoming a seasonal exhibit space in winter. When the tent is not erected, the space can still serve as an interpretive area with a groundplane marker, set within the stabilized gravel, for group meeting area. The stabilized gravel serves as an readily used inexpensive path material that would complement the adjacent path materials.

Further refinements can also be made in the organization of the existing huts and in the removal of a culvert. While the huts illustrate an important interpretive theme, they are located on a steep slope along a degraded path. If relocation is pursued one hut to the north may be retained in a suitable location for universal access. One possible option is to add a single, typical soldier's tent. The remaining huts could be relocated at Muhlenberg's Brigade. Relocating the southern huts would allow space for the topography to be regraded near the spring and springhouse. Maintaining one hut within the landscape will allow for visitor interpretation and access, while relocating the other huts can aid interpretation elsewhere in the park. In addition, the removal of a remaining culvert from the former asphalt road near the spring is already underway. Recommendations for Washington's Headquarters include:

- Locate a few more interpretive objects and waysides while avoiding visual clutter
- Consider ground-plane installed interpretive markers or other interpretive options that limit landscape clutter
- Consider developing a cell phone tour using the documentary materials for the 19 interprtive stations
- Consider options for placement and design of Washington's marquee
- Shape the marquee area using stabilized gravel and potentially place an in-ground interpretive marker
- Remove remaining worm fences
- Remove culvert from the center asphalt road and regrade the topography for greater continuity of the area
- Keep northernmost hut for universal access; relocate southernmost huts to Muhlenberg's Brigade
- Regrade topography near spring and springhouse after hut relocation

E. VARNUM'S QUARTERS & THE STAR REDOUBT

A number of treatment recommendations can be implemented at Varnum's Quarters and the Star Redoubt to make the visitor experience more engaging. Apparent in Plan *Pr dwg 13*, Varnum's Quarters and the Star Redoubt are located on opposite sides of Route 23, a busy commuter route through the park. The road separates these two park features, both physically and in terms of interpretive messages and user groups. The more developed area around the tour route and parking lot at Varnum's Quarters is used by visitors interested in cultural and interpretive aspects, while the parking lot north of Route 23 at the Star Redoubt is mainly used by recreational visitors. Bus parking for Varnum's Quarters is located at the Star Redoubt parking lot with a safe but indirect pedestrian cross walk on Route 23.

Historically, the Star Redoubt was constructed as one of the outer line of defenses. Today it is somewhat remote and obscure amidst a dense woodland backdrop. This contemporary siting creates

a challenge for visitors to visualize that the redoubt was one of many earthworks at the outer line. An artists' image of the more open landscape with several redoubts on a wayside would enhance visitor understanding. Additionally, the history and the role of the defensive structure may be more explicitly interpreted to visitors.

Facilities adjacent to the redoubt can be improved. The parking lot west of the redoubt serves bus parking and local recreational users. Adjacent facilities include a bathroom, mown walking trails, and some interpretive signage. The area is naturalistic in character with woodland and pine plantation, offering recreational trails and wildlife habitat. The vegetation screens views to the Schuylkill River and the site of Sullivan's Bridge and Fatman's Ford. Selected views to the river should be opened along the pathway. Like other forests in the park, woodlands are in decline due to deer over-browsing but will be restored beginning in 2013. Plan *Pr dwg 13* shows yellow view marker locations at proposed views amidst renewed woodlands. Similarly, the nearby mature pine plantations are in decline and is recommended for renewal.

To address these issues, interpretation of the Star Redoubt needs to be enhanced. As at each area, a recommended approach is to construct a park map and focus area detail plan at the parking lot or install these two wayfinding maps on the bathroom wall to provide site orientation. The kiosk would include a locator map, list of interpretive messages and their locations, trail information as a starting place for both recreational and interpretive users, as well as information about the nearby Varnum's Quarters. From there, visitors can explore whichever interpretive messages or site features that interest them. Interpretation should be adjusted to connect the story of the outer defenses. A map of the line of defenses with redoubts labeled would assist in knitting the story together. Additionally, an oblique aerial could be used on interpretive panels to show the proximity of the site to the river, bridge and fort, as views through the trees are not desired. Infrequent tours or special events at the redoubt could also enhance visitor understanding of the earthwork.

Pedestrian access can continue to use mown paths. These mown paths through the meadow are flexible, allowing changed mowing routes to have visitors move through varied areas of the landscape. Mown paths would be organized to connect to the trace road remnant and woodland trails to create loops and extend visitor routes. There is one issue in terms of changing paths alignment, and that is roughly matching the visual depiction on the wayfinding map. If desired, mown paths from this area can also connect to the Grand Parade path system south of Route 23.

Treatment recommendations at the Star Redoubt include enhancing woodland quality by suppressing invasive species, enhancing edge habitat, renewing and replacing mature and declining pine plantations. Existing woodlands and pine plantations should be retained to focus views to the river without including modern development beyond the boundary. Woodland management is needed to augment the quantity of young native plant species, improve habitat, and reverse the trend of heavy deer browse that limits regeneration.

At Varnum's Quarters, similar interventions are recommended. Currently, the tour route brings visitors to the Varnum's Quarters parking lot, where most cultural visitors stop. From there, an adjacent plaza and interpretive walk leads to the building. The building is seasonally open to the public. Annual visitation to the area is approximately 8,000 people, which is fewer than the number of visitors at the Visitor Center, Muhlenburg's Brigade, and Washington's Headquarters. This lower visitation is likely the result of the uninviting appearance of the building and unclear information to

signal when the building is open and visitors are welcome. Additionally, tour trolleys do not stop at Varnum's Quarters, which contributes to decreased visitation.

Frequent visitors to the building include large school groups and joggers who use the multi-purpose trail. Because the building is quite small, school groups are separated into clusters of 6 to 7 students and a group leader. Groups muster on the rear and front yards while waiting to go into the house. Interpretive messages currently presented at Varnum's Quarters include the impact of the encampment on the local community, the Stephens family, and use of the Grand Parade as a training ground.

To enhance the visitor experience at Varnum's Quarters, visitors should be alerted to the fact that the building is open at certain times of the year. When the building is staffed, some signal or display may be used to cue visitors that the building is open. Currently, the Rhode Island regimental flag is placed near the multi-purpose trail and the door is opened to draw visitors. At other times, a silhouette of a person in 18th century clothing is placed along the path. Continuing these visual clues will help attract visitors to the site and make the building more inviting. Similar techniques could also be used at other sites throughout the park to attract visitors when live interpreters are present. For example, iconography of regiments and generals could be used as symbols for wayfinding throughout the park.

Interpretation at Varnum's Quarters can be improved. To more adequately address site orientation and organize the interpretive themes, a kiosk at the parking lot area is recommended. The kiosk used for overall site orientation would have an overall park locator map labeling all six interpretive areas, an area map or oblique aerial view of Varnum's Quarters, a list of interpretive messages and their locations, and information about the nearby Star Redoubt. More in-depth interpretation of specific site features could occur along the adjacent multi-purpose trail. Placing a wayside along this trail would attract a different audience group to the site, while interpretive markers at the building would provide direct place-based interpretation. Additionally, interpretation of the Star Redoubt could also occur at Varnum's Quarters or the multi-purpose path to avoid vehicular-pedestrian conflicts along Route 23. A side view of the Star Redoubt is available from Varnum's Quarters, which could be vivified with an interpretive panel. Overall, the existing interpretive signs show deterioration and are inadequate for conveying multiple stories. Changes to interpretive signs and markers are proposed.

Pedestrian access to Varnum's Quarters also can be improved. Existing paths are narrow and are not universally accessible. Interpretive signs are placed at "bump-outs" in the walks at awkward locations with limited space for visitors to walk around the signs. At a minimum, studies carried out would determine the feasibility of making the site universally accessible. The pedestrian plaza with the Von Steuben statue may remain as part of the multiple layers of commemorative history, while commemorative vegetation, including the hawthorns and other flowering trees, would also be retained and renewed around this memorial. Details on the renewal of commemorative vegetation are provided in Chapter VII.

In summary, recommendations for Varnum's Quarters and the Star Redoubt include:

- Construct a kiosk at the parking lot or on the bathroom wall for overall orientation of the Star Redoubt

- Adapt interpretive messages at the Star Redoubt to include the outer defenses story and proximity of Schuylkill River; include map of the line of defenses with labeled redoubts and oblique aerial on interpretive panels
- Consider tours or special events at the Star Redoubt to enhance visitor understanding of the earthwork
- Maintain pedestrian access through mown paths
- Connect mown paths to the trace road remnant, woodland trails, and Grand Parade path system south of Route 23
- Enhance woodland quality by suppressing invasive species
- Enhance woodland edge habitat
- Renew and replace mature pine plantations with mixed deciduous woodland
- Retain existing woodlands and pine plantations for screening purposes
- Identify and establish vistas through woodlands to the river
- Encourage woodland rejuvenation to sustain the woodlands
- Provide visitor clues to encourage increased visitation to Varnum's Quarters using flags, silhouettes, or other displays
- Consider use of regiments' iconography as symbols for wayfinding throughout the park
- Construct a kiosk at the Varnum's Quarters parking lot to address site orientation
- Reorient interpretive sequence at Varnum's Quarters at specific features and along the multi-purpose trail; relocate interpretive waysides and markers
- Consider interpretation of the Star Redoubt from Varnum's Quarters to avoid pedestrian-vehicular conflicts on Route 23
- Update interpretive signs for increased durability
- Improve pedestrian access at Varnum's Quarters
- Study feasibility of universal access at Varnum's Quarters
- Retain, preserve and renew the Von Steuben statue area, related commemorative vegetation, and the pedestrian plaza, while considering universal access
- Renew flowering commemorative vegetation around the plaza as needed

F. ARTILLERY PARK

Artillery Park, named after the "parked" arrangement of the artillery during the Encampment, is a site that has experienced several previous interpretive treatments, each with varying degrees of success. In the late 1990s, a local blacksmith operated a seasonal forge in the existing hut and interpreted ironwork to visitors. While the exhibit was appealing, the location was not suitable for an active living history component and was not viable for the 20 to 30 visitors per day. The forge also created additional safety hazards. Some seasonal and annual events also were held at Artillery Park, such as celebrations for the 125th anniversary and the 150th Reenactment. Today, there is only minimal interpretive treatment at the site.

Artillery Park poses challenges to interpretation. Upon arrival to the site today, visitors are underwhelmed. A large parking lot compels visitors to stop, but once at the site, visitors are not directed on what they are seeing or what to do. The area features three waysides, which are located at the cannons, under a distant tree, and along the Baptist Trace Road. While these waysides are

within walking distance, only one is visible from the Artillery Park parking lot. The distance to the waysides, very few existing story lines, and the lack of clear direction deter some visitors.

Many visitors come to Artillery Park for recreational use. The site offers the only parking lot with an adjacent bathroom along Inner Line Drive. Because of these amenities, visitors use the area to park and hike along the recreational trails throughout the woodlands of nearby Mount Joy and Mount Misery. A recently completed trail loop connects the parking area and trails, creating a more hiker-friendly environment. As a result, the area has become a niche location for recreational use coupled with low interpretive use.

These dual user groups, each with specific interests, create a unique situation at Artillery Park in terms of how both groups are served and how interpretive and recreational functions are balanced. One recommended approach is to use the existing kiosk located by the bathrooms as a point of interest for park maps, trail information, and interpretive key points, as a starting place for both recreational and interpretive groups. A broad site orientation could occur at this location to give visitors a menu of options, with interpretive stories presented near the cannons and along the Baptist Trace Road and natural resource interpretation on Mount Joy and Misery. Alternatively, a more accessible interpretive exhibit could be designed closer to the parking lot. Core themes and stories could be provided in this area, with more detail provided farther away near the cannons. Overall, a clear site orientation and visitor sequence throughout the site will aid in creating a better park experience and enhance the area as one of the park's key interpretive sites.

Though the existing interpretive treatment at Artillery Park is sparse, the history of the site is rich with stories. During the encampment, Artillery Park was the site of cannon storage, equipment repair, and portable blacksmith shops. This was the centeral location where artillerymen were cross-trained in areas of professionalism, which later led to the creation of West Point Academy. The area also offers a strong engineering theme through sophisticated war planning, artillery design, and artillery arrangement. During the Revolutionary War, artillery was placed in the front line with infantry, though a century later during the Civil War, artillery was moved behind the front line. The artillery arrangement varied if the cannons were stored or if they were fired, each requiring a number of people to load and discharge the gun. Interpretive panels should focus on these messages, using illustrations or models from the C. Keith Wilbur books to show artillery arrangements.

Other Revolutionary War era interpretive features include the stone schoolhouse and the Baptist Trace Road, an 18th century road that originally connected to Fatland Ford. These features could also be interpreted into the larger contextual story of Valley Forge. Later layers of commemorative history and natural history, also evident at Artillery Park, could offer supplemental interpretive themes. Commemorative plantings and original cobblestone, partially covered by asphalt, from the construction of Inner Line Drive remain as vestiges of the early 20th century park history. Interpretation of natural resources could occur along hiking trails on Mount Joy and Misery. In summary, treatment recommendations for Artillery Park include:

- Bolster interpretive themes through additional encampment era, commemorative era, and natural resource stories where appropriate
- Improve visitor experience through site orientation and interpretive sequence
- Develop site orientation and visitor interpretive story at bathroom kiosk or parking lot edge
- Accommodate interpretive and recreational users

G. PAWLING FARM

Of the six interpretive areas, Pawling Farm has the fewest overall recommendations due to its existing condition and the GMP prescription that the area will continue to function as a natural area with a diverse population of plant and animal species and microclimatic conditions. Invasive species are being suppressed here and throughout the park to improve habitat health. Overall the area is effective in its current condition and interventions at Pawling Farm should be limited. Site access and site identity can be improved. The site today is mainly used by local residents who know about the quiet and scenic characteristics the site offers. Very few tourists travel to the north side of the river. More wayfinding and site identification signs would be useful to enhance access to and from Pawling Farm from other areas of the park.

