
CULTURAL LANDSCAPE REPORT

FOR

FEDERAL LEFT FLANK AND FISH HOOK SIEGEWORKS

PETERSBURG NATIONAL BATTLEFIELD

SITE HISTORY, EXISTING CONDITIONS, ANALYSIS
& TREATMENT RECOMMENDATIONS

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INTRODUCTION

The purpose of this report

The need for the following cultural landscape report (CLR) was anticipated by the National Park Service's Petersburg National Battlefield, Denver Service Center (DSC) and Philadelphia Support Office (PSO) to serve as the basis for the preplanning effort directed at the anticipated line-item construction project "*Preserve Earthen Forts*," (PETE 163-06). In 1998, the park had successfully competed for line-item funding for earthworks preservation based on the incidence of rapidly deteriorating Civil War era earthen fortifications within its boundaries. Agency approval of the earthwork preservation project was based on the park's experience with localized weather events causing many of the mature trees rooted in earthen parapets to topple in the wind, in the process disturbing tons of soil comprising the cultural resource.

Yet the intent of the preservation project to remove most of the mature forest trees, ran counter to consultant's reports holding that earthworks are generally most stable under a forest canopy. Further, the local park's preference to revegetate the cleared earthworks with common turfgrasses contradicted a movement within the agency towards an expanded use of native plants. The following report was thus conceived amidst such intra-agency debate, out of the hope that additional study might help resolve some of the heretofore intractable issues surrounding the management of these unique and valuable resources.

Study area

The focus of this report are seven earthen fortifications and their connecting trenches and breastworks, situated southwest of Petersburg in Dinwiddie County, Virginia. These fortifications, in aggregate, comprise approximately ten acres, consisting of the lands in this area that the NPS has managed to acquire and retain under its stewardship. These outlying fortification are only a small portion of the once vast system of Union fortifications ringing the small city in early April of 1865. These earthen structures are, moving across the study area from east to west; Fort Urmston, Fort Conahey, Fort Wheaton, Fort Fisher, Battery 27, Fort Welch and Fort Gregg(U.S.). Though not an historical name, park maintenance crews have given this area its nickname 'The Fishhook' which has persisted. The success of this moniker is owed to the shape that these parcels present in plant view (Figure 1.1). Hereafter, this report will refer to this area and its resources as the 'Federal Left Flank and Fish Hook Siegeworks.' The 'Left Flank' sub-set of the study area comprised of Fort(s) Urmston, Conahey, Wheaton and Fisher. The 'Fish Hook' portion comprised of Battery 27, Fort Welch and Gregg. This report concludes with recommendations that are intended to be site-specific to this particular place, its physical and administrative circumstances, and should not be made to serve elsewhere.

Scope of work and methodology

The original project agreement for this cultural landscape report states the following with regard to scope:

"...protect and preserve selected Civil War earthen forts and breastworks related to the Siege of Petersburg. This will be accomplished by completing a thorough survey of the project earthworks, identifying the major threats to the resource, developing a preferred alternative for a long-term management of the earthworks system, developing a treatment plan that outlines an approach to vegetation management and visitor access and implementing the treatment plan to ensure long-term resource preservation."

National Park Service policies regard the cultural landscape report (CLR) as the primary guide to the treatment and use of a cultural landscape. Based on the historic contexts provided through other historic studies, the CLR normally documents and evaluates the character-defining features, materials, and qualities that make a landscape eligible for the National Register of Historic Places. It analyzes the landscape's development and evolution, modifications, materials, construction techniques, geographical context, and use in all periods, including those deemed insignificant. Typically interdisciplinary in character, it includes documentation, analysis, and evaluation of the historical, architectural, archeological, ethnographic, horticultural, landscape architectural, engineering and ecological data as appropriate. It makes recommendations for treatment consistent with the landscape's significance, condition, and planned use.

In June 1998, The Olmsted Center for Landscape Preservation entered into a cooperative agreement with the University of Virginia - Department of Landscape Architecture, to conduct the research and writing of the CLR for this admittedly obscure landscape. This collaboration has produced a report which includes; an expanded historical narrative, a survey of existing conditions, assessment of surviving details and character-defining features, a review and evaluation of historical significance, landscape treatment recommendations, and schematic designs for visitor circulation and site amenities intended to enhance visitation and historical interpretation.

The historical narrative reaches beyond the immediate and fragmentary study area, encompassing the greater cultural landscape of Petersburg. This narrative overview presents the regional geography and physical development of the area dating from pre-history through Civil War-era military occupations, to the area's political and physical reconstruction. The post-war discussion takes in the resurgence of agriculture and commerce, Czechoslovakian immigration and settlement, and finally, the politics of park creation and development.

This report's inventory of existing conditions makes significant use of the work accomplished by the NPS Cultural Resources - Geographic Information Systems program operated out of Washington, D.C. Like the following CLR, the work of the CR-GIS project team was funded as a pre-planning effort serving the anticipated earthwork preservation project at Petersburg. Entitled '*Assessment of the Principal Earthworks, Federal Fish Hook Line, Petersburg, Virginia,*' (Lowe, et al), this report provided a survey and assessment of existing conditions, including knowledgeable and valuable technical observations of

surviving earthwork details which have been incorporated in this CLR and supplemented with additional narrative and observations.

In assessing the historical significance of the surviving Federal Left Flank and Fish Hook Siegeworks, the following report reviews the subject resources with respect to their capacity to meet the criteria of the National Register of Historic Places program. The project clearly states the intrinsic value of this site-reflecting its strong association with significant military actions, events and individuals and its ability to yield information relevant to the history of the American Civil War. In addition, the report also make available to the reader the findings of the Civil War Advisory Commission's Report entitled, "*Report on the Nation's Civil War Battlefields*" (1993) re-stating the case that the study area of this report overlaps with two significant battlefields, owing to the decisive influence of events that took place on this site to the outcome of the Appomattox Campaign and the greater war.

In developing treatment recommendations, team members were mindful to address the concerns of park management as well as agency policy, ultimately attempting to satisfy site-specific needs as well as to conform to a broad national vision regarding the stewardship of cultural landscapes. In this, the CLR project team was assisted by early participation in a planning effort making use of the '*Choosing by Advantages*' process employed by the agency for important decisions. This exercise, conducted on 11 June 1998 in the Philadelphia Support Office, included park and regional resource management and interpretive staff members. The product of this meeting was an evaluative matrix of various treatments for the seven major earthworks of this study. The matrix considered four alternatives: no action, removal of trees > 12" dbh, removal of all trees and revegetate with tall grass, and finally, management of individual hazardous trees. The relative value of these four alternatives were rated at each earthwork site for their utility in: preservation, interpretive value, visitor safety, access, sustainability, and effect on other resources. The results found that for the largest and most accessible sites, Fort(s) Urmston, Conahey and Fisher, removal of all trees and revegetation with tall grasses offered the agency the greatest advantages. The exercise also found greater value in managing individual hazardous trees at the remaining four remote sites; Fort(s) Wheaton, Welch, Gregg and Battery 27. These findings were subsequently presented to the Director's Advisory Board (DAB) at its 2 December 1998 meeting in Alexandria, Virginia. The DAB approved the clearing of three earthen forts and the hazard tree management of the remaining four, subject to review of the proposed seed mix specifications developed during the CLR process.

Thus, with direction toward the open vs. forested condition of the earthwork sites decided at a high level within the agency, this aspect of landscape treatment was not revisited within the preparation of the CLR landscape treatments. Rather, the treatment recommendations of this report focus on the selection of appropriate seed mixes for stabilizing earthwork soils, procedures for revegetation and hazard-tree management and finally the development of appropriate and sensitive visitor circulation patterns for all seven of the subject fortifications.

Landscape management abstract

Originally intended to serve only as temporary defenses in 1864, the earthwork fortifications surrounding Petersburg have endured for over one hundred and thirty six years. Following the war, the works were abandoned and woodland succession took place. Currently, these surviving forts and breastworks are hidden under mature forest cover. They remain the primary cultural resource in the

western range of Petersburg National Battlefield and are the focus of the park's resource management and interpretive programs.

Preservation of the surviving Civil War earthen fortifications of 1864-1865 was established as a primary objective of Petersburg National Military Park with the passage of its enabling legislation:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in order to commemorate the campaign and siege and defense of Petersburg, Virginia, in 1864 and 1865 and to preserve for historical purposes the breastworks, earthworks, walls and other defenses or shelters used by the armies therein the battle fields at Petersburg, in the State of Virginia, are hereby declared a national military park..."¹²

Petersburg National Military Park was established in 1926 following decades of unsuccessful local initiatives to create a battlefield park. Between 1929 and 1931, private lands containing earthworks southwest of Petersburg were conveyed to the fledgling park administered by the War Department. In 1933, management and administration of the park was transferred to the National Park Service. From that point until the United States' entry into WWII, the Civilian Conservation Corps engaged in maintenance and conservation efforts at the park which included the clearing of brush from the earthworks for greater visibility, and in planting vegetation to prevent soil erosion. At Petersburg and at other military parks and cemeteries within the park system, non-native species were employed as an exception to the agencies default preference for native plants. Little else was planned or undertaken in the way of memorialization, monumentation or other visitor facilities for the out-of-the-way Left Flank and Fish Hook sites.

During this time, an auto driving tour was designed to lead park visitors out of the main park unit, along the interconnected line of fortifications to interpret the breadth of the struggle that took place here. This tour was made possible by the National Park Service's sponsorship of 'Flank Road' behind the Union lines, and 'Defense Road' behind the Confederate lines. Construction of this road system began during the 1930's, continued sporadically through WWII, and was completed in 1963 with the construction of the Flank Road segment immediately to the south of Fort(s) Urmston, Conahey and Fisher. The completion of this road system, serving as the culmination of a thirty-year planning effort, was overlooked as park management began exploring a means to divest itself of these outlying properties the following year. In spite of the park's 1926 legislation and valid internal agency arguments against the divestiture, the National Park Service had lost confidence in its ability to manage these isolated parcels, and became concerned that the park's scarce financial resources were better directed to properties with higher visitor counts.

By 1973, most of the earthwork sites outside of the main park unit were transferred to the City of Petersburg. Earthworks situated within the boundaries of neighboring Dinwiddie County were retained by the National Park Service, largely due to that municipalities' unwillingness to commit to their preservation. These earthworks are the subject matter of this report.

The following year, Petersburg National Battlefield hosted a National Earthworks Preservation Conference. The consensus of this 1974 conference was that grass, generically, was the vegetation best suited to stabilizing the earthworks and preventing soil erosion. Yet it was a consensus without consequence, as the park's Dinwiddie County sites remained in deteriorating condition, and were generally forgotten within a second-growth woodland. In the random areas where trees were purposely

removed from the earthworks, no substitute vegetation, grass or otherwise, was installed. The historic landforms were exposed to the forces of erosion without the mitigating effects of a plant cover of any sort.

Following the renewed ecological sensitivity of the 1970's, a consultant's report entitled "*Vegetative Threats to Historic Sites and Structures*," was prepared in 1983 and submitted to the NPS, National Capital Region. This document, directed at the Union earthen forts surrounding Washington, D.C., was the first to promote the use of native grasses for vegetating Civil War earthworks. Six years later, another outside consultant, Andropogon Associates, would argue both in favor of tall native grasses and native herbaceous vegetation, as well as leaving earthworks protected in a forested condition. The resource management staff at Petersburg National Battlefield responded to the Andropogon Associates report by conducting various field trials of its recommendations. Recognizing that these early trials were generally qualitative, the trials were made in good-faith by the park in the hope that they would offer a practical tool for protecting these threatened resources. Unfortunately, field experience with implementing the recommendations for native grasses at Petersburg National Battlefield was discouraging. The field trials yielded inconsistent results and incurred costs in the multiples of more conventional and reliable treatments.

Drawing upon their proven track record in preserving the earthworks within the main park unit, the park management and staff at the Petersburg National Battlefield have not supported the recommendations of the Andropogon report for two basic reasons. First, related to the efficacy of tree cover in earthwork preservation, the consultant's recommendation were to leave forested earthworks - forested, making general claims that forest cover offers superior protection for the historic landforms. Yet these recommendations could not be reconciled with Petersburg NB's years of field experience, nor with its interpretive objectives. The second factor leading to the park's rejection of the consultant's recommendations was centered on the claim that the establishment of native grasses and forbs leads to a low-cost and sustainable stewardship of the landforms. The results of park field trials employing native-plants also ran contrary to that assertion, leading park resource managers to discontinue further experimentation with the park's fragile cultural resources.

Findings

The management of the properties which are the focus of this report have long been challenging to the agency. These parcels are a fragment of a larger battlefield, as well as of a larger system of earthworks employed by General Grant to besiege and subdue Confederate forces in this area. The story of these fortifications and the surrounding battles is fundamental to an understanding of the historical events that transpired in 1864-1865, yet using these isolated NPS-owned tracts to convey that understanding remains difficult. This report was initiated and makes its final conclusions with confidence in the knowledge and skills of the staff at Petersburg National Battlefield. The findings of this report support the park's increased efforts directed at these long-neglected and undervalued resources.

Understandable in part due to the depth of feeling that is tied to the subject matter of the natural environment as well as the material legacy of the Civil War, this project has itself been besieged by intramural controversy. Two fundamental issues frame the debate. The first weighs the relative merits of forest cover versus its risks to the earthworks. The second, involves the prescription of replacement vegetation in the event that forest cover is to be removed.

Regarding the primary issue, this report's review of existing research finds forest cover, or alternately a mixture of grasses and herbaceous plants, may both present valid options to resource managers. Given a thriving forest stand, compared to a thriving growth of grasses and forbs, both scenarios offer a practical equivalence in protecting against soil erosion. With reference to its study area, the following report draws the conclusion that the choice between tree cover, or grass cover, should not be made generally, and is a choice more appropriately considered against other management objectives. The forest covering the Federal Left Flank and Fish Hook Siegeworks consists of a second growth woodland characterized by a predominance of mature species greater than twelve inches dbh (12" diameter at breast height- an accepted threshold of risk for trees growing on historic landforms), a significant number of dead and unhealthy "hazard trees," and a sparse understory- including a shrub layer consisting of invasive and nuisance species. This being the case on the specific parcels under study, the existing woodland vegetation provides decidedly inadequate erosion protection, affords cover to illegal relic hunters, inhibits circulation - encouraging visitors to walk on the historic landforms, and subjects the historic resource to the devastating effects of tree windthrow. Added to these resource management concerns, the existing woodland obscures the visibility of the landforms, inhibiting attempts to actively interpret these important cultural resources. For these reasons this report supports the management decision - concurred with by the NPS Director's Advisory Board - to remove forest cover from three of the seven fortifications within its study area.

The second contested issue involves the specification of replacement vegetation following removal of forest cover. This amounts to a choice between native and non-native plants, a recurring and unresolved discussion topic within the agency. Recent Presidential directives have reissued perennial advice against introducing invasive and exotic species into the environment. Yet a universal prohibition of non-native plants from all federally owned property does not appear to be the intent. Such a prohibition would have implications for the ground of the White House itself (a NPS managed property), including the removal of expansive areas of European and hybrid lawn grasses as well as removal of the famed Rose Garden.

The ten acres comprising NPS holdings of the 'Federal Left Flank and Fish Hook Siegeworks' are surrounded by suburban homes, a church, two cemeteries, and a large steel recycling plant. It is anticipated that any remaining undeveloped property surrounding the earthwork sites will be developed within the next twenty years. The proposal to use native plants on these earthwork sites has not been made employing the argument that in doing so the agency would foster and maintain an island of purely native plants within a background of suburban development. Nor has a justification been made that the creation of such a land-locked preserve at this particular place is a worthy and responsible use of the agency's scarce resources. Rather, what has been argued is that earthworks vegetated exclusively with native species are more environmentally sustainable, effecting superior earthwork preservation as a by-product.

The findings of this report do not support generalizations as to the superior functional utility of plants based on native status. Rather, given the parameters of the proposed preservation project, this report holds the objective of earthwork preservation as primary, considering a plant's characteristics, requirements and ability to reveget steep slopes superior to consideration of nativity. As a result of careful and thoughtful assessment, the findings of this report support the use of both native and non-native plants towards effective and sustainable earthwork preservation. Only aggressive invasive plants should be excluded from the legitimate options available to a resource manager. These aggressive plants comprise a mere three to five percent of all non-native species present in the United States.

Findings also suggest that a convergence of outcomes will occur if the two extremes of the native vs. non-native issue are allowed to play themselves out at Petersburg. Here, as elsewhere in the highly-settled east, the co-occurrence of native and non-native species is the norm. Given the place and circumstances, prescribing either a native plant restoration or a non-native monoculture, will procure the same mixed results unless high levels of specialized maintenance is directed at its prevention. This phenomenon has been observed by the managers of Petersburg National Battlefield, where earthworks initially seeded with commercially available turfgrass, have been colonized by a variety of native plants. Without periodic over-seeding and continual maintenance to ensure the success of turf cultivars, the park's experience has shown that populations of native grasses increase proportionally over time. Conversely, attempts to establish a reserve of native plants inside the earthworks parcels would be under constant pressure from the humanized landscape pressing in on all sides, resulting in the same mixed ends, though by different means.

Recognizing this inevitability, early drafts of this report specified a mix of native and non-native plants for revegetating earthworks. In response to comments on early submittals, this final document has been revised to include five seed mix alternatives, ranging from a purely native mix, to three combinations of natives and non-natives, and finally to a mix of commercially available turfgrasses. These five alternatives, developed in consultation with horticulturists, plant pathologists, native plant specialists, stewardship biologists and park resource managers, are currently in the early stages of a field trial at Petersburg NB. The results of these trial will inform the seed specification for the earthwork preservation project.

This report also developed conceptual design treatments respecting the historical significance and unique characteristics of each of seven fortifications, their inter-connecting breastworks, access routes and adjacent terrain comprising the Federal Left Flank and Fish Hook Siegeworks. Scaled plan drawings depict proposed trails, boardwalks and bridges for visitor access and circulation; as well as proposed plantings, designed to enhance interpretation and views, emphasize and protect significant features and provide shade and a sense of scale. Placement of site amenities such as view platforms, benches, stile crossings, interpretive waysides and perimeter fencing is also shown in plan drawings.

Sections, elevations and detail drawings show conceptual site constructions, planting techniques, and describe proposed fabrication and joinery details. Consideration of significant archaeological resources is reflected in these designs which rely upon 'minimum intervention' methods. To protect historic fabric, trails are built above grade; boardwalks, bridges and observation structures are set on skids and pillow blocks; and proposed tree and shrub planting beds are framed within log crib walls.

Design proposals also consider the value of natural resources on these sites, where several large caliper trees survive as products of a landscape wrought by-war. This consideration identifies several mature, risk-prone trees reserved from earthwork clearing operations, to be utilized in the construction of site amenities. Alternately, in certain areas healthy trees which do not threaten earthworks are proposed to remain, serving to reference significant features and to provide a necessary rest area within a shaded, commemorative grove.

¹ Draft Project Agreement, Petersburg National Battlefield - "Preserve Historic Earthen Forts." 17 March 1998. The "Purpose" of the final agreement was simplified on 20 March 1998 to " 1. Protect and preserve select Civil War earthen forts from damage caused from wind thrown trees; erosion and inappropriate recreational activities on the forts. 2. Showcase important forts by

removing vegetation that blocks the visitors view of these structures, and , 3. Ensure preservation and interpretation treatment to forts can be maintained by existing maintenance staff in a cost and time efficient manner.

² An Act to establish a national military park at the battle fields of the siege of Petersburg, Virginia, approved July 3, 1926 (44 Stat. 822).

Early settlement

Aborigines, planters and adventurers:

In 1948, on a farmstead five miles east of Dinwiddie Courthouse, Virginia, archaeologists uncovered a cache of fluted points and snub-nosed scrapers fashioned from variegated chert- the handiwork of Clovis Indians who lived there 10,000 years ago. Upon further investigation this site revealed a pre-historic tool works- the first ever found east of the Appalachian Mountains- where the 'flaking' of multi-colored stone produced implements essential to survival of the species.¹ One hundred centuries passed before the first settlers arrived in the area from England. In 1607, while exploring inland waterways, Captain Christopher Newport encountered a thriving civilization along the margins of the Appomattox River. Navigation was halted by waterfalls near what is present day Petersburg, ten miles northeast of the Clovis workshop. The indigenous culture was observed replete with an advanced agriculture and trade, religion and government, ruled by a queen described as a: "*lustie, manly woman. She had much copper about her neck; a crown of copper upon her head.*"² Settlement patterns and architecture were equally refined. Adjacent to fields profuse with maize, melons, tobacco, vegetables and legumes; tribal huts, covered arbors and long houses, enclosed by log stockades, delineated the villages of the 'Apamattica.' The new arrivals opted to establish their settlement east at Jamestown.

Beginning in 1620, 'planters' who survived the journey from England were awarded fifty acres of the new world; an equivalent grant was doled out to 'adventurers' who paid for passage of their indentured servants.³ These land grants, known as 'headrights' or 'patents,' were bestowed upon subjects of the English Crown without regard for aboriginal tenure. Consequently, the ensuing decades were marked by a clash of cultures contesting land rights. Intruders and residents launched murderous raids upon each other. An Indian massacre in 1622 nearly devastated the nascent Virginia colony, forcing Englishmen to establish forts at the fall line of the James, Pamunky, Chicahominy and Appomattox Rivers. That year, warring factions established by treaty a geographical demarcation; Indians were granted all territory west of the falls, settlers controlled the land to the east. In 1646, Fort Henry was situated on the Appomattox River to protect that segment of frontier from attack. A garrison of forty-five soldiers drawn from surrounding 'shires' was commanded by Abraham Wood, a former indentured servant, who had amassed patents worth over 1900 acres.⁴ Wood administered the outpost and boundary until 1680, allocating passes to pioneers and striped badges to Indians for designated entry and egress into either region; at the time both were considered subjects of the English Crown. Peter Jones, Wood's son-in-law, received control of the fort in 1671 and opened a trading station nearby at Peter's Point. His dual enterprise burgeoned as a center of fur trade and a threshold to western explorations in search of gold and a route to the Southern Seas.⁵ Indians established a village just west of the fort. Indian Town Creek, named after the settlement, was also called Old Town Creek and later, Rohoic Creek which forms the western boundary of Petersburg today (Figure 2.1). By 1680 Wood had sponsored several expeditions west, reaching the Ohio River and claiming for England the Northwest Territory. His holdings increased to nearly 4,500 acres; the demarcation line was disregarded, and by Acts of the Virginia Assembly, Indians were deemed as slaves.⁶

Plantations

The advent of the 18th Century ended the pioneer era of Tidewater, Virginia. Aware that economic vitality may not be realized by the pursuit of gold or a route to the South Sea, planters continually transformed the landscape, cultivating crops and an aboriginal botanical: *Nicotiana rustica*. With early Tidewater farmsteads nearly exhausted from tobacco production, prospects of infinite virgin soil in the western frontier presented great opportunity. As indentured servants and African slaves leveled fields from woodlands and cultivated the 'golden weed,' a profitable trade with England developed to meet the demand of European markets. Warehousing fees, taxes, import duties and inflated prices provided fortunes for kings, magistrates, merchants, ship captains and planters. Brokers and inspectors profited. Shipping receipts substituted for currency. Wages and debts were paid in weight and in hogsheads. As the tobacco plant impoverished the soil, it enriched the economy of the dominion. Before the outbreak of Revolutionary War, wheat was added to shipping manifests. Warehouses stuffed with valuable leaf and grain were sited at convenient locations along the riverfront, their wharves bustled with teamsters, stevedores, sailors and slaves. While commerce flourished, brick mansions rose amidst older wood-framed cottages along the James and Appomattox Rivers. The Plantation evolved, imposing a new order of economics, trade and social hierarchy on the emerging culture of colonial Virginia. A new class emerged from primeval forests of the new world with a taste for the culture and aesthetics of the old. They imported European tutors and expensive commodities. They bred fine horses, held lavish hospitalities and indulged in opulent furnishings and attire.

City and County

The city of Petersburg and Dinwiddie County trace their origins to a geography of trade and exploration. In 1732, Peter Jones III, Abraham Wood II and William Byrd II established a market place for tobacco export on the site of Jones' original trading station, and by 1748 petitioned for a town charter. Peter's Point was thereafter referred to as Petersburg and incorporated as a township in 1752. The Crown appointed Robert Dinwiddie as Lieutenant Governor of Virginia on July 4, 1751. A year later Dinwiddie County was created from Charles City County. During the mid-century economic boom a schism developed between the established, self-reliant landed-class of the county and profit-driven entrepreneurs of the city. Agrarian cycles and market-dependency forced planters to rely on creditors and brokerages in town for economic stability. This bred tension, mistrust and hostility. Yet as city and town residents retained distinct attitudes and lifestyles, the essential marketplace at the river's edge amalgamated their disparate interests, remaining key to an equation of prosperity. Following the Revolutionary War, Virginia was granted statehood in 1788. Dinwiddie County was then comprised of farmsteads and hedgerows, forests, marshes and pine barrens; laced together by a network of rivers, streams and occasional roads. By 1825, Petersburg had captured the regional cotton market and began to manufacture cloth. Astride advances in farm machinery and the invention of steam engines and locomotives Petersburg began developing an industrial sector. Foundries produced iron by 1840 and soon afterward, lead-works were established (Figure 2.2). Contrasting an expanding grid perched on the riverbank, the rural character of landscape surrounding Petersburg was noted by Fredrick Law Olmsted as he passed through on horseback in 1853, while a correspondent for the New York Daily Times. In describing the countryside he wrote: *"For hours and hours one has to ride through the unlimited, continual, all-shadowing, all-embracing Forest, following roads of which no more labor has been given than was necessary to remove the timber which would obstruct the passage of wagons. For days one may travel*

and never see two dwellings of mankind within sight of each other[sic]."⁷ Travelling further, Olmsted, the gentleman farmer from Staten Island, reflected on the detrimental effects of tobacco cultivation:

*"Old fields ... of a coarse and yellow sandy soil bearing scarce anything but pine trees and broom sedge. In some places, for acres the pines would not be above five feet high- that was land that had been in cultivation, used up and 'turned out' not more than six or eight years before. Then there were patches of every age, sometimes the trees were a hundred feet high. At long intervals, there were fields with pines just beginning to spring in beautiful green plumes from the ground, hardly noticeable from the dead brown grass and sassafras bushes and blackberry-vines, which nature sends to hide the nakedness of the impoverished earth."*⁸

The U. S. Census enumerates a prosperous decade in Virginia between 1850 and 1860, due in part to the efforts of native sons, Cyrus McCormick and Edmund Ruffin. McCormick's inventions enhanced machinery and Ruffin's innovative doctrine prescribed in his *Farmer's Register* gained steady popularity for improving the productivity of acidic soils. By 1860, Virginia's agricultural practice had advanced so significantly that production and property values exceeded all previous levels.⁹ Agricultural Societies and Farmers Unions educated growers on crop rotation and encouraged model farms and agricultural schools. Exhibits at state and county fairs featured trophy produce and livestock. Boasting a regional agrarian prominence, the Petersburg Fair of 1856 promoted an agricultural showcase and presented various social attractions, including: *"a race track for the display of horses and mules, and the ladies were urged to ply their needles, dive into experimental pound cake, cheeses, and plum pudding."*¹⁰

A constant stream of commodities floated down the Appomattox River and on to the Chesapeake Bay, bound for Europe. River transport was efficient yet shipping goods overland to market remained difficult. Heavy rains wreaked havoc on narrow dirt wagon roads coursing through Virginia's rolling topography. During wet seasons they became quagmires. An observer wrote: *"...there was a steady and drenching rain the whole livelong day, which reduced these clayey roads to a pudding or porridge."*¹¹ Plank, or corduroy roads, designed to eliminate rutting, were built using split logs laid across the route, assuring continuous traction for wagon wheels. These 'turnpikes' were maintained by an overseer and punctuated with toll gates (Figure 2.3).