Recreational activity by local residents is the primary visitor use of Pawling Farm. Low impact recreational use will continue on this site, although activities require a degree of monitoring for conflicts between habitat and recreational values. To help alleviate potential conflicts, vehicular and pedestrian access should be clearly delineated, with marked parking areas and trails.

For the park visitor interested in the interpretive value of the Encampment Era, the connection between Pawling Farm and Washington's Headquarters can be presented more completely. Although historically these two distinct areas were separated by the Schuylkill River, they were inherently linked, as the site served as the supply center and commissary for the encampment. Though connections between the two sites continue to be severed by the railroad embankment and train station on the south side of the river, interpretive efforts can relay this message and strengthen the overall interpretive program at the park. Selective tree removal in focused areas of the Pawling Farm may also provide views to the Washington's Headquarters site.

Other interpretive opportunities exist at the site in addition to natural resource values and the Encampment Era commissary. Pawling Farm offers examples of remnant structures from 19th century farming. Ruins of these structures should be stabilized for interpretive value.

In summary, recommendations for the Pawling Farm include:

- Preserve naturalistic character, natural resources, and wildlife habitat of the site
- Remove invasive species to protect diverse plant and animal populations
- Limit interventions for minimal impact
- Enhance wayfinding to the area and site identification
- Retain low impact recreational use
- Monitor recreational use for conflicts with habitat/natural resource values
- Delineate vehicular and pedestrian areas more clearly
- Enhance connection between Pawling Farm and Washington's Headquarters
- Stabilize remnants of historic buildings from 20th century farming
- Explore additional interpretive themes, such as commissary, natural resources, and scientific farming

CHAPTER VI: ENDNOTES

[1] National Park Service, *Draft General Management Plan/Environmental Impact Statement* , *Valley Forge National Historical Park,* (January 2007): 2-5.

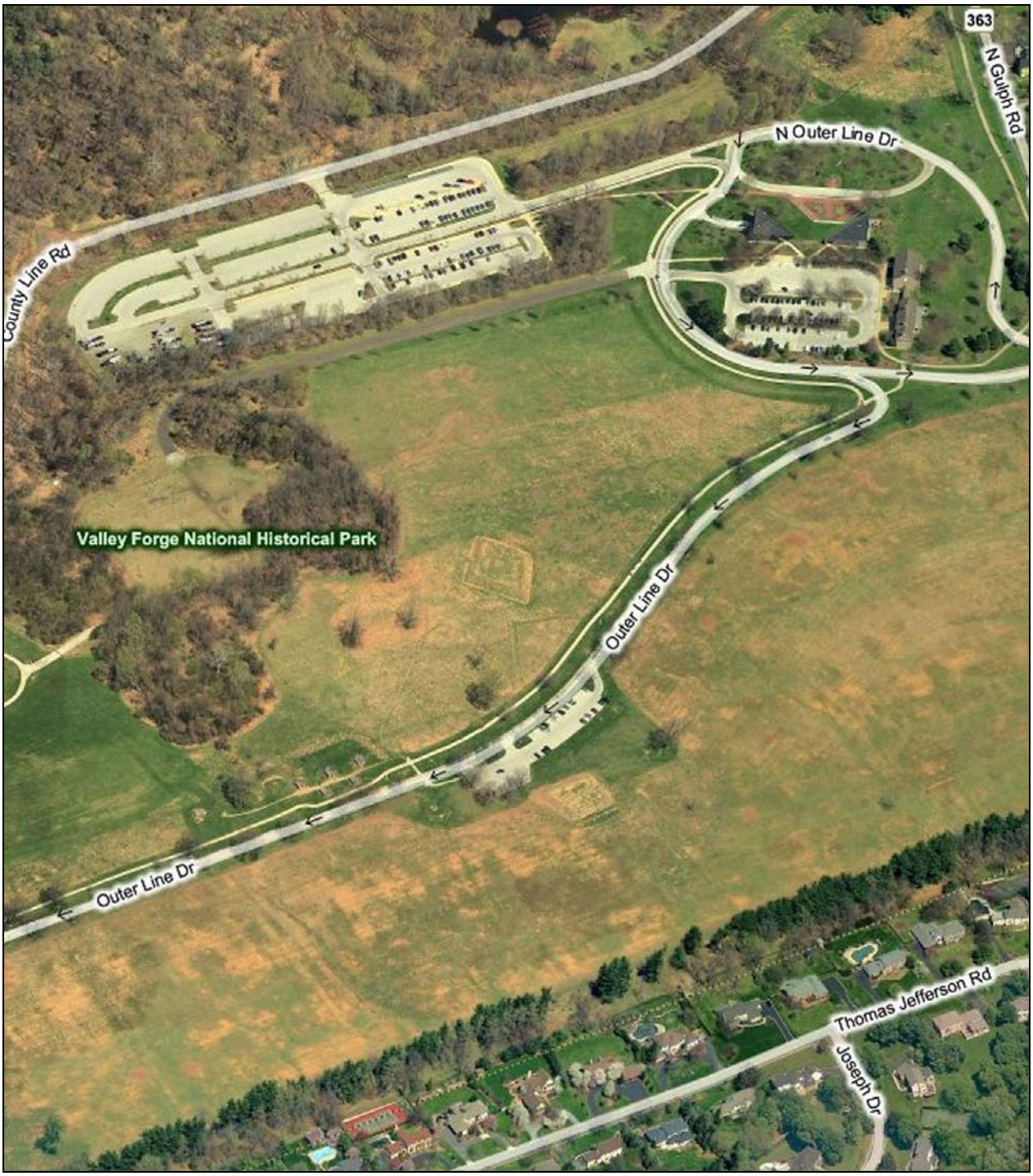

Figure VI.1. Current Muhlenberg's Brigade landscape context with five huts, two earthworks, walks and a small parking lot in foreground, thin plantings at park boundary and residential development beyond. There is easy access along a paved path from the Visitor Center top right. (R-VF-MuhlenbergsBrigade-context-Bing2010.jpg)

Figure VI.2 a and b. Aerial view of current Mulhenberg's brigade with a simulation of a proposed approach, making a dense block of huts or hut frames. A new paved path to the lower right provides access to the earthwork where an interpretive marker keys to a digital tour. (R-VF-Muhlenbergs Brigade-orig-Bing2010, R-VF-Prop-Simluation-Muhlenbergs Brigade-Bing.jpg)

Figure VI.3. Captured in this oblique aerial view, the Grand Parade is a bowl shaped area circled and crossed by roads. This contiguous open space includes quarrying remains today. (R-VF-GrandParade-context-Bing-2011)

Figure VI.4 a and b. Aerial view of the existing Grand Parade depicts patchy woodlands on disturbed topography remaining from quarrying. The simulation of the proposed Grand Parade landscape will unify the bowl shaped grassland after mitigation. (R-VF-GrandParade-Bing2011.jpg) R-VF-Prop-Simulation-HL-GrandParade-Bing.jpg)

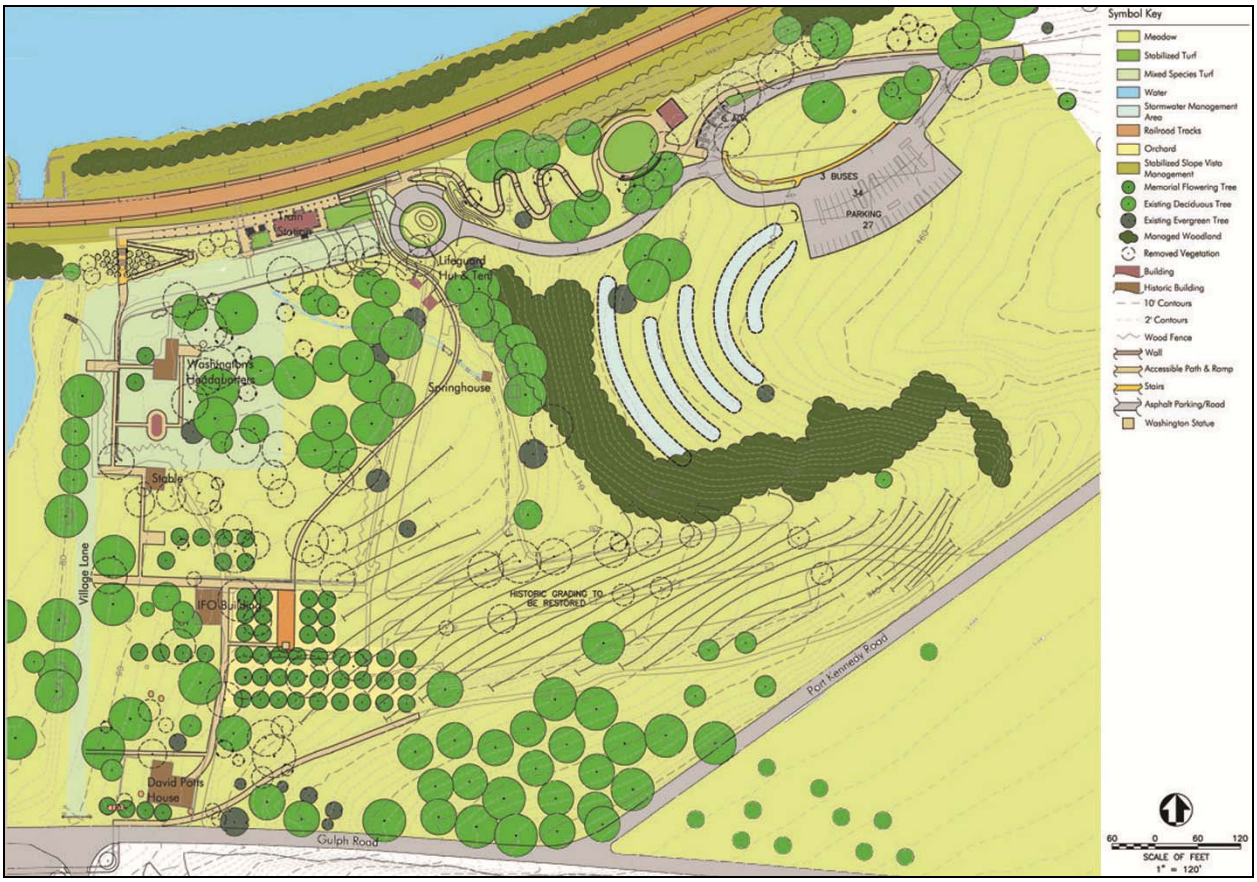

Figure VI.5. Washington's Headquarters landscape treatment plan depicts the removal and regrading of the large parking lot constructed in the 1970s, and additions to the Valley Forge village area that included tree removals around the headquarters, the addition of trees in small orchard-like blocks, the placement of the Washington Statue in a commemorative grove, and new visitor parking, river overlook, paths and ramps for a visitor access and interpretation sequence of this historic site. The project, completed in 2009, addressed many of these landscape preservation treatment recommendations. Heritage Landscapes. (R-VF-GWHQ-Treatment-Sept2006-small.jpg)

Figure VI.6. This 2007 photograph depicts the process of grading subsoil over the removed bicentennial parking lot to reinstate the 1905 documented topography. Heritage Landscapes. (R-VF-GWHQ-Remove-Impervious-Parking-Restore-1905-Grades.jpg)

Figure VI.7. Washington's Headquarters visitors stop to read the interpretive signs along the new sidewalk that leads to the river overlook and path down to the train station and headquarters. Heritage Landscapes. (R-VF-GWHQ-InterprtivePanel-27Nov2010-18.jpg)

Figure VI.8. View of the completed project looking west, downhill along the accessible pedestrian path to the train station (center) and headquarters (left behind trees). Note the tracks and Schuylkill River to the right. Heritage Landscapes. (R-VF-GWHQ-Slope-Walk-27Nov2010-21.jpg)

Figure VI.9. This photograph looking south from the accessible ramp toward Washington's Headquarters shows the completed project with a more open landscape around the headquarters through selected tree removal, retention of native Sycamore trees along Valley Creek, visitor walks, village lane and a new interpretive panel. Heritage Landscapes. (R-VF-GWHQ-Headquarters-Ramp-South-27Nov2010-34.jpg)

Figure VI.10. This panorama view sweeps from Washington's Headquarters, upper left, to the newly planted commemorative grove trees around the reinstalled Washington Statute demonstrating the recaptured breadth of open space. The Pennsylvania native crabapple is a durable tree for this use. To the right of the statue, golden grassland thrives over the regraded slopes, shaped using the documented 1905 topography, in the area of the large bicentennial parking lot. Heritage Landscapes. (R-VF-GWHQ-27Nov2010-Grove-Pano-A-HL.jpg, R-VF-GWHQ-27Nov2010-Grove-Pano-B-HL.jpg)

Figure VI.11. Aerial oblique view of the Varnum's Quarters & Star Redoubt landscapes along the north and south sides of Port Kennedy Road. The Von Steuben statue and Varnum's Quarters are readily access along paved paths, while the Star Redoubt is accessed along mown turf paths. Each area has a modest parking lot to provide access. (R-VF-VarnumsQuarters-context-Bing2010.jpg)

Figure VI.12 a and b. Current view of the Von Steuben statue and path at the edge of the parking lot. Simulation of proposed wayside, with paving extended around it for viewing from both sides. Park map and area oblique aerial view aid visitor wayfinding. Additional hawthorn trees are proposed to extend the clusters around Von Stueben. (R-VF-HL-VarnumsQuarters-336.jp , R-VF-Prop-Simulation-HL-VarnumsQuarters-336.jpg)

Figure VI.13. This aerial view shows existing Artillery Park landscape along Camp Road and the surrounding context with Mount Joy at the lower left. (R-VF-ArtilleryPark-context-Bing2010.jpg)

Figure VI.14 a. Oblique aerial view of the Artillery Park landscape today which is well appointed with a large parking lot and comfort station. There is also a considerable acreage that is closely mown. (R-VF-P-ArtilleryPark-Bing2010.jpg)

Figure VI.14 b. A key feature in this simulation of proposed Artillery Park landscape is the alignment of all the cannon along the path with gravel or another pavement below them, which will heighten the impacts of these guns and reduce small scale mowing around them. Another proposed feature is a smaller area of mowing overall and clearer delineation of visitor paths, either mow or paved. (R-VF-PropSimulation-HL-ArtilleryPark-Bing.jpg)

Figure VI.15. This view captures the existing Pawling Farm landscape and context. (R-VF-PawlingFarm-context-Bing2010.jpg)

Figure VI.16. The current Pawling Farm area has no wayfinding information and includes a rectangular mown area. The simulation of proposed Pawling Farm landscape depicts a smaller area of mowing along the access road edge, a clear mown path and a wayfinding kiosk at the north end of the parking area. (R-VF-PawlingFarmClose-Bing-2010.jpg, R-VF-PropSimulation-HL-Pawling Farm-Bing.jpg)

VALLEY FORGE NATIONAL HISTORICAL PARK
CULTURAL & INTERPRETIVE LANDSCAPE TREATMENT PLAN
CHAPTER VII: PARK-WIDE LANDSCAPE MANAGEMENT PRACTICES

A. INTRODUCTION TO SUSTAINABLE LANDSCAPE MANAGEMENT

Using current best practices, this chapter presents guidelines for management of the following areas:

- Landscape Maintenance Staffing
- Forest & Woodland Management
- Edge Management
- Hedgerow Establishment & Management
- Plantation Management
- Screen Planting Management
- Meadow Grassland Establishment & Management
- Exotic Invasive Species Suppression
- Commemorative Vegetation Management
- Turf Management
- Soil Management & Erosion Control
- Stormwater Management
- Circulation System Management
- Trail Development & Management
- Historic Fieldstone Walls
- Park Benches & Lighting

Sustainability is an increasingly important benchmark for action on each of these topics. The application of green practices and principles is an increasingly recognized component of preserving and sustaining NPS properties like Valley Forge NHP. As a baseline, preservation seeks to safeguard a valued place and limit site disturbance in any undertaking. The effective transformation of Valley Forge into a more useful, safe, meaningful, and authentic place is a sustainable practice. The reuse of a historic site yields a modest carbon footprint when compared to shaping a new landscape. Preservation can be a highly sustainable practice with careful design and detailing. As Valley Forge NHP is renewed, a number of factors can be considered in terms of an implementation approach. Where degraded aspects of the landscape are replaced in-kind with historic materials, there is also an opportunity to apply new technologies and consider green design and best management practices (BMP).[1]

B. LANDSCAPE MAINTENANCE STAFFING

Details of annual or cyclic landscape inspection and maintenance efforts directly relate to landscape types, as different types of land cover require specific landscape skills and tools. The range of landscape types and size of varying areas serve as an indicator of the level of hands-on staffing required for a given landscape. There are variations in applying level of care maintenance practices based on objectives, current conditions, human and financial resources, climate, microclimate and other relevant factors. The current ground plane at Valley Forge consists of small areas of mown turf, extensive grassland meadow, and varied woodlands, each with differing maintenance regimes. Twenty-two natural and anthropogenic vegetation associations exist at Valley Forge including:[2]

Anthropogenic

- Cropland
- Developed Land
- Old Nursery Site
- Old Quarry/Reclamation Site
- Transportation Corridor
- Grassland (Mowed)
- Grassland (Tall Grass)
- Northern Catalpa Planted Forest
- Mixed White Pine – Hardwood Plantation
- White Pine Plantation
- Planted Ornamental Tree Grove
- Red Oak Plantation
- Eastern Hemlock Plantation

Natural

- Wet Meadow
- Silver Maple Floodplain Forest
- Riverine Floodplain Forest
- Northeastern Modified Successional Forest
- Chestnut Oak – Black Birch Talus Slope
- Tuliptree – Oak Forest
- Dry Oak Forest
- Successional Old Field/Shrubland
- Water

In general the recommendations incorporated in these sections strive to reduce maintenance burdens, as the 3,500 acres of the park are beyond the limits of level of park landscape maintenance staff. In terms of the level of future staffing efforts to maintain the Valley Forge landscape, full-time person-per-acre numbers can aid in developing a staffing count specifically for landscape care. A full time employee (FTE) unit is based on the standard of 2,080 hours per year for each FTE. Valley Forge NHP-specific time records are the most precise source of actual time expended for use in developing a unit of staffing assessment.

Maintenance levels and capabilities are critical factors with regard to the character, use, and functionality of cultural landscapes. Different types of vegetation and built elements require more or less care than others. Highly tended lawns require considerably more full-time equivalent employees than managed woodlands, while mixed species, less frequently mown lawns are more historically appropriate. Even at a level of 1 person per 30 acres, VAFO would require 116.6 FTEs for landscape maintenance of its 3,500 acres. What this ratio means is that landscape inspection and maintenance actions at Valley Forge are targeted and selective and that the objectives of those actions are driven by the most pressing needs or the actions that have the highest value in terms of directing types of landscape toward more stable communities.

Within this context of limited human resources to care for a very large landscape, realistic expectations are critically important. An important factor with regard to maintenance regimes is to build the skill sets of maintenance personnel on procedures unique to the Valley Forge landscape. Doing so fosters a stronger sense of stewardship and pride amongst work crews and aids in the protection of resources. If work crews understand landscape inspection and maintenance actions in relation to the park mission and defined goals, the work is more meaningful and engaging. On a broad level, a well tended landscape is a source of team pride. Valley Forge NHP is a valuable and valued landscape, for the surrounding community, region, and nation and embodies a range of cultural and natural resource values.

In summary, overall maintenance staffing recommendations include:

- Build realistic expectations based on human resources and skill sets available
- Adjust maintenance efforts to reflect landscape typologies and FTE staffing per acre
- Build landscape maintenance personnel inventory and management protocols and procedures unique to Valley Forge to foster effective landscape stewardship
- Target staffing effort toward highest priorities, focus on initiatives that can shift landscapes toward more stable, lower care communities

C. FOREST & WOODLAND MANAGEMENT

After the Encampment, the area was characterized by extensive farm fields and scattered regenerating woodlands of hickory, black oak, white oak, Spanish oak, chestnut oak, chestnut, gum, sugar maple, elm, mulberry, sassafras, water beech, walnut, buttonwood, and dogwood. The successional woodlands greatly contributed to the character of the landscape and helped define patterns of spatial and visual relationships. Trees are also valuable for the ecosystem services they provide including stormwater interception, energy conservation related to climate modification, absorption of pollutants, interception of particular matter, oxygen release, and carbon sequestration.[3]

Today, a total of 18 different forest and woodland communities have been delineated within the park, comprising 34% of the total land cover.[4] Of these, the largest is modified successional forest, with 456 acres. Species within this composition include white ash, black walnut, elm, tree-of-heaven, black locust, red cedar, oriental bittersweet, boxelder, dogwood, black cherry, and sassafras in areas of disturbance from farmland and forest gaps.[5] The second largest composition is the tuliptree forest alliance, with 374 acres of tuliptree, black oak, white ash, red maple, northern red oak, sassafras, dogwood, spicebush, black haw, mountain laurel.[6] Other forest alliance communities noted in the General Management Plan (GMP) include the white oak forest alliance (204 acres) and the chestnut oak forest alliance (186 acres) on Mount Joy and Mount Misery.[7] In the low-lying areas

of the park, the sycamore/ash floodplain forest consists of 170 acres of green ash, sycamore, silver maple, black walnut, boxelder, elm, river birch, spicebush, multiflora rose, and raspberries.[8] Overall, all communities exhibit little to no forest regeneration, with the exception of areas inside of deer exclosures. Increasing deer populations, along with the growth of invasive and volunteer vegetation, has greatly affected existing and future forest and woodland areas.

In order to recapture the historic character of the Valley Forge woodlands, a phased strategy for woodland management is needed for canopy and understory vegetation regeneration. The condition of the woodland areas, with mature trees and limited regeneration, should be considered for intensive tree planting. To ensure that newly planted trees thrive and that the desired effect is achieved, it is essential that trees are carefully chosen. Trees should be selected according to woodland area, species type, and soil type. Trees should also be obtained in full health, planted appropriately and be provided care for the first three years. Observance of the recommended guidelines during selection, installation, and maintenance will aid in tree planting success.

Trees should be selected for specific woodland communities by contractors, staff, or volunteers to meet project objectives. The species chosen for planting in each area should conform to the list of existing trees inventoried and the soils and conditions where they are to be planted. Tree size for park planting should be fairly substantial; 1 to 3 inches in caliper is a good range for public landscape use. Smaller trees are more vulnerable to deer browse, vandalism, improper depth of planting, and other potential causes of failure. Use of deer exclosures is useful for protecting a range of species and encouraging natural regeneration within a particular patch. Smaller trees may be appropriate for planting within exclosures; however, more costly larger trees offer advantages in a public setting. A public setting calls for a tree with greater presence. If a tree is staked and mulched appropriately, it is less likely to be stepped on or knocked down. Additional protection, such as hardware cloth, may be needed for protection against small animal damage. Maintenance staff will have an easier time recognizing the trees for maintenance, and they will be less likely to unintentionally damage the tree. Additionally, the slightly larger trees will more quickly become a noticeable and valued part of the improved woodland landscape.

In addition, a planned approach to manage invasive and non-native vegetation needs to be considered. In general, invasive exotic plants should be removed from the landscape. Invasive species suppression will require a targeted multi-year campaign throughout the Valley Forge landscape. With a planned suppression program, colonized areas of invasive plants will be removed over time although seed sources will remain in adjacent areas. Inspection and removals should be an annual effort that will suppress dense patches of undesirable plants within a few years of intensive effort. After the invasive species have been removed, a program of inspection and more limited suppression will be needed into the future. Planning a detailed program of invasive species suppression that can be adequately staffed is an initial step. Outreach and collaboration with adjacent landowners may be required for comprehensive control of invasive species vectors. More details about invasive species suppression is provided in a later section.

Overall, the goal for forest and woodland management is to balance existing native species by adding smaller trees and understory vegetation for regeneration. While planting smaller vegetation may be a potential conflict with the large deer populations present at the park, tree protection measures and deer fences and exclosures may be able to provide some level of protection for young vegetation in woodland areas. Managed hunting to reduce resident deer populations can be immediately effective at reducing pressure on vegetation. Research shows that as "woodlands suffer from excessive

browsing, tree seedlings are unlikely to establish without protection unless deer numbers are controlled."[9] If regeneration does not occur naturally, once an area is protected, it may be necessary to stimulate the growth of seedlings by carrying out preliminary work such as thinning to provide more light."[10] Additional light may also encourage invasive seed sources to grow, thus requiring suppression to reduce competition and allow native species to thrive. Thus, woodland stewardship is an ongoing maintenance task as management efforts adapt to the changing landscape.

Woodland management recommendations include:

- Define phased strategy for woodland management
- Remove invasive plants from the landscape
- Suppress invasives through targeted multi-year campaign
- Apply tested protocols to determine best method for invasive plant removals
- Manage non-native, non-invasive trees
- Plant new trees to foster forest regeneration
- Protect new trees from deer browse and small animal damage
- Encourage natural regeneration by protecting areas from deer browse
- Establish procedures for long-term renewal of woodland diversity
- Develop public relations strategy for management plan

D. EDGE MANAGEMENT

Woodland edge habitat is defined as the ecotone or transition zone between a maturing forest and adjacent habitats such as grasslands and meadows. Edges typically exhibit dense plant growth which creates a linear corridor that supports a greater diversity of plants and animals compared to interior areas. Insects and animals that live in edge habitat have simultaneous access to two habitat types, abundant food sources, and dense cover for protection. As a result, increased wildlife populations in these areas attract additional predators.

Vegetation within a woodland edge is usually composed of early successional plants that require more sunlight that woodland species. Typically, succession naturally advances from annual grasses and forbs, to perennial grasses and forbs, to shrubs, vines and briars, to young woodland tree species, and finally to mature woodland/forest. Plants indicative of the third and fourth stages of succession, such as shrubs and young woodland, comprise woodland edges. Shrubs, vines, and briars create overhead canopy with sparse ground vegetation which allows wildlife to forage, nest, travel or rest in secure cover.[11] Common species in these edge habitats are saplings of dogwood, sassafras, sumac, redbud, cherry, and cedar that also contribute to cover.[12]

A well developed woodland edge is "feathered" with plant communities that are intermediate in height when compared to adjoining habitat types.[13] This intermediate height creates a visually pleasing, gradual transition between grassland or meadow and woodland. However, the majority of woodland edges today do not exhibit this transitional zone. "All too frequently, this 'feathered' edge has been eliminated as a result of past efforts to maximize open space for other purposes. This elimination creates an abrupt and quite noticeable change in vegetation and results in the loss of a very important habitat component for a wide array of wildlife species."[14] Along the woodland edges at Valley Forge there are examples of areas lacking transitional zones, which instead exhibit sharp boundaries between woodland and grassland, or infestation of invasive species that thrive at sunny

edges. This intersection of different landscape types requires careful consideration. Edges between meadows and woodlands should be actively managed to promote more diverse habitats and wildlife populations and the feathered transitions of native species that thrive in the intersection between woodland and grassland.