When Petersburg incorporated as a city in 1850, the *Boydton and Petersburg Plankroad Company* was chartered. The following year construction on the Boydton Plank Road was underway. The primary route southwestward to Dinwiddie Court House and Mecklenburg County, its trace is today a segment of U.S. Route 1 and Route 58. Dr. James Boisseau, a prominent Dinwiddie resident, wrote to his son studying law at the University of Virginia:

*"The survey for the Plank Road has been completed through the county. The Court House Road from Birrches Bridge (over Burgess' Run) to Petersburg has been condemned for that purpose...The road will be perfectly straight...Mr. Pratt of New York has contracted for the whole Road at \$1900.00 per mile...he has brought on steam saw mills...He has commenced cutting timber...and will commence sawing soon. The Road is expected to be finished in 18 months."*¹²

Two years later, Jérusalem Plank Road was also completed, heading in a southeasterly direction. Corduroy roads required constant maintenance and were inherently short-lived, increasing necessity for durable and passable routes. This demand was satisfied by railroads, which were direct, impervious to the effects of weather and capable of carrying large payloads. The railroad came to Petersburg in 1833 with

the construction of the Petersburg and Weldon Railroad. The line transported southern produce from markets in Weldon, North Carolina. Five years later, the Richmond and Petersburg Railroad linked Richmond to Petersburg, followed by the Petersburg and Norfolk line, bound east for the deep water harbor on Virginia's coast. The South Side Railroad, running west from town, featured the highest railroad trestle in the world near Farmville, Virginia, crossing 128 feet above the Appomattox River en route to Lynchburg. By 1858, that line absorbed what had earlier been the City Point Railroad, resulting in a total of five railroads and six major roads converging on Petersburg from all directions (Figure 2.4). The city sat poised on the Appomattox River, strung amidst a web of transportation and trade, commanding a far reach to the surrounding territory.

Events preceding the siege of Petersburg

In the mid 19th century, one hundred and ten miles of bucolic landscape lay between Washington, D.C. and Richmond, Virginia; not a great distance when compared to the chasm of ideologies separating these two capital cities. In October of 1859, John Brown and a small band of abolitionists commandeered a Federal arsenal at Harper's Ferry, Virginia. The following morning Lt. Colonel Robert E. Lee, commanding a company of U.S. Marines, attacked the raiders and captured Brown, killing ten of his men. Convicted of treason, John Brown was hanged in Charles Town on December 2, 1859, instantly achieving martyr status and providing a cause-celebre for the northern states. Brown's raid ignited the bitter dispute between socioeconomic adversaries of the north and south, it's aftermath fanned the flames into a raging firestorm, which ultimately *resulted* in civil war. Principal Civil War battles would involve twenty-six states; the majority in the south, a few in the north, and several ranging west of the Mississippi River as far as New Mexico. Of the 384 principal battles fought throughout the war, 123 were staged on the landscape of Virginia, more than triple that of Tennessee, with thirty-eight, the state claiming the second-most battle sites.¹³

"Some 10,500 armed conflicts occurred during the Civil War ranging from battles to minor skirmishes...clashing convictions and the determination to defend them cost the nation 620,000 lives."¹⁴

By June of 1864 the conflict had raged on inconclusively for over three years, racking up a high death toll. Virginia was torn by the ravages of war. General Robert E. Lee, performing with the surety of military genius, defended his Confederate capitol with an army grossly outnumbered by Union forces. While a succession of northern generals played their hand at capture and destruction of the Confederate army and Richmond, none were successful in routing the gray-coated defenders from their positions. The few Confederate offensives on northern terrain were thwarted during gruesome battles at Antietam in September 1862 and Gettysburg in July 1863.

Due in part to the business of journalism and the advent of photography, atrocities of war were presented graphically to the public. Battles popularized in the press featured vivid sketches, engravings and candid front line accounts. The Civil War was the first conflict on American soil delivered in detail to the doorstep of a concerned and well informed populace. The great expense of war, combined with a mounting toll of casualties strained the governments of both factions. Within northern statehouses as well as Washington D.C., Mr. Lincoln's "little war" became a dire political concern. 1864 was an election year and the president knew that his popularity and political future hinged upon delivering an end to the protracted struggle. Lincoln's "State of the Nation" address that year resounded a macabre tone:

"The election has exhibited another fact not less valuable to be known- the fact that we do not approach exhaustion in the most important branch of national resources- that of living men. While it is melancholy to reflect that the war has filled so many graves, and carried mourning to so many hearts, it is some relief to know that, compared with the surviving, the fallen have been so few." ¹⁵

By July 1863, Union victories in Vicksburg, Mississippi and Port Hudson, Louisiana had secured control of the Mississippi River. Later that year, in defeating the southern army at Chattanooga Tennessee, the Federals won entrée into Georgia and South Carolina intending to sever the Confederacy into halves. Momentum of Federal campaigns was increasing, although it cost dearly. Congress passed a bill on February 29, 1864 re-establishing the grade of Lieutenant-General within the U.S. Army. This rank, held briefly by George Washington, was re-created for Ulysses S. Grant who had recently demonstrated his ability at Vicksburg and Chattanooga. President Lincoln signed the bill on March 1st and on March 9th presented to Grant his commission as commander of all Union armies. The Lieutenant General was 41 years old. Capitalizing on recent success, Grant devised a solution to force an end to the war. The Union army would pull the lynchpin of the Confederacy by launching a major offensive targeting Richmond and Lee's Army of Northern Virginia. If this coup was successful, remnants of the Confederacy would disintegrate in short order. Both the chief executive and legislature, expecting a swift closure to the war had empowered their new military leader with command of twenty-one Army Corps and eighteen military departments comprised of over half a million personnel. In a reflection on Lincoln's military acumen, Grant recalled:

"In my first interview with Mr. Lincoln alone he stated to me that he had never professed to be a military man or know how campaigns should be conducted, and never wanted to interfere in them...all he wanted or had ever wanted was some one who would take the responsibility and act, and call on him for all the assistance needed." ¹⁶

Grant was anxious to meet the challenge put forth by his commander-in-chief. Acutely aware of his enemy's strengths as well as his army's weaknesses; he recognized the clumsiness of a decentralized command. This contributed to a fundamental flaw in the Union effort, where an echelon of egocentric generals waged disparate campaigns with their semi-autonomous armies. In his memoirs, Grant spoke of this military mayhem: *"The Union armies were now divided into nineteen departments...there were thus seventeen distinct commanders...(who) acted separately and independently of each other.. I determined to stop this.[sic]" ¹⁷*

In addition to shifting his army's hierarchy to a centripetal command, the young general took careful assessment of his foe, regarding him with utmost respect. Describing the charge assigned to his new rank he wrote:

"The Army of Northern Virginia...was strongly entrenched and commanded by the acknowledged ablest General in the Confederate Army...Such an enemy was not, of course, unprepared with adequate fortifications at convenient intervals all the way back to Richmond, so that when driven from one fortified position they would always have another farther to the rear to fall back into." ¹⁸

Grant's understanding of the enemy's strength, the limitations of his own army, the complications presented by the terrain and the logistics of supply, was key to his success in this final campaign against Robert E. Lee. His strategy was based upon a two-pronged attack. General Sherman fighting in the south, was to capture Atlanta, then turn north to rejoin the Army of the Potomac and General Butler's Army of the James, who would be engaged wresting control of Richmond from Lee's Army of Northern

Virginia. Heralding the advance of the offensive on May 4th 1864, Butler's 40,000 troops captured City Point, the tip of a peninsula at the confluence of the James and Appomattox Rivers. Later that spring City Point would transform into a Union supply hub, servicing Grant's armies for the duration of the campaign. However, events did not proceed as planned. The outnumbered Confederates neutralized Butler's Army of the James, by containing it behind a narrow line of works at Bermuda Hundred. Further north, a series of fierce battles occurred between Lee's army and the Army of the Potomac commanded by General Meade. Union troops 118,000 strong, engaged a Confederate force of 62,000 during the Battle of the Wilderness on May 5th through 7th and again in the region of Spotsylvania Court House from May 8th until the 19th. Severe fighting inflicted heavy casualties to both sides in these contests, including the deaths of Union Generals' Wadsworth, Hayes, Sedgewick and Stevenson, later to become namesakes of forts along the Petersburg siege lines. Yet the southern defenders were not displaced. On June 3rd 1864, Grant's next offensive lurched within eight miles of Richmond. At Cold Harbor, he ordered his troops to launch a desperate frontal attack. The stalwart Rebel brigades fought hard and held fast yet again, affecting overwhelming Union casualties of 13,500.¹⁹ Although Grant made several attempts to arrange a truce with Lee to collect the dead and wounded, he was criticized in the northern press for squandering his troops and referred to as a butcher of men. The commanding General was ultimately responsible for this bloody affair, where the wounded were left for 48 hours to die in the fields between opposing fire. A closing passage in a letter written June 7, 1864 expressed his concerns to General R.E. Lee. *"Regretting that all my efforts for alleviating the sufferings of wounded men left upon the battle-field have been rendered nugatory, I remain &c U.S. Grant, Lieutenant-General [sic]"*²⁰ The incidents of Cold Harbor altered Grant's status of hero into the scapegoat of a failed effort. In retrospect he sorely wrote: *"I have always regretted that the last assault at Cold Harbor was ever made...no advantage whatever was gained to compensate for the heavy losses we sustained."*²¹

Concluding four weeks of indecisive conflict, casualties were tallied at thirty-one percent on each side, with Union losses double that of the Confederacy. Grant's plan had been stymied by Lee. The direct capture of Richmond was no longer considered viable and his foe, although outnumbered, appeared indefatigable. Yet Grant had significantly weakened Lee's army, crimping his ability to muster major offensive actions. For the duration of the war, excepting a few instances, the Army of Northern Virginia fought from a defensive stance. The northern commander knew he must amend his plan and redeem himself. He now believed that to advance on Richmond and Lee's army he must not attack directly, but force a surrender by cutting sources of supply. To isolate the Confederate capitol Grant had to seize its railroads. To accomplish this his army must first cross the James River and capture Petersburg, a city of 18,000 situated on the southern bank of the Appomattox River, just twenty-three miles south of Richmond.

A City Enveloped by War

Defending the Cockade City

As a transfer station for goods bound for Richmond, the 'Cockade City' operated as a satellite of the larger metropolis. In 1863, after nearly two years of war, the Federal effort encroached on the Confederate capital. Several arteries of support were threatened and Richmond became increasingly dependent upon Petersburg for its sustenance. With the exception of the Richmond and Danville

Railroad, all other southerly supply lines to Richmond flowed through Petersburg, deeming that junction crucial to the survival of the Confederacy.

Aware of the strategic importance of Petersburg, the Davis administration requested Captain Charles Dimmock CSA, to design a shield for the town in the spring of 1862. Utilizing a work force of slaves, he began constructing a series of berms as fortification. Originating on the northeast banks of the Appomattox River, an irregular line of piled earth continued in a semi-circle, encompassing the city, until it reached the northwest banks (Figure 2.5). After a year of digging, Petersburg stood protected with its back to the river, holed up behind ten miles of rambling earthworks accentuated by fifty-five artillery batteries, in what became known as the *Dimmock Line*. Trained as an engineer, Dimmock appropriated all favorable topography, resulting in several formidable sections, yet leaving others inherently more vulnerable. Ultimately though, the scale of the works became its nemesis. Their expanse compromised the limited capacities of the southern army. 'Manning the works' became increasingly problematic throughout the term of the siege. As these original Confederate fortifications expanded to over thirty-five miles by late autumn in 1864, Generals Lee and Beauregard, would shuffle their graycoats to needy sections anticipating or responding to the Union army's movement. In a dispatch to Richmond, Robert E. Lee wrote:

*"The enemy's position enables him to move his troops to the right or left without our knowledge, until he has reached the point at which he aims, and we are then compelled to hurry our men to meet him, incurring the risk of being too late to check his progress and the additional risk of the advantage he may derive from their absence."*²²

On June 9th of 1864, Dimmock's excavations faced their first trial when Union armies descended on Petersburg. A force of 3,000 infantry and 1,500 cavalry from General Butler's Army of the James, threatened the city's defenses from the east and south. The sparsely populated Confederate works were reinforced when a panicked call went out to the town's militia. Old men, young boys, and invalids ineligible for conscription, turned out to defend their city behind southern-facing escarpments.²³ The Federal infantry flirted with Confederate skirmishers and pickets in the northeast, but on encountering the imposing scale of Dimmock's work, assumed they were well defended and reconsidered a frontal attack. From a Union foot soldier's view, a half mile of exposed plain lay before rising mounds of engineered earth. Cannon mounted on redans were aimed to sweep the field of charging infantry. Sharpshooters perched atop parapets four meters high, towered over a ditch carved six to eight feet deep and fifteen feet wide. Several yards in front of this ditch and berm, entanglements of abatis, fraise and chevaux de frise were placed to impede an attacker's progress, allowing defenders more time to reload, aim and fire (Figure 2.6). While the Union infantry ruminated on attack, a small force of mounted troopers turned south and stormed the Confederate works at Jerusalem Plank Road, then, headed toward town. Major Fletcher Archer CSA, commanded an emergency defense comprised of an artillery battery limbered from the northern edge of the city, and a scattered army and available townsfolk. A local Petersburg lawyer turned soldier, described his fellow defenders in this incident: "...their pursuits were as diverse as their ages...In the manner of uniform and soldierly appearance we were (as) motley a crew"²⁴ This collaboration repelled the raiders during a desperate stand at the city's reservoir. It cost the lives of fifteen gallant defenders, eighteen were wounded and forty-five captured. Petersburg's seal had been threatened but remained intact, due to a last-ditch effort by citizens and a crusty band of soldiers released from town hospitals and jails. General Butler was infuriated by the outcome of this engagement, knowing that a great opportunity had been lost. At his camp he interviewed Anthony Keiley, a lawyer and most recent

prisoner of war. When a clerk asked his name and occupation, Keiley responded, "Mr. Blank and Lawyer." Butler slid forward in his chair, lit a cigar and asked, "Will you tell me how many soldiers were in Petersburg at the time of General Kautz's first appearance?" The attorney refused. "Oh you need not decline. I know there was not a soldier there." Then Keiley quipped, "Well sir, but I am curious to how you know that." Butler fired back, "By this infallible deduction; if there was a soldier in town, no lawyer would get in the trenches!"²⁵ General Butler, known for his quick temper would later call in Maj. General Gillmore who failed to take the southerner's works, and strip him of his command.

The first clash at Petersburg's Reservoir Hill had set the stage for imminent battle. The Union army, ever-persistent, continued to accumulate a massive force. Confederate commander, General P.G.T. Beauregard, shifted all attention to Petersburg. Jockeying more troops from Richmond and Bermuda Hundred, he managed to accrue a meager force of approximately 4,000 behind his works. Realizing the vulnerability of his charge, he dispatched this warning to General Lee: "Prisoners report Grant on the field with his whole army."²⁶ Shortly afterward, an unofficial sentiment from Beauregard found its way to Lee: "Unless reinforcements are sent before forty-eight hours, God Almighty alone can save Petersburg and Richmond."²⁷

The Battle of Petersburg

Before dawn on June 15, Union General William "Baldy" Smith began marching 18,000 troops of his 18th Corps across the Appomattox River on a pontoon bridge constructed by Federal engineers at Point of Rocks. Hay was spread over the decking to deaden the drumming of hoof and boot. The battle for Petersburg began by late afternoon, when the newly arrived Federals attacked from the east at Battery 5 on the Dimmock Line. Within two hours of fighting, Brigadier General Hink's division of U.S. Colored Troops cut a swath through the Southerner's works and commandeered Battery 5. The Federal army now claimed roughly a mile of the fortifications to the south. The Confederates peeled back, regrouped and hastily dug a defense. Yet another wave of bluecoats, the 2nd Corps, led by General Winfield S. Hancock, arrived to reinforce Smith's advanced battle lines. Darkness fell. A dim moonrise filtered through the dusty aftermath of battle, casting a pall over the terrain. Exhausted Union officers and men, primed to capitalize on their gains, were bent on pursuing their dispersed foe and overturning Petersburg. Beauregard, aware that his outnumbered army was fraught with peril, later offered: "Petersburg at that hour was clearly at the mercy of the Federal commander, who had all but captured it, and only failed of final success because he could not realize the fact of the unparalleled disparity between the two contending forces."²⁸ Baldy Smith, aware of this possible advantage, wired a dispatch to his superior General Butler; "unless I misapprehend the topography, I hold the key to Petersburg."²⁹ Smith would later be wrongfully blamed for passing on a golden opportunity to take Petersburg. Meanwhile Grant had received word that Beauregard ordered another division of 6,000 from Bermuda Hundred to join in the fight along the Dimmock line. The Federal upper echelon was reluctant to attack, fearing a larger rebel force at the rear. Exercising caution, perhaps with the memory of Cold Harbor looming in his subconscious, Grant forwarded a message to General Hancock, ordering him to bolster their defensive position and dig in for the night until additional forces arrived. Seasoned Union troops, well aware of their hard fought advantage were incensed by this over-cautious measure. A soldier of the 2nd Corps later wrote, "the rage of the enlisted men was devilish. The most bloodcurdling blasphemy I ever listened to I heard that night, uttered by men who knew they would be sacrificed by the morrow."³⁰

History would determine that a siege of Petersburg may have been averted had Generals Smith and Hancock pursued the Confederates on the first night of battle. The overwhelming odds were unknown to the Union command. Yet they held the military might to wage a deliberate siege, intent on eroding their opponent's strength through attrition and starvation. Grant aired this view when he wrote to his wife from City Point on the 15 of June 1864: "...I feel no doubt about holding the enemy in much greater alarm... They are now on a strain that no people ever endured for any great length of time."³¹ As these early engagements unfolded on Petersburg's doorstep, Grant secretly marched the Army of the Potomac south towards Wilcox's Landing on the James. Major Ira Spaulding and his 450 members of the Corps of Engineers had laced a 2,100 foot pontoon bridge across to the base of Windmill Point, southeast of City Point. Unknown to Lee, starting at dawn on June 15, that bridge supported a marching payload thirty-five miles long, floating on tidal water eighty-four feet deep. By late evening the next day 100,000 men, 56,000 horses, 5,000 wagons and 2,800 head of cattle had crossed the James en route to Petersburg to join their comrades facing the enemy poised within the handiwork of Captain Dimmock's slaves and engineers.³² As the troops crossed the bridge, officers shouted, "*Close up and move smartly, men. We've gotten away from Bobby Lee, and he doesn't know it. Victory and peace are on the other side of this river.*"³³

Close to 130,000 Federal soldiers had assembled to the east of Petersburg. Military historians applaud Grant for his brilliance in orchestrating a maneuver of this magnitude. In a letter to his wife Julia he wrote, "*Since Sunday we have been engaged in one of the most perilous movements ever executed by a large army, that of withdrawing from the front of an enemy and moving past his flank ...so far it has been eminently successful and I hope it will prove so to the end.*"³⁴ For three days a battle raged on from dawn to dusk. Each day the Confederates called more troops from the Richmond guard until their defense numbered 14,000. At four in the morning on the 4th day, the Federals in full force rushed the Confederate lines only to tangle with antagonizing pickets. In a masterful stealth tactic, General Beauregard had ordered his troops to abandon several advanced works overnight and dig new strategic positions on a ridgeline further to their rear, barely two miles in front of Petersburg's streets. Soldier's accounts of the digging, with fork and spoon, bayonet, knives and tin cans, recall their fervor in establishing a new position under cover of darkness. This move confused the Federal attackers at dawn. Breaking ranks as they overran empty trenches and dispersing over the battlefield, they became the vulnerable targets of entrenched southern gunners. In an appearance that bolstered Confederate esprit de corps, General Lee arrived on the scene to personally direct the defense. The Union mustered another massive drive across the fields at 3 p.m. As successive infantry charges were repulsed by cannon and shot, bodies of dead and wounded littered the terrain. Pickled in a viscous crossfire, the 1st Maine Heavy Artillery regiment, suffered 632 casualties in twenty minutes, recorded as the most severe losses of any regiment in any battle of the war.³⁵ After four consecutive days of conflict the blue juggernaut failed to surmount Confederate escarpments. Ten thousand Union casualties lay tangled in the wake of battle, strewn like flotsam across a denuded landscape of war. Behind their protective works, the Confederate defenders suffered over 4,000 casualties. On the evening of June 18, General Meade admitted to Grant: "*...Our losses particularly today, have been severe...It is a source of great regret that I am not able to report more success.*"³⁶ Grant replied: "*I am perfectly satisfied that all has been done that could be done...Now we will rest the men and use the spade for their protection until a new vein can be struck.*"³⁷ That same evening Grant was heard by his aide-de-camp to say:

"...the topography of the country about Petersburg has been taken advantage of by the enemy in the location of strong works. I will make no more assaults on that portion of the line, but will give the men a rest, and then look

*to extensions toward our left, with a view to destroying Lee's communications on the south and confining him to a close siege."*³⁸

The savvy of Confederate strategists and the obstinate earth of the Dimmock Line had effectively repulsed an attacking force of staggering dimensions. With neither side capable of besting the other, battle lines were drawn and the troops dug in deeper. Soldiers set their rifles aside to wield shovels. In lieu of filling cannon barrels with black powder, they passed the days digging saps and filling gabions with dirt. Sprouting from this compacted soil, a full scale siege was born that would endure for 292 days, until April 3rd 1865, when Grant and Lee would shake hands at Appomattox Court House. In understanding the extent of the siege beset on Petersburg, National Park Service historian Chris Calkins writes:

*"The siege...lasted almost a quarter of the Civil War, 9 ½ months...there would be 6 major Battles, 11 engagements, 50 skirmishes, 6 assaults and 4 expeditions...there are 109 fields of armed conflict comprising the Petersburg campaign. (it) would cover over 2,300 square miles in an area 70 miles by 30 miles!"*³⁹

Militarizing Terrain: Creating a Denuded Landscape of War

Origins of Modern Trench Warfare

Napoleon's mastery of military organization had overwhelmed rival European armies of the early 19th Century. Prior to the Civil War, his successful structuring of maneuverable units ranging from small companies to large corps was considered de rigeur by the United States Military Academy at West Point, which adopted this methode de guerre into the curriculum. A primary textbook at the Academy, *Treatise on the Science of War and Fortification* was written by Francois Gay de Vernon, a professor of fortification at Napoleon's *Ecole Polytechnique*, the French Military equivalent of West Point. The text stressed the importance of field fortifications in both offensive and defensive positions. In his volume concerned with military theory, *The American Civil War and The Origins of Modern Warfare*, Edward Hagerman writes:

*"Gay de Vernon is significant for setting forth when and to what extent field fortifications should be used...when fighting from a tactical defense...and pursuing the tactical offense. He further advocated the practice of the Roman armies in fortifying their camps. He believed that their 'habitual attitude' should at all times be defensive."*⁴⁰

Dennis Hart Mahan, graduated first in his class at West Point in 1824, by 1836 he became the distinguished professor on the science of military engineering at the Academy. His amended version of de Vernon's treatise was adopted as 'the textbook', and used well past his death in 1871. Mahan also organized the *Napoleon Club*, a popular forum where students and colleagues discussed strategy employed in Napoleonic campaigns. Other courses at West Point utilized textbooks authored by prominent French engineers and architects. A few were translated into English, yet the nuance of military language remained decidedly French. Terminology describing earthworks, weaponry, ammunition, maneuvers, strategy and tactics were coined or evolved from French words, then pronounced in an American vernacular. (refer to: Glossary of Earthwork Terminology) Cadets were required to study the language and obliged to communicate in the terms of their craft. While a cadet at West Point, Robert E.

Lee excelled at French, consistently scoring high marks. In his third year, for a diversion, he indulged himself by reading a French edition of Rousseau's *Confessions*.⁴¹

19th century high-tech, alters the rules of war

The introduction of nascent technologies affected the course of battlefield tactics. By mid 19th century, armament design had made several advances. Cartridge ammunition added reliability, rifled bores increased accuracy and range, and the breech loader enhanced fire power and convenience. These improvements, debuted during the civil war, forced an amendment to the prevalent practice of open frontal assault. Entrenched positions, were now occupied by both offensive and defensive forces on the battlefield. The rules had changed. Picks and shovels accompanied muskets into battle. Equipment designers experimented with hybrid accoutrements. A lightweight trenching bayonet was issued to infantry troops for digging an immediate defense. Soldiers marched, skirmished, formed battle lines, fired, then charged. If successful in routing the enemy from a position, they reversed the occupied works, redirecting the defensible edge. After a hard fight and new ground won, troops bivouacked and began excavations, defending the advanced position, ever-conscious of imminent counterattacks. Given time, these works would be enhanced. These maneuvers signaled the advent of modern trench warfare, where manipulated terrain, essential to an army holding its ground, became a by-product of war. The landscape of the Petersburg siege bears that imprint today.

The Earthen Fort: a Civil War Precedent

Mid-nineteenth century high-tech munitions were most effectively combated with the lowest common denominator...dirt. Throughout the Civil War, both were in plentiful supply. A precedent for earthwork fortification had been tested at the onset of the war. In April 1861, thirty-four hours of relentless shelling routed the Federal garrison at Fort Sumter, South Carolina. Union Major Robert Anderson surrendered the fort to Confederate Brig. General P.G.T. Beauregard, his former artillery student at West Point. Two years later on August 17, 1863, while attempting to wrest control of Charleston's harbor, Federal guns bombarded the fort for seven straight days reducing its impregnable masonry walls to a pile of rubble. In an attempt to strengthen the battered fortress, Confederate Army Chief Engineer, John Johnson, directed the construction of revetments with over 400 troops and laborers. Paradoxically, as *gabions* fabricated of cotton bales and sand were piled high in an attempt to buttress the walls, Sumter became increasingly stronger. Huge, amorphous mounds of churned earth, stone and disintegrated brick combined with the *gabions* in absorbing the impact from exploded shells. Conversely, the formal, solid brick and mortar walls, inflexible upon implosion, were eventually destroyed from continual blasts. Tested again in the summer of 1864, this island earthwork endured a continuous barrage from Federal artillery for two months, yet never succumbed. Charleston would eventually fall by winter of 1865. Throughout the war, Fort Sumter received seven million pounds of shell, becoming an icon of Southern resolve (Figure 2.7).

U.S. Army Signal Corps

Technological advances added to the mix of variables impacting the siege. Railroads were established, transporting troops and supplies to and between the front lines. Observation balloons were sent aloft. Telegraph lines pulsed field communications and a semaphore language based on an encoded telegraphic alphabet was utilized by a new branch of the military, the U.S. Army Signal Corps. To more effectively monitor enemy movements, vantage points nesting in treetops and towers were strategically

sited among the siege lines. Enhancing the eyes and ears of Union commanders, this Corps was essential for developing strategy and responding to enemy maneuvers. Typical communications from the Signal Corps Officer read as follows:

October 9, 1864: The enemy's line of breast-works...near J. Boisseau's house has been abandoned, men in it moving forward about 250 yards to a new line on the right...moving abatis from old line to front of new one. Enemy's picket line near the Fisher house was relieved at 5:00 pm...each post has six men in it. The usual number of wagons and horsemen passing toll-gate on the Boydton plank road. ⁴²

November 4, 1864 The fort near the Boisseau property has nearly all leveled down and there is apparently a heavy breast-work thrown up a few yards in rear of the position it occupied. Several small squads of the enemy's infantry have been drilling without arms. ⁴³

November 7, 1864 The fog has made it impossible to see the enemy's lines most of the day. ⁴⁴

The officers soldiers and dispatchers of this new corps kept a running commentary pulsing through the telegraph lines. Important priority messages were sent encrypted to the various headquarters along the lines and back to Washington D.C. An elite group of operators were empowered to cipher the messages. According to the official report of Chief Signal Officer, Captain Charles L. Davis, the Signal Corps operated seven stations within the Petersburg siege lines. The first was located at Walthall house, northeast of Petersburg. It commanded a view of the city and three of the enemy's signal stations on the left bank of the Appomattox River "and all signals used on the enemy's stations were intercepted and interpreted." ⁴⁵ Station number two was strung in a hickory tree on high ground at the Friend house (Figure 2.8). Station number 3 was situated at the Avery House. It commanded views of the opposing lines and afforded a glimpse of the Cox Road and the Southside Railroad, west of the city. The fourth station was "on a pine tree in Fort Davis" ⁴⁶ It covered the terrain between Jerusalem Plank Road and Halifax Road. Another pine tree housed the fifth signal station "near the picket line, half a mile north of Fort Howard." ⁴⁷ This perch looked out on Confederate Fort New Orleans, Fort Lee, the Boydton Plank Road and the Cox Road. A small tower near the Aiken House comprised the sixth station. It was primarily used as a relay, "communicating by signals with all the stations along our front." ⁴⁸ The tallest and most elaborate was a 145 foot high tower, located at Peeble's farm, on the extreme left of the Union lines. "It commanded an extensive and clear view of the roads, camps and works of the enemy." ⁴⁹ The site shared the headquarters of Maj. General Meade and the western terminus of the U.S. Military Railroad.

U. S. Military Railroad

"The country back to the James River is cut up with many streams generally narrow, deep and difficult to cross except where bridged. The region is heavily timbered, and the roads narrow and very bad after the least rain...To provision an army... through such a country, from wagons alone seemed almost impossible." ⁵⁰

Lt. General Ulysses S. Grant

An indomitable challenge confronted General Grant in northern Virginia during the spring of 1864, namely implementing his plan to choke Petersburg and starve the Confederacy while supporting an army of 120,000. This demanded an efficient network of supply. Grant subscribed to the Napoleonic maxim,

'an army marches on its stomach.' The general's decision to establish rail service to the Federal siegelines was key in his design to win the war. In June, he ordered Charles McAlpine, Chief Engineer U.S. Military Railroads, to re-establish service on a dilapidated *City Point and Petersburg Line*. By July 7th, seven miles of track had been retrofitted to meet a delivery of twenty-four locomotives and 275 cars at City Point. From that day on, the 2,000 engineers and Construction Corps of the Union army built, modified and maintained a tidy railroad, servicing the Federal effort. Withstanding the brunt of criticism, jokes and Confederate fire, it handily supplied a thirty-five mile siege line with the necessities of war. So efficient was the service that newspapers from northern cities arrived daily and freshly baked bread from City Point were delivered warm to troops on the front. Union Private Wilbur Fiske of the 5th Corps wrote in February 1865: *"We rode up on the train from City Point...Grant has a network of railroads, which connect with every corps, and almost every brigade. In a short time I expect they will issue rations to us on the picket line, from the cars. They run almost out there now."*⁵¹

The rail lines originated at City Point, just eight miles east of Petersburg on the James River. As the supply hub of the siege effort, the hamlet quickly became a bustling seaport, offloading a plethora of cargo from industrialized northern cities. Within a short timetable of barely eleven months, the U.S. Military Railroad had covered the terrain with over twenty-seven miles of track, including four branches and spur lines. Boasting a total of over 785,981 passengers, it carried twice the ridership of the combined military railroads in Virginia.⁵² The railroad quickly became a vital component of Grant's war on the Petersburg Confederacy, rushing men and materiel to the front lines. Soon after the digging and placement of chevrons-de-frise, a steam whistle's shrill was heard from the trenches; a harbinger of supplies and fresh recruits (Figure 2.9).

On August 18-21 fighting to the south of Petersburg at Globe Tavern resulted in Federal troops wresting control of the Weldon Railroad, three miles south of the city. Complying with Grant's plan to cut vital Confederate supply lines to Petersburg, troops and railroaders of the Union 5th Corps, tore up the track. Soldiers piled rails atop huge fires built of ties and heated them until cherry-red. To render them useless they were twisted around nearby trees and referred to as "Grant's hairpins", others were formed into a Maltese Cross, the emblem of the 5th Corps (Figure 2.10). Concluding four days of viscous fighting, the Union foothold at Globe Tavern on the Weldon Railroad was secure. Historian, Noah Trudeau frames the incident: *"What had begun as a large-scale wrecking expedition now became a permanent extension of the Union lines."*⁵³

Union officers close to the fighting developed a strong dependence upon the rail link with City Point. On August 29, 1864 Major Gen. George Meade, reiterating the importance of the railroad, expressed to Grant his concerns for, *"...supplying of troops on the Weldon Railroad, and the advantage of greater facility in moving troops from left to right of our extended line"*⁵⁴ In keeping with his plan, Grant agreed with Meade and ordered his chief quartermaster to, *"extend the City Point Railroad with the least practical delay to the Weldon Railroad."*⁵⁵ On September 1st, the construction corps shifted into high gear. Working at a furious pace over the next ten days, they cut a swath through forest and fields adjacent to their battle lines and laid nine miles of track terminating at Warren Station, near Globe Tavern. The line had now ventured out fourteen and a half miles from City Point. The start of this section became known as *"the path of danger"*, popularized in *Frank Leslie's Illustrated Newspaper* of New York in 1864.⁵⁶ Confederate artillery crews within range, trained their guns at the billowing smoke of Federal locomotives. To create a margin of safety, reserves of the Union 2nd Corps worked alongside trackmen, digging the rail bed five feet below grade, then adding berms to protect the line and its passengers from the rain of Confederate grape-shot and canister.

Grant's plan to end the siege involved the capture and control of Boydton Plank Road and the South Side Railroad, the remaining arteries that supplied Lee's army of Northern Virginia. In mid September a western offensive was launched from entrenchments at the Weldon Railroad. Union troops hammered relentlessly on their outnumbered southern adversary. The fighting was brutal. The Federals steadily gained ground, attributing their success in part, to service of the Military Railroad. By October 2nd, after the Battles of Poplar Springs Church and Peebles Farm, Union lines had extended over two miles west and were within range of threatening the Boydton Plank Road. One month later in November 1864, a new section of track was completed. Just 1,000 yards due south of Fort Urmston, on the new Federal left, sat Patrick Station, on several hundred acres of farmland owned by William Peebles. The Patrick Branch ran west for 2¼ miles from the existing line at Warren Station to the camps of the Union 5th & 9th Corps on Peebles farm. This new railroad terminus within earshot of a picket's rifle report, insured the response time and delivery of soldiers, supplies, communiques and munitions, to the Federal vanguard. Civil War historian Richard Sommers has observed, *"for the first time in American military history...trains were employed to transfer troops laterally from one quiet sector of a battlefield to a railhead barely a mile from the firing line."*⁵⁷

Federal siege lines had spread from east to west forming a large arc of ravaged terrain encompassing the Petersburg. The military railroad that made the extension of those lines possible, mimicked that form. While the railroad responded to demands of the camps and adapted to their position, it simultaneously conformed to the topography. The result was a railroad unlike most. General Horace Porter, of Grant's staff remarked that, *"its undulations were so marked that a train moving along it looked like a fly on a corrugated washboard."*⁵⁸ Due to the exigency of war, engineers hadn't the luxury of time to properly grade the trackbed. Constructed with a bare minimum of trestles and bridges to span ravines and level inclines, the tracks hugged the contours of Virginia's countryside (Figure 2.11). Chief Engineer, Moore admitted in his report that, *"the grading was not very heavy on account of our conforming to the surface of the ground."*⁵⁹ Critics of the line, mostly engineers and officers of the Union army, suggested that locomotives would be unable to pull cars laden with cargo and troops up the steep grades. The railroaders proved the pundits wrong, and as Chief Moore later reported, *"It was discovered that engines hauled an average of fifteen loaded cars per train, and in many cases twenty-three loaded cars with one of our ordinary engines, thus demonstrating the practicability of supplying a large army over a temporary road constructed in this manner."*⁶⁰

In 1864, locomotive trains were a technological marvel, moving a great mass across the landscape at phenomenal speed. Many a soldier commented about his scary train ride to the front lines and some were in fact taken ill with motion sickness. A sure anecdote for pre-battle anxiety or boredom from siege warfare was the thrill of a ride on Grant's railroad. A Union Private recalled an excursion on the line in February 1865:

*"To ride over these roads on a long train, would be hardly pleasant for fastidious people, where the swells and depressions in the roads are continuous, and where the cars will settle together, and the next moment fetch you a jerk that will pretty nearly throw you out of your seat. But these railroads are not made for fine ladies or fine gentlemen in particular...The train jumps along over the rough road at an awful rate, and we wonder over how many rods of ground our remains would be strewn if we should happen to lose our hold."*⁶¹

The ever-increasing demand for supplying the armies of Grant's fifth offensive gave fuel to the railroad's fire, causing it to spread rapidly. Two more branches would be added before the fighting ceased

(Figure 2.12). In December of 1864, the Gregg Branch ran south for two and one-quarter miles from Hancock Station to Fort Blaisdell. In February 1865, the final leg of the line was completed, running from Warren Station south along the Weldon right-of-way for two miles, then west for three miles to Humphrey Station, situated 3,000 yards south of Fort Cummings. "...an average of nine trains, exclusive of specials, were run each way daily, amply supplying the wants of the army...Some days fifteen trains were run over the road each way...A number of hospital cars were fitted up for the purpose of moving the sick and wounded from the front and along the line to City Point. These were kept in constant use." ⁶²

Before the winter of 1864 completely set in, the Federal siege lines encircling Petersburg pointed a stout thumb westward, protecting its flank from north and south with a series of formidable earthworks. Safely concealed within its center, pulsing neurons up the spine of this military behemoth ran a vital component of the United States Army, the fly on the washboard, General Grant's Railroad.

The Army Corps of Engineers

The Corps of Engineers, established in 1802, was assigned the task of designing constructing and repairing the civil and defensive works of the U.S. Government. The *Official Records* further states:

"Its additional wartime duties, as prescribed by regulations applicable at the outbreak of Civil War, were to present plans for the attack and defense of military works, lay out and construct field defenses...to form part of the vanguard to remove obstructions, and in retreat, as part of the rearguard, to erect obstacles and destroy roads, bridges etc., in order to retard the enemy's pursuit" ⁶³

Tall order. The most promising students at the U.S. Military Academy were rewarded at graduation with a highly-prized commission in the Corps of Engineers. Robert E. Lee graduated second in his class in 1829. Ten years later at St. Louis, Lieutenant Lee supervised a company of Engineers attempting to alter the course of the Mississippi River. In 1841, he was dispatched to New York to retrofit defenses of several forts protecting that harbor. He would later serve as superintendent of West Point from 1852 to 1855. This elite Corps, known to exemplify a mastery of military and civil engineering, situated itself within the vanguard of technology. The Corps exercised considerable control over the Academy and held great influence with the U.S. Army for most of the 19th century. For fifty years, from 1816 to 1866 the Inspector of the U.S. Military Academy was also Chief of the Corps. Academy superintendents were routinely selected from the Corps' ranks. In testimony to the effectiveness of the corps during wartime, Colonel Theodore Lyman, General Meade's aide-de camp, wrote in praise of the Engineer's handiwork during a prelude to the siege of Petersburg in June of 1864:

"A pontoon bridge, 2,000 feet long, was made in ten hours, and over this passed a train of wagons and artillery thirty-five miles long...all of which was chiefly accomplished within the space of 48 hours! In civil life...they would allow two or three months of plans and collecting of materials. Then not less than a year to build it." (Figure 2.13) ⁶⁴

An emerging cadre of officers would eventually fill the upper echelon of armies opposed at Petersburg, digging their respective siege lines while steeped in doctrine taught at West Point. Military theoretician Edward Hagerman has written: *"The Army of Northern Virginia and the Army of the Potomac...gathered the highest proportion of West Pointers of any Civil War armies, forming a common culture down through divisional command."* ⁶⁵

Denuded landscapes of war

The effects of war on landscape have undergone various permutations through history. The armies besieged about Petersburg were no exception, producing their own brand of site-specific interventions on the Virginia countryside. J.B. Jackson, the late cultural geographer, was assigned to a combat intelligence unit during World War II. He described a European landscape enduring U.S. Army field operations,

*"Armies do more than destroy, they create an order of their own...both sides imposed a military landscape on the landscape of devastation. The civilian population had almost entirely disappeared, but it had been replaced by another very different one: thousands of highly disciplined men, each of them doing what he was trained to do, going where he was told, eating what he was fed."*⁶⁶

Jackson's assessment is timeless. Much of the same occurred eighty years earlier at Petersburg. A staggering number of fortified earthworks were created by both armies. Ultimately, soldiers working with shovel and axe would transform the landscape, constructing an environment to occupy for the term of the siege (Figure 2.14). Temporary positions won during a skirmish hastily became company entrenchments and would continually evolve until a regiment and finally an entire division, occupied the full scale works. Digging *saps*, *pits* and *parallels* became the constant toil of infantry, supervised by officers and engineers. Often these trenches and holes were dug under enemy fire as troops struggled to fortify a hard-won position. *Sap rollers* were used to provide cover from sharpshooter's flying minnie balls. Freshly excavated earth was reinforced by stacking soil-filled wicker *gabions*, or staking with sawed-off logs and rough-hewn planks (Figure 2.15). The addition of these *revetments* fortified a network of earthworks, assuring their utility. Col. Lyman wryly observed the construction of new Federal entrenchments after the Battle of Peebles Farm on Oct. 1, 1864.

*"It is quite interesting...to see a redoubt going up. The men work after the manner of bees, each at the duty assigned. The mass throw up earth; the engineer soldiers do the "revetment"...the engineer sergeants run about with tapes and stakes, measuring busily; and the engineer officers look as wise as possible and superintend"*⁶⁷

Slash and Burn

Upon arrival to the Petersburg lines a Pennsylvania chaplain described the character of the surrounding terrain: *"the country seems all woods with a plantation about once in five miles. Five miles is quite neighborly."*⁶⁸ This was destined to change as companies of troops assigned names like "pioneers" or "axemen" demonstrated their particular talent. The epitome of bravery, pioneers strode in the vanguard, shouldering axes instead of rifles. Under heavy fire they led the charge, bashing and chopping through advanced enemy entanglements of *abatis* and *cheveaux-de-frise*. When clearing a forest, their slashing opened a firing range for artillery and sharpshooters, while felled trees provided construction timber and firewood for the camps. Union Drum Major, Richard Patton wrote home from the Petersburg front in December of 1864: *"To mother, we received word today that we will go...into winter quarters near this place...but will have to move into the woods as wood is scarce here"*⁶⁹ Pioneers were elements in a simple equation: while the woodlots of Virginia provided raw materials to the war machine, soldiers supplied energy to convert a bucolic and agrarian countryside into a denuded landscape. The land offered the stuff of its own transformation, the catalyst was the army. Generals coveted these squadrons of axe-wielding troops whose efforts were critical to waging war. In a postscript to a dispatch of orders, Major General Meade slipped a reminder to Major General Parke, *"As soon as you can spare*

me some of my axes back I should like to have them." ⁷⁰ To which Parke immediately responded, "I will return you your axes as soon as possible." ⁷¹

The process of manipulating the land ranged from simple pits to excavations to engineered earthworks. A haphazard array of built forms integrated with land forms and structures such as entanglements, revetments, bombproofs, huts, towers, trestles, stockades, gallows, gun platforms and plank roads appeared. On March 9th, the Pennsylvania Chaplain reassessed the changes to the siege landscape: "all the wood for thousands of acres has been cut off for fuel...a few houses are occupied as officers quarters but almost all have been torn down for ...material...for huts. In short the whole region is a dessolation. [sic]" ⁷² (Figure 2.16) As the war effort escalated, more forests were razed, farm fields were hacked and lay fallow. Clearing the land exposed the thin layer of top soils to erosion. With the rains water flowed in torrents, carving gullies into the compacted earth, basting the ground in a gelatinous muck. Hundreds of thousands of boots and hooves trampled the ground further compacting the soil, slogging through mud or kicking up blinding dust storms as the intense heat of summer parched the land. A chaplain from a Vermont regiment wrote:

"We had now been in the vicinity of Petersburg 17 days moving from point to point, fighting throwing up entrenchments and marching as the emergency dictated-never idle. We had been on the turfless pine plain of this region, long enough. Water fit to drink could not be obtained the weather oppressively hot and dry the wind blew like a monsoon, drifting sand into our eyes, sifting it through our clothes and rubbing it into the pores of our skin." ⁷³

Anatomy of Field Fortifications

This seemingly reckless imprint of armies held a military logic of its own. A complex hierarchy of fieldworks evolved, directly related to position, bearing and rank. As prescribed by standard field engineering manuals, advanced rifle pits or *vedettes* were connected to the main line by a series of parallels. These trenches shielded troops from *enfiladed* fire. Munitions, messages, supplies and reinforcements were ferried through these corridors, posing a perilous journey back and forth, dodging blasts from shot and shell. *Breastworks* erected at intervals sat atop *redans* or *redoubts* which protected the *parallels* and *vedettes*. These usually included a *banquette* or firing step and an exposed artillery platform, *en-barbette*. Set further behind these front lines, knit into the topography were larger forts that held artillery batteries, perched atop a prospect, or laid claim to a military crest. *Bombproofs* were dug as caves covered with thick layers of reinforced soil, their compact entrances resembled mine shafts. Soldiers hunkered down inside during mortar showers, protected from the flying shrapnel of exploding shells (Figure 2.17). *Powder magazines* were of similar design but greatly enhanced. A magazine held the ballistic lifeblood of the fort; it was protected against all hazards. In completed fortifications a full compliment of *traverses* or covered ways connected the batteries to magazines and bombproofs and on to the trenches. What developed in relatively short order was a myriad of sophisticated earthworks, providing relatively safe movement for soldiers operating within an extremely hostile environment.

Life in the Trenches... "cold-blooded dueling"

"...we entrenched below the Trojan walls, mud slopped up water, our clothes were rotting with the wet, lice scissored through our groins...protected men skewered us with their arrows."⁷⁴

Aeschylus wrote this passage in the 5th century B.C. describing the plight of a foot soldier. Although well known for his tragedies, the poet and playwright preferred to be remembered for service in the army, where he fought and was wounded in battle against the Persians at Marathon. Two millenium later another tragedy of classic proportions was staged on the landscape surrounding Petersburg. The *Last Long Camp* of the Civil War, endured the rigor of siege warfare.⁷⁵ It was a war of numbers, a war of attrition and as in all wars, soldiers were expendable. At Petersburg they were caught in the ebb and flow of battle-tides, lapping upon the shores of a landscape they created from overturned ground. Generals would plot strategy, but ultimately the valor, determination and spirit of soldiers decided the battle. The majority of troops on both sides held an unwavering commitment to duty and honor, standing among their brethren, imperiled in the conflagration. They fought and died for their respective causes as comrades in arms. As one vast army divided into factions straddled over a marginal zone, they traded trenches and munitions for bodies and lives, oftentimes realizing the futility of their commensurate effort. Midway through the siege, a Union private wrote from the trenches facing Petersburg, echoing a soldier's timeless lament: *"We are finally back here on Gen. Grant's line fronting Petersburg...We had hoped to be sent somewhere else...this was the least desirable place to which they could have sent us...back into these dirty trenches again...it is regular cold blooded dueling...I am getting tired of it after a while."*⁷⁶

The Picket Line

As soldiers acclimated to an environment of familiar earthen warrens, their position and duties were clearly defined. Pickets and sharpshooters detailed in advance rifle pits were subjected to the abuse of standing for hours in mud or water, damp and freezing, or roasting in sweltering trenches. As sentries they were expected to keep a watchful eye across a vast chasm of neutral ground, snipe at the slightest movement and sound the alarm of an enemy advance (Figure 2.18). At times that distance was uncomfortably foreshortened. Under continuous scrutiny of enemy snipers, pickets were often unable to abandon their position or raise their head for fear of being shot. Waiting for darkness to offer respite and relieve their watch, they slipped away to the relative safety of rear lines. In October 1864, a young Union recruit enlisted less than two months wrote home from his "digs" before Petersburg: *"a Soldiers hymn for my mother on picket duty for 8 hours on the field of battle mother All the night alone I lay Angels watching over me Mother till the breaking of Day...I don't think much from home but Sundays I mean I must be at old butchers table to eat but that ain't so I eat at my own table on my belly. I wrote this letter on Sunday on my rucksack laying flat on my belly mother."* [sic]⁷⁷

Sharpshooters, holed up like moles in advanced rifle pits, were protected only by their entrenchments. Separated from their foe by a few hundred yards and within earshot, they frequently held conversations, sometimes taunting, sometimes friendly. A Union soldier wrote:

*"Banging away at the enemy served very well to keep our eyes open. All night long, notwithstanding the constant firing, our men and the enemy were exchanging words. At daylight we had a short truce to relieve the pickets. There has been little firing today, both parties being disposed to keep up the truce."*⁷⁸

Living within such proximity, troops became aware of ongoing activities across the field in rival terrain. On Oct. 14, 1864, Drum Major Richard Patton wrote in his diary: "...we can distinctly hear the Rebel Bands playing opposite us." ⁷⁹ Vigilant in their surveillance, the Signal Corps reported in the closing of a dispatch to 5th Corps Headquarters on October 25, 1864, "...unusual cheering in the enemy's camps on the Duncan road near the R. Jones house." ⁸⁰

Soldiers at the front were captive participants in a gruesome theatre of warfare. Regardless of the color of their coats, they witnessed friends and comrades die mercilessly before and behind the battle lines, a reminder that in the next instant, or the next charge, death or misery could become their lot. Trench warfare demanded an acute awareness of enemy sharpshooters who posed a constant death threat. Minie balls whizzed overhead, followed by the crack from a muzzle report a great distance away. Many a soldier fell dead before he 'knew-what-hit-him' (Figure 2.19). Confederate snipers fired muzzle-loading Enfield rifles with English-made cartridges, accurate up to 800 yards. Union snipers wielded breech-loading Sharps rifles, capable of drawing a deadly bead on an unsuspecting soldier at 600 yards. Firing up to ten rounds per minute, Sharps were three times faster than standard muzzle-loading muskets carried by infantry troops. ⁸¹ In 1861, U.S. Army Colonel, Hiram Berdan, proposed the idea of designating special 'Sharpshooter Regiments' comprised of expert marksman selected from the ranks of the regular army. Competition among troops was keen and criteria were stringent. The results culled supremely talented marksmen, who were formed into two regiments and issued Sharps rifles. Berdan's 1st and 2nd U.S. Sharpshooters became an elite group whose reputation preceded them into battle. Known to eliminate gunners of Confederate artillery batteries from across the field, their expertise was legendary and they hold the distinction of killing more men than any other regiment in the U.S. Army. ⁸²

Although troops living in the trenches were ideologically opposed, they faced a common foe. Disease lurked in their overcrowded, unsanitary excavations. The dense Virginia clay offered little drainage and when frozen in winter was especially impermeable. Rainwater filled rifle pits and trenches devoid of sanitary facilities, transforming them into cesspools. Private Bernard of the Petersburg Rifles wrote this passage in his diary after the fighting at Peebles Farm: "*Our regiment furnished the 100 men for picket last night. The rifle pits were...filled with water...the rain and the constant sharpshooting of the enemy made the tour of duty a most disagreeable one.*" ⁸³ Intense summer heat and proximity to the creeks, bogs and swamps surrounding Petersburg, introduced the armies to swarms of flies and relentless mosquitoes, the standard-bearers of malaria. The troops in the vicinity of Peebles farm suffered from bouts of diarrhea, typhoid fever, and 'miasmas'. ⁸⁴ These diseases were certainly not the extent of loathsome threats exacerbating a soldier's existence during the siege. An itch from the tiniest of organisms could produce overwhelming discomfort. The great armies contended with lice, which infested underclothes without discrimination. A Maine artilleryman noted, "*This little enemy was no respecter of persons; and having enlisted for the conflict, went into position in the pants seams of the highest officer as quickly as that of the lowest private*" ⁸⁵

Desertion

Disillusioned by war, a Confederate soldier wrote of a universal experience: "A soldier is not his own man, he has given up all claim on himself. He has placed his life in the hands of his superiors, he is as a checker player uses his men, if they see a chance to swap one for two they do it" ⁸⁶ Federal prisoners outnumbered the dead and wounded in casualty lists. Deserters were included in those totals. When dealt a miserable hand, countless soldiers, both blue and gray, willingly surrendered in search of release from

the bondage of war. Desertion was considered deleterious by the high commands and classified as a most serious offense. Deserters were hanged, or shot by their own officers when attempting to escape. On February 22, 1865, Robert E. Lee issued an edict to his army that anyone disobeying a command could be shot.⁸⁷ To encourage defection of Southern troops into his lines, General Grant instituted a policy of offering deserters amnesty, subsistence and transportation to anywhere within the Federal domain.⁸⁸ The message infiltrated Rebel picket lines every evening towards the end of the siege and Confederate troops risked emigrations to the Union lines, gambling against death for the hope of capture. A frustrated General Lee telegraphed a message, "Hundreds of men are deserting nightly, and I cannot keep the army together unless examples are made of such cases."⁸⁹ Lee's soldiers arrived starving, tattered and terrified. Advanced Federal pickets routinely received these nocturnal émigrés, sending them on to the rear stockades. A chaplain among the Union lines wrote to his wife:

*"I am at the front but a few hundred yards from the Rebs...as soon as it was fairly dark, the Rebs commenced firing minnie balls in our direction. During the night thousands of these missiles whizzed over our fort. The sound is most villainous, and it is apt to unstring the nerves of a greenhorn. The Rebs fire these balls to kill their own men, not ours. If they did not keep up a constant firing, half of their men would desert. As it is, many get within our lines every night"*⁹⁰

The siege of Petersburg weathered the final winter of the war, and by most accounts it was a brutal season for the common soldier. Relatively comfortable within their winter quarters, the upper echelon, although aware of these inhumane conditions, seemed to do little to effect an end to the misery. Brigadier General A.A. Humphreys, 2nd Corps commander, offered this glum picture of the situation in the trenches before him:

"The winter of 1864-65 was one of unusual severity, making the picket duty in front of the intrenchments very severe. It was especially so to the Confederate troops with their threadbare, insufficient clothing and meager food, chiefly corn bread made of the coarsest meal. Meat they had little of, and their Subsistence Department was actually importing it from abroad. Of coffee, tea and sugar, they had none except in the hospitals...The condition of the deserters who constantly came into our lines during the winter appeared to prove that there was no exaggeration in this statement."[sic]⁹¹

A community of war: "no man's land"

Troops in the trenches comprised a unique segment of nineteenth century information-craving culture. Like friends and family living comfortably back home, they also held an insatiable thirst for knowledge of the war surrounding them. A squadron of journalists, artists and photographers representing major newspapers responded to this demand. These media troops, stationed on assignment among the camps, mingled with soldiers and officers garnering information. On many occasions, daring correspondents slipped into the front lines to feel the pulse of war, composing a narrative of the experience for their readers. Photographers, Mathew Brady and Alexander Gardner and artists, Alfred Waud and Edwin Forbes, photographed and sketched scenes, depicting the warscape with accuracy and detail. Rough sketches from the front lines were sometimes left incomplete, to be finished afterward in safer, more comfortable surroundings. Back in the studios of larger cities, another army, armed with pen and ink, produced intricate engravings of these photographic and freehand images which were then reproduced in newspapers and fine gallery prints. Published accounts in popular newspapers and journals such as *The New York Herald*, *Harper's Weekly*, *Frank Leslie's Illustrated Magazine* and *The Richmond Examiner*,

found their way back into the trenches passing among troops until tattered to pieces. Northern papers arriving daily at City Point were delivered to the front lines via the U.S. Army Military Railroad. Newsagents pitched camp tents and hawked the latest headlines along rail sidings and corduroy roads. Some papers sold for ten cents, a considerable price relative to the meager earnings of a soldier. Those who could read would recite for those who were willing to listen. Isolated on the front and exhausted from exchanging insults and lead, rival soldiers swapped information. Reports on visiting generals or dignitaries, regimental hometowns and victory or defeat in fighting afar, were popular topics discussed across battle lines. From the Petersburg trenches on March 16, 1865, a Reverend wrote:

*"a Johnny raised a little white flag, and held up a paper. One of our boys started on the run, with a "Herald." They met in the middle at the Rebel abatis, shook hands, and exchanged papers, and both ran back. This was followed by at least a hundred of paper for paper, and coffee for tobacco. The boys were all on the parapet...then the rebs called out, "Yanks, hunt your holes, we are ordered to fire." Down went all heads, and bang, bang, went the guns."*⁹²

This sport of trading newspapers was certainly not condoned by officers of the high command. In fact, they feared that army strategy and secrecy was compromised by such liberal exchanges among the ranks (Figure 2.20). Lt. General Grant was gravely concerned and set out to prohibit this practice. On November 11, 1864 he wrote to the Secretary of War:

*"All the Northern papers of the 10th, and especially the New York Times, contain the most contraband news I have seen published during the war. The Times lays out Sherman's programme exactly and gives his strength. It is impossible to keep these papers from reaching the enemy, and no doubt by tomorrow they will be making the best arrangements they can to meet this move." [sic]*⁹³

Grant sent a second message to Maj. General Meade that day, requesting that he prevent, *"to-day's papers getting into the hands of the enemy"*⁹⁴ The order was immediately handed down to Major General Parke commanding the 9th Corps, at Peebles farm, whose soldiers occupied the trenches there. He dutifully responded that he had, *"sized all papers of the news agent"* but mentioned that other agents were selling papers *"along the railroad from City Point to Warren Station"* and that it seemed unfair to prohibit sales in his camp.⁹⁵ In testimony to the power of the press and allure of the written word, Meade's assistant responded to Parke's rebuttal, *"The newspapers have been allowed to come to the army from City Point, and General Meade says it is unnecessary to restrain your agents from disposing of them as usual. Care should be taken, however, to prevent them from reaching the enemy through the pickets."*⁹⁶

While soldiers held court in their trenches, trading was a popular occurrence and a picket's advanced post sometimes functioned as a commodity brokerage. Confederates rich in tobacco swapped for Union coffee and other goods in short supply. As pickets developed a mutual dependence upon the stores of their enemy, an economy of fair-trade developed which engendered communication among rivals. Soldier-bonding emerged naturally, creating a unique fraternity among antagonists. An environment of mutual trust evolved, creating a community of warfare, which spanned the ravaged field between opposing lines, aptly named, "no man's land." Veteran soldiers disillusioned with lethal rifle dueling and resentful of having surrendered their liberties to army life, made arrangements between themselves. Relying on a timeless code of honor, they practiced an unofficial social intercourse. Disregarding army policy, they established rest periods and ad hoc truces for trade, conversation, poker games and worship.