To improve woodland edges and quantity and diversity of wildlife and plant populations throughout the park, a number of strategies can be employed. Three methods to enhance woodland edges are:

- Natural Regeneration
- Planting/Establishment
- Manipulation

Natural regeneration is considered the easiest and cheapest establishment method, relying on the natural succession of vegetation from plants already on site, dormant seeds or roots, seeds dispersed by wind or wildlife from nearby areas. Succession can be increased through the disturbance of the groundplane by plowing or disking existing grasses. Another alternative is to temporarily erect biodegradable mesh or a fence wire to serve as a bird perch along the length of the intended transitional edge. Birds perching on the mesh or wire will deposit droppings, containing a rich source of seeds.[15]

The second method, planting, or establishment, requires more labor and financial investment to plant shrubs and saplings along the woodland edge. Research conducted by the Indiana Department of Natural Resources offered guidance on establishing new edge plantings. The guidance states:

> At a minimum, planting areas should be 20 to 25 feet in width. Early successional tree species (dogwood, hawthorn, cherry, plum, etc.), that tend to be taller than shrubs at maturity, should be planted in rows immediately adjacent to the existing woodland edge, followed by shrubs species as the planting extends farther out. For most purposes, trees should be planted in rows 10' apart with 10' between each tree within the row. Shrubs should be planted in rows 6' apart with 6' between each shrub within the row. Avoid planting each row of trees or shrubs to a single species. Instead, utilize multiple species within each row and alternate species in a random fashion to enhance the diversity of the planting. A minimum of five species is recommended.[16]

Prior to planting, the area should be prepared by eliminating competing vegetation which can accomplished by conventional tillage or systemic herbicides. Soils should also be amended. Planting woodland edges is beneficial to allow the landowner to influence the composition of plant species that will ultimately exist within the transition zone.[17]

The last method is manipulation of the outer portion of an existing woodland. Rather than adding new vegetation along the woodland perimeter, this strategy subtracts woodland vegetation to spur early successional stages. Cutting or girdling trees greater than 4" diameter within the first 10 to 25 feet of the woodland perimeter allows sunlight to penetrate to the ground level to stimulate growth of grasses, forbs, briars, and shrubs.[18] Hickory, oak, walnut, dogwood, hawthorn, wild plum, grapevine, and similar and fruit-producing woody plants should be left standing.[19] Trees that are removed can be used to create brush piles that provide additional habitat and cover. Similarly, girdled trees also provide "important nesting habitat for a wide variety of cavity-nesting wildlife as the trees begin to decay" along with insects and invertebrates.[20] Manipulation of existing woodlands

works best for east and south facing edges with longer sun exposures; however, northern edges may also benefit from this treatment to remove tall trees that block sunlight.

In terms of maintaining woodland edges, selectively cutting undesirable tree species within a 15 to 30 foot wide swath should occur every 5 to 10 years. Natural woodland edges are irregular with frequent undulations that increase the perimeter of the edge boundary. This not only creates more edge habitat, but also can also aid prey animals as edges "create more of a challenge for predators who do have clear, straight views within their hunting ground."[21] Overall, a woodland edge should extend a minimum of 10 to 25 feet beyond the forest edge, although wider transition zones provide greater benefits.[22] The reinforcement of positive, sustainable woodland edge plantings is a process that will take time to initialize and will require conscious management over time.

In summary, edge management recommendations include:

- Enhance woodland edge vegetation for wildlife and vegetation diversity
- Evaluate natural regeneration, planting/establishment, and manipulation methods and select most appropriate approach
- Maintaining established woodland edges by selectively cutting undesirable tree species within a 15 to 30 foot wide swath every 5 to 10 years
- Create irregular woodland edges to increase the perimeter of the edge boundary
- Create woodland edges that extend 10 to 25 feet beyond the woodland

E. HEDGEROW ESTABLISHMENT & MANAGEMENT

As indicated in the GMP, vegetation management strategies within the park should address existing hedgerows and consider new hedgerows along historic boundaries. Hedgerows are another category of vegetation, adding to the turf, meadow or grassland, woodland, and commemorative vegetation. They offer a unique interpretive opportunity to make visible historic property boundaries within the park. Today hedgerows exist along a few historic boundary lines within the park. (See Plan 6.) They contain limited, often self-sown trees, invasive shrubs and scrub. As indicated in the prior cultural landscape study, these are contributing resources that can remain visible in the landscape.[23] Efforts can be made to enhance these features. A hedgerow can be defined as a "narrow strip of woody and herbaceous plants at field margins and property boundaries… containing spontaneously arising plants, that is, plants arriving as propagules through the agency of wind or animals."[24] In agricultural land uses, hedgerows are encouraged by farmers as wind blocks. Multiple research efforts on hedgerows conclude that the "composition, form, size, location, age and management of [hedgerows] reflect both social and natural events… [they] occur in the landscape because of human activity, but are subject to natural and social forces."[25]

The values ascribed to hedgerows are diverse. Hedgerows offer land management benefits by preventing soil erosion adjacent to cultivated areas and offer wildlife value from the linear, woody vegetation that provides food, cover, and spatial components that are otherwise absent in agricultural landscapes. The presence of dead or decaying trees within hedgerows can benefit avian species by providing nest cavities.[26] Research of hedgerow habitat types has shown that hedgerows consisting of continuous trees and shrubs had the greatest structural diversity and, thus, the greatest bird species diversity.[27] Related research findings indicates that hedgerows are essential for at least 15 to 20 vertebrate species, such as small birds, rodents, mammals, and reptiles.[28]

For the Valley Forge NHP landscape native trees may be the ideal vegetation for hedgerows, rather than continuous tree and shrub cover. While trees have single trunks, shrubs, with their multiple stems and crowded interiors, can be easily invaded by undesirable plants from garlic mustard and burdock to ornamental grasses and non-native trees. Therefore it is advised that the VAFO NHP hedgerows are managed principally for native trees. Selected historic hedgerows, that follow historic boundaries and do not interfere with commemorative vegetation, can be replanted, as mapped and discussed in Chapter V. (See Figures V.8, V.9 and Plan 6.)

Renewing existing hedgerows and adding selected ones would highlight the historic boundary or agricultural field patterns within the park landscape, adding visual definition and enhancing visitor perception of the agricultural uses and multiple property owners of the historic Valley Forge NHP landscape. For example, views across open spaces like the Grand Parade can be enhanced with the revival of visible field patterns. The land management and wildlife values of these linear corridors are important for plant and animal diversity. It is recommended that woody vegetation along hedgerows, particularly native trees, be increased to make these features more visible to visitors. This objective can be accomplished using a customized approach to both hedgerow establishment and hedgerow augmentation that focuses on tree planting and tree care, with suppression of undesirable vegetation.

There are several methods that could establish new hedgerows in the selected areas of historic boundaries. New tree locations can be determined by stretching a measuring tape the length of each row and marking the initial planting sites of trees at various random intervals, ranging from 8 to 25 feet. An overall appearance of the variable intervals between trees would mimic a random, self-sown pattern. Hedgerow vegetation should be planned and managed as a linear feature, but variations of 5 or 6 feet from the centerline may be accommodated. Wide gaps in the trees plantings may be difficult to maintain, and fostering a more complete row of randomly but closely spaced trees will likely be preferred. Marking the tree planting sites would be followed by calculating the needed number of plants by counting the marked sites and determine how many plants of each species to plant.[29] Alternatively, the park can encourage native trees to seed into the row from nearby tree seed sources, allowing native trees self sow, be identified, cleared around, and mulched. The young trees would then have both sunlight access and reduced growth competition, and would grow from seedling, to sapling, to tree over time. This approach would require suppressing invasive species and selectively removing some native trees from crowded areas through cutting at grade or weed wrench removal. However, occasional small tree clusters would reinforce the random patterns of the hedgerow. Even if the intent is to plant native shrubs within the hedgerow, initial tree planting and maintenance, over a five-year period, is advised as the first phase.

Selection of plants for hedgerows should be woody species that produce both food and cover preferred by wildlife. Plants can be purchased from local and regional nurseries to ensure ecological adaptations to Valley Forge. In general, hedgerow plantings should have the following characteristics:

- Capacity to grow well on sites of average fertility and with limited maintenance
- Minimal aggressive plant propagation or growth that would spread in width, to retain a linear feature, a visual boundary
- Ready availability of native planting stock from local or regional sources, or transplanted from the park
- Life span of at least 25 years, possibly much longer[30]

- Encouraging an assortment of suitable native trees suitable to the soils and orientation rather than single species
- Encouraging native shrubs where inspection and maintenance through volunteer plant removal is feasible

A diverse hedgerow or screen planting is a better habitat offering a greater array of food and shelter. Observation of hedgerow habitat indicates that integration of native evergreens increases use of screening plantings for resident species, as well as migratory ones. Native deciduous shrubs may also be used in selected hedgerows, if desired. Several types of shrubs exist in the VAFO NHP landscape. Most of the shrubs listed below can be propagated by live cuttings. The process would be to cut stems from existing shrubs in the spring when plants are dormant. Cutting a stem to the ground is often a good approach. Typical guidance for shrub rejuvenation is to cut 1/3 of stems each year for 3 years. Using pruning shears, divide stems into 18 to 24-inch lengths, taking care to stack with bottoms of stems down, as they should be planted that way. Within a few days of cutting, take these cut stems to the hedgerow planting site, open the ground with a shovel, press the bottom of each stem about 6 to 8 inches into the grade, remove the shovel and step on the cut to compact around the stem. To foster growth remove taller vegetation and mulch at a two-foot width along the shrub plantings. After mulching, water stems to the point of ponding on the surface, twice and water weekly for one month and in drought conditions that year. Several tree and shrub species are suitable for use as hedgerows at Valley Forge, reference the following lists and current park plants.[31]

Large and Small Deciduous Trees for Hedgerows:

- Sugar maple (*Acer saccharum*)
- Serviceberry (*Amelanchier canadensis*)
- Northern catalpa (*Catalpa speciosa)*
- Flowering dogwood (*Cornus florida*)
- Walnut (*Juglans nigra*)
- Black cherry (*Prunus serotina)*
- Wild plum (*Prunus americana*)
- Common chokecherry (*Prunus virginiana)*
- Oaks (*Quercus alba, Q. bicolor, Q. coccinea, Q. velutina, Q. rubra*)
- Black locust (*Robinia pseudoacacia)*
- Staghorn sumac (*Rhus typhina)*
- Smooth sumac (*Rhus glabra)*
- American elder (*Sambucus canadensis*)
- Sassafras (*Sassafras albidum*)

Evergreen Trees for Hedgerows:

- Red cedar (*Juniperus virginiana)*
- White spruce (*Picea glauca)*
- Northern white cedar *(Thuja occidentalis)*

Deciduous Shrubs for Hedgerows:

- Silky dogwood (*Cornus amomum*)
- Gray dogwood (*Cornus racemosa)*

- Red-Osier dogwood (*Cornus stolonifera)*
- Witch-hazel (*Hamamelis virginiana)*
- Elderberry *(Sambucus canadensis)*
- Nannyberry (*Viburnum lentago*)
- Blackhaw (*Viburnum prunifolium*)
- Highbush cranberry (*Viburnum trilobum)*

The species chosen for a particular area can be selected from the above list and or an enlarged list of native plantings by inventory of native plants near hedgerow sites. Also noting the soil type and soil moisture potential along the hedgerows, as well as other site specific factors. Care is required to aid in hedgerow plantings establishment for 3 or more years. Various animals are responsible for the majority of damage to trees and shrubs along hedgerows. Deer, in particular, can affect plants through heavy browsing and antler rubbing that severely disfigure plants and results in substantial plant mortality. These impacts can limit the success of establishment. Monitoring for signs of damage and intervention with physical barriers can protect plantings during the first 5 years of growth.[32] Methods to address these types of animal damage include protection by various mechanical means. Growing tubes that allow light to pass through can be placed over small trees to limit deer browse of young branches of saplings. Young trees can be protected from fall deer antler rubbing by placing 4-foot tall wire mesh guards on trunks. Also, during the winter rodents will chew on tree and shrub stems. They can be thwarted by placing wire mesh guards on young plants. As plants mature, guards can be removed and reused on other young trees and shrubs.

Once hedgerows are well established, inspection and management can be reduced to annual field review and suppression of undesirable species. To maintain the value of these hedgerows, periodic removal of trees for thinning may also be required. Occasional dead trees can be retained as snags that add valuable wildlife habitat. These combined approaches will maximize plant and animal compositional diversity in the VAFO hedgerows.[33]

In summary, hedgerow management recommendations include:

- Manage hedgerows for historic interpretation and habitat values
- Renew and augment existing hedgerows through managing native trees and shrubs and suppressing undesirable plants
- Replant historic hedgerows where appropriate to reveal additional historic boundaries
- Obtain hedgerow trees by harvesting seedlings or saplings within the park, or from local or regional growers
- Plant trees to form linear rows, at random spacing with a slightly staggered formation
- Encourage succession, allowing native trees to self-sow, and manage seedlings and saplings
- Plant native shrubs where desired, using live wood stem plantings if desired
- Suppress invasive species through mechanical removal, dig, cut, or use weed wrench
- Limit deer browse of small trees by using tubes that allow light to pass through
- Protect young trees from fall deer antler rubbing with 4-foot tall wire mesh guards
- Protect tree and shrub stems near ground level from rodent chewing during the winter with wire mesh guards
- Retain dead tree trunks, where they do not pose visitor safety issues, for valuable wildlife habitat, remove branches so that mowing along

F. PLANTATION MANAGEMENT

Several pine plantations exist within the park boundaries today. Planted in the 1960s for unknown reasons, the stands today are over 50 years old and presently in decline. The condition of the trees is due to limited management over past decades. Typically, pine plantations are managed for timber from the initial plantings through fertilizer, herbicides, prescribed burns, and thinning. Plantations can be managed for habitat and other values in addition to timber. Research indicates that "as densely stocked plantations mature and the canopy closes, shaded understory vegetation dies, food production decreases, cover is reduced, and overall habitat quality declines."[34] In the future, before new plantations reach this stage, they should be thinned to allow sunlight to penetrate the canopy and generate herbaceous plant and shrub growth within the understory. Doing so will yield a stand with vertical and horizontal diversity and diverse and abundant animal and plant communities. Having plants in all vertical layers allows ground, shrub, and treetop-dwelling wildlife to exist in the same horizontal space.[35] To accomplish this, thinning should occur on a 5 to 10 year interval, depending on site conditions.[36] After 20 to 25 years of growth, plans are generally made for harvest and reforestation.

Because the existing pine plantations were not managed in this way, trees grew tightly together, the canopy closed, and undergrowth shrank, with limited herbaceous material and a thick mat of pine needles. Additionally, maximum traditional harvest age for pine plantations is about 40 years. The plantations are now older than 40. After 50 years, some species of pine begin to decline and can lose significant economic value as timber.[37]

Due to the age of the plantations, late-rotation management strategies and harvesting techniques can be applied to the park. Strategies can be employed for a phased removal of the pines, allowing for the plantation areas to transition to woodland compositions that can be actively managed with less intensity than standard plantations and still provide screening where desired while the young woodland species are established. Late-rotation management strategies for old plantations include:

- Obtain professional forestry advice to assess the need for thinning and/or develop a reforestation plan[38]
- Thin areas to remove suppressed, diseased, poorly-formed, or damaged trees and allow sunlight to reach the groundplane (using basal area of 60 to 80 square feet per acre)
- Burn selected areas every 3 to 5 years, making sure to intersperse the stands that are burned in any year. Fire promotes growth of legumes, grasses, and forbs; increases production of fruit by shrubs and vines beginning 3 years after the burn and ending 5 years after the burn; and makes leafy browse more nutritious for 1 to 2 years after the burn.
- Leave dead trees (snags) for cavity- nesting birds and squirrels as long as visitor safety is not any issue
- Align strip openings with management roads, creating a wider area for sunlight to enter adjacent plantations and to allow easy access for maintenance
- Fertilize after thinning to maximize the benefits to understory plants browsed upon by deer[39]

Obtaining professional advice from a forester offers the best opportunity to address the existing plantations in a holistic manner. Experienced foresters can make quick decisions and recommendations based upon the existing condition and desired outcome for plantations. They can

also provide valuable advice about transitioning the pine plantations into woodlands and establishing young woodland species.

In terms of removing selected trees, general guidelines provide a framework. Given the age and the condition of the plantations, removal of some trees will be necessary to foster the regrowth of understory and new canopy trees. Actively managing the plantations and removing some of the pines will be critical in retaining evergreen areas where desired. Removing trees also provides an opportunity to make improvements for wildlife habitat.

General plantation management techniques include:

- Use irregularly shaped harvest boundaries to maximize the edge
- Leave buffer strips that are at least 50 feet wide along roads to screen the view of timber harvests, or harvest these zones 5 to 10 years after the initial harvest
- Leave residual snags or large-diameter live stems as wildlife trees for the next rotation
- Leave hollow logs, treetops, and logging debris on site after harvesting. As these decay, they promote fungal growth, which is a phosphorus source for certain animals; attract insects, which serve as food for other wildlife; provide cover for small mammals, salamanders, and snakes; and help return nutrients to the soil.
- Leave hardwood stands along streams and in low-lying areas to increase acorn and fruit production and to provide travel corridors for mature woodland species like wild turkeys and gray squirrels
- Use shelterwood harvests, which leave some mature trees in the overstory, to be harvested 5 years after the initial harvest or during the late stages of the next rotation
- Limit clearcutting to small areas, of a visually acceptable size
- Mix stands of different ages and forest types
- Maximize the number of coverts (areas where three habitat types meet), which attract an abundance of wildlife
- Maintain buffers that are more than 100 feet wide on each side of streams as travel corridors for wildlife, and plant pines to link hardwood stands isolated by development or agriculture
- Plant young pines to link older, isolated pine stands
- Minimize timber management on special sites like home sites, cemeteries, or historical areas
- Consider plantation areas as a part of the larger surrounding landscape when developing a wildlife management plan[40]

G. SCREEN PLANTING MANAGEMENT

Screening plantings are found throughout the park, mainly along property edges to screen adjacent properties. While the previous section addressed the management of pine plantations for screening and wildlife habitat, this section expands upon guidelines to be used for vegetative screening. Currently, screening vegetation mostly consists of evergreens with intermixed self-seeded deciduous trees. The evergreens, specifically planted for screening purposes, are in decline and offer opportunities to renew the plantings.

When selecting plant materials for renewing screening, the following should be considered including:

- Size at maturity
- Establishment time
- Seasonal vs. year-round screening
- Foliage density
- Branch arrangement
- Site conditions[41]

Tree characteristics over time should be considered prior to selecting specimens. As plantings grow, each species takes on a different size, height, spread, foliage density, and appearance. Determining mature tree characteristics can aid in selecting suitable vegetation for the available site. In addition, screening vegetation must be hardy to withstand pollution, poor soils, crowded edge conditions, and limited maintenance. If screening trees are located near utility lines, sidewalks, parking lots, streets, fences, walls or buildings, they will also be subjected to abuse from construction and maintenance in these areas.[42] Disease and pest resistant trees that are appropriate for the hardiness zone and soil type should also be considered.[43]

For the Valley Forge landscape, a list of suitable vegetation materials for screening can be derived from the existing plantings. Using the existing plantings as a baseline, fast growing and slow growing trees should be added. Fast growing vegetation provides a screen quickly within a few years, while the slower growing species begin to grow. Using a combination of fast-growing trees and slower growing trees can ensure continuous coverage as older and faster growing trees decline. Faster growing trees can also be removed as more desirable trees mature. This approach should be used in areas with existing trees to supplement the screening area and ensure continued screening. Planting understory trees and shrubs where trees already exist is also a method for continued screening.[44] Shrubs can quickly fill in areas giving time for trees to reach mature sizes.[45] Understory trees and shrubs are less important in screening, however, because most key areas of the park from which views beyond the boundary are important to screen lie at higher elevations than the surrounding terrain.

In terms of tree types and species, a combination of deciduous and evergreen trees should be used for year-round screening. Using a combination of trees with dense foliage is good for noise control and blocking views. Evergreens provide screening in winter, and deciduous trees offer more coverage during six months of the year.[46] Additionally, trees with ground level branches, such as unpruned evergreens and weeping branches, are great for blocking views, noise, wind and snow.[47] At Valley Forge, it is preferred to use native plantings similar to those currently found on-site today. Those species outlined for use in hedgerows in the above text are ideal candidates for screening plantings.

In summary, recommendations for management of screening planting include:

- Consider tree characteristics over time prior to selecting specimens
- Select suitable vegetation materials from the existing trees and shrubs
- Use a combination of fast-growing trees and slower growing trees to ensure continuous coverage

H. MEADOW GRASSLAND ESTABLISHMENT & MANAGEMENT

Valley Forge NHP is rare within the National Park Service with its actively managed meadows or grasslands. According to the GMP, "grasslands comprise the second largest percentage of park

property—almost 32% (1,330 acres)."[48] Between 1992 and 2005, VAFO converted 914 acres of turf lawn into meadow, thus reducing maintenance and mowing efforts. "The establishment of tall grass meadows meets several management objectives, including a return to a landscape more suggestive of the small grain agriculture prior to the arrival of the Continental Army and a good habitat for birds and small mammals. Common graminoid species within the tall grass community include redtop, broom sedge, panic grass, sweet vernal grass, orchard grass, tall fescue, red fescue, and purple top," which provides refuge and nesting habitat.[49] However, the "greatest threat to grassland vegetation is the presence of invasive species."[50]

The park's upcoming meadow management plan will provide detailed recommendations to supplement these guidelines for the care and establishment of meadows. Seeding or planting desired meadow areas begins with planting of preferred grasses and wildflowers. By choosing and establishing the right plants, meadow areas contribute to habitat value, drawing field and woodland edge birds and insects. The proposed meadow grasses and wildflower species are commonly recommended as a mixture of 60% native grass seed and 40% wildflower seed. The list below can be fine-tuned to local soil and climatic conditions as desired. Options for the proposed mix include:

Native Grass Seed: Fresh, clean, dry, mixed species, 60 to 100% of seed composition, of the following:

- 50 percent Little Bluestem (*Schizachyrium scoparium*)
- 30 percent Indiangrass (*Sorghastrum nutans*)
- 20 percent Switchgrass/Panic grass (*Panicum virgatum*)

Wildflower Seed: Fresh, clean, dry, mixed species, zero to 40% of seed composition, may include native meadow flowering plants. Seed used should be of native plants to the park and region already observed in grasslands and meadows. Meadow seed mixes, obtained from regional sources or gathered on site, could include:

- Butterfly weed (*Asclepias tuberosa*)
- Smooth blue aster (*Aster laevis*)
- Purple coneflower (*Echinacea purpurea*)
- Mist flower (*Eupatorium coelestinaum*)
- Wild bergamont (*Monarda fistulosa*)
- Black-eyed susan (*Rudbeckia hirta*)
- Gray goldenrod (*Solidago nemoralis*)

Many other native plant seeds are available and may be appropriate. Using plants that are already present in the Valley Forge landscape in comparable conditions to the area to be planted would be a prudent approach. Meadow wildflower seed could be gathered from existing stands of plants within the park for replanting elsewhere. As planting projects are scoped, scheduled seed availability needs to be arranged. Importantly, the park already has begun to obtain local materials by harvesting and growing native seed from existing meadow plants. When this is not possible, obtaining seed from local and regional sources is desired. A regional source for seeds and plant plugs for the Valley Forge area would be Ernst Conservation Seeds, LLP in Meadville, PA, (www.ernstseed.com).

If a new are of grassland or meadow is intended, removing and/or suppressing the current vegetation is important to establish the desired vegetation. Seasonal timing of this process is important to retain soils and limit disturbance. Establishment involves suppressing undesirable weed species for as

much as three years. Seeding or planting plugs onto open soils are establishment options for meadows. Typically, a perennial grass and wildflower mix is used in the initial seeding process. However, annuals can also used in the initial seeding and over-seeded for the first few years to provide additional bloom and fill gaps in bare soil that could be targets for undesirable species. If areas to be planted need a quick cover, it may be advisable to use native grass plugs. Plugs have an advantage in quicker growth, but are more costly and require hand planting. Plugs can be acquired through a conservation plant grower and are often contract grown to ensure availability.

Initial meadow inspection and care will involve suppressing undesirable weed species for a period of three years. Meadow care, once established, will be light with inspection and species control as needed and mowing once every two years. Mowing is used to suppress woody species which sprout from seed annually. A mowing pattern can be established to foster beneficial insect populations. Recent research indicates that biannual mowing also supports butterfly and praying mantis habitat, as annual mowing dislodges immature caterpillar cocoons and reduces the breeding and feeding resources. Controlled burning of meadows could be considered as an alternative to mowing, but would require preparation of an environmental impact statement. The protocols for meadow grassland management inspection and care will be determined by the target species and habitat conditions desired.

To complement the upcoming and detailed meadow and grassland management plan for the park, establishment and management recommendations include:

- Establish meadow-grassland areas, using a mix of native, locally-present meadow grasses and wildflowers
- Use historically prevalent species to guide interventions
- Consider factors such as habitat value when augmenting plant species
- Suppress undesirable vegetation
- Consider mowing established meadows once every two years on an alternating pattern to foster beneficial insects while controlling wood species
- Inspect and manage meadow-grasslands for preferred species

I. EXOTIC INVASIVE SPECIES SUPPRESSION

Exotic invasive species can invade historic landscapes if maintenance care is not focused on the issue. Exotic plants do not originate in the region. Invasive plants are aggressive and tend to increase in number while effectively competing against non-invasive plants by limiting plant growth, reducing native reproduction, and degrading the habitat value of the area. Colonization of exotic invasive species from both historic and contemporary sources is often noted at property edges and in woodland areas of historic sites such as Valley Forge NHP. Exotic, fast growing species are considered bully plants, offering few positive benefits and threatening populations of native plants. In a designed landscape, historically appropriate exotic plants that do not spread invasively, may have a place in the overall composition. In contrast, invasive non-native plants that migrate and proliferate throughout the landscape are not welcome as their growth tactics out-compete other plants and alter the landscape character. In recent years, considerable technical literature addressing testing, tools, techniques, safety issues and effective control have been developed, and active suppression of invasive plants has been undertaken at Valley Forge.

In 1985, a study at Valley Forge NHP revealed that 35% of vegetative species identified were exotic invasives. By 2001, nearly 20 miles of forest edge and 900 acres of woodlands were infested with invasive vines and shrubs.[51] Today, the park landscape has a number of invasive species, however, more prominent and problematic are Canadian thistle, crown vetch, Japanese knotweed, Japanese barberry, Japanese hops, mile-a-minute, miscanthus, and oriental bittersweet. The location of these species varies. Areas with the largest problem areas are found near the river, woodland slopes, and open meadows. Miscanthus, an ornamental grass escaped from nearby residential gardens, has been noted throughout the meadow areas of the park.

Inspection and manual control are the principal elements of a invasive species program. Invasive species suppression is typically an ongoing effort. With a planned suppression program, colonized areas of invasive plants can be removed manually without the use of chemical controls. Seed sources may remain in adjacent areas. Inspection and removals are an ongoing effort that will suppress dense patches of undesirable plants within a few years of intensive effort. Planning the program of invasive species suppression is an initial step. However, each invasive species has unique attributes that depend on the surrounding ecosystem and environmental factors. Given these factors and the habits of each species, a method for removal can be selected. In addition to the selection of a removal method, timing and intensity are important factors for the success of any invasive species control.

With any invasive species suppression program, thorough research should be carried out on the species to be removed and an invasive species suppression plan should be drafted to outline the method, intensity, and duration to be used. Additionally, it will be important to define the resource objectives, special parameters and equipment, and plants, animals, and physical characteristics of the site. Public notification and support may also be needed for select methods, such as prescribed burning to educate the public on the benefits on the method. After planning, a tested protocol may be used. For example, an effective strategy for large parks is the Bradley Method, a perimeter approach that sequentially moves from landscape edges to a center. Locations of infestations are identified and plants are eradicated at the perimeter and removal continues working toward the densely populated areas. Overall, the Bradley Method has three basic principles, "Start in areas where the native plants are thriving and gradually clear into the more heavily invaded areas… while removing invasive plants, try to keep from disturbing the environment any more than necessary," and lastly "do not over-clear." The Bradley Method "has great promise on nature reserves with low budgets and with sensitive plant populations."[52]

Overall, there are five broad categories for invasive species removal: physical, chemical, biological, prescribed grazing, and prescribed burning.[53] Physical or mechanical means to remove, kill, injure, or alter growing conditions for unwanted plants are labor intensive and therefore costly to contract or to dedicate staff to this field work. Additionally, these manual means may need to be used repeatedly, thus adding to the overall cost. However, this type of method has a minimal environmental impact, which is good for sites with high ecological and social values. It also is suitable for volunteers and a good match for large-scale volunteer events. Chemical methods use herbicides to suppress or kill unwanted plants; however, these methods should be used in a way that minimizes impacts to non-target species. Biological control mechanisms use natural enemies of invasive plants to reduce their dominance. This method is often used gradually to suppress low-value habitats or remote areas. The fourth method is prescribed grazing, where the application of domestic livestock grazing at a specified season and intensity can control invasive plant populations and enhance desirable vegetation conditions. Similar in objective, prescribed fires can suppress invasive species by mimicking naturally occurring fire patterns that influences biological

communities and ecological processes. This last method is most beneficial in fire ecosystems, such as native tall grass prairies; consideration would require preparation of an environmental impact statement.