Soldiers ceased firing to retrieve their dead. Union army Chaplain, Clay Trumbull describes a truce in his war memoirs:

*"...in some cases old acquaintances recognized each other, or relatives met face to face...before Petersburg, a father in the Maryland Union regiment met his son, a soldier in the Confederate regiment...they greeted each other affectionately, and talked together until the signal came ...when they sprang apart, each to his own lines...against each other in deadly conflict."*⁹⁷

Field medicine

*"...as we were marching, men dropped like sheep along the road, while others were just able to drag their weary feet: poor half-starved creatures trying to fight upon food hardly fit to sustain life"*⁹⁸

Dr. Archibald Atkinson, CSA

As the siege wore on, Grant's strategy of debilitating Confederate supply lines brought many southern soldiers close to starvation. Soldiers of both armies developed a tolerance of hardship and intense suffering. The misery endured by the wounded on and off the battlefield compounded the horrors of war, compelling brave soldiers to plead for death to relieve their suffering. Union army Chaplain Armstrong's diary entry of March 24, 1865: *"...The rebel loss was frightful. And how they were torn and mangled by shell and grape! The scenes I have witnessed and the sounds heard on the battlefield, and in the hospital, are not to be written or told."*⁹⁹ The practice of field medicine was a horror during the Civil War. Modern armaments inflicted horrendous damage to the human body. Grapeshot and canister sprayed a field with shards of steel and lead projectiles, mowing down soldiers, tearing through filthy uniforms and burrowing into flesh and bone. Exploding missiles dismembered and maimed (Figure 2.21). Dead, wounded and mangled bodies littered the battlefield, inaccessible to ambulance corpsmen under heavy fire. Many bled to death. A soldier wounded in battle was subject to a pernicious cycle of infection, gangrene and amputation. Without medical attention wounds turned septic, while treatments lacking antiseptic practices caused further complications. Maggots infested these patients, thriving on diseased tissue. In the crush of casualties following a battle, attending physicians were ill-equipped and understaffed. Medical procedures held inside makeshift hospital tents were a callous and medieval affair. Army surgeons smoked cigars and frequently operated holding a knife in their teeth, with both hands wielding blood-soaked instruments that passed infection from one victim to the next: A doctor wrote, *"...the surgeon snatched his knife from between his teeth, ...wiped it rapidly once or twice across his blood-stained apron, and the cutting began. [sic]"*¹⁰⁰ Another Union surgeon reported, *"We operated in old blood-stained and pus-stained coats, the veterans of a hundred fights...with undisinfected hands...we used undisinfected instruments, ...and still worse used sponges which had been used in prior pus cases and had been only washed in tap water.[sic]"*¹⁰¹ An unfortunate patient had no recourse but to "bite the bullet" as a limb was severed, then cauterized, sometimes without the benefit of anesthesia. Chaplain Armstrong attended to the wounded behind the lines at Petersburg. He recounted a grotesque scene in a letter to his wife, *"yonder is a tent from which comes horrid shrieks and groans...look in at the door and (you) will quickly hide your eyes and stop your ears...As you pass from this tent...There is a promiscuous heap of trunkless limbs. I cannot describe what I have witnessed. Nor would you want me to.[sic]"*¹⁰²

50th N.Y. Engineers and the Picturesque

Behind the Union lines lay the vast infrastructure of the war effort. Reserve troops, Quartermaster Corps, Army Engineers, teamsters, laborers, horse-handlers, blacksmiths, surgeons, ambulance drivers and undertakers, dwelled in relative security, beyond range of enemy artillery and shot. Field hospitals, stockades for prisoners, corrals for horses and livestock, mess halls, kitchens, railroad stations and gallows were assigned space. Tents and informal huts constructed of low log walls and pitched canvas roofs, dotted the landscape in ordered rows. In contrast to the primitive accommodation found at front line trenches, camps positioned safely behind the lines were further developed and infinitely more comfortable. After the frenzy of ordering camp subsided, engineers and troops with idle hours indulged in creatively applying final details to camp architecture and design (Figure 2.22). Photographer Alexander Gardner, known for his evocative photos of conditions throughout the conflict, offers this idyllic description of Federal camps he photographed before Petersburg:

"The ingenuity and taste of the American soldier is strikingly illustrated in the variety of architecture with which he adorns his summer quarters...The forests are ransacked for the brightest foliage, branches of pine, cedar and holly are laboriously collected. Camps are surrounded with neat hedges, arches bearing the corps badge...and the tents are sheltered from the sun by roofs of deftly woven twigs and leaves. Sometimes a framework is erected around a number of tents, upon which is fastened a thick covering of evergreens, completely hiding the interior, and forming a home delightfully cool, even in the hottest days" ¹⁰³

Following his tour on the Petersburg front, a drum major from the 9th Corps wrote, "we moved and now have comfortable quarters...a good log house with a board floor a door, washstand in front, frying pans cupboard, blacking brush, bottles tin cup benches [sic]" ¹⁰⁴ In at least one instance, the results imbued a sylvan atmosphere of the Picturesque, an unlikely setting for a war torn campsite. The 50th New York Engineers, stationed near new headquarters at Peebles Farm, built a winter camp replete with a rustic log church, cabins, and a 150 foot tall signal tower. The camp as an anomaly of war was quite the attraction, winning admiration and notoriety among soldiers, officers, war correspondents and civilian visitors.

When they weren't building their own, the Union army had a penchant for appropriating southern architecture. As thousands of armed troops marched through a region fighting and extending battle lines, local residents were forced to flee, abandoning their homes. Some structures caught in the midst of a firefight were shot to splinters, compliments of invading or defending riflemen. Others were ransacked and burned by marauding cavalry, or looted by the swarm marching past. Union soldiers acquired a reputation as a plundering army, evident in a popular sobriquet used by southerners to describe the conflict: "the war of northern aggression." Public buildings, mansions and finer homes were commandeered by the upper echelon of the army and re-fitted into command posts or headquarters. The Globe Tavern on the Weldon Railroad was used as headquarters for General Warren's 5th Corps. Here the offensive to extend the Union lines toward the South Side Railroad was mobilized. Poplar Spring Meeting House on the Church Road saw duty as a field hospital used by both armies, and the Peebles house was transformed into Army of the Potomac headquarters by Major General Meade. Subordinate officers found their shelter in sheds, log and canvas tents or refitted outbuildings, commonly referred to as shebangs.

Camp Culture

The tedium of camp life became apparent during the siege. War operations tempered in late fall of 1864 and as the threat of a long, cold winter approached, a routine existence established itself. Following a rotation on the front line, soldiers complained of boredom in camp. A New York soldier wrote, "*dull, duller, dullest...nothing can exceed the monotony of camp life*"¹⁰⁵ To combat ennui during hours not dedicated to military protocol, the ranks passed time enjoying a full compliment of amusements. A social order developed which included events such as greased pole climbing, greased pig chasing, foot and horse racing, baseball, cricket and gymnastics. Card games and storytelling spontaneously erupted whenever a few troops found themselves in a circle. Invention and improvisation were de rigeur. Gallows doubled as a frame in a popular game of tenpins (Figure 2.23). Country men played fiddles, flutes and banjos. Army bands serenaded officers outside headquarters. Cockfighting, popular among the Confederates was seldom permitted on the Union lines. Alexander Gardner recorded this rare scene of camp amusement in front of Petersburg August 1864 (Figure 2.24). Horse racing was especially popular. One course was held along a level section of the Halifax Road, near Fort Wadsworth at Globe Tavern. Another recorded race took place at Peebles farm on March 17, 1865.

*"the Irish Brigade of the II Corps, got up a grand race, with printed programme and every luxury...the course laid out...in rear of what you remember as the noted Peeble house. There was a judge's stand flaunting with trefoil flags, and a band beside the same...then a bugler blows at a great rate and the horses are brought to the line; the bugler blows at a great rate some more, and away they go. There were a good many different races...Everything was extremely quiet and orderly, and no tipsy people about"*¹⁰⁶

In an attempt to promote esprit de corps, visits from dignitaries, luminaries and statesmen, were given high profile. These special guests of the army sauntered through the camps overseeing army operations, stood in review of dress parade, and paid their respects to the fighting troops, dead and alive. Occasionally the tour would include a glimpse of gritty, front line trenches, courtesy of the becalmed enemy guns that particular day. Major General Meade wrote to his wife of such an instance from his camp at Peebles farm on October 18, 1864:

*"Yesterday General Grant came up in the morning with the Secretary of War, Secretary of the Treasury, the Collector of New York, Mr. Hooper, member of Congress from Boston, together with several military dignitaries. They spent a short time at my headquarters from whence I took them to see a part of the lines, after which they returned to City Point, I accompanied them. At City Point I met Admiral Porter and Captain Frailey, each with his wife. As these ladies desired greatly to go to the front and see some rebels, I persuaded their husbands to return with me, and we stopped the cars near Hancock's headquarters, inspected our line and the rebel works, and then went to Hancock's who got us up a comfortable supper, and after dark shelled the enemy's lines. They seemed greatly delighted, and returned about 10 p.m. to City Point."*¹⁰⁷

Not all of the amusements at camp were light-hearted (fig 37). The penalty for desertion became a macabre form of troop entertainment. When deserters were captured they would face a firing squad. As a prelude to the event the deserter was hauled through the camp, accompanied by a dirge, wearing a placard stating his offense. These somber public spectacles required mandatory attendance. A Colonel from the 2nd Rhode Island Volunteers, described such a scene in his diary entry of January 6, 1865:

"Today I witnessed a sad sight- the execution of a soldier who deserted from a New Jersey Regiment. The condemned man first rode about the camps in an ambulance and seated upon his coffin...I had a look at him and made the remark that if they let him alone he would die from fright...our entire division paraded to witness the execution ...the coffin was placed near the grave...the man was seated upon it with his eyes bandaged...as the reports from the muskets were heard the man fell back dead...the division was marched by...as each company approached the Captain gave the command "Eyes right", and each soldier was forced to look at the body. I was glad when it was over." ¹⁰⁸

Pride of place

Troops were aware of their position relative to military boundary. Headings on letters written home offer vague place names like "before Petersburg." Soldiers exacted their positions relative to architectural references, whether standing intact or in ruins. Names like: Six-mile house, Yellow Tavern, Burnt house, Miss Peagrams, Jones', Peebles, or Wyatts, assumed a provincial sense of location and direction. Place was also inferred by proximity to a nearby fort or headquarters. Simply stating "Fort Fisher", or naming a division or corps, like "1st Division, 6th Corps," would suffice to identify a position. Likewise, as so often evident in the milieu of war, leaders offered troops a *raison d'etre*. Soldiers admired certain officers. In such instances they would sometimes identify their position not by geography but by whom they proudly served. Crawford's Division, Butler's Army, or Rhode's Regiment were legitimate terms for the justification of place.

Although the Federal army had the advantage of greater numbers and a more developed supply network, throughout the siege, Confederates waged war with unique advantages. Having pre-established defensive positions they were less subject to arduous marches. Many were local and intuitively understood the terrain, while the Union army relied upon scouts and maps based on unfamiliar landmarks, references and inaccurate distances. When a Federal column marched through a landscape few friends lay in its wake. Yankee officers and scouts could seldom trust the directions of local 'confidants'. Hailing from lower latitudes, southern troops had no need to acclimatize to the sweltering heat of summer. Foremost, Confederate soldiers were fighting on their own soil, protecting their families, farms, towns and way of life. The wolf was at their door. Johnny Reb was duty-bound, defending his hearth against bluecoat invaders.

The Battle of Peebles Farm and Poplar Spring Church

Grant's offensive had pushed steadily southwest by late August and having gained control of the Weldon Railroad, concentrated at Fort Wadsworth near Globe Tavern. The U.S. Military Railroad followed this expansion, reaching the area by September 10th, where Warren Station was built as the western terminus for troops and supplies from City Point. From this base, Union skirmishers and cavalry probed hostile country to the south and west, running daily forays to reconnoiter and raid. With the Weldon Railroad in hand, the Southside Railroad, Boydton Plank Road and Cox Road now lay before Grant's mounted vanguard. In the weeks preceding the battle at Peebles', Brigadier General Gregg, commanding the 2nd Cavalry Division, had been assigned to push the envelope of the current Union frontier. He sized up the situation in a series of messages to General Meade's headquarters:

"September 28...My advance at Armstrong's, near Hatcher's Run, destroyed the telegraph line from Petersburg to Stony Creek, chopping down the poles...a strong effort is being made to reach the (Boydton Plank) road, but I do not think we will reach it, having tried as much as possible...will withdraw to Wyatt's and try the enemy toward Poplar Spring MH

"September 29...My advance reached works near Miss Peagram's; there learned of a force of infantry half a mile beyond that, I presume at Peebles'. The presence...made it impracticable. The road leading from Wyatt's to Poplar Spring Church is heavily barricaded and picketed. I have withdrawn my force to ...Wyatt's and do not think any further results can be produced in this direction." [sic]¹⁰⁹

The message was clear that Grant's objectives would not be achieved by a half-hearted turnout. Although well advised, the caution recommended by Gregg was not heeded and on September 30, General Warren mobilized his 5th Corps and two divisions of the 9th Corps, to push off from their stronghold at Fort Wadsworth. By 9:00 am, a long column of troops was marching fervently west along the Poplar Spring Road, en route to Boydton Plank Road, with its sights set on Petersburg. The Confederates had dug a perpendicular line of defensive works along Squirrel Level Road, incorporating a half-finished redoubt named Fort Archer. It sat amidst a clearing on Peebles' farm. The fortifications were defended by cavalry and horse artillery, the main body of Rebel infantry being held back to protect Petersburg. Filing out of the woods into a clearing past the small meeting house, blue-coated soldiers had their first glimpse of the Confederate fort as its battery opened fire 600 yards away (Figure 2.25). The leading division immediately took cover in a ravine that ran parallel to the Squirrel Level Road and waited to gather strength for an adequate attack force. Colonel Lyman, described his approach with General Meade a few hours later:

"Most of the road was through a pleasant wood, chiefly oak. Passing the "church" (a little, old, wooden building that might seat forty persons), we turned to the right and came out on a large, open farm. On a roll of land, just ahead, was the Peeble house (pretty well riddled with bullets), and...more open land ending in a fringe of wood. Perhaps 400 yards in front was the captured line and the redoubt"¹¹⁰

At 1:00 p.m., two brigades of General Griffin's Division, 5th Corps, braved the open field teeming with Confederate bullets and shell. This column defied heavy fire and steadily advanced, leading the charge on Fort Archer. Storming the parapet, they captured a gun and over seventy troops. Col. Norval Welch, commanding the 16th Michigan Volunteers, shouted, "a commission to the first man to mount the parapet of that redoubt"¹¹¹ He arrived first, and while standing on top of the parapet waving his sword to encourage the assault, was shot twice through his head. A new Federal fort, further to the northwest, would soon be named in honor of his gallant act (Figure 2.26). The fearless attack was described to L.A. Henrick, the New York Herald correspondent, by a proud General Warren: "A more magnificent charge was never made by any troops in any war."¹¹² A fragmented force of Confederates fled Fort Archer and rallied at a lunette to the northeast, attempting to make a final stand. These outnumbered troops were ousted and scattered back to stronger works situated along the Boydton Plank Road. A soldier in the 5th Corps described the fight just beyond the Poplar Spring Meeting House on land owned by its pastor, Reverend Talmage:

"The pastor of this church, also a farmer, was named Talmage, and lived in a house near where we encamped, and the house is now Headquarters for our Division (Gen. R.B. Ayers Commanding). Mr. Talmage and his family of several children and wife were in their home when the battle was raging all

about them, and they fled to one of the out-houses where they had thrown up an embankment...the house and out-buildings were riddled with shot and shell, from first one side and then the other. The family were in a pitiable condition, their goods scattered and wrecked." 113

Federal engineers immediately set to the task of fortifying their newly-won position. By 3:00 p.m., the fresh soil of a hastily dug Union picket line had been connected to the works at the Weldon Railroad, setting up a temporary front. The battle was not over. Confederates were massing a counterforce of veteran troops in strong works behind the Boydton Plank Road. General Warren ordered an advance from the poverty grass of Peebles' farm in two directions, in an attempt to push north toward Pegram's property and Boydton Plank Road. General Potter's 2nd Division, 9th Corps, approached from the left, but hampered by dense woods and swamp was unable to connect with the other 5th Corps Divisions of Generals Ayers and Griffin. The outnumbered Rebels seized this opportunity at 4:30 p.m., when General Wade Hampton's cavalry drove a wedge through this gap in the advancing line of bluecoats. Separated and disoriented, the Yankees were routed by Hampton's horsemen and dealt a heavy blow- 1,496 prisoners were taken and 514 were killed and wounded. Wicked fighting broke into the open of Pegram's farm and further north to the cornfields of R. Jones' farm. At sundown, U.S. Colonel James Wheaton, commanding 1st Michigan Volunteers, was killed north of the skirmish at Fort Archer, at the site where Fort Fisher would soon be built. As the conflict raged on, the Confederates lacked the numbers to overwhelm their enemy, and the Federals managed to rally artillery and regroup, strengthening their original line they turned more topsoil on Peebles' property. This position would mark the northern extent of Union offense until the following spring. Colonel Lyman, accompanying General Meade, continued his commentary:

"At 5:30 we were sitting in the Peeble house...when we heard heavy musketry beyond the narrow belt of woods that separated us from the Pegram farm; there was cheering, too, and then more musketry...there came from the woods a considerable number of stragglers, making their way to the rear, then came a piece of a regiment, with its colors, and this halted inside the captured works. The musketry drew plainly nearer, and things began to look ticklish." 114

The next day, October 1st, brought heavy rain and renewed fighting. A telegraph line had been strung to the Peebles house, now a field command post. Confederates attacked the Union right flank on the Squirrel Level Road and the fighting broke into the cleared ground surrounding Chappell's farm house. Lieutenant Thomas D. Urmston gave his life here, leading the 12th U.S. Infantry. Fort Urmston would soon be built on the Union line, guarding the Squirrel Level Road. Federal commanders anticipated a difficult fight and ordered reinforcements (Figure 2.27). At 9:30 am, Major General Meade sent the following message east to General Hancock commanding the 2nd Corps:

"The major-general commanding directs that Gen. Mott's division be sent to Gen. Parke at the Peebles house, near Poplar Spring Church...Trains of cars will take his troops to the Weldon railroad close to Warren's headquarters, where they will give him someone to show him the road to Peebles'...sixty cars will be ordered-all there are on the road" 115

Most of the day involved disputes at Union outposts extended beyond the foothold at Peebles farm. Confederate forces would not abide the loss of further ground. They stirred Federal intruders from their temporary claims, but failed to evict them from the sodden furrows of Peebles' land. The rain continued. At 2:00 p.m., a dispatch from the Peebles house headquarters to Brig. General Gregg stated, "Gen. Mott's leading brigade has just arrived here, and is moving out to Parke. The whole division will soon be

here, and as soon as it reaches Parke dispositions will be made to attack the enemy near the Peebles house...the attack will be made as soon as practicable.[sic] " 116 General Parke, working at the front, offered his assessment of the situation at hand. Closer to the fight and perhaps better informed than headquarters, he was making slightly different arrangements while awaiting the arrival of Mott's 2nd Corps. At 3:00 p.m., he fired off a communiqué to 9th Corps headquarters at Peebles': "*Any advance that we may be able to make this evening may result in the taking of the Pegram house, but I think nothing further. The enemy have artillery at that point...the ground is getting very soft. No change has been made in my lines.*" 117

A conservative approach based upon field conditions was favored and held a Union advance in abeyance until the following day. Meanwhile further south at the lower Vaughn Road, General Wade Hampton's cavalry staged a series of unsuccessful charges on the Union infantry, in a desperate attempt to dislodge them from positions guarding the Federal southern flank. At dawn on October 2nd, the third day of battle, General Mott's 3rd division teamed with the 5th and 9th Corps, determined to storm over the ground and take the Boydton Plank Road. By 7:30 am, General Parke reported that he and Mott were in position and would soon advance the entire line. Two hours later, Parke informed his commanders, "*the Pegram house unoccupied.*" 118 The Confederates had returned to their fortified works on Boydton Plank Road overnight, leaving little resistance in the area except a few skirmishers at the Davis house to the northeast. By 11:30 am, the word to headquarters went out from General Parke that he found little opposition and had ordered a skirmish line dug in front of the Pegram house (Figure 2.28). In a timely letter to his wife, Colonel Lyman described the scene immediately following these events, "*the whole line advanced, established a front at the Pegram house...The engineers were trotting around briskly ordering a redoubt here and a battery there, all intent on fencing in our new property.*" 119

General Warren sent a dispatch to General Ayers at 11:50 am, hoping to grab more land to the north. Urging him to attempt the capture and control of Fort Bratton at Davis' house, he advised, "*Everything but cavalry, as far as we have found out, has left this neighborhood*" 120 In a rare instance, the Union advance gained new latitude with relative ease, extending their works compliments of a strategy implemented by the southern army. Having one foot entrenched, the Federal force confidently strode to within range of their destination, only to find it unobtainable. The correspondent for the New York Herald diplomatically recounted, "*Near the Boydton road a very formidable line of works was found, behind which the rebels were posted in heavy force. It was not deemed advisable to attack, and our men fell back, and occupy a safe position.* [sic]" 121

Typical of siege operations thus far, in the aftermath of battle, new lines were drawn while each side made a careful assessment of the outcome. The Confederates, in considering their inferior numbers, were wary of overextending lines that may prove difficult to defend. They elected to regroup and strengthen existing fortified works set into supremely defensible positions. The Federals, waging land-grab warfare, were smitten with their new real estate venture, aware of an opportunity to develop a trophy landscape of engineered siegeworks before Petersburg. In a favorable commentary on the results of Federal army maneuvers around Peebles farm, L.A. Hendrick of the New York Herald concluded: "*Our line has been lengthened a mile and a half; we have driven the enemy from his strong works only recently put up...we are nearer Petersburg, and now securely threatening the Southside Railroad.*" 122

Fighting at the Battle of Peebles Farm occurred from September 30 through October 2, 1864. The conflict ranged across the landscape of Wyatt's farm to Poplar Spring Meeting House, Chappel house and Squirrel Level Road, then on to Peebles, Pegrams and Jones' farms. Depending on the writer, the battle

was given a different name. A few southern papers called it "Jones' Farm", the front page of *Frank Leslie's Illustrated Newspaper* named the conflict, "The Battle of Poplar Spring Church" and *Harper's Weekly* entitled the events, "The Battle of Peebles Farm." (Figure 2.29) (Figure 2.30) This conflict, resulted from a decisive move by Grant's Army of the Potomac, led by Maj. General Meade, to break the four month siege of Petersburg and forge on to capture Richmond. Although well intentioned, the plan fell short of its goal, and consistent with previous campaigns, resulted in high casualties. The struggle at Peebles Farm did however, manage to secure another valuable tract to the Federal claim surrounding this pivotal southern city, while continuing to debilitate General Lee's Army of Northern Virginia. When the smoke had finally cleared, the casualties for the Union totaled 2,898, including 187 dead, 905 wounded, and 1806 missing. Confederate losses, by close estimation were tallied at 1,300.¹²³

Evolution of Federal Left flank and Fish Hook Siegeworks

*"The commanding general directs that you send in the names of any officers of your command who fell in the recent engagements at Peebles' farm, with a view to the naming of the new redoubts."*¹²⁴

Following the operations of early October on Peebles farm and environs, Union soldiers and engineers engaged in protecting their hard-won turf. Their interventions would evolve, unimpeded by major battles, through the fall and winter of 1864-65. The result would be nothing short of a showcase for military engineering prowess, borne of a style fashioned from the U.S. Military Academy at West Point. By this juncture in the siege, veteran soldiers and engineers knew their business. The landscape was replete with building materials available for harvest by an abundant labor force, capable with an axe and spade as well as a musket. Hordes of troops camped on the land while Grant's railroad delivered a constant stream of supplies and replacements from the depot at City Point. The well-oiled army machine was now capable of turning out sophisticated siegeworks designed to protect the western segment of Union lines.

Headquarters

Major General George Meade, leading the Army of the Potomac, was pleased with his latest acquisition. Recognizing the importance of posting a command within earshot of the battle lines, he opted to relocate his headquarters to this frontier. On October 2nd, his aide-de-camp wrote, "*Here Gen. Meade sent me to look for a new camp...It was a tedious business getting a spot, for the whole country was either occupied, or very dirty from old camps*"¹²⁵ Meade had another motivation for the move. He was tiring of the long commute to work each day. Shortly after the conflict at Peebles he wrote to his wife, "*I was afraid you would be uneasy at not hearing from me during our recent operations, but my headquarters were some five or six miles from the scene of action, and it was always at midnight when I got back, tired out with the day's work, and had to start early in the morning, so that I really did not have time to write.*"¹²⁶

Army of the Potomac headquarters was established at the Peebles house and remained there until the siege was broken the following spring.¹²⁷ The Federal concentration had sprawled more than two miles west of Globe Tavern and the Weldon Railroad and the terrain was now seriously overcrowded. Union defenses extended to a point just beyond the area where Fort Fisher was being built. To sort out the confusion a great effort at organization was underway. The *Signal Corps* busied itself establishing outposts. Sharpening their focus on the slightest enemy movement, they constantly informed superiors

and designers of relevant news, which led to revisions in the construction and placement of fortifications. Chief Signal Officer, Major B.F. Fisher, tapped out a continuous flow of messages over the wire:

October 4: "I have one station near the Pegram house overlooking the enemy's lines in the vicinity of the Boisseau property. This is in charge of the Ninth Corps officer; one is being put up along General Ayres' front. Have not yet located on the left and rear." 128

October 5: "The station on the Ninth Corps front sees a portion of the Boydton plank road between Ritchie's and Robertson's and will be able to notice movements made upon it." 129

October 8: "At 5:00 pm Captain Davis reports about 1,000 men, infantry, moving westward on the Boydton plank road. They were seen passing a point a quarter of a mile west of the toll gate." 130

For the three weeks following the Battle of Peebles Farm, soldiers and engineers of the north and south relentlessly constructed and modified their defenses. Chopping and digging, skirmishing and drilling was the order of the day. A virtual chess game ensued on a playing field of engineered warscape. Each army jockeyed its players into and out of positions dictated by skirmish, strategy and maneuvers. Shovels increasingly replaced firearms as the fighting declined and earthworks loomed omnipresent. On October 3, orders from General Meade to the 9th Corps commander, General Parke, stressed the urgency to complete the new fortifications- conscious of a plan that would insure their protection. *"The commanding general desires you to have the intrenchments, slashing, &c., pushed forward as rapidly as possible, working all the men you can. The redoubt at Clement's house will be put up and one in the rear to close the position. Major Michler is instructed to employ all the engineer officers and troops upon the work. [sic]" 131* An hour later, General Parke replied, *"Received your dispatch of 8:00 p.m. I will have the work upon the intrenchments pushed as rapidly as possible...I have just received a report from our scouts that they saw considerable commotion in the enemy's lines. I think all these reports go to show that the enemy is adjusting his force to meet the new condition of things." 132*

Just two days after battle actions at Peebles Farm, production of new camps and defenses was running at breakneck speed with all components of the Union army harnessed toward militarizing terrain. Major General Parke sent this update to headquarters: *"Picket-firing continuous at the north-west angle of our picket line. I have details at work on the redoubts at Pegram's and Clement's house, and I have furnished Captain Harwood, U.S. Engineers, with details for work on the rear line." 133* Major N. Michler, U. S. Army Engineer Corps, was responsible for the design-build of Federal earthworks. He filed his report on the position and progress of ongoing excavations:

"October 2nd, ...on the morning after repulse of the enemy in his final attack, it having been determined to hold on to this position, ...was ordered to select a new line to connect the advanced point near the Pegram house with Fort Wadsworth, and locate the necessary intermediate works. The tracing, profiling and construction of them was immediately commenced...Before daylight on the morning of the 4th, by direction of the commanding general, ...made a reconnaissance for the purpose of selecting a line to be refused from the left flank toward the rear, and to be connected with Fort Dushane. The sites of several new redoubts were established, the connecting lines traced, and with large details their construction immediately commenced." 134

The new Federal stronghold was now delineated on the landscape. Later that day, Colonel Lyman and General Meade rode the extent of the Federal estate. Surveying the progress Lyman noted:

"October 4th ...Some of our earthworks were very workmanlike, handsomely sloped in front, and neatly built up with logs in the rear...a handsome sight to get a view of half a mile of uniform parapet...and see the men's shelter tents neatly pitched in the pine woods just in the rear, while in front a broad stretch of timber has been slashed." 135