Exotic invasive trees and shrubs, vines, and groundcovers each have effective means of control. In order to completely suppress undesirable woody and herbaceous plants, manual removal, targeted burning, mowing, herbicide and biological controls may all be potentially effective means of control. Physical or manual removal is a proven method of suppression. Plants and roots are removed by hand without toxins. This technique is often used for vines and groundcovers and is more successful with some species than others. Some plants can be suppressed through mowing at target times, like early spring when top growth absorbs most of the plant nutrients. Repeating mowing is an effective control in areas where the ground plane is readily mown and woody plants are not in the way of mowing activity. Plants with brittle roots and vigorous re-growth, like garlic mustard, require a variety of techniques and a degree of persistence with hand pulling, herbicide treatments, and propane torch burning.

Other tools to assist woodland management include Weed Wrench or Talon tools, made to manually remove young woody plants of ½ inch to 1-½ inch caliper while limiting disturbance to the root zones of the nearby plants. An effective protocol for invasive exotic tree and shrub suppression for plants larger than Weed Wrench size is a double cutting method, where the plant is cut with the second cut as close to grade as possible, followed by painting herbicide, typically Glyphosphate or Triclopyr, directly on the cut trunks. Stems wet from cutting absorb the herbicide as they dry out, effectively killing the plant. Without herbicide, trees will continue to resprout vigorously. Coordination between tree cutting crews and licensed pesticide/herbicide applicator should be scheduled for best results. Herbicide should be applied to the cut trunks within six hours. This cut and paint method limits herbicide migration into other areas of the landscape and is safer and more effective because it focuses only on undesirable plants, kills roots through absorption into plant tissue. Herbicides should not be applied to low-lying hardwoods, ditches and streambeds, or near standing water within or adjacent to woodlands.[54]

To accomplish suppression, volunteer teams could be formed on select work days to remove target species by hand. This volunteer base approach has been effective in public parks and preserves. Valley Forge NHP has already established a "Weed Warrior" program comprised of interested volunteers, local high school students, Youth Conservation Corps members, Student Conservation Association interns, and others that work on suppression efforts several times a year. Control of target species is well along and ongoing efforts will require a lesser level of effort.

Ultimately, selection of an invasive species removal technique is dependent on available personnel, funding, and proximity to non-target species. The control of specific target species needs to be carried out by researching best practices to obtain data on successful control, planning the effort and persisting with suppression until the species is under control. Invasive species control should address target species and rely on best practices and field tests to refine the most suitable approach.

Exotic invasive suppression management recommendations include:

- Define phased strategy for exotic invasive suppression
- Suppress invasives through targeted multi-year campaign
- Apply tested protocols to determine best method for invasive plant removals
- Develop public relations strategy for the management plan

J. COMMEMORATIVE VEGETATION MANAGEMENT

The commemorative vegetation at Valley Forge National Historical Park is an added layer within the cultural landscape. Planted to beautify the park and to honor the soldiers and the Encampment, vegetation was principally placed along drives in allées and in groves. While trees are considered to have inherent aesthetic value, commemorative trees are imbued with memory and other values beyond aesthetics.[55]

After many decades of growth, commemorative allées and tree clusters along the park drives were in decline and in need of renewal. With some trees already removed and others remaining as mature specimens, the original patterns of rows and groves was incomplete. In the past, limited attention was given to these prominent landscape features. Intensive tree planting was required to recapture these plantings. To renew the character of the commemorative vegetation at Valley Forge, replanted trees followed the original planting pattern as closely as possible. Examination of tree pits and early 20th century aerial photographs of park archives aided in determining the location and spacing for reestablishing lost allées and clusters.

These methods were used to replant over 600 commemorative trees from 2008 to 2011, and could be applied in the future as needed. Engagement of the community in replanting is a park benefit. Multiple approaches may apply to funding the replanting of commemorative vegetation. The basic choices are implementation by contract, with staff in a sequence of initiatives, or with staff and citizen volunteers. If funds are available, a bid process under contract may be pursued, using detailed specifications and tree approval at regional nurseries to ensure sound stock. Another option is to engage the community with civic or school groups using volunteer labor with park staff supervision. A hybrid approach could be pursued to complete the plantings under different strategies over a period of years. Using a hybrid approach, replanting can occur on both the short-term and long-term levels, with short-term planting undertaken by the park and school groups and long-term planting through the tree program. First planting high visibility areas also may be more suitable for community involvement and volunteer groups. Less conspicuous areas may be good candidates for park action. Similarly, areas away from busy road traffic are safer and more suitable for school groups.

Community involvement is an excellent way to enhance and replant commemorative vegetation at the park. People plant trees as memorials or to commemorate other major life events. The park employs this strategy to gain support for planting and care for trees. While some public programs allow a person to adopt the stewardship of an existing tree, or to provide funds for the care of trees, the park does not add endowment costs to the basic cost of purchasing and planting a memorial tree. This is to make the memorial tree program more accessible and because the trees also serve park needs. Donors are obliged to abide by a pre-established commemorative tree policy that includes selection, location, and planting rules. In some cases, donors can select a tree species from an approved list, in others they will be informed of the need tree that they have donated. Pre-approved lists provided by NPS include a variety of species suitable for the region and general desired aesthetic. Planting locations are at park discretion and not negotiable with the donor. In accordance with NPS policy, individual markers are not placed on or near trees. Memorial trees are recorded on one of the park's GIS layers, for park purposes.

Beyond smart planning and financing, best practices are enacted in the actual planting and establishment of new trees at Valley Forge. Steps can be taken to ensure that trees thrive and the

desired effect is achieved. Trees should be selected from vigorous healthy nursery stock. If site conditions are less than ideal, soil amendments, grading, or drainage changes may be needed. Trees should planted appropriately provided with care for at least three growing seasons. Ideally, park trees are larger in size than woodland trees, with commemorative plantings at 1 1/2 to 3 inches in caliper. If planting bare-root gel-coated trees, the maximum size is about 1 1/2 inches caliper. Smaller trees are more susceptible to transport or planting damage are vulnerable to mowing loss, vandalism, and weed growth competition. Larger trees are more visible with the landscape, making them more recognizable to the public and maintenance crews.

Commemorative trees to be planted can be purchased as bare root, container grown, or ball and burlap. Each offers benefits and drawbacks for tree planting, particularly when planting with volunteers and groups. Each also requires slightly different planting techniques.

Bare roots trees are shipped from the nursery with bare roots dipped in gel to retain root moisture during transport. As no earth ball encloses the roots, gel-dipping must be specified when ordering bare root trees or significant tree loss will occur. Typically, bare root trees are less expensive to purchase and ship, but demand greater planting care. A 1-½ inch bareroot tree is about 10 feet high and weighs about 30 pounds, which can be easily moved and carried by volunteers or staff for simple planting operations. Because of the reduced weight, reduced shipping charges and damages occurs, as damage to nursery growing stock nearly always happens during digging and transporting the trees. Once bare root trees arrive on site, trees are completely open to view and damage to trunks, branches and root masses can be readily seen. When planted, bare root trees adjust immediately to the planting soil rather than forming a root barrier at the edge of the container or ball and burlap soil. Additionally, trees are available from selected growers at 1-inch to 1¾-inch caliper size for early spring planting with plants dormant before leaves break out.[56]

Container grown trees have been grown in fabric or plastic containers that enclose the root mass. These trees are typically transplanted from container to container as the tree grows. However, containers can cause circling and limiting root systems as trees are not often upgraded to larger containers when their root systems need more space to grow. Container grown trees are prevalent throughout the nursery industry, and are more likely to have confined root masses that fail to reach out into the surrounding soils.

Ball and burlap trees (also known as B&B) are typically grown in the ground. When the tree is ready for sale, the root ball is dug and wrapped in burlap. Typically, these trees are the heaviest with a substantial earth ball surrounding the roots that requires substantial effort to plant. Planting these types of trees is carried by an experienced landscape company for best results.

In summary, commemorative vegetation recommendations include:

- Enhance commemorative vegetation through intensive tree planting efforts
- Replant commemorative vegetation following the original planting pattern as possible
- Examine tree pits and early 20th century aerial photographs to determine locations and spacing of lost commemorative allées and clusters
- Map potential tree planting locations
- Record existing conditions of existing commemorative trees with notes for future removal and replanting
- Evaluate commemorative planting options, i.e. using park staff, contract labor or community volunteers, and select most appropriate approach

- Consider commemorative tree programs with community outreach programs to provide funds and interest for commemorative trees
- Evaluate benefits and drawbacks of bare root, container grown, or ball and burlap trees in commemorative planting efforts

K. TURF MANAGEMENT

Today, the Valley Forge landscape includes limited areas of mown turf, principally around high visitor traffic areas such as around the Visitor Center, commemorative allées, and important interpretive sites. Turf ground plane areas require a substantial amount of time and resources to maintain. Since the 1990s, Valley Forge NHP has drastically reduced the amount of mown turf on site to improve ecological services and to minimize resource expenditure.

Because the Valley Forge landscape boasts an array of natural, cultural, and historic resources, it is important to keep in mind several key issues with regard to turf management. One important component is the impact maintenance efforts and equipment can have on other historic and cultural resources, notably trees, structures, and small-scale objects. Overall maintenance efforts can be considerably improved with a few basic guidelines. Although the Valley Forge landscape requires relatively little mowing, care should be taken in mown turf and meadow sections because of the potential ripple that improper techniques cause. Maintenance crews should not mow immediately next to trees, fences, monuments, or other built elements of historical origin. Mowing tree roots that protrude from the ground plane should also be avoided. Riding mowers should not be used in tight areas with limited maneuverability. All mowers should be equipped with a rubber guard and a guard over the blade. This prevents small rocks, twigs, etc. from hitting nearby objects and visitors. Nylon string trimmers can be used for close trimming in areas adjacent to fences and stationary objects, but use around trees should be limited as they can strip bark. Large mulch circles around trees and gravel or paved maintenance strips around buildings can protect resources from mower damage. While mulch circles and maintenance strips are contemporary practices that do not conform to the historic landscape appearance and character, they are best management practices for protecting resources and will reduce maintenance staff time by expediting the use of riding mowers and limiting small-scale, close trimming.

The overall amount of landscape maintenance has been reduced through the establishment of no-mow fescue, mixed species turf, meadows, and healthy woodland areas. Mowing effort can be decreased by reducing the amount of traditional turf and converting it to no-mow fescue or a mixed species turf that requires limited mowing. Fescue looks similar to lawn, giving the ground plane a green appearance, but requires little mowing or chemical fertilizers. Nurseries offer mixes of these short-growing fine fescue grasses that reach about 6 inches in height. Establishing this low grass cover in specific areas may be a sustainable option to reduce maintenance.

Meadows of native grasses and wildflowers are another approach that reduced the amount of and current maintenance burden. Adding multiple herbaceous species within the existing lawn areas using a regional, native mixed turf seed mix create a rougher look, require more infrequent mowing, and decreases chemical and fertilizer use. Such species could include white clover (*Trifolium repens*), wild strawberry (*Fragaria vesca*), crabgrass (*Digitaria sanguinalis*), creeping charlie (*Glechoma hederacea*), nut grass (*Cyperus rotundus*), creeping phlox *(Phlox subulata)*, periwinkle *(Vinca minor)*, low-growing Veronica (*Veronica repens*), and sedums (*Sedum* varieties). Meadow establishment and

care can be moderate at the outset with efforts to suppress invasive and undesirable species. Once the meadow is established, care will be light with annual inspection and species control as needed with mowing or controlled burning once every two years to suppress woody species. Some areas may also be conducive to groundcover and meadow conversion, particularly in areas with dense tree canopy. Establishing groundcovers and meadows can help remedy several issues; first, it can improve the character of the ground plane in areas where other vegetation cannot grow or where it is difficult to maintain; second, it can provide cover to open, eroding slopes, and third, it can provide wildlife habitat.

Overall, ground plane vegetation recommendations include:

- Limit mown turf to decrease maintenance and chemicals
- Avoid mowing immediately adjacent to trees, tree roots, fences, monuments, or other built elements of historical origin
- Avoid using riding mowers in tight areas with limited maneuverability
- Equip all mowers with rubber guards and blade guards
- Use nylon weedwhackers for close trimming in areas adjacent to fences, and stationary features, but not close to trees trunks.
- Install mulch circles around trees and maintenance strips around buildings to protect resources from mower damage and reduce mowing time.
- Plant no-mow fescue turf around the Visitor Center and other high traffic areas
- Consider mixed species turf to reduce maintenance and bolster landscape character
- Consider meadow or groundcover conversion in open areas with dense tree canopy or woodland areas
- Consider woodland conversion where possible

L. SOIL MANAGEMENT & EROSION CONTROL

During any undertaking or project, management of soils is imperative to controlling soil quality and limiting negative impacts such as compaction from heavy machinery. Native soil is a combination of sand and gravel, clay, silt and organic matter. As such, it is important to remember that soil consists of both organic and inorganic materials, which are both living and non-living elements. In addition to the sand, gravel, and clay, living organisms such as bacteria, viruses, and earthworms are present in the soil and directly contribute to soil quality. As a living medium, soil is full of biological activities that benefit vegetative growth by breaking down nutrients and making them absorbable food for plants. Mistreating soil inhibits these natural, living processes and depletes the soil of nutrients. Similarly, manufactured soils lack the "living" quality of natural soil.