This advanced line of Union siegeworks was anchored by a circuit of redoubts named in honor of officers who made the supreme sacrifice during battle at Peebles farm. Responding to an order for a list of their names, Brig. General Crawford, commanding the V Corps, wrote on October 13:

"...I have the honor to report the names of officers who were killed in the late battle at Peebles' farm: Col. Norval E. Welch, 16th Michigan Veteran Volunteers; Capt. J. H. Wheaton, 1st Michigan Volunteers; Capt. W.H. Keene, 20th Maine Volunteers; First Lieut. Thomas D. Urmston, 12th U.S. Infantry; Second Lieut. J. Conahey, 118th Pennsylvania Volunteers." 136

Acts of courage demonstrated by these men were memorialized in earthen monuments dug by fellow soldiers on land owned by Messrs. Peebles and Pegram. These fortifications of the Federal left were bounded on the east by a segment of the Weldon Railroad and the Halifax Road, with Fort Wadsworth guarding the northern end and Fort Dushane protecting the south. The properties lying south included Clements' and Davis'. Bordering to the west, Parish and Smiths', and to the northwest and north were, Boisseaus', Jones', Boswells' and Chappells', respectively. To prevent a flanking attack from Lee's Army of Northern Virginia, U.S. Engineers staked out their lines to return back on themselves; the leading edge formed an oblong arc that nosed its way precariously into hostile territory (Figure 2.31). A Private in the 9th Corps succinctly described the arrangement:

"...we are a about half a dozen miles from Petersburg, in a southwest direction...between the Weldon and Southside Railroads. Off to our left the line bends around our rear so that the enemy are on three sides of us" 137

The Left Flank and Fish Hook

The earthworks situated on the northern edge of this line are referred to as the Left Flank. Originating in the east with Fort Urmston, then heading west to Fort Conahey and on to Fort Fisher. The line continues west beginning a curve through Battery 27 and Fort Welch, and then returns south/southeast to Fort Gregg, forming a hook.¹³⁸ Army Engineers were lauded for their diverse design applications that contributed in forming this lethal, impenetrable defense. Each fort had a distinctive footprint and organization that corresponded to its adjacencies. This formal earthen assemblage, although appearing haphazard in plan, self-consciously adapted to conditions of terrain and defensible positions relative to the Union line. A hallmark of its design provided a relatively small force the ability to efficiently defend the works and garrison the forts, freeing the balance of troops to wage offensive campaigns without fear of losing their positions. With efficiency and timing of the essence, Major General Parke, leading the 9th Corps headquartered on Peebles farm, was justifiably proud of the results achieved by soldiers under his command. On October 13, he wired this update to his superiors, *"I have the honor to report that nothing unusual has transpired along our lines in the past twenty-four hours. The redoubts are all completed except two-one in the edge of the timber on the right of the Peagram house, and one directly west of Peebles' house."*¹³⁹ Parke is referring here to Fort Fisher and Fort Gregg. His message confirms the immediate and professional response by officers, engineers and enlisted men to the October 3rd request to *"push forward as rapidly as possible."*¹⁴⁰ Running for over seven miles, a total of eleven forts including

several batteries were created and in various stages of completion within a short time (Figure 2.32). Major N. Michler, supervising the works, informed his superiors in his weekly report of October 22, that:

*"...the whole line occupied by the Army of the Potomac was entirely constructed and in defensible condition...The incredibly short time in which those (earthworks) to the west ...were built surprised the officers of our own army...The works were well constructed and finished, and the infantry parapets are as strong as they could be made to answer a useful purpose...The officers of the Corps of Engineers...and the men of their respective detachments, must be given the credit for the immense amount of work accomplished."*¹⁴¹

Beginning at Fort Wadsworth on the Weldon Railroad, a line of trenches connected west to **Fort Keene**, which protected the Vaughan Road. Then, another series of parallels and rifle pits zig-zagged west toward the Squirrel Level Road. Here sat **Fort Urmston**, the easternmost on the Left Flank line. It was dug as a hexagonal redoubt, during the conflict at Chappell's farm, in early October 1864. Three of Urmston's shorter sides affront the enemy lines to the north, northeast and northwest. Situated at the Squirrel Level Road, the fort held positions for six field guns placed *en barbette*- protecting Union gains by blocking access along that road bed. On October 21, Lt. Van Rensselaer of the engineers examined the front lines for, *"any weak places in the abatis...at the fort on the Squirrel Level road...and if so, to have it strengthened."*¹⁴² Fort Urmston's original parapet of 168 meters enclosed an area of roughly 2,985 square meters ($\frac{3}{4}$ acre). It was built by the 3rd Battery, Vermont Light Artillery from October 5-12, 1864 and was designed to hold a garrison of 200 troops.¹⁴³

To the left of Fort Urmston, 800 yards in a northwesterly direction, sits **Fort Conahey**. Its footprint was dug in twenty days immediately following the actions at Peebles farm, then dedicated to Lieutenant J. Conahey 118th Pennsylvania Volunteers, who gave his life for the Union cause in that battle. The fort was unique for its artillery *casemates*- enclosed chambers protected from hostile fire below the level of the parapet. *Embrasures*, a small opening providing a window for canon-fire, protected artillery crews from shot and shell blasts. Fort Conahey has an ovoid footprint, its northern exposure is detailed with a dentate façade. It had the capacity to hold eleven field guns. Of seven on the upper parapet, four fired through *embrasure* and three fired *en barbette*. Four guns were located below in the casemates. This earthen redoubt enclosed roughly half an acre of ground which was garrisoned by a force of seventy-five troops of the 2nd Division VI Corps.¹⁴⁴ By the first week in November, an engineer report stated that, *"Lt. Howell has had charge of the construction of Fort Conahey. The parapet and stockade are finished and the interior works are being pushed rapidly forward."*¹⁴⁵ One week later an update filed by Major Michler informed, *"the construction of Fort Conahey has been advanced...and is now very nearly completed, four feet of earth already covering the magazine."*¹⁴⁶ The articulated business edge of Fort Conahey was capable of directing *enfiladed* fire to the north. When coupled with its neighbor, Fort Fisher, 600 yards to the west, a lethal crossfire addressed the field fronting an irregular line of Confederate trenches sprawled before Petersburg.

Destined to become the largest of all the Union forts built during the Petersburg siege, **Fort Fisher**, sat farthest north along the lines. It was named for Lieutenant Otis Fisher, 8th U. S. Infantry, who was killed on September 30, nearby in an area that later became Fort Welch. Engineers broke ground for this fort during battle actions at Peeble's Farm. Fort Fisher's original design by Lt. C.W. Howell, U.S. Army Engineers, was a four-sided, almost square redoubt, holding seven guns.¹⁴⁷ Construction was completed by October 18, 1864 (Figure 2.33). Situated on a slight prospect, it is perched just east of the Church Road. Posted at a strategic position within the line, exposed to the northwest and north, it held a formidable command of the terrain. As per original drawings, the relief of the redoubt was twelve feet

with a six foot ditch and a parapet roughly fourteen feet wide.¹⁴⁸ In a few months, Fort Fisher would be transformed into a more developed, bastioned fort.

Initiating the curve of an arc to the southwest, 550 yards across the field to Fort Fisher's left, sits a well defined fieldwork known simply as Federal Battery 27. It was intended to be named Battery Abbott, but the title had already been given to another Union fortification.¹⁴⁹ On November 16th, a company of engineers set, *"a wire entanglement in front of the works from Fort Fisher to Fort Welch, to take the place of slashings removed by the troops. This entanglement...extended along the whole front, to a point about 200 yards to the left of Fort Welch, and was completed on the 17th instant."*¹⁵⁰ This measure was not deemed adequate and on December 22, a dispatch was sent to the 1st Brigade Commander, of the 1st Division, 2nd Corps:

*"Gen.: The...division directs that a new curtain between Forts Fisher and Welch be constructed by the troops of your brigade upon the lines staked out yesterday. The ditch to be six feet deep and twelve feet wide, and the earth to be used in the breast-works, which will consist of a banquette, with a berm of sufficient length to prevent land-slides. The work will be commenced at once and completed as rapidly as possible."*¹⁵¹

This message had the tone of a routine military request, yet it reverberated with a timbre of urgency. Increased enemy movements in the field dictated that a vulnerable segment in the line needed to be fortified. This earthwork straddled an important position, and as a battery it was not enclosed and defensible only from a frontal attack- posing an inherent weakness to a defensive line. Yet Battery 27's, three-sided face dovetailed with protective angles of fire from Fort Fisher to its right and Fort Welch, barely 200 yards to the southwest, alleviating this potential flaw. When this "curtain" was constructed from late January through February of 1865, it added a threatening dividend of firepower to the Fish Hook Line. Along a parapet of 132 meters, platforms for eleven guns were erected. David Lowe of the National Park Service, suggests that eight of these were large siege guns, protected behind embrasures, capable of launching twenty to thirty pound shells.¹⁵²

The redoubt named to honor Colonel Norval Welch, who died storming a Confederate salient on Peebles farm, protrudes at the westernmost tip of the Fish Hook. It was designed and built directly after that battle from October 3-10, 1864. **Fort Welch** is traced in the shape of a pentagon. Surrounding eight tenths of an acre, its working exposures faced prevailing enemy forces from the northwest, west and southwest. Welch's parapets rise more than three and a half meters above the ditch and held a maximum of nine guns that alternated positions from *embrasure* to *en barbette*. Officers and men of the 50th New York Engineers had charge of constructing the work, supervised by Lt. Colonel Spaulding who reported October 3rd:

*"I sent Captain Hinè during the night (Sunday)with two companies to the Peagram house to build a pentagonal fort for nine guns, five in barbette and four in embrasure. He reported the work ready for the guns on Wednesday morning and they were placed in the battery.. The entire work, except the magazine, was completed on Friday and surrounded by a double row of abatis. [sic]"*¹⁵³

A jagged line of rifle pits and trenches, 550 yards long, curve in an arc south to southeast, connecting Fort Welch to **Fort Gregg**. The coordinates of these advanced works protruding into hostile territory before Fort Gregg, register the terminus of the Fish Hook line. Set in an exposed, pivotal position guarding the flank, Gregg negotiated a range of almost 200 degrees of enemy terrain. The saw-toothed western façade of this unique, six-sided redoubt, speaks to its critical position on the line. Fort Gregg

comprises only half an acre of ground, and rises almost four meters from the base of its ditch. Designed to defend its stance, Gregg had platforms for six field guns and a prescribed garrison of seventy-five troops. The redoubt was named for Lt. James Gregg, of the 45th Pennsylvania Infantry. It was dug by Union soldiers during October 3-27, in 1864.¹⁵⁴ (Figure 2.34)

Situated to the east of Fort Gregg, tucked safely inside the Federal compound, rose the parapets of **Fort Wheaton**. Originally dug by Confederate troops and black slaves in August of 1864, this hexagonal redoubt named Fort Archer, sat perched on high ground at Peebles farm as part of the Confederate Squirrel Level Line. Early in the Battle of Peebles Farm, Archer fell to the charge led by Colonel Norval Welch of the Union 5th Corps. Once absorbed into U.S. Army territory, the Engineer Corps reversed the direction of its firing aspect and commandeered the earthwork for service as a second line defense. Fort Wheaton encloses almost an acre with positions for a six gun battery, known to deliver explosive ordnance to the enemy from its protected niche. Private Fiske wrote from the front in December 1864; *"But a few rods from here the rebel camp can be seen in plain view. They are within good shelling distance of Fort Wheaton. Directly in front of us a wood intervenes and shuts them out from view"*¹⁵⁵

Patrick Station: U.S. Military Railroad

The helm of the Federal left was now ensconced on the high ground of Peebles farm. As Signal Corps stations and telegraph lines crisscrossed the landscape, the only link missing in the chain of Federal communication was the railroad. On October 31, four weeks shy of pulling up stakes at Meade's old camp, Brigadier General Rufus Ingalls, Grant's Chief Quartermaster, sent a cordial dispatch from City Point to the new Army of the Potomac Headquarters on Peebles farm. *"Does Gen. Meade wish the railroad extended toward the Southside road? If so, a force can be put to work on Wednesday, a. m."* The expected reply came promptly: *"Gen. Meade will be glad to have the railroad extended as far as Peebles' farm, that being the left of our line."*¹⁵⁶ On November 2nd, work commenced on the Patrick Branch of U.S. Military Railroad. The new line continued west from Warren Station at the Weldon Railroad, through an expanse of forest before it emerged into the cleared fields of Peebles farm.. One week later, the two and a quarter mile spur was completed, terminating at Patrick Station, on the doorstep of Meade's command post. The train service brought men and materiel to the camps, forts and front lines of the Federal left and serviced several headquarters in that precinct. Chief Engineer of the Military Railroads of Virginia, J. J. Moore wrote in his report of operations:

*"The work on the extension...now called the Patrick Branch...did not commence until November 2 on account of an engagement that took place near where the proposed line was to run...Eight hundred and fifty feet of trestle-work, averaging twenty feet in height, was built. During its construction the weather was very unfavorable, it raining nearly all the time, making it almost impossible to do work on track. [sic]"*¹⁵⁷

Despite difficulties encountered during construction, this segment was completed in short order. The new rail line further enhanced the efficiency of the Federal war effort. By early December, operations that included a ride on General Grant's railroad were commonplace, as troops, officers and visitors commuted to destinations along all points of the Federal front. This dispatch from headquarters reveals the precise timetable associated with the service:

"Dec.9, 12:20 p.m. The commanding general directs that you send Capt. Soper's unassigned company New York Volunteers to Patrick's Station as soon as practicable by railroad. The company should, if possible, come up by

the 3 p.m. train to-day. Capt. Soper on arriving at Patrick Station will report to Gen. Humphreys at the Peebles house. [sic] " 158

Most soldiers rode the train under orders, shuttled to a new location. A few had the thrill of a ride for sheer recreation. In a letter entitled, "A Trip to the Front", a Union Private of the 5th Corps, tells of such a passage in February of 1865:

"We climb to the top of a loaded train and are soon whirling through the bright morning air...we can see the rebel works, and ours too, from the top of the train as it moves along...call your attention to the city of Petersburg itself...the tall spires are plain to be seen, and occasionally you get a glimpse of the buildings. They don't look to be more than a mile and a half from the railroad...How pretty it looks in the warm sunlight this morning. Everything is so quiet and still that you hardly believe that between you and that city, there are two hostile armies, who have been seeking to destroy each other all they can for almost eight months...But we must hasten on. We shall find now a city of camps all along the way till we get to Patrick Station, which is at the extreme end of the line, and about fourteen miles from here. [sic] " 159

Strengthening siegelines: expanding Fort Fisher, building Battery 27

Major-General Parke, commanding Ninth Corps:

The major-general commanding considers that the arrangements to guard against surprise are not sufficient to secure your command against it...additional precautions should be taken by having under arms...some part of your force. 160

Major-General and Chief of Staff A. A. Humphreys

November 18, 1864

From late November through December, 1864, the Confederates were active digging more works in their sectors opposite the Fish Hook Line. Construed as a move to threaten their lines, the Federals responded in kind by strengthening the tip of their exposed left flank (Figure 2.35). Orders were issued November 30, 1864, to: "prescribe garrisons" for Forts Fisher, Welch and Gregg. Each fort was to be assured a force of 150, 175 and 75 soldiers, respectively. 161 On December 1, a report from the 9th Corps stated that a total of eight artillery batteries and forty guns were transferred "pursuant to instructions" to the Peebles house. The order directed: "The artillery disposed as follows: Fort Fisher, C and I, 5th U.S. Artillery, 4 guns; Fort Welch, 10th Massachusetts Battery, 6 guns; Fort Gregg, 1st New Hampshire Battery, 4 guns" 162 A Federal escalation was in gear. In addition to strengthening the garrisons, an order by telegraph on December 7, from General Meade, apportioned the number of troops to stand picket duty in the trenches for the upcoming winter.

"Maj.-Gen. Gibbon's division, from left of Wheaton to right of Fort Fisher, 900 men; Maj.-Gen. Miles' division from Fort Fisher to Fort Cummings, both inclusive, 1,550 men...Second Army Corps, will assign 250 enlisted men to garrison Fort Urmston, 75 enlisted men for Fort Conahey, 300 enlisted men for picket...300 enlisted men for picket relief, with a proper compliment of officers...The artillery...will have 150 rounds of ammunition per gun...The infantry will have 200 rounds of ammunition...six days' ration of bread, sugar, and coffee, four days' salt meat, two days' beef on hoof, and two days salt." 163

Evidently, the Federal commanders anticipated a storm of Confederates from the northwest sometime in late winter or early spring of 1865. Early in February, General A. A. Humphreys, ordered more men into the frozen trenches, *"The number of men required to relieve the picket line between Fort Fisher and Fort Gregg is 500."*¹⁶⁴ Plans for a major expansion of Fort Fisher, and the construction of Battery 27 intended to bridge a gap in the lines between them. The Union army continued this buildup in response to the gaggle of Signal Corps telegraph reports citing increased enemy concentration downrange from the escarpments of Fisher and Welch:

*Nov. 22, 1864 5:00pm Church Road Station reports: ...strengthening the enemy's works to our right of Boisseau's property. They are also constructing winter quarters at several points on this front.*¹⁶⁵

*Dec. 3, 1864 A working party of 250 to 300 men building works northwest by north from Fort Welch...line about 300 yds. They are engaged in carrying dirt upon stretchers and pounding it down upon the works. In some places the logs of which the works are constructed can be distinctly seen, having not yet been covered. ...Due west of Fort Welch and left of Boisseau's property, enemy have erected a fort ..enemy picket line is much stronger today...some of the men have not been relieved since yesterday*¹⁶⁶

*December 16, 1864 8.45 p.m. the enemy have been strengthening their lines to-day. To our left of Fort Fisher the picket-posts have been connected, making a continuous breast-works. They have also been at work on what seems to be a fort on Boisseau's property.*¹⁶⁷

Work on Fort Fisher and adjacent Battery 27 ensued through miserable winter conditions. Colonel Spaulding, commanding the 50th New York Volunteer Engineers reported on January 30, that *"the severity of the weather during the past week, and the depth to which the ground is frozen, has prevented any considerable progress being made."*¹⁶⁸ The engineers intended the revised design of Fort Fisher and new excavations at Battery 27 to meet the challenge of a more adequate defense. This translated into taller parapets, more guns, powder magazines and bombproofs, all tucked behind a fence of nasty entanglements. Troops kept busy and warm in work details, cutting trees and fabricating defenses.

*"For the past two days Capt. Dexter has been engaged with his company in hewing and preparing gun platforms for Fort Fisher. These platforms are fourteen by eighteen feet...materials for seven platforms have been delivered. Eight sections of cheveaux-de-frise have been made during the week."*¹⁶⁹

Construction continued from January to mid-March, 1865. By mid February the work was progressing well despite the uncooperative weather. A strong row of abatis with two lines of interlaced wire, had been strung completely around the fort. In one week, 496 gabions were made and installed at Fisher, Battery 27 and portions of the 9th Corps advance line.¹⁷⁰ Small companies of engineers organized troops from the 2nd, 5th and 6th Corps into details. A colonel from Rhode Island wrote: *"Friday Feby 17/65- Today I have been at work in charge of a detail of six hundred men at work on a fort called Fort Fisher which is built across the Weldon Rail Road. It rained all day, and we worked in the mud and water. This fort will be a strong one, and as it is in sight of the Rebels we shall have music before it is finished. [sic]"*¹⁷¹ The arduous process continued. Within the next week, 639 gabions, 204 facines were made in camp and 3,523 feet of timber was hewn, delivered and issued for use at Fisher and nearby Battery 27. The Chief Engineer stated, *"the work upon Fort Fisher has progressed as rapidly as the state of the weather would permit"*¹⁷² By February 20th, seven gun platforms and two powder magazines were added to Battery 27. Spaulding indicated, *"The battery on the left of Fort Fisher...parapets and traverses finished, and the work is now complete, mounting eleven guns [sic]."*¹⁷³ His report continued,

advising that eight gun platforms were installed and three-fourths of the parapets were completed at Fort Fisher, with engineer officers promising to complete the work in five days. A week later, on February 27, Colonel Spaulding sent an update: "...parapets of Fort Fisher nearly finished. The work is ready for 15 guns and is enclosed with abatis. The whole fort will probably be completed to-morrow, except for the interior works, and these have not yet been commenced."¹⁷⁴ Final enhancements progressed slowly but deliberately. Considering its design and size, and the adverse weather conditions, engineers and troops succeeded in a remarkable task. The result of their efforts produced the largest Federal fortification of the Petersburg siege. When combined with its flanking earthworks, the arrangement posed a daunting threat to the Confederates. Fort Fisher now featured four corner-bastions protruding well beyond the original perimeter, enhancing its ability to serve a menacing barrage of fire in an unlimited direction (Figure 2.36).

The new outline of Fisher was so large, that during construction, officers stationed in the original fort complained that fire and sight lines were eclipsed by the new work. This led to a heated exchange between the construction engineers and General A.A. Humphreys, the II Corps commander, who wrote on February 1st: "*The new Fort Fisher completely obstructs the fire of old Fort Fisher despite my caution to conduct the work so that it will not be an obstruction at that point. I beg that you will have more constant supervision and direction of the work by some officer of engineers.*"¹⁷⁵ A brisk reply came from Chief Engineer, Major J.C. Duane, "*An officer of engineers visits the works on new Fort Fisher every day. The masking of the guns at old Fort Fisher is unavoidable.*"¹⁷⁶ Humphreys immediately shot back, "*I must differ with you. The length of time the new work has obstructed and probably will obstruct the fire of the old might, I believe, have been, and may be, much shortened.*"¹⁷⁷ The issue was put to rest four hours later when Humphreys wired another message to Duane, informing him that four guns would be delivered to the new fort that evening.¹⁷⁸ The redesigned fort held emplacements for nineteen field guns, fifteen firing through *embrasures*, four firing *en barbette*. Traced to a significantly larger footprint, it now encompassed an area of almost 4 ½ acres. This included three traverses, one over fifty-four meters long, three magazines and an interior stormwater drainage system, which was completed by March 20, 1865. That day, a report of Capt. Van Rensselaer, in charge of Fort Fisher, read; "*The entire parapet has been redressed, on account of the damage caused by the heavy rains.*"¹⁷⁹ Fisher's parapets stretched 582 meters, commanding expansive views of the terrain. The average relief of this earthwork was over four and one-half meters. David Lowe, estimates that 10,973 cubic meters of dirt were excavated, demanding a total of 2,058 labor days, to complete the earthwork¹⁸⁰

Before the opening rounds of fighting ensued in 1865, Confederate trenches extended for 35 miles around Petersburg, supported by a force of 60,000. The strength of the Union Army opposing them was estimated at 110,364.¹⁸¹ The Federal left flank now rippled with sinew as all fortifications along the lines were developed, enhanced and strengthened. This strategy to garrison the forts with a small but efficient number of troops capable of holding the line, enabled commanders to free a greater force eligible for the upcoming spring offensive. Top ranking Union strategists kept a constant eye toward the South Side Railroad and the Boydton Plank Road, Petersburg and Richmond. Soon winter would break, it would be time to flex some muscle.

Signal Tower

While Battery 27 was dug and revetted and Fort Fisher given its redoux, another interesting feature was rising on the landscape owned by the Peebles family. Since the value of Signal Corp's intelligence reports had become indispensable to army operations, plans for a new observation tower on the left flank

were in the pipeline as early as November 29. Official correspondence buzzed with expectant talk. U.S. Grant's Chief Signal Officer, sent this memo to General Meade's camp: *"The general commanding wishes to know what progress you made, if any, in the erection of the tower referred by him."* The reply came back: *"the tower referred to was not built, as it was deemed best to wait awhile before taking action upon it."*¹⁸² The time was right in early winter of 1865 and the U.S. Army engineers, never idle, set about to raising a timber pylon. To magnify the Federal viewshed, this structure would be sited behind Fort Fisher on the high ground of Peebles farm, in the front yard of General Meade's headquarters. The engineers had their hands full as progress on the tower was delayed by inclement weather. On January 23, Col. Spaulding's engineering report read: *"The cold weather has caused the work on the signal tower to progress slowly, it being very difficulty and hazardous for men to work at such an elevation, upon insecure footing when the weather is cold and stormy. Major Hine reports all the material on the ground, 130 feet framed, sixty-eight feet raised, and sixty-four feet completed."*¹⁸³

On February 8, a Union soldier visiting the 6th Corps observed:

*"On a plat of ground between the 6th Corps and the 2nd, they were building a high "lookout," which has already reached an altitude of 140 feet. How much higher it is going isn't known, but already an observer on top can overlook a large tract of the enemy's country. The rebels had honored it by sending one shot plunging over into our camp, but that elicited no reply and did no damage."*¹⁸⁴

Colonel Spaulding reported February 13, that although twenty-six additional feet had been added, cold and windy weather postponed further work on the tower. Major Hine promised that *"three of four days of mild weather will enable him to complete the work."*¹⁸⁵ The long-awaited news came in an official message to army headquarters from Spaulding, dated February 20, 1865. *"The signal tower is so nearly completed that it will be probably finished to-morrow...drawings of the tower will be furnished, with a detailed description of the work."*¹⁸⁶ With the tallest tower of the Union army completed to 145 feet, the Signal Corps handily monitored all Confederate movement and dispatched the information to a central command (Figure 2.37). Captain Davis wrote, *"...the stations were all in successful operation on the morning of the 29 ultimo, and all connected by signals with a station at the deserted house, (Peagram's) ...from our right to the vicinity of the tower on Peebles' farm, and a telegraph line had been run to this tower, thus connecting all with these headquarters in the field."*¹⁸⁷

50th N.Y. Engineers Camp

As fighting calmed to a level of obligatory exchanges, and defensive lines swelled with excessive layers of protection, troops settled in for a long winter. Behind the front lines, a segment of the army had already been attending to the duties of better housekeeping. *"We have been busy all day improving our camp and my headquarters. We have built a fence in rear of the line of tents and put white sand in all of the streets. This gives a very clean appearance to our camp which we think is one of the best in the Army."*¹⁸⁸

The 50th New York Engineers camp became a wartime attraction. It was situated to the east of Peebles farm on the site which is now Poplar Grove Cemetery. The camp was laid out by surveyor's transit in formal military order, yet tidy log cottages lined along narrow streets, offset by a canopy of existing conifer and hardwood trees resembled the sylvan atmosphere of a rustic alpine village (Figure 2.38). A variety of army services were quartered in this camp. The Surgeon's office, hospital and ambulance corps

occupied a quadrant, as well as officer's quarters, drummer's quarters, Sutler's store and pontoon works. Wooden walkways, raised above grade connected the dwellings and helped to control the infiltration of mud into shebangs and other dwellings (Figure 2.39). The Headquarters tent resembled a topiary, with a twin gothic-arched façade and a large insignia of the Engineer Corps covered in laurel (Figure 2.40). The camp's centerpiece and drawing card, a rustic log chapel, built by engineers under Captain McGrath, was crafted in the popular Picturesque style. Featuring gothic details, it including a tall, central spire fabricated of hewn logs taken from the surrounding area (Figure 2.41). This house of worship, named *Poplar Grove Church*, was completed in late February 1865, and intended to replace *Poplar Springs Meeting House*, which was used as a field hospital by both armies before and after the Battle of Peebles farm. First services were held by Reverend Duryea of New York, on Sunday, March 5th. The church had secular uses as well, providing a venue for social events enjoyed by clergy, officers, soldiers and camp visitors. An officer described a fete held on March 10, 1865:

*"Yesterday...we had a "Matinee Musicale" at the Chapel of the 50th New York Engineers. Nothing but high-toned amusements...the band was the noted one of the New Jersey brigade, and consisted of over thirty pieces...We had a batch of ladies, who by the way, seem suddenly to have gone mad on visiting this army. No petticoat is allowed to stay within our lines, but they run up from City Point and return in the afternoon"*¹⁸⁹

An End to The Siege

The Assault of March 25, 1865: setting the stage

Operations resumed on this day in the region before Fort Fisher and Welch on the Federal left flank. Three divisions of the 6th Corps, lashed out into no man's land through a break in the abatis left of Fort Fisher. The 102nd Pennsylvania Volunteers charged Confederate rifle pits and advanced works, connecting with the 1st Maine Volunteers opposite Fort Fisher. A furious exchange of artillery filled the air, bursting shot and shrapnel overhead and exploding craters into the ground. Cannon thundered from the parapets of Forts Fisher, Welch and Battery 27, intent on softening Confederate positions. The 2nd Vermont Regiment drove the Rebels back to their main works from entrenchments along the Church Road at the Jones house. In the captured trenches they were joined by the 3rd Vermont Battery, who bombarded the Confederate rear line from this advanced position. This engagement somewhat extended the field and created breathing room from the encroaching Confederate army. The revised Federal edge of this zone of contention came to within 2,500 feet of trenches occupied by gray-coated defenders. These actions would soon prove invaluable to an upcoming Union advance but the cost was dear. The 6th Corps' casualties were tallied at 47 killed, 402 wounded and 30 missing, while 469 southern prisoners were taken.¹⁹⁰ On March 28, Lt. Colonel Tracy, 2nd Vermont Volunteers, submitted his version of the event:

*" they charged in and captured the enemy's line in front of the Jones' house...I ordered the Second Vermont Reg't. To charge and take the Jones house, which was gallantly done! Finding that my regiment were the only troops advanced beyond the works and that we could do no good by remaining at the house, I ordered my regiment back to the earth-works we had captured, keeping skirmishers out near the house. Afterward, finding enemy sharpshooters using the house for a protection, I sent men out with orders to burn it, which was immediately done.[sic]"*¹⁹¹

From this advanced position, Federal officers began to scrutinize the formidable Confederate defenses. In search of a vulnerable segment to direct an attack, they discovered a ravine beyond their forward ditches which ran uphill through a break in the line of earthworks. This cleft in the land was adjacent to Arthur's swamp, described as a dense, impenetrable quagmire. Both of these features would soon be negotiated by troops in an impending Union attack.

The Breakout for Petersburg

"My command occupied Fort Fisher, a large earthwork on the line of the Third Division, Sixth Corps, near the signal tower, just in front of Patrick Station, which work I continued to occupy until the morning of April 2, 1865, when the Sixth Corps broke through the enemy's lines in front of Fort Fisher." 192

Captain Romeo H. Stuart, 3rd Vermont Battery Vols.

On April 1st, General Grant received a note at his headquarters near Dabney's Mill, informing of Generals Sheridan and Warrens' success in routing southern cavalry and Pickett's infantry at Five Forks. With Robert E. Lee's right guard now beaten and scattered, the South Side Railroad was exposed. Grant was anxious to see his plan to fruition by dealing the final, devastating blow to his adversary and take Petersburg. Colonel Lyman witnessed this historic moment and later wrote: *"Grant folded the slip of paper, and, looking at Meade, said, very quietly: 'very well, then I want Wright and Parke to assault tomorrow morning at four o'clock.' These dozen words settled the fate of Petersburg and of Richmond!" 193*

George Gordon Meade now held the working orders he needed to strike the Army of Northern Virginia and put an end to the siege. Actions of March 25th secured the valuable ground needed for staging a massive charge on the Confederate works. General Meade stipulated that the 1st, 2nd and 3rd divisions of the 6th Corps, would lead the attack. The corps commander, Major General Horatio Wright, could hardly contain his esprit-de-corps. Equally exuberant as General Ord, who promised Grant he'd plunge into the southerner's works, *"...like a hot knife goes into butter "* 194 Wright responded to Meade by pronouncing: *"Everything will be ready. The corps will go in solid, and I am sure will make the fur fly...there will be no hesitation...I expect we will have broken through the rebel lines fifteen minutes from the word 'go'." 195*

The plan of attack called for Wright's divisions to form in echelon between Fort Fisher and Fort Welch at midnight and await a signal gun from Fisher at 4:00 a.m. At that instant, the troops, resembling the form of a massive wedge, were to advance towards the enemy works between the burnt house and their left. 196 Contrary to a typical full tilt, screaming charge, this pre-dawn maneuver was planned as a clandestine attack. Officers were ordered to inform the troops that musket fire was disallowed, for fear of divulging their advanced position. The orders read, *"The necessity of perfect silence in this movement up to the time of making the assault cannot be too strongly impressed upon the command"* 197 Knapsacks and canteens were left behind. Soldiers consigned their personal effects and letters to trusted friends who would remain safe behind the lines during the impending fight. Some pinned nametags to their coats in case of the inevitable. Axemen took the lead of the assaulting columns. Bayonets were mounted. Garrisons, purged of available troops from Forts Urmston east to Fort Howard, were reduced to a skeletal force to safeguard against a possible Rebel counterattack. In a brazen move, the rear lines stretching from Fort Urmston to Fort Gregg were abandoned. 198 The Union army wanted all its muscle out in front for this event. The 2nd Division, positioned at the tip of the wedge and closest to the enemy's lines, would

lead the attack. The date was April 2nd, 1865. Before Fort Fisher and Fort Welch, the left flank of the Union army coiled its strength, ready to spring a frontal attack on the imposing, untested Confederate defenses poised before Petersburg. Within the next twenty-four hours, troops of the 6th Corps would pull the Confederate lynchpin by breaking siegelines and marching into Petersburg and on to Richmond. Strategy had been carefully mapped as Major General Wright attested: *"The point chosen for the assault, selected after the most careful considerations, based upon personal examination and the reports of a large number of officers who had for a long time scanned the works of the enemy, was in front of Forts Fisher and Welch, over ground perfectly cleared of trees and offering few natural obstructions, except the marshes which the front of the enemy's line was intersected."*¹⁹⁹

The prelude to the attack was a feat in itself since it involved a multitude of 17,000 troops.²⁰⁰ As early as 11:00 p.m. on April 1st, regiment after regiment, filed out of the works between the two forts, secretly blanketing the terrain with blue-coated forms laid prone in the night. A supply mule loaded with picks and shovels clattered onto the field in front of the 1st Division, inviting Rebel sharpshooter fire. This generated a series of heavy volleys from Confederate trenches, incurring many Union casualties. Remarkably, however, according to an front-line officer, *"the men behaved well during the whole of severe fire, without returning a shot or uttering a word to indicate their presence to the enemy."*²⁰¹ The patient attackers awaited what must have seemed an eternity in the damp pre-dawn silence, completely exposed before their protective works. At 4:40 a.m., a delayed signal gun finally sounded from Fort Fisher, heralding the advance.²⁰² A dense fog muffled the sound of trampling boots and heavy breathing as the Union soldiers approached their foe.

The 2nd Division commander, General George Getty, described the ensuing charge: *"...just as the enemy's picket line was gained the silence was broken by a scattering volley. The troops instantly responded with a ringing cheer and pushed on in face of the enemy's fire, which was now spitting along the whole line."*²⁰³ Then, Confederate field guns opened up, hurling grape-shot and canister. The 1st Brigade of the 3rd Division, led the charge before Fort Welch, its commander's report recounted the action: *"Instantly a terrible fire of musketry and artillery was opened upon us by the enemy, but my men gallantly and bravely advanced at a double-quick and in a few moments scaled the breast-works, which at this place were from twelve to fifteen feet high."*²⁰⁴ The 2nd Brigade, to its right was trammled by, *"the deep darkness and the deep swamp to be passed through, and from a severe and annoying fire from the enemy."*²⁰⁵

Across the swamp to the east in front of Battery 27, troops of the 2nd Division's 2nd Brigade clamored uphill along a narrow ravine. Using the land as a shield from enemy fire, they poured through a fissure in the Confederate line. Footing was difficult for the attackers, running at a double-quick on soggy ground. Yet in almost total darkness, facing intense enemy fire, they pushed on. Once the forward entanglements of *abatis* were hacked away, troops scrambled over ditches and scaled steep parapets, others scurried through sally ports and traverses to gain access to the defensive works. A Colonel from Rhode Island offered his version of the story, *"I fell into the ditch with a number of my men after me...the Rebels fired their cannon and muskets over our heads, and then we crawled up the rope and onto the parapet of their works, stepping right among their muskets as they were aimed over the work. It was done so quick that the Rebels had no chance to fire again but dropped their guns and ran."*²⁰⁶ Other versions of the conflict were not this simple. Most of the Federal onslaught was met at the southerner's works where brutal hand to hand combat ensued. Many brave men perished defending their cause. An aide-de-camp observing the action wrote, *"...the Rebel lines sorely beleaguered (in) outlying redoubts...In one was a Rebel captain,*

*who told his men to surrender to nobody. He himself fought to the last, and was killed with the butt end of a musket, and most of his command were slain in the work."*²⁰⁷

Great courage and sacrifice of southern soldiers could not offset an advantage of overwhelming numbers held by their opponent. With the Federals' prize within their grasp, the attackers advanced in a frenzy despite stout resistance from skirmishers. Greycoated troops scattered to the rear, abandoning their works. To add insult, those retreating were hounded by their own guns as Federal artillerists reversed cannon in the captured batteries and fired upon their dispersed enemy. Surrendering troops were rounded up and sent across the lines under guard. A Major from a Pennsylvania regiment tells of war-weary soldiers accepting their fate, *"...The colors...soon gained the enemy's main works, behind which were discovered many rebels, who appeared only too glad of the opportunity of going to our lines."*²⁰⁸

Having been living idle in the trenches for a seemingly endless term, the Union soldiers were primed for this fight. The rampant drive that began in the pre-dawn darkness on April 2nd unleashed several companies of Union soldiers who rushed on past the fighting, crossing unfamiliar terrain, to the Boydton Plank Road and then to the South Side Railroad. General Getty praised the blue-coated freshet in his official report: *"The troops after breaking through the enemy's works, pressed forward with the greatest dash and enthusiasm and without order of formation, until at length they were halted with great difficulty and the lines reformed at a point on the Boydton plank road over a mile from the rebel lines...For over two miles the line moved forward over a wooded and difficult country, capturing flags, guns and prisoners at every step."*²⁰⁹

By 9:00 a.m., this extended blue wave eventually lapped onto the South Side right-of-way. Eager troops, bent on destruction, tore up tracks and cut telegraph lines. Union Corporal John W. Mauk and Private Daniel Wolford, of the 138th Pennsylvania Volunteer Regiment, were returning from that wrecking crew and approached by two mounted Southerners. One of the troopers, armed only with a pistol, demanded their surrender. The corporal refused, raised his rifle and fatally shot him, later to learn that the dead man was renowned Confederate Lt. General A. P. Hill.²¹⁰ Since the attack at dawn, over 3,000 Confederates had been captured, costing the 6th Corps 123 dead and 958 wounded.²¹¹ According to a member of Meade's staff, this successful assault on the western Confederate line sounded the death knell for General Lee's Army of Northern Virginia. The South Side Railroad was finally breached at Sutherland Station and Boydton Plank Road, was swarming with Northern soldiers. A poignant commentary on the long-awaited reversal of Confederate trenches and march into Petersburg was penned by Colonel Lyman, who after the melee, crossed the lines on horseback and surveyed the scene:

*"It was now definitely known that the enemy had given up his whole line in this front and was retreating northwesterly...the General (Meade) had got all his troops in motion...the staff had come from camp. We all started up the (Boydton) plank road, straight towards the town...passing their line with abatis, and heavy parapet...up the road...marked by deep ruts of the Rebel supply-trains. As we got to the top of the rise we struck open country that surrounds the town for several miles, and here the road was full of troops, who, catching a sight of the General trotting briskly by, began to cheer and wave their caps enthusiastically!...From this spot we had an admirable view of our own works, as the rebels had, for months, been used to look at them. There was that tall signal tower, over against us and the bastions of Fort Fisher."*²¹²

Aftermath

Early morning of April 3rd, Petersburg residents hunkered down in their homes and witnessed a continuous column of Federal troops, horses and wagons flow into their unguarded town. Union bands marched triumphantly through the deserted streets playing Yankee Doodle. The city that evaded capture for over nine months was soon inundated with Federal troops. Smoke billowed from tobacco warehouses set ablaze by a retreating Southern army, just hours ago. Moments before daylight, jubilant soldiers of the 1st Michigan Sharpshooters, climbed to the rooftop of the Courthouse and unfurled the Stars and Stripes.²¹³ At 8:00 a.m. Maj. General Meade arrived. An hour later he met with Lt. General Grant, who had already appropriated a brick residence as a temporary headquarters.²¹⁴ By 10:00 a.m. a specially-configured train of the U.S. Military Railroad delivered President Lincoln to Hancock Station, a few miles south on the Jerusalem Plank Road. Before boarding, the chief executive curiously scrutinized the train then quipped, "*Has this railroad got a lawyer?*"²¹⁵ Grant sent a welcoming committee including his favorite horse, to fetch the Commander-in-Chief. After a few stops along the siegeworks accompanied by cheering from Federal soldiers, the presidential party rode into Petersburg. Congratulations were in order. Lincoln beamed with joy, and as he pumped his general's hand with two of his own he remarked, "*Do you know, general, I had a sort of sneaking idea all along that you intended to do something like this*"²¹⁶ After a short meeting the two commanders parted ways, Grant to the west to pursue Robert E. Lee and Lincoln east to City Point. Soon they would both learn that Richmond was captured during their meeting and was currently in flames. Meanwhile Robert E. Lee's beleaguered Army of Northern Virginia made its way westward toward Amelia Court House, in an attempt to rendezvous with other Confederate forces. The prospect of victory wafted in the air for the Union army.

The break in the Siege of Petersburg would mark the beginning of the Appomattox Campaign, the final contest between the Army of Northern Virginia and the Armies of the Potomac and James. In the final months, activities culminated at the western edge of Union Army lines opposing and constantly threatening the Confederate right. Referred to as "*The Last Long Camp*" by William Lemuel Peebles, heir to Peebles farm, the result of these actions initiated the denouement of this long-running conflict between a divided United States. Throughout the 9 ½ month siege, Union armies relentlessly attempted to outflank Lee, storm Petersburg and capture Richmond. At the onset, in June of 1864, General Lee forecasted that the outcome of such an event, "*...will be a mere question of time.*"²¹⁷ His army, ravaged and starving was held in abeyance, bound to its trenches and obliged to defend Petersburg in hopes to preserve the Confederacy. Lee lacked adequate strength to mount an offensive against his overwhelming foe. Many brave attempts were made, some successful, yet the advantages held by his opponent would eventually become his undoing. In the final, wicked winter months of the siege, General Lee defended thirty-five miles of earthworks surrounding Petersburg with a force of 55,000 war-weary soldiers. Finally forced to abandon defenses and relinquish control of Petersburg, Lee's army pushed west until on April 9, 1865, the West Point graduate surrendered at Appomattox Court House and shook hands with Ulysses S. Grant. The Union General, in kind, afforded Lee his utmost respect and arranged for generous terms of surrender.²¹⁸ Lee requested that his southern horsemen were granted the courtesy of keeping their mounts, since the Confederate army didn't supply horses to the cavalry. Grant consented to this and as a measure of good will, arranged free passage home aboard Federal railroads for paroled Confederate troops.²¹⁹ Over the next few days formal surrender ceremonies were held and more than 28,000 Southern troops relinquished their arms and battle flags.²²⁰ The last regiment surrendered their colors on April 12, under the civil command of Brigadier General Joshua Chamberlain, exactly four years to the day that the first shot was fired on Fort Sumter. True to his nature as a soldier-gentleman, Grant had already ordered a

moratorium on victory celebrations and cheering in the presence of the demoralized Southern army. Chamberlain went a step further and risking censure, ordered his soldiers to the "carry-arms" position, in respectful salute of their former adversary.²²¹ *"Never did victorious troops behave better,"* claimed a South Carolina volunteer, while a surgeon from the 9th Alabama added, *"The conduct of the Federals was soothing and comforting beyond anything that words can express."*²²² General Chamberlain later defended his act of chivalry stating, *"Before us in proud humiliation stood the embodiment of manhood; men whom neither toils and sufferings, nor the fact of death, nor disaster, nor hopelessness, could bend from their resolve...waking memories that bound us together as no other bond; was not such manhood to be welcomed into a Union so tested and so assured?"*²²³

In describing the historic events surrounding the siege of Petersburg, the author's primary intention was to focus through a lens trained on the Federal Fish Hook Line. This sharpshooter tactic has admittedly narrowed the field of reference, certainly having no wish to diminish the importance of fighting and events that simultaneously occurred in nearby areas, especially since to a large degree those conflicts were related to overall army strategy. The scope of this report dictated such a focused approach. Hopefully the narrative hasn't paraded as a full accounting of army actions during the siege et al., but mainly a recounting of wartime pressures upon a particular parcel of land situated at the extreme left of Union siegelines. It is also regrettably, outside the scope of this report, to include the countless interesting and noteworthy accounts of courageous undertakings and exploits of the Confederate army.

Aftermath and Metamorphosis to Park Land

*"Four years of war, during which the law was executed only at the point of the bayonet throughout the States in rebellion, have left the people possibly in a condition not to yield that ready obedience to civil authority the American people have generally been in the habit of yielding."*²²⁴

Lt. General U.S. Grant, December 18, 1865

The erasure of war

The thundering field guns and spitting muskets were now silent. The throng of men and military hardware inhabiting the landscape for ten months vanished like a summer rainstorm; the clamor of rattling sabers, trampling hooves and battle cries was gone. Cattle herds, their drovers, the supply and ambulance wagons, and tents of sutlers, surgeons and newsagents were gone. A calm descended on the terrain as nature prevailed, mingling birdsong with the murmur of late spring breezes, fanning the desolate battlegrounds south of Petersburg. In the wake of this exodus lay the remnants of vast armies scattered among the ravaged fields. Hackneyed remains of huts and earthen warrens pervaded an unoccupied landscape. When the contest was decided soldiers discarded their accoutrements of war, littering excavations of trench and overturned earth. A ground impregnated with lead and rusting shrapnel was inundated with splintered logs, stumps and cavities from exploded shells. Bodies lay twisted in dense thickets and swamps as carrion for airborne scavengers, or prostrate, decomposing in shallow graves (Figure 2.42). The war had ended yet the battle for reconstruction had just begun.

In the months and years to follow, vestiges of a once omnipresent war began to fade as its earthen telltale eroded from natural and unnatural circumstances.²²⁵ On the heels of vast armies, the first component of war extracted from the landscape was the railroads. As hardware vanished, a senseless

trace marked the land. Tracks that once mimicked the course of defensive lines, now sat rusting at City Point. By late May 1865, the rolling stock of Grant's railroad was already a memory and the terrain began its reclamation. While rains softened the profiles of earthworks, primary succession ensued and souvenir-hunters plundered the battle grounds. Bodies were retrieved, farmers converted fields to agriculture, and ad hoc salvage operators combed excavations in search of lead minie-balls.

Early Visitors

Visitors were inevitable. Many came to gawk at the aftermath of battle, roaming through dusty trenches and earthworks, assessing the spoils of war. Locals came to see where the fighting occurred for ten months, others came to mourn. Confederate soldiers came for a glimpse of the Union lines from another perspective. General P.T. Beauregard arrived in October of 1867.²²⁶ The first tourists, a small party of British and Americans, landed at City Point and approached the battlefield via military railroad on April 4, 1865.²²⁷ The dust of battle had barely subsided as these civilian visitors reviewed the scene: *"the dead were buried on the plain, but in the trenches numbers were lying as they fell during the assault...broken rifles, and bayonets, blood-stained uniforms were scattered all over the trenches."*²²⁸ The party observed the officer's cabins and church of the 50th N.Y. Engineers camp and deeming it, *"most elegant,"* comparing it to a Swiss village.²²⁹

John Trowbridge included Petersburg in his tour of the southern states as he gathered material for a book depicting the devastated Confederacy. In late September of 1865, the journalist filed this description of the city: *"Its business was shattered. Its well-built, pleasant streets...were dirty and dilapidated...the lower part of town showed the ruinous effect of the shelling it had received"*²³⁰ The state of the Cockade city was reflected in its impoverished residents- victims of a grossly devaluated Confederate dollar. Streets were filled with homeless former slaves in search of a new life, far from the plantations. Trowbridge ventured out into the siegelines: *"A very good corduroy road, built by our army, took us through deserted villages of huts...past abandoned plantations and ruined dwellings: over a plain...covered with forests before the war, but where not a tree was now standing."*²³¹ After viewing the already infamous Crater, and several other fortifications, he came upon a scene that typified the aftermath of war: *"In the earthworks I saw a Negro man and woman digging out bullets. They told me they got four cents a pound for them in Petersburg. It was hard work but they made a living at it."*²³²

After a respite in Petersburg, the adventuring writer explored the westernmost region of the Union lines. He marveled at the work of the 50th New York Engineers camp, situated east of Peebles farm, still posted under army guard as precaution against endemic vandalism: *"Passing the winter quarters of the Sixth Corps, we approached one of the most beautiful villages ever seen. It was sheltered by a grove of murmuring pines. An arched gateway admitted us to its silent streets. It was constructed entirely of pine saplings and logs. Even the neat sidewalks were composed of the same material."*²³³ Trowbridge raved of the Engineers' church, referring to the structure as, *"the gem of the place"* and made special mention of a sentiment inscribed over the pulpit by its builders at war's end.²³⁴ The message dedicated the church to the original Poplar Spring Meeting House congregation of Reverend Talmadge, whose original building had been destroyed during the conflict.²³⁵ Although a movement was afoot to relocate the picturesque church to Central Park in New York City, the engineers thought it more appropriate to make reparations to the community violated by army maneuvers. The church stood for almost three years after the war, becoming an unfortunate victim of neglect, it was razed in April of 1868.

Within a year of Trowbridge's survey, the Engineers camp began a transformation into a cemetery to inter Federal war fatalities.²³⁶ The site was designated as Poplar Grove National Cemetery by the War Department. By the summer of 1866 the "burial corps" formed into teams that systematically searched the battlegrounds for the remains of soldiers. In thickets, woodlots and swamps many were found where they fell. A solitary stake marked makeshift graves scattered among open fields. Corpses were gathered and transported by wagon to the new cemetery, then re-buried in wooden coffins. Locals received five dollars for any assemblage of bones that included a skull. That summer, as residents of Petersburg witnessed this macabre spectacle, airborne pestilence once again pervaded the region producing an epidemic of dysentery.²³⁷

Tourism

The first recorded commercial venture at Petersburg's siege lines was established by Napoleon Hawes, a former Confederate soldier, who began serving curious visitors soon after the smoke of battle had lifted.²³⁸ Advertised in the Petersburg newspaper as a "Retreat," Hawes served wines, liquors, lemonade and cakes at his popular location, "*among the umbrageous foliage of the grove.*"²³⁹

An industry of tourism began in earnest with the reopening of Jarratt's Hotel in Petersburg, in April of 1865. The new proprietor, Colonel James H. Platt 3rd Vermont Infantry, had served during the siege of Petersburg. Platt welcomed fellow Union officers as well as local visitors. Targeting a clientele from northern cities, he produced a promotional brochure in 1866 entitled, *A Guide to the Fortifications and Battlefields Around Petersburg* (Figure 2.43). To encourage visitation, the brochure boasted convenient access from New York, Baltimore and Washington D.C., including train timetables that coincided with meals served at the hotel. Final pages of the manual were dedicated to classified and display advertising.²⁴⁰ Cleverly coded as a travel guide, this innovative twenty-seven page booklet offered a brief explanation of the siege illustrated by a site map of Major Michler U.S. Engineers, which included siegelines, dwellings, landmarks, roads and railroads. A narrative of his recent tour of the region written by Orange Judd, editor of the *American Agriculturist*, was included as well. This account mentions the popular attractions of the Crater and Engineers camp and of particular interest held a vivid description of a short-lived icon of the Union occupation:

*"...We advise every one coming to Petersburg, to visit...Fort Fisher and the observatory near by, study the whole field...Fort Fisher, which is one of the finest constructed works to be seen here. From the top of Fort Fisher, and especially from the observatory near it, 150 feet high, one has a grand view of the fields already described, and can take in at a glance many square miles of the surrounding country."*²⁴¹

Declining earthworks

As curiosity increased, the condition of army entrenchments steadily declined and the insidious process of erosion worked the landscape. Rain and wind buffeted parapets devoid of vegetation. Profiles softened as runoff filled trenches with water and silt. Human disruptions combined with natural forces to deteriorate the siegeworks. When Orange Judd visited in June of 1865, he forecasted an eventual demise of these vulnerable constructions. Enumerating the pressures on the site he wrote:

*"Hundreds now come daily, from almost all parts of the country, and many thousands will doubtless visit this place the present year...Most of the abatis...are being removed quite rapidly for firewood, by the negroes and other inhabitants of Petersburg. This, with the washing down of the many earth ridges and rifle-pits by rains...will materially change the appearance of the whole region ere long."*²⁴²

Almost ten months of siege war wracked Petersburg and decimated its surrounding forests. Bound by necessity, county and city residents harvested a bounty of building supplies from the fields outside their door. To most citizens both Union and Confederate army constructions were not considered sacred, but rather, essential for rebuilding their lives. Gun platforms, chevaux-de-frise, shacks and trestles were disassembled, and logs were pried from corduroy roads and revetments. Timber fragments were carted off as firewood. While subconsciously erasing the memory of conflict, underpinnings of siegeworks were torn from their earthen bindings and pilfered as remuneration. Ironically, the wartime scenario had been reversed, as a disgruntled citizenry now lay siege to the 'works of war'. Sans revetments, these earthen forms were rendered vulnerable. Exposed to the ravages of time, their odds for survival were thin.

The first steward

William Lemuel Peebles left home at sixteen to serve the Confederate cause. After the war he returned to the family homestead in Dinwiddie County. A landscape he knew just four years ago was unrecognizable.²⁴³ The original house and barns were razed. He was greeted by dilapidated outbuildings, camp tailings of the Union 6th Corps and an excavated ground of trenches, berms and redoubts scattered across his family's once productive farm. An imposing timber pylon loomed on the property (Figure 2.44 Photo of Signal Tower). Young Peebles knew his father would not return for some time, as his health was poor since capture and incarceration aboard a Federal prison ship in Hampton Roads, Virginia. William enlisted the aid of a local freeman and in a brazen move they toppled the edifice. The timbers, he reasoned, would substitute for trees of his father's ten acre, virgin forest felled by Federal troops. They were used for the foundation and framing and with a loan from his future father-in-law, Peebles procured the materials and labor to build a modest gabled home on the signal tower site.²⁴⁴ He named the structure, "Fort Fisher Farm"²⁴⁵ (Figure 2.45).

In January 1866, Peebles married Elizabeth A. Battle and shortly after built another home on the property to lodge his parents. Soon, cotton bloomed again on the fields of Peebles farm. In the following years after losing two wives and an infant son, William Lemuel remarried a third time. With Annie Leighton Bradbury he raised five sons and two daughters. Peebles hired free blacks to work in his fields and built cabins for them on the property. Cotton production would cease to be viable by 1875-6, when field laborers traveled to northern cities in pursuit of higher wages. This absentee labor base contributed to a regional economic slump, forcing William Lemuel to file bankruptcy in Dinwiddie County Courthouse, March 29, 1875. County appraisers set the value of one hundred acres of his land at \$1,200.00 The county clerk recorded values of his household effects: "...1 wash stand valued at \$10. 1 Ward Robe at \$35. 1 Centre Table at \$5.00 1 Carpet at \$15. 40 Chickens at \$15. 2 Tables at \$6 1 doz chairs at \$12. 2 Mules at \$125. [sic]"²⁴⁶ Little is known of how Peebles managed to retain ownership of his property, yet he then turned his land to a meager production of watermelons, peanuts, vegetables and tobacco.²⁴⁷

Peebles would later write: *Historic Dinwiddie County, Virginia or The Last Long Camp*, a promotional booklet to encourage a resurgence within the county. The small pamphlet held a collection of photos with

descriptions of relevant historic sites, including the J.C. Boswell House situated due north of Fort Fisher and his own residence, Fort Fisher Farm.²⁴⁸ Here, Peebles entertained northern soldiers who occasionally arrived at the farm to reminisce the war years. In one such instance, Captain Charles L. Davis of the U.S. Engineers, credited for building the signal tower, visited and presented him with a photo of the tower taken immediately after its construction. Davis then a retired Brigadier General, posed for a photo with W.L. Peebles, smiling admirably at each other they crossed swords.²⁴⁹ William L. Peebles died in 1916, and a few years later, Fort Fisher farm burned. His wife would survive him by fourteen years and carry out his bequest that Fort Fisher and a right-of-way for a road, be transferred to the U.S. Government²⁵⁰ One of the earliest proponents for establishing a military park at Petersburg, Peebles wrote:

*"Dinwiddie was the camping ground of the Armies of the Potomac and Northern Virginia for many months in 1864-'65, the last great camp of the civil war. In mere honor and justice to these two,...Dinwiddie deserves a great National Park, and the Grand Army of the Republic should demand it, and there both North and South should meet and smoke the pipe of peace and good fellowship under the flag of the greatest nation on earth, 'Old Glory.'"*²⁵¹

Agriculture and immigration

*"In Europe as their families grew, did not have enough land to support them so in 1887 started coming to America...they found Virginia was good...It was very hard for the first pioneers who were not welcome here. Merchants did not trust them and would not let the Czechs ever have a handful of salt or pinch of pepper on time. [sic]"*²⁵²

The war wrought drastic changes to the once productive landscape encircling the Cockade City. Early attempts at reconstruction were fledgling yet the plow would eventually return dividends to Dinwiddie County farmers who struggled to re-establish their agricultural achievements of the pre-war era (Figure 2.46). Virginia was not readmitted to the Union until 1870. Throughout these interim years the state was regarded as Military District Number One, under jurisdiction of the U.S. Army. War veterans and civilian defenders of the Southern cause were denied citizenship and lost their right to vote. With Confederate currency devalued, barrows full of dollars could scarcely buy necessities, seed or supplies. Carpetbaggers roamed the region, speculating on property and business opportunities. Some attempted a foray into politics stirring support of the free-black vote.