Because of these factors, soils play an important part within an ecosystem. Soils support vegetation, produce food and raw materials, regulate the water supply, treat and filter water pollutants, support nutrient cycling, sequester carbon, and provide biological habitats.[57] Healthy soils allow rainwater to infiltrate, reducing excess runoff, erosion, and flooding. Soils also cleanse and store rainwater, recharge groundwater, and moderate the delivery of water to plants. Healthy soils are critical to healthy vegetation and healthy soil organisms. In terms of nutrient cycling, soil and its associated microorganisms play a major role in converting atmospheric nitrogen into usable forms in the soil and returning nitrogen back to the atmosphere. Similarly, soils are important in the carbon cycle, containing as much or more carbon as the vegetation they support.

The importance of soil facilitates the need for management guidelines and strategies. Overall, soil health should be maintained or improved to sustain on-site and surrounding ecosystem services. Use of pollutants, chemicals, or soil amendments that can harm human and ecological health should be avoided. Whenever possible, non-toxic or least-toxic alternatives should be used.

According to the GMP, the soils at Valley Forge are "predominantly moderately well-drained silt loams derived from weathered limestone, schist, gneiss, and quartzite… Class I or II soils for agriculture with few to moderate limitations."[58] Generally, two main types of soils are found south and southwest of the Schuylkill River. The primary soil south of the river is Duffield silt loam with moderate to severe erosion hazards. The second most prominent soil types are Edgemont Channery loam and Edgemont very stony loam with limited development possibilities.[59] Other soils include Penn-Lansdale sandy loams, Lawrenceville silt loam, Birdsboro silt loam, Readington silt loam, Bowmansville silt loam. All have moderate to slow permeability with limited to severe erosion hazards.[60]

These findings are similar to those found for soil tests during construction at Washington's Headquarters. Soil tested consisted of a red color with more silt than clay, and red rocky shale not far from surface. Tests confirmed that overall the soil had a small particle size that was susceptible to compaction with machine use, and had related slow percolation rates, near 1-2 inches per hour. Due to these characteristics, this type of soil is also especially prone to run-off-and erosion issues.

Prior to any construction, healthy soils should be identified and avoided, if possible, and a soils protection plan and specifications should be developed. Construction staging and other disturbance zones should be limited to areas where soil was previously disturbed. Contractors should be informed of staging, scheduling, special soil conditions, and equipment restrictions for soil quality. Particularly for Valley Forge, projects may require special machinery, with specified maximum sizes and weights to limit soil disturbance and compaction. Pneumatic tires or wide-track, light-weight machinery can be specified for construction projects to limit soil compaction.

Where disturbance is unavoidable during construction, a goal should be to create a net zero waste site, in which soil cut and fill quantities are balanced and soil is reused on-site. Imported soil should be used only when on-site soils are exhausted. Soils should be protected to minimize damage. Disturbance on soils beneath tree canopy may be restricted to preserve areas with vegetation and limit soil compaction. Reducing the unnecessary removal or disturbance of existing vegetation helps to protect soils. It is important not to work on wet soils with heavy equipment to maintain pore space.

When excavation is required for a project, topsoil and subsoil should be separated during the excavation process. The principal difference between topsoil and subsoil is the percent of organic matter, although subsoils may contain different percentages of the mineral soil components—sand and gravel, clay, and silt. With the scarcity of native soils and the impacts on other landscapes of soil stripping for construction projects, specifications can be developed for testing excavated and on-site soil stockpiles and amending these soils for reuse at the construction site. This is a sustainable construction practice that reduces transportation costs and not requiring the degradation of another site to remove the topsoil.

Excavated soils can be effectively reused on site with appropriate amendments. Often an increase in sand and small gravel can aid in soil percolation and enhance aerobic conditions. Compost is generally added to enhance availability of plant nutrients. While general garden care guidance touts the annual addition of compost to soils, recent studies indicate that composted material in excess of 20% by volume of soil reduces plant growth rates. It is thought that this is due to the decomposition process that is continuing to a degree to breakdown the humic material in the compost and that process robs nutrients from the plants. Therefore, the percentage of compost should be balanced with percentages of other inorganic materials, with a target of 15% humic materials by volume. Compost and other humic matter can be obtained onsite from landscape and lawn trimmings. The key elements to successful reuse of on-site soil are careful construction practices, controlled stockpiling, thorough testing for all soil factors, addition of appropriate amendments, thorough mixing and proper placement of subgrade soil fills and finely graded surface topsoil. Similar techniques can be used to improve the health of degraded soils through testing, amending, and deep tilling to increase soil fertility.

After construction, a soils management plan can outline sustainable courses of action for future maintenance needs. Soils can be maintained with a vegetated surface and exclusion of disturbing activities. Overall, the aerobic conditions and soil will be enhanced by addition of organic matter, aeration, and healthy vegetative covers.

In summary, soil management recommendations include:

- Protect native soils and the organic and inorganic materials therein
- Maintain or improve soil health to sustain on-site and surrounding ecosystem services
- Avoid pollutants, chemicals, or soil amendments that harm human and ecological health
- Use non-toxic or least-toxic alternatives whenever possible
- Avoid healthy soils during construction, if possible
- Develop and implement a soils protection plan and specifications for construction projects
- Use areas of previously disturbed soil for construction staging and other disturbance zones
- Specify wide track light-weight machinery for construction projects to limit soil compaction
- Create a net zero waste site, where soil cut and fill quantities are balanced
- Separate topsoil and subsoil during excavation
- Avoid working on wet soils with heavy equipment, which causes over-compaction
- Test soils and amend as needed with sand and organic material
- Reuse soils on-site, limiting imported soil

M. STORMWATER MANAGEMENT

While much of the topography of Valley Forge NHP remains form earlier times, previous drainage practices in a few developed areas had an impact on the park's topography and waterways. In specific areas particularly along roads, historical practices collected the stormwater in catch basins, and piped it to outfalls, where the water flowed over the ground, scouring, collecting sediment, and contributing to erosion, before reaching the designated waterway and heading downstream. Increasing square footages of impervious paving and surfaces from drives, parking lots, and buildings increased stormwater run-off at Valley Forge. More seriously, impervious surfaces in the areas surrounding the park has increased exponentially, with substantial development roads, residential subdivisions, and commercial office parks. Stormwater falling on these large impervious surfaces

collects sediment and pollutants, eventually finding an outfall into Valley Creek, Trout Run, and ultimately the Schuylkill River. Spring thaw and flashy storm flows into the park from the surrounding developed areas can be very high and damaging to the banks of the VAFO NHP creeks, runs, and rivers.

Stormwater run-off at Valley Forge is managed to limit and direct overland flows and promote infiltration into the ground. Doing so help to retain the topography of the cultural landscape and enhance the environmental quality of the park, its waterways, and adjacent river. In general, there are a number of ways to manage stormwater on-site. Simple measures can be carried out, such as protecting soils and vegetation to optimize water absorption, retention, and infiltration to minimize runoff; using grading to capture and slow runoff; and collecting, filtering, and reusing rainwater runoff from all surfaces.[61] Wherever possible, landscape-based water treatment methods are used, instead of traditional curb and gutter systems. Additionally, multiple water uses should be achieved simultaneously, such as designing infiltration basins that are attractive and provide habitat.

In accordance with Pennsylvania law and compliant with the federal Clean Water Act, stormwater best management practices (BMP) must be used. A number of options are available, including:

- Biologically Enhanced Practices
- Filtration Practices
- Infiltration Practices
- Sedimentation Practices
- Source Reduction

Biologically enhanced practices use "vegetation or biological (e.g., microbial) processes in addition to infiltration, filtration, and/or sedimentation to reduce peak flow, runoff volume, or pollutant concentrations of stormwater runoff."[62] Examples of such practices include bioretention basins or rain gardens, wetlands, filter strips, and vegetated swales. Routine visual inspection and monitoring is needed for these methods to ensure the practice is functional. If not functional, repair or replacement must occur before any other assessment is warranted.

Filtration practices use the process of physical sieving to remove solid pollutants from stormwater runoff. This is typically done by allowing the stormwater to pass through a bed of porous media such as soil, sand or gravel. In filtration, the sands and gravels filter and remove the solids from the water, and the filter media retains the particles as the cleansed water is discharged. With this practice, visual inspection, monitoring, capacity testing, and synthetic runoff testing are needed to assess the functionality of filtration methods.[63]

The third type of stormwater BMP, infiltration, reduces stormwater runoff and retains stormwater pollutants by infiltrating the stormwater into the soil.[64] Infiltration trenches, infiltration basins, and porous pavements are types of commonly used infiltration practices. It is recommended that infiltration methods be observed through visual inspection, monitoring, capacity testing, and synthetic runoff testing. Capacity testing is especially critical to determine if the infiltration practice requires repair or replacement.

Another sustainable practice reduces runoff peak flow by temporarily storing runoff in a basin or constructed vessel while allowing solid pollutants to settle out and be retained. These sedimentation practices may include constructing dry ponds, wet ponds, wet vaults, and proprietary devices. Akin

to other BMPs, assessment methods for sedimentation practices include visual inspection, capacity testing, synthetic runoff testing, and monitoring for maintenance or repair.

Perhaps the easiest and least costly stormwater BMP to implement is source pollution reduction. This stormwater management tool reduces pollution before it enters the system. Such strategies to reduce source pollutants include reducing lawn fertilizers and corrosion inhibitors, reducing dog excretion, controlling erosion, reducing road salt and sand, monitoring construction sites and regular street sweeping. Assessing source reduction techniques rely on empirical evidence. Source reduction can be used throughout the park at Valley Forge by changing landscape management strategies.

A combination of these sustainable stormwater practices can be used in selected areas. Areas adjacent to surface parking are especially prone high stormwater run-off volumes during storm events. Careful consideration should be given to the stormwater capture and paving materials for new and existing parking lots. New construction offers the opportunity to implement many of these stormwater BMPs. Installing sunken rain gardens and vegetated swales adjacent to parking areas and in medians can collect overland flows. Similarly, infiltration basins and certain sedimentation practices can allow the sediment and pollutants to settle out and stormwater to infiltrate into the ground. Rehabilitation of Washington's Headquarters, for example, removed excessive amounts of impervious surface, managed overland flow, and captured surface runoff for in swales for infiltration. The structure and cross-section of parking areas should also be considered to allow for filtration and infiltration. One option is to use a concrete grid filled with gravel to provide structure to the ground surface for vehicular movements and allow water infiltration. Parking lots can be designed with gravel coursing, without fines, for infiltration. In this alternative, a base of sharp crushed would be followed by courses of smaller, sharp gravel. A light topdress of soil on top could support herbaceous vegetation to grow, partially concealing the gravel below, but allowing for filtration. A third, more costly option, is to install subsurface infiltration chambers filled with gravel under the parking areas. This option requires the use of asphalt or concrete paving, which is graded to drain into a an open swale that leads to the infiltration chambers below.

In summary stormwater drainage best practices recommendations include:

- Foster stormwater infiltration, limiting overland stormwater flows to protect topography
- Treat rainwater and greywater on-site prior to discharge
- Protecting soils and vegetation to optimize water absorption, retention, and infiltration to minimize runoff
- Using landscape-based water treatment methods, such as grading and planting, to capture and slow runoff
- Avoid traditional curb and gutter systems with subsurface drainage wherever possible
- Evaluate and select appropriate stormwater best management practices: biologically enhancement, filtration, infiltration, sedimentation, and source reduction
- Consider a combination of stormwater best management practices that work together

N. CIRCULATION SYSTEM MANAGEMENT

Today, Valley Forge NHP is an amalgam of multiple historical layers, including commemorative history dating to the late 19th century and early 20th century. Circulation features were one of many commemorative features constructed at the park to beautify the grounds and provide visitor access to

the interior of the park. Later, mid-20th century circulation features, namely parking lots, were added for the encampment bicentennial. The circulation system at Valley Forge is composed of these various elements.

Circulation features dating to the late 19th and early 20th century commemorative era, including tour routes such as Outer Line Drive and Inner Line Drive, require retention, repair, and preservation. These features should be retained, kept functional and operable while preserving their alignment, width, and historic materials, such as paving, curbs, gutters, and related grading. Other commemorative circulation features such as pedestrian paths should also be retained.

Some portions of paving along commemorative routes could benefit from repair and repaving in the near term. Other portions of drives exhibit multiple layers of asphalt, which has substantially raised historic road elevations and obscured remaining historic features, such as cobblestone gutters. For example, Inner Line Drive retains its original cobble gutters, but portions of the gutters are paved in asphalt, degrading the legibility of these features. Most of the gutter was exposed in a 2008 restoration project, and has helped facilitate drainage and stormwater management issues. These commemorative elements should continue to be maintained.

Six acres of little-used parking lots were removed and the historic contours restored during the 2000 decade, with more targeted for removal. Most existing circulation routes are functional and needed for access. Only the spur road is targeted for removal. Additional areas may be restored to enhance the open landscape of Valley Forge, reduce stormwater run-off, and reduce maintenance. Similarly, it is not anticipated that any new circulation features will be developed for the park, but if in the future additional circulation systems are needed, they should embody the character of the late 19th century commemorative circulation elements. Alignments of historic tour routes and paths show responsiveness to topography, usually following the curvilinear contours of the landscape.

If new parking lots are needed in selected interpretive areas, the design of new lots should respond to the site topography. Parking lots should be planned and adjusted to make them visually subordinate and located away from buildings to minimize impacts to views and key features. No surface parking should be placed within primary views of any historic structure. Attempts should also be made to locate new circulation features within the topography to minimize visual impacts of these additions to the landscape. Sustainable design and best management practices should also be used in the design of new or altered parking lots. Infiltration swales can be used to break up the visual dominance of paving and provide space for vegetation to be planted. In creating or altering any parking lots at Valley Forge, consideration should be given to the paving materials and adjacencies of the lots, particularly with respect to drainage issues.