By 1870, productive acreage had tapered to roughly sixty-five percent from a decade earlier and land values had been reduced by half.²⁵³ U.S. Agricultural Census figures that year show a drastic decrease in county production from the totals of 1860. Bushels harvested in wheat, tobacco and corn were reduced, respectively, to thirty, twenty and forty percent of earlier productions.²⁵⁴ Yet farmers of Petersburg and Dinwiddie managed to eke out a living. Reverting rank trenches and fallow fields, they plowed bullet-encrusted soils into productive furrows, while land value dipped to barely four dollars an acre.²⁵⁵ Dependent upon railroads for shipping produce to market, Southside farmers paid higher freight rates fixed by Southern railroad cartels intent upon rebounding from wartime losses.²⁵⁶ The situation worsened, and as free blacks departed plantations en route to northern cities seeking jobs; a labor force was desperately needed to sustain the county's agriculturally based economy. The newly-founded Dinwiddie Immigration Society, the Petersburg Agricultural Society and the Petersburg Lodge of the Patrons of Husbandry, (the Grange) sent out a call to attract a replacement worker class to take up residence in the county.²⁵⁷ The appeal was answered when an influx of pioneers from northern states, capitalizing on

affordable land prices, established homesteads among the barren fields.²⁵⁸ Simultaneously, an exodus of Eastern Europeans who fled their homelands under the tyranny of Austrian rule, landed on American shores. These émigrés arrived from Slovenia, Croatia, Hungary, Moravia and Bohemia.²⁵⁹ In Dinwiddie County Courthouse they signed on immigration rolls as "farmer" intent upon working the land- hopeful this frontier would bear prosperity.

A dispossessed landed class were pressed to divide their vast holdings. Large plantations were divided into smaller, more affordable and easily managed farms. In 1850 Dinwiddie County registered 703 farms. By 1890 that number increased to 1,801 and twenty years later continued to rise to 2,274.²⁶⁰ More immigrants arrived toward the turn of the century from Poland, Russia and Yugoslavia, and Czechoslovakia. In the thirty years between 1880 and 1910 the average farm size was reduced from 173 to 116.3 acres. These changes, along with the reduced cost of land, permitted purchases of agricultural property for those in lower economic strata. Accordingly, the percentage of farm owner-operators increased proportionally throughout those years. By 1890 over half of the farm lands of Dinwiddie were worked by their owners and in 1910 that number reached almost sixty-seven percent.²⁶¹

Since the Civil War, agrarian land ownership in Dinwiddie County shifted remarkably from a feudal system of property controlled by a few wealthy land owners to a class of immigrant, subsistence farmers. Along with farming skills, new residents brought ethnic influences as well, weaving them into the cultural fabric Dinwiddie County. Margaret C. Blaha, a first generation Czech, lives near Fort Urmston. She recounts the development of her parish, St John Nepomucene, on land directly south of that fort.

"Following the war between the states, a small number of Czech immigrants came to the Petersburg area. As early as 1887, there was the hope of building a church in Dinwiddie County for the Czech-speaking Catholics...The Catholic Church was built by parishioners in 1907, at its beginning, St. John's consisted of about 15 families...in 1914, the parishioners formed a club to finance building of a hall...to serve as a place to teach religion, a room for the priest to stay...also to hold social events, pot luck dinners and dances...(had a Czech brass band to play for dances and special occasions...a lot of Czech men belonged to the Army band at the armory) In 1931, the wooden Church was replaced with a brick structure...this is the present worship center...its located on 16 acres of land donated by parish families...at present time membership is 85 families and a growing faith community, a unique blend of second third and fourth generation Czech families." ²⁶²

Epitaph to Gallantry: Establishing a Park at Petersburg

Beginning in 1888, various attempts were launched in hopes to establish a memorial battlefield park amidst the landscape surrounding Petersburg. That year a bill promoting a park introduced in Congress by Senator John W. Daniel brought little result.²⁶³ Nine years later in 1897, Congressman Sydney P. Eppes of Virginia, took up the charge and introduced a bill in the House of Representatives proposing the establishment of Petersburg National Park, with an initial request of \$125,000. The proposal languished, then lost support due to the advent of the Spanish-American War. By 1907 the concept of a memorial park gained momentum. The campaign was renewed among citizens and veterans who had since risen to political prominence, endorsing a plan to re-enact the Battle of the Crater during opening ceremonies of a new park. This scheme, heralded as a great boost to the civic vitality of Petersburg, eventually faltered. In 1909, Francis Rives Lassiter attained Sydney Eppes' seat in the Fourth Congressional district. With the help of Army Assistant Chief of Staff, General W.W. Witherspoon, Lassiter sponsored a bill that focused

on identifying the positions of various regiments during the war. Concurrent with the Lassiter proposal, Mr. Charles Davis Hall of Petersburg stirred interest for a park similar to those recently created at Gettysburg and Antietam, and included a grandiose plan for a memorial road connecting the Petersburg and Gettysburg battlefields. Park planners shied away from this idea deeming it too ambitious and unlikely to pass through Congress.

By 1913 Patrick Henry Drewry of the Virginia House of Delegates proposed an innovative plan to create a memorial boulevard on terrain between the Union and Confederate siegelines. This no-man's-land right-of-way would encompass the city from its eastern bank on the Appomattox River in an arc towards the western bank. Securing title to such a collection of easements seemed unrealizable and the idea was overshadowed by another plan put forth by the A.P. Hill Camp of Confederate Veterans. Their proposal, to obtain large tracts of land and collectively form a park gained favor, and in 1923 Captain Carter Bishop, a Confederate veteran of the A.P. Hill Camp suggested that desirable parcels be surveyed and tabulated.

The following year P.H. Drewry now a U.S. Congressman, sought to introduce a new bill along with Speaker of the House, Frederick H. Gillette of Massachusetts. Carter Bishop joined forces with both the Governor of Pennsylvania and New York Senator Wadsworth, son of a deceased Union general and namesake of the Federal fort built at the Weldon Railroad in 1864. This formidable team prevailed and by February 1925, President Calvin Coolidge established a commission to study the "feasibility" of a battlefield park. A combined tract of 185 acres including roadways and markers, was proposed in a bill introduced to Congress by Wadsworth and Drewry. Passing muster in both houses, it was signed into law by President Coolidge on July 3, 1926.²⁶⁴ A National Military Park at Petersburg was finally established. Sixty-one years had elapsed since the generals shook hands at Appomattox Courthouse. William Lemuel Peebles had been dead for ten. The persistent efforts of veterans and concerned citizens to memorialize the longest siege fought on American soil had come to fruition.

War Department Administration

Early Plans and Acquisitions

Administration of the newly founded park was given to the War Department and managed by the Petersburg National Military Park Commission, led by Captain Carter R. Bishop, Captain Henry N. Comey and Lt. Col. Henry C. Jewett. In June of 1928 the commission filed a report of intentions for the park with the Secretary of War, expressing the need for constructing roads adjacent to Union and Confederate siegelines, and garnering possession of all earthworks "*contiguous to the roads included in the Park.*"²⁶⁵ Acquisition of the Crater Battlefield, 200 acres of Camp Lee and supplemental acreage near Jordan House and Battery Five was requested, as well as an operating budget of \$885,000.00.²⁶⁶ By early September 1928, Secretary of War Dwight F. Davis, responded favorably to the commission's proposal, outlining an early blueprint for preservation:

"To preserve for historical purposes the breastworks, the earthworks, walls or other defenses or shelters used by the armies therein. This objective cannot be obtained by merely connecting with a road several isolated forts or earthworks...It is most important that the Commission make every effort

*possible to secure the preservation of the forts and trenches adjacent to or in the immediate vicinity of the road and boulevard system. As far as possible, this land should be in one continuous strip."*²⁶⁷

The popular notion of combining automobile tour roads with memorial battlefields held sway among park framers. A report written for the park in 1929 by Francis Toms entitled, *The Historical Fortifications Around Petersburg Virginia and the Establishment of these Battlefields as a Memorial to the Soldiers of the War Between the States*, offers a view of challenges and issues facing the founding stewards. It is interesting to note that, as the title suggests, this park differs from the Gettysburg and Antietam battlefield parks recently created. The Petersburg park would exist as a collection of interdependent earthworks forming an aggregate landscape covering a large area, rather than a singular battlefield area as monument or war memorial. Another intriguing issue in park development is mentioned when Toms describes the work of the commissioners: *"The government could not condemn land for use in the park and this made it necessary for the Commission to secure all land by donation."*²⁶⁸ For political reasons, the Federal government would not impose its right of eminent domain. The task of land acquisition fell to active citizens and leaders of the Petersburg Battlefield Park Association, who exercised a powerful influence over the local population. Toms' report continued to outline seven "ideas" promoted by the Commission reflecting policy on future development. Among the more novel concepts proposed were:

- #1 *The breastworks consist of raised fortifications of earth which are not suitable for agriculture, and...should be turned over to the Commission by a great many of the owners.*
- #3 *Improved roads will be built, some concrete and some gravel surface oiled, in general running between the two lines of breastworks.*
- #7 *As the land is secured, the fortifications will be cleared of all brush and suitable tablets and markers will be placed at the most important points to describe the events and actions.*²⁶⁹

These early intentions addressed an impending stewardship, and created a frame of reference for future park managers. The Petersburg Military Park Commission outlined progress to date in its report of April 5, 1929, which included a proposed site plan and a detailed line-item budget. It described the ongoing publicity campaign launched by the Citizens Association and a host of civic organizations. Meetings, speeches and conferences were held to promote the Park concept- exerting considerable pressure on property owners to ante portions of their farms: *"Personal visits, with and without members of the Citizens' Association, to the owners of the tracts of land desired for the purpose of obtaining their promise to donate the land have frequently been made."*²⁷⁰ The report estimated that approximately 500 acres of land would comprise the park, of which 215 had already been donated. Another 87.83 acres were promised, leaving 197 acres left to be acquired. Most of this land was concentrated on the Federal siegelines.²⁷¹ In outlining the ambitious plan, the report described the system of connecting roads:

*"...a strip of land to be in general 100 feet wide, wider at the forts and narrower across ploughed fields...It is intended the sites of all forts within the boulevard system, as well as those adjacent thereto, will be marked by a bronze tableted granite memorial or marker, have one or two guns and be inclosed by a fence."*²⁷²

Construction of twenty-one miles of roadway was proposed, sixteen of gravel and five miles of concrete, intending to match the quality of primary roads in Virginia. An attached site plan delineated in color outline the intended 'boulevard' following the line of fortifications south of the city. Of particular note, west of Squirrel Level Road the proposed 'boulevard' follows the Union lines but crosses into the

no-man's-land north of Fort Urmston, then returns behind the trenchworks connecting Fort Conahey and Fisher. It then heads north to the west of Fort Fisher on the existing Church Road towards Boydton Plank Road and Confederate Fort Gregg. The remaining siegeworks of the Federal Left, namely Forts Welch, Gregg, Wheaton and Battery 27, are left out of the tour loop. What appears as a straight access road runs west for 550 yards from Church Road at Fort Fisher into the Battery 27, Fort Welch area. Further plans called for the construction of seven monuments in various locations throughout the Park, but excluded mention of memorials on any Left Flank or Fish Hook fortifications. The total expenditure to realize this vision was set at \$747,842.00 to be spent over a five year period. The report concluded: *"The Commission believes this plan of the Park as outlined will be simple yet impressive, will not be exorbitant to establish and cost little for upkeep, lends itself to future development, and additions can be made at little or no expense to the Government."*²⁷³

A response to this report from Congress, suggested several revisions. Recommendations advised that the section of Church Road connecting Fort Fisher with Confederate Fort Gregg not be included in park holdings and that it continue to be maintained by the State of Virginia. This omission would seriously weaken the planner's intention for a continuous park loop, and in effect, recreate the wartime gulf between the lines of the northern and southern armies. It would also sequester Fort Welch, Battery 27 and Union Fort Gregg to the end of the line. A further directive of the Board discouraged proposed construction of the seven monuments, advising that their cost: *"...would not be at all commensurate with the subjects to be monumented."*²⁷⁴ The founders pressed on, despite the fact that original ambitions for the project were unlikely to be realized. According to a progress report of December 10, 1929: *"All work of surveying the land required for the Park has been completed, with the exception of the Crater Golf Course"*²⁷⁵ This update included a ledger of property owners with surveyed land parcels submitted for acquisition. The ledger, which included acreage from the estates of Joseph Kofron and Mrs. Annie B. Peebles, comprising much of the siegeworks of the Federal Left, was prefaced by the caveat: *"Under the present law the land must be donated. The future(park) progress therefore depends entirely upon the speed and completeness with which the land is donated."*²⁷⁶

During the political maneuvering, physical changes to the landscape continued. Francis Toms reported ongoing activities within the Park:

*"Work began in earnest during January 1929. The general condition of the fortifications was good with the exception of the lines and forts which have been destroyed. Beginning at one end of the entrenchments, crude but accessible roads were built to the points from nearby roads. Then all brush, decayed trees, and trash were removed from in and around the secured lines and forts. Bomb-proofs and powder magazines were reconstructed and finally, a sign was erected to inform visitors of the important point. Work of this nature was continued throughout the fall of 1929."*²⁷⁷

The popular press kept citizens informed of the progress and pitfalls in developing their military park south of the city. As local workers toiled at retrieving earthworks buried in forest cover Louise Aaron, a columnist for Petersburg's Progress-Index, wrote in July 1929:

*"Building the park was not merely a matter of erecting monuments and tablets, of constructing fine roads and publicity. One would hardly have guessed that great stretches of breastworks and other fortifications lay within the tangled undergrowth and dense trees that cover the greater part of the park area. To build a military park meant penetrating those woods and cleaning up."*²⁷⁸

Acquiring the Left Flank and Fish Hook

In 1929 the War Department ordered the U.S. Army Quartermaster Corps to survey and draw scale plans of land destined for Park acquisition. The engineers completed their assessment of the Left Flank siegeworks and a total of 28.81 acres were prepared for transfer to the park. The ground of Fort Urmston and 900 feet of Union trenchlines running west towards Fort Conahey was owned by Joseph Kofron. His property, comprising 4.87 acres was surveyed and mapped on September 16, 1929. The plan shows the footprint of a Catholic church and cemetery lying due south of Fort Urmston²⁷⁹ (Figure 2.47). This building is mentioned by Margaret C. Blaha as St. John's, built in 1907. The Park's intended parcel is divided by this property. To the west lay another tract of 16.19 acres, scheduled to be donated by the estate of Mrs. Annie L. Peebles. A site map, drawn earlier on July 31, shows the pledged property connecting to the Kofron section, following the line of works to include Fort Conahey and continuing west again to encompass Fort Fisher, terminating at the shoulder of Church Road.²⁸⁰ The third section, completing the ensemble, was also owned by Mrs. Peebles. Engineers surveyed these 7.75 acres last, on October 3, 1929. They were the least accessible among impenetrable growth and laden with ticks, snakes and mosquitoes.²⁸¹ This tract began at the southwest parapet of Fort Fisher extending along trenchworks to include Battery 27 and Fort Welch, where it turned south into a dog-leg of trenches and rifle pits, terminating at the footprint of Fort Gregg.²⁸² The share of the Federal Left Flank fortifications was transferred to the U.S. Government by the heirs of William Lemuel Peebles on July 29, 1933 for the consideration of one dollar.²⁸³

In January 1931, Congressman P.H. Drewry appealed to the U.S. Treasury for continued appropriations for Petersburg National Military Park. Praising the involvement of Petersburg's citizenry he wrote: *"Please let me also recall to your mind that this is the only instance, as far as I know, in which the land is donated to the Government for military park purposes. Out of 87 tracts desired by the Government, the Citizens' Committee has secured deeds and transfers and promises...from about 83 land owners...The first section, of about three miles...has been fully conveyed to the Government."*²⁸⁴ An inventory of park acquisitions that year totaled 507.38 acres. The aggregate property was divided into smaller sections referred to as "areas" to simplify the process of surveys and transfers. *"The needed amount in the Battery Five area, 64.13 acres, was the first to be acquired in its entirety. The other areas into which the Park was divided were: Fort Stedman, Fort Sedgewick, Fort Gregg (Confederate), Fort Howard, Fort Urmston; all other areas were classified under "detached areas."*²⁸⁵ It is interesting to note that the title "Fort Urmston Area" was most probably chosen as a term of convenience, since it was first in the line of forts west of Squirrel Level Road. Surprisingly, the Commission chose not to name this section after Fort Fisher, (or General Meade who headquartered there) heedless of its prominence and significance during the war. It is also important to note here that, up to this date, inclusive of the war years there has been no mention of "Fish Hook Fortifications" when referring to this westernmost property of the Federal siegelines. The heading "Fort Urmston" is the first recorded term used by the War Department in 1931 to identify these earthworks.

A 1931 map of Piecek Farm drawn March 23, shows a revision in park-taking lines (Figure 2.48). It clearly outlines Fort Urmston with its southern portion eclipsed by the rectangular footprint of a schoolhouse. Bordered along the building's northern edge, and separating it from the ground of the fort, a fence runs for approximately 400 feet to the Squirrel Level Road. It is interesting that there is no mention of Joseph Kofron on the plan. Since the school house did not appear on the earlier survey of Kofron's 4.42 acre plot, we can safely assume that the southern parapets of Fort Urmston were destroyed sometime between September 16, 1929 and March 23, 1931. This is consistent with Margaret Blaha's story of her

congregation building a new brick church in 1931. It is possible that the wood and materials of the original structure were used to frame the schoolhouse. A site plan of the park drawn one week later, dated March 31, shows these "areas" outlined and color-coded. It lists the Fort Urmston area at 33.27 acres (Figure 2.49). This map depicts a pipe-stem right-of-way leading from Church Road to the hexagonal trace of Fort Wheaton, which encloses the number 20. This number corresponds to a table on the plan entitled, "Detached Areas," which lists property donors. The donor on line 20 is Mrs. Annie E. Peagram. Her contribution of Fort Wheaton was 1.15 acres. It was conveyed to the U.S. Government on December 26, 1929 for the sum of one dollar.²⁸⁶

Auto tour roads

On May 14, 1932 a ground-breaking ceremony marked construction of the park's first roadway. In early June, an article in the Washington Post announced that official opening ceremonies of the new park were set for June 20, calling it: *"The fourth great military classroom and theatre of the War Department, the Petersburg Military Memorial Park."*²⁸⁷ The story continued, promising that President Hoover would be on hand to dedicate the park, *"...which already has been cleared of the...tangle of shrubbery which has preserved the breastworks...forts and other evidences of the struggle for 68 years...The park is the gift of the people of Petersburg to the War Department. No funds were appropriated for its purchase by Congress."*²⁸⁸ Hoover did not attend. Congressman Drewry presided over the festivities that attracted several thousand visitors. As the motoring public arrived in force to celebrate the coming of this latest auto-friendly park, nearly two thousand cars were parked at the Fort Stedman area.²⁸⁹

Initial clearing and maintenance of the park was performed by a small crew of the Emergency Conservation Work agency (ECW). Then on July 13, 1933 a company of the Civilian Conservation Corps set up camp near Fort Stedman. Veterans of the World War served in this peacetime corps. Bivouacking in tents, 173 men worked under the direction of Engineer, J.V. Colson. Considering field conditions, the charge to render the park into a manageable state was formidable. A report on the History of Company 1364 of the CCC detailed the task at hand:

*"The principle task of the men at the camp was at first to clean up the dense undergrowth from the earthworks so as to make them visible from park drives...Having cleaned the fortifications of brush growth, it has been necessary to seed and sod the earthen banks with wire grass (Bermuda Grass) to prevent erosion of the soil...tree planting has been important work...this crew moves an average of 500 trees a month to make an interesting variety of growth along the park drives."*²⁹⁰

It appears that managers were leaning toward creating a destination that would appeal to visitors on a scenographic motor tour, who intended to view attractions (siegeworks) from the comfort of their Model A. The experience then, would resemble a drive along one of the popular parkways of the day, where motorists were rewarded with views of lovely scenery, rather than a literal restoration of the battlefield scene. *"As the park has gradually emerged from its wild state the men have turned to various types of work intended to make the area more beautiful and interesting to the public."*²⁹¹ A carpet of turf was grown along the cleared road banks, trees were pruned and historical markers were set along the route. All work focused on removing any visual encumbrance to expose the earthwork attractions. A few days after the CCC arrived on the scene, the *Petersburg Progress-Index* published a story espousing the importance of these men:

*"Even those people who are so short-sighted as to fail to appreciate the value of the reforestation work of the CCC cannot fail to recognize the permanent worth of the work which 200 civilian workers are beginning today in the Petersburg National Military Park. Most people we daresay, who have not taken the trouble to familiarize themselves with this project think of it as Battery Five on the north side of the Hopewell Highway and the Fort Stedman area on the south side and have a vague idea that in time the park will include a larger territory. The truth is that in six months Petersburg will be almost surrounded by a military park of attractive appearance and, more important still of course, of deep and enduring importance to all lovers of history and especially to students of military history."*²⁹²

Proposed as a stimulant to commercial vitality, this new park featuring motor roads was sure to attract visitors within driving range. Residents of Petersburg hoped to soon have their generosity and hard work rewarded by a grateful and appreciative public.

National Park Service Management

Early resource management

Executive order #6166 of March 3, 1933 brought a change of command to the Petersburg Military Park, when it mandated the reorganization of Federal agencies. The Department of the Interior assumed responsibility for all Military Parks formerly managed by the War Department as of August 10 that year. B. Floyd Flickinger served as acting superintendent of the 346 acre park. The War Department hierarchy was relieved of its watch, yet John.V. Colston remained as supervisor of the CCC camp, continuing efforts on the park development and beautification campaign. A forestry policy report was produced in October 1933 and approved one month later by Director Arno B. Cammerer.²⁹³ The document surveyed current conditions and outlined a treatment prescription generated by the new managing agency. The analysis of site conditions included praise of previous work completed by the War Department, mainly the clearing of trees and dense growth and some plantings at Forts Stedman and Battery 5. As the report stated, other park segments required attention:

*"The general condition that exists...is that of heavy natural woods cover, usually of young loblolly pine. This typifies the aspect of Fort Lee, Fort Fisher, Fort Wheaton, Fort Urmston and the two Fort Greggs among others. Fort Wadsworth is well-nigh impenetrable wilderness of dense weeds and rank-growing brush, with only a few scattering trees."*²⁹⁴

Treatment solutions were proposed by park managers who reiterated earlier War Department ambitions of purging imperfections visible from park roads in deference to the automobile tourist. Tree stands near roadsides that came within proximity of earthworks were to be, "opened up sufficiently to afford a view to one riding by."²⁹⁵ Deadfall, standing snags and dead limbs considered unattractive, were to be removed as part of a "thinning" regimen (Figure 2.50). A concerted effort was begun to manicure areas having high profile attractions, while simultaneously attempting to preserve the natural character of woodlands. At issue was balancing the protection of a site ecology with the rampant development spurred by increased visitation. The report bears a trace of this perennial debate within the National Park Service. Recommending first that wooded areas beyond view of the road be left in a natural state because they have, "served to protect the old fortifications against erosion," the report contradicts itself by then adding:

"In order to invite inspection, however, the stands must be made sufficiently open to provide visibility across the fort or other feature as well as freedom to wander about unencumbered by logs and tangled growth. To this end the dead and down material should be taken away as well as certain entangled masses be removed." ²⁹⁶

A subsequent statement portends that clearing all undergrowth is contraindicated, yet a discrepancy arises when that essential vegetation (undergrowth) is assigned token representation: *"Groups of it can be left here and there where it will help retain the woodland picture but still not interfere with the visibility or accessibility."* ²⁹⁷ Early park policy appears conflicted and weighted toward creating the illusion of a nature perfected. In the rush to present the wonders of the park's cultural resources to a smitten public, regard for protecting natural processes were overlooked. Allowing the curious visitor a free range over the earthworks is indicative of this attitude. Perhaps managers underestimated the ultimate value of balancing cultural and natural resources, and could not predict future problems this policy might create.

These ecological issues were brought into focus when the treatment discussion moved to protection of the earthworks. Although a mat of pine needles was considered adequate cover to protect against erosion on gentle grades, earthworks with high relief were in jeopardy of degrading once the dense brush was removed from their slopes. The park managers elected to use Bermuda Grass, *Synodon dactylon*, and Hall's Honeysuckle as an antidote to erosion, basing their decision on the performance of existing colonies as well as those recently installed by the E.C.W. projects. They cited the species' advantages:

"Bermuda grass is found growing naturally in the vicinity and is being used in mixture with other grasses to form a continuous sod... Hall's honeysuckle, an exceptionally good soil binding species, demonstrates its ability to form a pleasing cover over parts of the old fortifications...where it has voluntarily established itself. The planting of this species on certain bare earthworks where erosion has set in is recommended." ²⁹⁸

In October 1933, National Park Director Arno Cammerer, expressed his concern of using invasive species in a memo to John V. Colston, Camp Superintendent. He submitted this caveat:

"You are using Bermuda grass on the trench works. If this is common to the park and has been used before, it is perfectly proper to use it again. However, we do not want to bring in a species of grass that will become a pest in the future unless native grasses will not do the work of controlling the erosion. This same thing holds true for honeysuckle." ²⁹⁹

Although the jury was still out on the invasives issue, work of thinning, grubbing and re-planting continued. Photographs attached to a Narrative Report dated July 3, 1934 show the results of these operations. The narrative stated: *"Breastworks sprigged with Bermuda grass last fall are being dressed with soil to assist the rooting of the runners coming from the sprigs"* ³⁰⁰ This treatment was used at the Fort Urmston area. (Figure 2.51). The photos clearly show new grasses appearing as a vigorous groundcover. Interior views of Forts Fisher, Welch and Urmston document a cleared shrub layer and healthy understory growth (Figure 2.52). Among the earthworks are mixed stands of hardwood and pine, some with diameters at breast height (dbh.) approaching twenty-four inches. These sentinel trees represent a successional forest grown up on an abandoned battleground. Another interesting view illustrates this vegetation as well as the Fish Hook access road which leads to Battery 27, Fort Welch, and Fort Gregg (Figure 2.53). With the terrain recently cleared of scrub, sightlines have been extended through the landscape. The arc of the road is discernable as it winds around a parapet from an easterly direction.

Road development: enhancing circulation

An exchange of correspondence initiated in 1934 between the Petersburg park and the Bureau of Public Roads, concerned a plan for an overpass to carry the park tour road over five tracks of the Atlantic Coast Line near Fort Wadsworth. This overpass would insure unimpeded travel to the western properties within the park by eliminating a dangerous grade crossing, and help to complete an original intention of a loop road following the earthworks. After considerable debate the scheme for a reinforced concrete overpass was vetoed in favor of an underpass half a mile to the south. In a letter to the N.P.S. Associate Director, H.J. Spelman an engineer for the Bureau of Public Roads (BPR) expressed the sentiments of those opposed to the plan:

*"There will be required 45,000 cubic yards of borrow fill for such a structure and the taking of such a quantity from anywhere in the neighborhood may result in an unsightly condition adjacent to the Park. In addition, the erection of the structure 30 feet above the general surrounding terrain would introduce an objectionable landscape feature."*³⁰¹

Five days later, N.P.S. Associate Director Demaray's response expressed both practicality and design sensitivity. Favoring the underpass option, he recommended that the structure remain in the original location, thereby not extending the road for over a mile and unnecessarily, *"cause it to leave the line of defenses."*³⁰²

As the Fort Wadsworth underpass project was prepared for bid, an infusion of funding from the Public Roads Administration was earmarked to develop important roads within the park.³⁰³ That year, three and a quarter miles of paved roadway was constructed by the Bureau of Public Roads, following Federal lines from Jerusalem Plank Road west to Fort Wadsworth. Originally referred to as the *Davis-Wadsworth Road* in Park Service communications, Project 4A-1 was finished in the popular style of a manicured parkway with sweeping curves and cleared shoulders planted in Bermuda Grass. It would be named Flank Road. To the north, construction plans were initiated for Defense Road in September 1935. Designed to connect Confederate Fort Lee with Battery Peagram, two miles to the east, the roadway mimicked the arc of intermediate trenchlines between the two forts.