Lost aspects of circulation features, such as former roads and drives, can be incorporated into the pedestrian circulation system. For example, a number of 18th century roads exist within the park, such as the Baptist Trace Road, are used to enhance the pedestrian trail systems and connections. While some of these remnants have been fragmented, segments can be used and connected with the mown path system.

In summary, treatment recommendations for circulation systems include:

- Retain, repair, and preserve commemorative circulation features dating to the late 19th and early 20th century era
- Maintain original cobble gutters along commemorative circulation routes

- Remove areas of excess pavement, drives, or parking areas if not needed
- Develop any new circulation features for the park using the character of historic circulation elements, such as alignment, width, and material, whenever possible
- Locate parking lots away from historic buildings or near secondary building elevations to minimize impacts to views and key features
- Keep parking lots visually subordinate, not in primary views
- Locate new circulation features within the topography to minimize visual impacts
- Use sustainable design and best management practices for new circulation features
- Incorporate former roads and drives into the pedestrian trail system

O. TRAIL DEVELOPMENT & MANAGEMENT

Trails and paths at Valley Forge are used by pedestrians walking, strolling, jogging, and biking. Unpaved paths in forested areas provide classic woodland experiences. Mown paths are great for limited use, being mown through meadow areas to provide access to sites. The alignment of such paths can vary depending on the level of visitor use and impact and desired visitor experience. In contrast, paved paths, such as asphalt and gravel, provide a permanent hard surface for more intensive recreational use. Paved paths also provide service access for landscape maintenance, through lightweight golf carts with pneumatic tires.

While current paths at the park are sufficient for current needs, guidelines for future paths can be outlined. With recreational and occasional service purposes, paths are proposed for a 54 to 60-inch width, which is sufficient for single file passing. This path width is also good for relatively low impact construction. Using small machinery and extreme care, paths can be constructed with a few stockpiling locations for excavated soil and gravel fill materials. Overall, construction with limited adjacent impact is desired.

To begin path construction, the path layout should be field staked using highly visible, offset stakes located outside of the construction zone that can remain in place. The path base should be excavated into the soil about 6 to 8 inches in depth and filled with a based course of 4-inch compacted gravel, using a small backhoe with a 48-inch bucket. This machine can work within the proposed path width, excavating the base, placing gravel fill, and then driving on the base course to cut the next portion.

Path surface materials can vary from gravel to asphalt to concrete. Gravel and bound aggregate paths are generally less costly to construct and are often in keeping with the historic character of the property. Gravel materials can be quarried locally, thus matching the site aesthetic and reducing transportation costs. Comparatively, asphalt and concrete paths are more expensive to build, each requiring specialized machinery. Both are also fossil fuel intensive, which affects site sustainability. However, as technology progresses, newer and greener alternatives for concrete and asphalt are becoming more readily available and may be beneficial to use.

For gravel-surfaced paths, a 4-inch layer of decomposed granite or crushed 3/8” or 1/4" aggregate with StaLok® Paving Material should be placed on the base gravel material. StaLok is a patented, non-toxic, colorless and odorless organic binder that comes in concentrated powder form that binds stone dust and fines to form a durable low maintenance path. StaLok for aggregate path surfacing

can be obtained from Stabilizer Solutions, Inc. in Phoenix, Arizona (www.stabilizersolutions.com). Mixing of the patented binder with the gravel is a specified technique that can be carried out at the gravel supply location and brought to the site. Once at the site, the approved aggregate and StaLok mixture is placed on the compacted gravel subgrade, raked smooth, wet down, allowed to stand and compacted to provide the desired 4 to 5 inch depth. This gravel bound path hardens as it dries and resists erosion.

Where path gradients exceed 5 percent and where paths intersect, water bars can be placed at 15-foot intervals to shunt surface water flows to the side of the path. Doing so takes water flows off path surfaces at regular intervals to limit path erosion. Water bars can be constructed of cobblestone, "V" or "U" shaped formed steel, or other durable materials. They should be placed at an angle with one end farther downhill creating a break in the path that catches moving water and shunts it to the side.

In summary, trail development guidelines include:

- Consider locally available path materials and type of expected use prior to path construction
- Consider carbon footprint of concrete, asphalt, gravel, and StaLok for path construction
- Use low impact construction for new paths, not to exceed 54 to 60-inch widths
- Construct paths with 4 to 6 inch compacted gravel base course, using a small backhoe with a 48-inch bucket
- Use water bars on paths that exceed 5% gradient

P. HISTORIC FIELDSTONE WALLS

Historic fieldstone walls at Valley Forge should be identified, mapped, assessed for historic significance, stabilized, retained, and repaired. At Valley Forge, fieldstone walls are typically dry-laid masonry alignments that have no mortar binding the stones together. These are often demarcations of historic fields. Treatment of these walls often presents opportunities for enhancing historic character and landscape interpretation. Historical research techniques and visual analysis, can contribute to the planning process that decides the appropriate maintenance of historic fieldstone walls. In general, walls should be preserved in situ and either reconsolidated where fallen apart or planted as a hedgerow. With either approach, a process of stabilization and removal of invasive plants is beneficial to improve the appearance of the feature and promote habitat health. Planting of native trees as hedgerows along fieldstone walls highlights the historic location with the landscape and aids in the management of invasive plants by the provision of shade. Once stabilized and consolidated or planted as a hedgerow, walls may be inspected and periodically repaired as needed.

In summary, management of historic fieldstone walls include:

- Identify, map, and plan for management of walls
- Select a process for stabilization of material and removal of invasive plants
- Decide on a strategy of consolidation or planting as a hedgerow based in prior planning
- Replace stone to match the original in size, color and texture

Q. PARK BENCHES & LIGHTING

Park furnishings can provide both continuity and needed functions within this large landscape of Valley Forge NHP. A new bench, patterned on a typical historic public park bench, was detailed and specified for the Comfort Station area of George Washington's Headquarters. A prototype of the proposed bench is seen in figure VII.1 and an elevation drawing is provided in Figure VII.2. The bench is functional, attractive and relatively cost effective to fabricate. It is also fairly lightweight so that it can be moved easily with two people and it can be secured in place along the base metal straps. This bench combines metal strap and wood or Trex, durable lumber made from recycled materials, for the bench seat and back slats. In the Pittsburgh Parks, they have found that the oak slats required annual or bi-annual sanding and varnishing, while the Trex material needs surface washing. Trex indicates on its website that the product is environmentally friendly, pointing out that, "All the ingredients we use are being reused and the process to make them is also environmentally responsible. Trex is made from reclaimed plastic and wood - materials that would otherwise go unused in landfills." Trex carries the LEED Green Building Rating System™ materials trademark and is a relatively durable material that is easy to clean. The metal frame is strong and durable. In fact, there are examples of metal strap frames from benches one century old that remain serviceable. Using slats for seat and back allows for easy repair, with easy slat replacement.

There is some lighting along the public roads that pass through the park and at intersections. The approach to the Valley Forge NHP landscape is to limit lighting to areas of higher use or where nighttime visibility is required for visitor safety. A good practice is to adhere to Dark Sky principles and shield lights focusing illumination downward. A related issue is the archeological sensitivity of the entire park; in areas where disturbance has been limited or prior archeological studies have not been carried out. Trenching and related excavation to install utilities is ground disturbance, requiring archeological review and possibly ground excavation for site clearance. One approach that can be applied is the use of solar lighting in parking lots, at entry points and along paths that receive night use. Solar lighting technology continues to improve, affording wider options in pole types, heights, and finishes and solar array styles and sizes, etc. Application of renewable energy to lighting needs is a sustainable practice, and solar lights require spot excavation at the pole location, not trenching to feed electrical supply. The application of solar powered lighting could be tested at Valley Forge NHP as a contemporary best practice with limitation of ground disturbance as an added benefit. In areas already disturbed or that require higher light levels than solar fixture can provide research the most energy efficient lighten that will meet the target lighting levels. LED technology continues to improve and may offer useful options.

This guidance on a standard park bench and selection of site lighting fixtures can establish standards for furnishings, while limiting maintenance of park furnishings and supporting sustainable practices.

In summary, recommendations for park benches and lighting include:

- Affirm the selection of the standard bench proposed or choose another standard
- Select and test a solar light fixture to determine function and application
- If higher light levels are needed, select an energy efficient fixture that meets the target levels needed.

CHAPTER VII: ENDNOTES

[1] Sustainable planning for Valley Forge NHP can be informed by the Sustainable Sites Initiative (SSI). SSI is a detailed and comprehensive structure addressing the full spectrum of site-related sustainable issues. SSI is a partnership of the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center, and the United States Botanic Garden in conjunction with a diverse group of stakeholder organizations. This initiative promotes sustainable land development and management practices for a wide range of sites, including open spaces such as local, state and national parks. SSI provides tools for those who influence land development and management practices and can address increasingly urgent global concerns such as climate change, loss of biodiversity, and resource depletion. Technical Subcommittees within the initiative are developing and putting forth sustainable benchmarks for soils, hydrology, vegetation, human health and well-being and materials selection. The *Guidelines and Performance Benchmarks*, released in 2009, provides a set of prerequisites and credits combining current research, technology, best practices, and performance goals for the design, construction and maintenance of sustainable sites. A series of pilot projects were selected in June 2010 and are testing various aspects of the SITES rating system applied to a cross-section of project types, sizes and geographic locations. An updated *Guidelines and Performance Benchmarks*, incorporating feedback from the pilot projects, is scheduled for release in 2013, when the rating system will be open to project enrollment. For Valley Forge NHP, the prerequisites and point rating system may provide a useful sustainability checklist that may apply to interventions and ongoing management of the landscape. In addition to major renewal efforts, an overall goal of sustainability also affects how to assess and plan for effective daily maintenance including staffing. See: http://www.sustainablesites.org/about/.

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Figure VII.1. A prototype of the proposed Valley Forge bench is seen in this photograph. The design uses a late 19th century/early 20th century park bench, and modifies to make durable details and add arm rests. The painted of powder-coated iron strap framework has oak slats attached. An alternative is Trex slats made of recycled materials. (R-Park-Bench-Architectural-Iron-800-442-4766-edit.jpg)

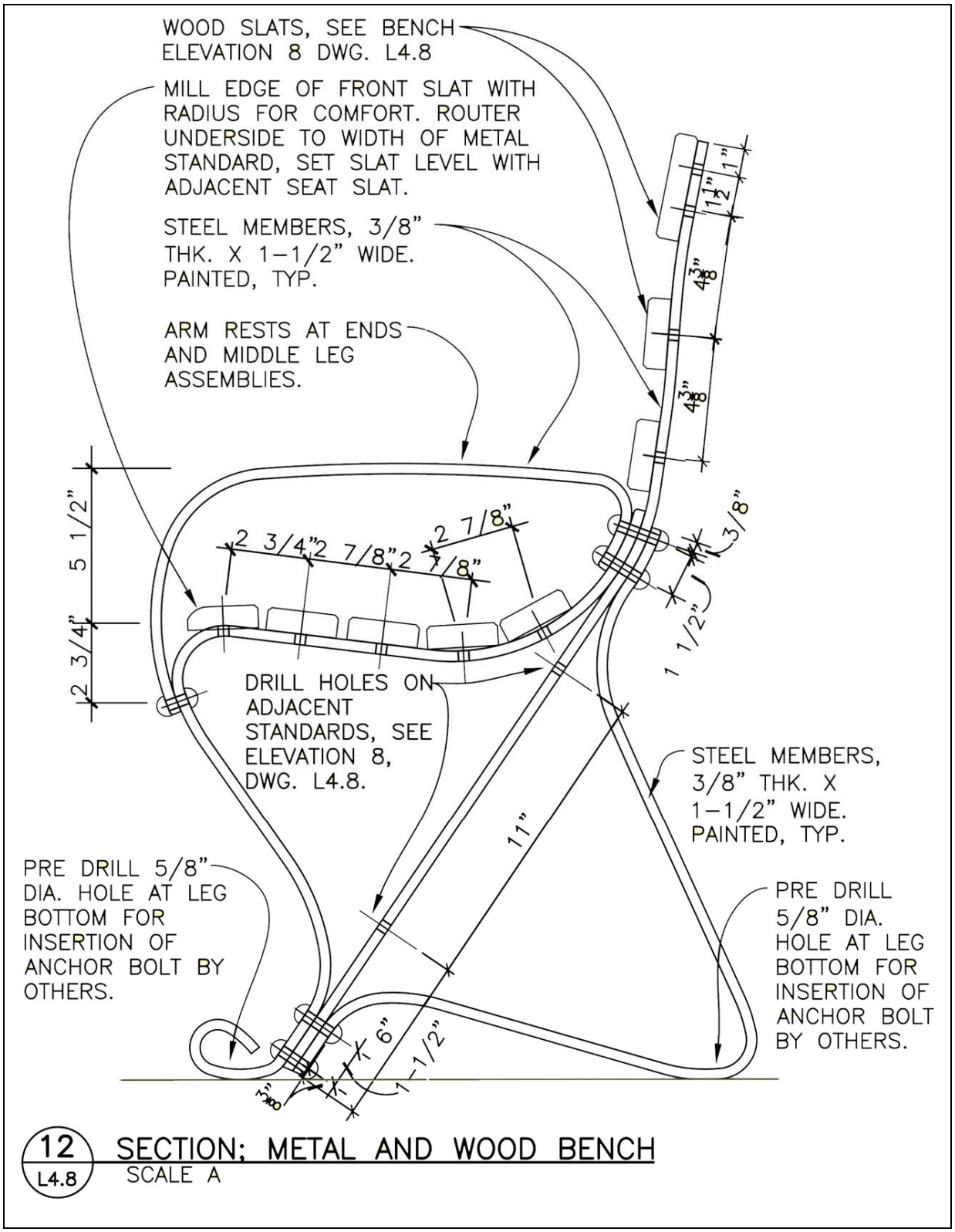

Figure VII.2. This section detail from the fabrication drawing for the metal strap iron and wood or Trek slat bench depicts the profile and fastening details for this bench. (R-PPC-Bench Section-BW.jpg)