After the severe winter of 1935, Flank Road was resurfaced to repair damage done by frost heaves. In April of 1936, Branch Spalding, the new Coordinating Superintendent of the Park wrote to N.P.S. Director Cammerer stating: *"I recommend that all further road construction, other than the Wadsworth underpass, be undertaken as Minor Road Projects for execution by our Branch of Engineers"*³⁰⁴ Concerned that Park Service standards were not being met by the Bureau of Roads, he wrote in a subsequent letter to Cammerer: *"I hope it is needless to say that I am not so much concerned with who builds the roads as with what kinds of roads are built."*³⁰⁵ In September 1936, the construction of a concrete underpass would enable the planned Defense Road to cross the Halifax Road and Atlantic Coast Line Railroad without obstruction. R.B. Poeppell, the Resident Landscape Architect concerned with erosion on slopes adjacent to the road cut, wrote to Director Cammerer in Washington with a solution:

"The road slopes...will undoubtedly wash considerably unless steps are taken to prevent it immediately after it is accepted by the Park Service from the contractor...It is suggested that CCC labor be employed to plant these slopes thickly with honeysuckle or to cover them with a mulch of leaves ...to be held in place by a screen of four inch mesh securely pegged with long stakes. The latter has

*worked well in a final solution of holding a similar high cut bank on the Sickie Drive in the Chancellorsville Battlefield."*³⁰⁶

In November, treatment of the underpass bank was decided. The Honeysuckle groundcover scheme was vetoed, instead, horizontal rows of sod were planted, then covered with top soil and mulch of hay and straw. A "binder twine" was tied to pegs driven into the ground to secure this arrangement on the slope.³⁰⁷ By year's end, the combined effect of these early projects contributed significantly toward achieving the concept of a dedicated and uninterrupted park loop road.

Management objectives for the Park continued to focus on circulation and access, motivated by a necessity to accommodate visitation. In February 1937, as construction documents were nearing completion for the Flank Road underpass at Fort Wadsworth, Park Superintendent Coleman promoted a plan to move a 2.2 mile section of the Halifax Road to the west of the Atlantic Coast Line Railroad, so as to eliminate two at-grade railroad crossings.³⁰⁸ Coleman's straightforward rationale relied on similar logic for building the Wadsworth underpass. Halifax Road was a major access route to the Park and the, *"elimination of the grade crossings would be desirable not only to the general public but to the National Park Service, as they constitute a hazard to park visitors."*³⁰⁹ By October of 1938, the concrete paving on Defense Road was underway between Fort Lee and Battery Pegram.³¹⁰ It was opened for public use before the end of the year.³¹¹

Conditions extant, 1937

An aerial photograph taken in March 1937, documents the existing conditions at the Federal Left Flank, Fish Hook and surrounding areas as well as the results of clearing and maintenance performed by the ECW and CCC since the Park's establishment in 1926 (Figure 2.54). Clearly evident in the image is the orientation of Squirrel Level and Church Roads which define the terrain comprised primarily of forest and agricultural fields. There is little evidence of suburban or industrial development. The agrarian imprint of tilled fields still marks the perimeter of Civil War era Peebles and Pegram farmsteads. Similarly, to the north of Fort Fisher, the lower segment of Boswell's farm appears at the top of the photo. A thin, dark line represents the early dirt access road which paralleled Union trenches from Fort Urmston west to Fort Fisher. Fort Urmston's outline is plainly visible due to a dense stand of conifers within its boundary. The access road eclipses the southern quadrant of the fort. On that cleared site stands two main structures, the schoolhouse and Catholic Church of St. John Nepomucene, with an adjacent graveyard to the west. The area between Fort Urmston and Fort Conahey is grown in mixed woodland with pine as the predominate species. The footprint of Fort Conahey is indiscernible, its volume and relief camouflaged by the forest cover. A clear division of vegetation exists on either side of the trenchlines running from Fort Conahey to Fort Fisher. On the northern boundary, mid-stage, old field succession is evident, grown almost exclusively in deciduous species with a dense shrub and understory layer. To the south, the parcels are heavily populated with pines. Bordering this area to the west lies Fort Fisher. Its sharply etched bastions filled with dark coniferous growth, are offset from the surrounding terrain of a leafless deciduous forest. The fort's penplain is visible and sparsely vegetated in young scrub pines and grasses. West of Fort Fisher and the Church Road a thin, discernable white line represents a recently cut access road into Battery 27 and Forts Welch and Gregg. Tilled fields are visible to the north of the Federal trench lines leading to Battery 27 with a thin buffer of tall pines marking their edge. The pattern of Battery 27 is well-defined by a dense stand of tall, dark, pines growing just outside the parapets forming a silhouette against the white background of fields to the north. Inside the redoubt, small clumps

of pine are offset by mixed deciduous species growing on a partially cleared ground. The line of the access road is sharp, denoting recent construction, as it follows the form of a fish hook to Fort Welch and heads towards Fort Gregg. The pentagonal geometry of Fort Welch telegraphs strongly from the depths of its perimeter trenches. An agrarian lot borders its northern face, while a dense mixed forest abuts the remaining four sides of its perimeter. Heading south, the signature access road is less distinct as it cuts through mixed forest cover to Fort Gregg. A small, sandy open area, evidently a vehicle turn-around signals the road's terminus just north of the earthwork. The irregular western aspect of this earthwork is partially obscured by a mixed canopy, yet the perimeter trenches show clearly as dark hollows engraved into the landscape. A few clumps of pine volunteer on the interior. Fort Gregg, isolated at the tip of the N.P.S. holdings is encompassed by dense forest and scrub, it reads as the most remote of all fortifications in the region.

Observations from the aerial photo when coupled with a contemporary report in July of William Howard, N.P.S. Regional Wildlife Technician, present a more complete account of existing vegetation at ground level and introduces the problem of plant succession within the Park at the time. In discussing the open areas in the park he wrote:

*"It is my belief that such areas should produce a vegetative cover which will prevent erosion and be of use to wildlife. Few plants are more desirable than native legumes. We know of but two ways to retain a fair stand of native legumes, one by burning, the other by liming...The vegetation is sparse. Herbaceous material is represented by broom sedge, Andropogon sp., sorrel, Rumex sp., poverty grass, Aristida sp., while the shrubs are represented by bayberry, wildplum and blackberry. Shrubs are very rare. You will recognize the plants are pioneer, by nature, and will be replaced by pine seedlings that are gradually closing in on all sides."*³¹²

It is apparent that as early as 1937, both the persistent growth of pioneer pines and the question of the utility of native species would present recurrent issues for Park managers regarding a treatment policy. Resolutions were deferred as appropriations dwindled significantly with the advent of world war.

Wartime maneuvers

During the Second World War, Petersburg battlefields hosted modern armies on their terrain. Land was granted to the military for a hospital and training school, roads were widened, power lines were strung and once again the landscape supplied water and fire wood to army regiments as they swept through the area bound for other camps. In August 1941 the 139 members of the Civilian Conservation Corps camp were transferred to a National Defense Department detail. These veteran workers of the resident C.C.C. camp had tended to the clearing, preening and maintenance of Park property since July 1933. A skeleton crew remained on duty until July of 1942 when the camp was disbanded and replaced by U.S. Army troops bivouacking on the site.³¹³

Despite wartime pressures, a shortage of labor and supplies, and opposition within the National Park Service, construction began on the Fort Wadsworth underpass for the Atlantic Coast Line Railroad on September 25, 1941. The contract was awarded to the lowest bidder at the price of \$107,854.60³¹⁴ This was a considerable sum for a wartime disbursement that served no purpose except to further the possibility of an intended park road. Earlier that year, N.P.S. Chief of Planning Thos. C. Vint, registered his dissenting opinion in a memorandum to the Park Service Director, threatening the underpass project as well as the existence of fortifications in the western range of the park:

*"The more distant forts and emplacements lying south and west of Petersburg are primarily of interest to the occasional military student. The land acquisition priorities now aim at completing the holdings east of town...before going after the more remote and much smaller tracts west of Fort Wadsworth. I, therefore, conclude that a heavy expenditure for underpass at Fort Wadsworth may represent an investment which we cannot use for some years, and possibly never. It would prove embarrassing to find ourselves possessing such a structure toward the end of a stub road."*³¹⁵

Despite this critique, the underpass project ensued and although expected to run for two years, work was halted after fourteen months by a Federal government embroiled in war. However, local political pressure and the presence of U.S. Army activity at nearby Camp Lee commuted sentencing of the structure. A strong argument favoring the necessity of the underpass spoke to the absolute safety and efficiency of troop transport in the area. This reasoning proved effective and work resumed. The Fort Wadsworth underpass, Project 5-A1, was finally completed on the 12th of August, 1944. Six years later, Flank Road would be extended west from Fort Wadsworth to the Vaughan Road near Fort Keene. This newly surfaced primary park road, Project 5-A2, followed the line of trenches leading further west to the Federal Left Flank. The combination of bridge and road created a portal to outlying acreage of the Left Flank and Fish Hook fortifications. Lacking such key improvements in park circulation, these valuable properties would possibly have slipped into obscurity or worse, been divested and lost forever.

Shortly after the completion of Wadsworth underpass, Congressman Drewry again stoked the political boilers, encouraging closure of the park loop that traced the line of the Federal Left Flank siegeworks. In a letter to Associate Director Demaray, he stressed the importance of honoring an earlier commitment *"with the people on the southwest portion of the Park area where there are a number of most interesting forts."*³¹⁶ Noting that local residents donated their land to the government in exchange for a military park and road adjacent to the earthworks, Demaray begged the question with his superior, N.P.S. Director Newton B. Drury: *"...you should consider the matter of building the Park Road a little later, along the breastworks from Fort Urmston, past Fort Conahey, Fort Fisher, Fort Welch, and then on to Federal Fort Gregg. A narrow driveway should be constructed to Fort Wheaton from Church Road."*³¹⁷

The final two pieces of the plan to incorporate Left Flank siegeworks into the park loop was referred to in the earlier Park Master Plan of 1936 as Project 5-B1, stretching from Fort Urmston to Fort Fisher and Project 5-C1, continuing from Fisher to Gregg. Although avidly proposed, the idea fell on deaf ears. Drury shelved the proposal indefinitely when he replied to Demaray a week later: *"The memorandum...refers to an extension of the Forts Wadsworth-Keene Road as far as Fort Gregg, but we have not planned to go beyond Fort Keene; consequently, no plans or estimates have been submitted for such an extension."*³¹⁸

Post war development and divestiture

By the late 1940's, post-war pressures of suburban development began to impinge on the Park. Farm lands bordering Flank Road were subdivided into smaller building lots which held transferable easements through the park's right-of-way. Issues of preservation and land use were hotly contested when park superintendents, expected to allow new owners access to their property, refused to do so.³¹⁹ To parry the controversy, N.P.S. Assistant Director Tolson suggested transferring ownership of Flank Road to the State of Virginia, a move intended to divest the park of the imbroglio yet still maintain control of the

fortifications beyond. Congressman Drewry raised the earliest battle cry against this motion, when he wrote again to Newton Drury, informing him of this recent "rumor":

*"Briefly, it is a question of the roads through the Park to the Southwest of Petersburg, and there is some talk of turning over the roads, which have been developed by the Park Service, to the State of Virginia. I think this would be a big mistake from the standpoint of the development of the Park...I cannot think that the Park Service is going to release the land which we had so much trouble in getting for the Park."*³²⁰

The debate over ownership rights persisted from the 1950's into the 1970's. An aggravated local citizenry felt that their gift of lands, donated for historical and civic purposes, was no longer secure under the aegis of the National Park Service. Acting N.P.S. Regional Director Elbert Cox and Petersburg Superintendent George Emery, heedless of the popular will, began preparations for the transfer in 1950, the same year Flank Road was officially opened for public use. Four years later, Cox advised then Superintendent Floyd Taylor to make arrangements to convey the newly minted Defense Road and Flank Road to the State of Virginia, based on a rationale which considered them approach roads to the park.³²¹ Taylor penned his dissatisfaction:

*"...every reason which dictated the Service's decision to 'keep the roads' still continues with even stronger justification...the moral obligation cannot be easily erased...any relinquishment of the roads to permit unrestricted travel would certainly diminish if not destroy this significant and large section of the over-all Park Tour Route."*³²²

In 1963 increased momentum for enhancements of National Park Service property under "Mission 66" program spurred the Bureau of Public Roads to produce drawings for the completion of Project 10-A1, the long-anticipated section of park road between Fort Urmston and Fort Fisher. The plan, shelved since 1945, was now resurrected. A continuation of Flank Road, it began at Squirrel Level Road and ran west, clearing a right-of-way thirty to thirty-four feet wide. Following a C.C.C. access road which hugged the original line of Federal fortifications, the design provided for twin, nine-foot wide travel lanes with three-foot grass shoulders, terminating at the intersection of Church Road. Parking turnouts were carved out of the north road shoulders adjacent to Forts Conahey and Fisher.³²³ The parking turnout for Fort Urmston was located on the south shoulder, due to the road's proximity to the eclipsed southern perimeter of Fort Urmston.³²⁴

By 1964 the political tide shifted in favor of transferring Flank and Defense Roads to State control when Petersburg's city limits were proposed to extend south into Prince George County. Against stiff county resistance this measure was approved by the state, and Petersburg Park Superintendent, John T. Willett prepared to offer deeds to Petersburg's City Council.³²⁵ Shortly thereafter, Congressman Watkins Abbitt, Superintendent Willett and Regional Director Cox brought their proposal, now in the form of draft legislation, to Park Service Assistant Director Howard Baker in Washington D.C. This maneuver evoked considerable fervor among preservationists and raised the ire of N.P.S. Historian Ed Bearss, who immediately fired a salvo of dissent over the bow of an insensitive bureaucracy. Ironically, debate on this issue occurred in 1966, the golden anniversary year of Park Service establishment. Bearss wrote:

"We feel that such an action by the National Park Service will emasculate the Petersburg story. Except for the attack of July 30 at the Crater, all Union movements aimed at compelling the Army of Northern Virginia to abandon Petersburg from June 18, 1864, were directed against the Confederate

right. The loss of Flank and Defense Roads will...have given up vital ground in telling the story of ten months of Union effort to turn Lee's right." ³²⁶

Bearss went on to warn of the inherent dangers when relinquishing Park Service control:

"Along these roads are the best preserved earthworks in the battlefield, including Fort Fisher, the largest Civil War fort in the United States. Experience at Vicksburg, where land was conveyed to the city with a reservation that the city fathers were to maintain these lands in a "Park-like manner," has shown that real estate developers will lose little time in calling in their bulldozers and leveling the earthworks as soon as they are no longer protected by the Service." ³²⁷

Although the historian cited the significance of Federal Left Flank siegelines, and offered a compelling argument for their preservation, politics prevailed over preservation as Regional Director Cox secured the final word on the matter. Expressing his understanding of N.P.S. policy, Cox submitted the following justification for the forfeiture of park lands. In a memo to Director Hartzog, he cited the three "most important and significant" areas of the Petersburg Park as Battery 5, the Crater and Fort Stedman. Arguing that these sites held "substantial areas within the park boundary" and possessed "meaningful interpretation" and "receive by far the most legitimate visitor use," they were most worthy of management and preservation.³²⁸ Unfortunately, Cox misinterpreted the charge assigned the National Park Service fifty years earlier; to protect America's natural and cultural heritage through responsible landscape management and preservation. Perhaps not completely aware of their intrinsic value, a skewed logic emerges when he described Fish Hook properties as "the narrow strips of land acquired by the War Department (were) minimal at the time and became increasingly inadequate as urbanization, industrial development, and similar changes occur." ³²⁹ Relegating valuable properties to neglect due to their threatened condition runs contrary to the mission of the National Park Service. Sharing the myopic views of Thomas Vint, Cox espoused a preservation policy of natural selection. This 'survival of the fittest' reasoning contributed to a disregard of the Federal Left Flank and Fish Hook fortifications, creating a forlorn, stepchild-landscape abandoned in the western range of the park.

On February 8, 1973, the deeds for the Park lands in question were finally transferred to the City of Petersburg. The State of Virginia now had responsibility for maintenance of the road. Yet it was soon discovered that a 1.2 mile section of Flank Road lay outside the new city limits within Dinwiddie County. Although county managers were also willing to accept this parcel, including the road, they would not guarantee protection of the adjacent earthworks from development. Reacting to this potential calamity, the careful forethought of Charles Marshall, Director of the N.P.S. Virginia State Office, proposed that the Park Service retain control of this small section of road:

"In view of the strong position we have taken elsewhere on the preservation of park values threatened by highway development, and in view of our obligation to the Congress and the public to protect historical remains, we concluded that the long term interest of the public and the Service dictates that we not transfer the 1.2 mile section of Flank Road to another jurisdiction." ³³⁰

Latter day treatment Policy

By 1974 the Park administration was wrestling with issues of encroachment, pilfering of artifacts, archaeological interpretation, vegetative treatments and misdirected management. Intent upon negotiating these potential threats to Park resources and in an attempt to raise the consciousness of preservation, a

conference was called by Superintendent Hakel in July. In his, *History of the Petersburg Battlefield Park: 1957-1982*, Martin Conway outlines five of seventeen important recommendations decided during this early Earthworks Management Conference:

1. *The removal of large trees on the earthworks should receive careful consideration. Trees do compete for soil nutrients and moisture and tend to deteriorate the original manmade earth forms. This competition makes it difficult or impossible to establish and maintain a protective vegetative cover.*
2. *Improve existing soil or add topsoil to support effective plant growth on earthworks.*
3. *Select appropriate plants depending on the situation.*
4. *The least expensive and among the best plants from a maintenance standpoint is grass.*
5. *To support visitor impact consider the use of stabilized turf walks constructed on top or bottom of embankments.*³³¹

Prescriptions gleaned from this summit were hardly the bellwether needed to set the tone of ecological responsibility. While the conference results are open to question, several treatment alternatives in practice during this timeframe were deemed unfavorable and soon discontinued. To deter relic hunters armed with metal detectors, from digging potholes in remote areas of the Fish Hook, "Superintendent Hakel had 1,507 pounds of slugs broadcast over the parapets and ditches of Forts Welch, Urmston, Fisher, and Conahey."³³² Earlier in 1969, while attempting to discourage visitor circulation on earthwork features, a warning sign was posted that read "Beware of Snakes on Earthworks." Conway commented on its effect: "Rather than decreasing earthworks strolling, it appeared to increase it. The sign was removed."³³³ Following the conference in 1975, fencing was employed by Superintendent Elms, to help discourage visitors from trampling sensitive areas at the Crater and Fort Stedman, and in 1978 to further the 'effect' for interpretation, a work party of the Youth Conservation Corps, cleared a two-acre swath through the wooded area between Fort Morton and the Crater.³³⁴ The YCC worked four summers in the Park from 1977-1980, clearing view sheds, removing brush and maintaining trails, in memory of their predecessor, the C.C.C. There is no record or evidence of crews entering and preening any of the Fish Hook or Left Flank properties. Within those four years the park witnessed its greatest visitation from 1967 to 1981, tallying a high count of 665,942 in 1978.³³⁵

By 1982 the issue of the Flank Road transfer persisted as a thorn in the side of park management while development along that corridor continually impacted park resources. Martin Conway wrote: "Former Superintendent Elms, in retrospect, questions the National Park Service's wisdom in conveying park roads to the city (Petersburg) and the ability of all parties to live up to the letter of the legislation making the transfer possible."³³⁶ In a telephone interview with Ed Bearss, Elms related that he did, "...not believe that the earthworks on the lands adjacent to the roads are well protected...to make matters worse, is the moral issue - the National Park Service divested itself of lands that had been donated to the American people."³³⁷

Site History Endnotes

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- ³ Jones, Richard L. *Dinwiddie County Carrefour of the Commonwealth*, Whittet & Shepperson, Richmond, Virginia 1976 Chapters 1 through 14
- ⁴ *Ibid.* and another valuable source referred to for Early Settlement is the American Guide Series of the Virginia Writers Project-a Federal Works Projects Administration Agency publication entitled, *A Guide to Prince George and Hopewell and Dinwiddie County, The Country of Apatamica* Board of Supervisors of Prince George County Chamber of Commerce 1939
- ⁵ Scott, James G. and Wyatt, Edward A. IV *Petersburg Story, A History*, Titus Optical Company, Petersburg, Virginia 1960 p.11
- ⁶ Jones, Richard *Dinwiddie County: Carrefour of the Commonwealth*, Whippett & Shepperson, Richmond, Virginia 1976 p. 32
- ⁷ *Ibid.* p.87
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- ¹³ Floyd, Dale E. and David W Lowe, Civil War Site Advisory Commission, *Report on the Nation's Battlefields, Technical Volume II: Battle Summaries*, National Park Service, revised 1998 p.v
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- ¹⁵ Lincoln, Abraham Message of the President of the United States, and Accompanying Documents, to the Two Houses of the Congress at the Commencement of the second Session of the Thirty-Eighth Congress Part I, Washington: GPO, 1864
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- ¹⁷ Long, E. B. Ed. *Personal Memoirs of U. S. Grant*, Da Capo Press, New York, N.Y. 1982 p.364
- ¹⁸ Long, E. B. Ed. *Personal Memoirs of U. S. Grant*, Da Capo Press, New York, N.Y. 1982 p.364
- ¹⁹ Jones, Reverend William, J. D.D. *Life and Letters of Robert E. Lee, Soldier and Man*, Neale Publishing Co. New York and Washington D.C. 1906 p.312
- ²⁰ Long, E. B. Ed. *Personal Memoirs of U. S. Grant*, Da Capo Press, New York, N.Y. 1982 p.444 several versions of the event exist, however Grant would not agree to a unilateral truce suggested by Lee, and a diplomatic stalemate endured while troops littered the battlefield.
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- ²⁴ Keiley, Anthony M. *Prisoner of War or Five Months Among the Yankees by A Rifleman, Esq., Gent.*, West & Johnston, Richmond Virginia, 1865 p.12
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- ³⁰ McPherson, James M. Ed. *Battle Chronicles of the Civil War 1864* MacMillen 1989 p. 53
- ³¹ McFeely, Mary Drake and William S. Ed., *Ulysses S. Grant Memoirs and Selected Letters, 1839-1865*, Library Classics of the United States, New York, N.Y. 1990 p.1057
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The N.P.S. refers to the upper line of forts and trenches as the Fort Urmston Area, during the acquisition in 1931 re: Map of Petersburg National Military Park drawn by SLB
Federal Fish Hook Line, was coined later because of the footprint made by the new property. Re: USGS 7.5 minute series map.
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- ¹⁶⁶ Official Records, Serial No. 89, p.787
- ¹⁶⁷ Official Records, Serial No. 89, p.1018
- ¹⁶⁸ Official Records, Serial No. 95, p.158
- ¹⁶⁹ Official Records, Serial No. 95, p.158
- ¹⁷⁰ Official Records, Serial No. 95, p.160
- ¹⁷¹ Rhodes, Robert Hunt Ed. *All For The Union, The Civil War Diary and Letters of Elisha Hunt Rhodes*, Orion Books, New York 1991 p.206
- ¹⁷² Official Records, Serial No. 95, p.161
- ¹⁷³ Official Records, Serial No. 95, p.161
- ¹⁷⁴ Official Records, Serial No. 95, p.167
- ¹⁷⁵ Official Records, Serial No. 96, p.344
- ¹⁷⁶ Official Records, Serial No. 96, p.344
- ¹⁷⁷ Official Records, Serial No. 96, p.345
- ¹⁷⁸ Official Records, Serial No. 95, 9.345
- ¹⁷⁹ Official Records, Serial No. 95, p.163
- ¹⁸⁰ Lowe, David W. *Assessment of the Principle Earthworks Federal Fish Hook Line, Petersburg, Virginia*, National Park Service Cultural Resources GIS, Washington D.C. 1998 p.19
- ¹⁸¹ Calkins, Chris *The Final Bivouac: The Surrender Parade at Appomattox and the Disbanding of the Armies*, H.E. Howard, Lynchburg, Virginia 1998 p. 209
- ¹⁸² Official Records, Serial No. 89, p.740
- ¹⁸³ Official Records, Serial No. 95, p157
- ¹⁸⁴ Rosenblatt, Emil Ed. *Hard Marching Every Day, The Civil War Letters of Private Wilbur Fiske 1861-1865*, University Press of Kansas 1983 p.308
- ¹⁸⁵ Official Records, Serial No. 95, p.159
- ¹⁸⁶ Official Records, Serial No. 95, p.161
- ¹⁸⁷ Official Records, Serial No. 95, p.637
- ¹⁸⁸ Rhodes, Robert Hunt Ed. *All For The Union The Civil War Diary and Letters of Elisha Hunt Rhodes, 1861-1865*, Orion Books, New York 1991 p.206

- ¹⁸⁹ Agassiz, George R. Ed. *Meade's Headquarters, 1863-1865: Letters of Colonel Theodore Lyman from the Wilderness to Appomattox*, Atlantic Monthly Press, Boston 1922 p.317
- ¹⁹⁰ *Official Records*, Serial No. 95, p.156
- ¹⁹¹ *Official Records*, Serial No. 95, p.304-5
- ¹⁹² *Official Records*, Supplement Part 1 Reports, Volume 7 Serial No. 7 p.760-61 Report of Captain Romeo H. Stuart, 3rd Vermont Battery Volunteers, April 16, 1865
- ¹⁹³ Agassiz, George R. Ed. *Meade's Headquarters, 1863-1865: Letters of Colonel Theodore Lyman from the Wilderness to Appomattox*, Atlantic Monthly Press, Boston 1922 p.333
- ¹⁹⁴ Porter, General Horace *Campaigning With Grant*, Indiana University Press, Bloomington 1961 p.444
- ¹⁹⁵ *Official Records*, Serial No. 97, p.423
- ¹⁹⁶ *Official Records*, Serial No. 95, p.902 Order No. 105, Hdqtrs. 6th Army Corps, April 1, 1865. The 'burnt house' was used often as a reference in correspondence. In this instance it refers to the R. Jones house, known as Oak Grove, situated just west of Church Road in front of Fort Fisher.
- ¹⁹⁷ *Official Records*, Serial No. 95, p.902
- ¹⁹⁸ *Official Records*, Serial No. 97, p.424
- ¹⁹⁹ *Official Records*, Serial No. 95, p.903
- ²⁰⁰ Trudeau, Noah Andre *The Last Citadel* Little, Brown and Company, Boston 1991 p.368
- ²⁰¹ *Official Records*, Serial No. 95, p.903
- ²⁰² General Horatio Wright delayed the firing of the intended 4:00 a.m. signal due to poor visibility. "...the hour named having passed and light enough having dawned, the columns moved promptly at the signal, at 4:40 a.m." *Official Records*, Serial No. 95, p.903 Report of Maj.-General Horatio Wright 6th Corps
- ²⁰³ *Official Records*, Serial No. 95, p.953 Report of Bvt. Gen. George W. Getty, U.S. Army, commanding 2nd Division, 6th Corps, April 17, 1865
- ²⁰⁴ *Official Records*, Serial No. 95, p.981 Report of Col. William S. Truex, 14th New Jersey Infantry commanding 1st Brigade, 3rd Division, 6th Corps
- ²⁰⁵ *Official Records*, Serial No. 95, P.992 Report of Bvt. General J. Warren Keifer, 110th Ohio Infantry, commanding 2nd Brigade 3rd Division, 6th Corps
- ²⁰⁶ Rhodes, Robert Hunt Ed. *All for the Union, The Civil War Diary and Letters of Elisha Hunt Rhodes*, Orion Books, New York 1991 p.226
- ²⁰⁷ Agassiz, George R. Ed. *Meade's Headquarters, 1863-1865: Letters of Colonel Theodore Lyman from the Wilderness to Appomattox*, Atlantic Monthly Press, Boston 1922 p.338
- ²⁰⁸ *Official Records*, Serial No. 95, p.965 Report of Major James McGregor, 139th Penn. Infantry, April 16, 1865
- ²⁰⁹ *Official Records*, Serial No. 95, p.955 Report of Bvt. Gen. George W. Getty
- ²¹⁰ *Official Records*, Serial No. 95, p.993 Report of Bvt. Gen. Warren Keifer 110th Ohio Infantry, April 14, 1865
- ²¹¹ Lossing, Benson J., LL.D. *A History of The Civil War 1861-1865 and The Causes That Led Up To The Great Conflict*, The War Memorial Association, New York 1912 p.480 total number of Union casualties, including 2nd, 6th, 9th, and 24th Corps was 296 killed, 2,565 wounded, 500 missing
- Trudeau, Noah Andre *The Last Citadel*, Little, Brown and Company, Boston 1991 p.377
- ²¹² Agassiz, George W. Ed. *Meade's Headquarters, 1863-1865: Letters of Colonel Theodore Lyman from the Wilderness to Appomattox*, Atlantic Monthly Press, Boston 1922 p.338
- ²¹³ This was followed by the 2nd Michigan who flew their colors over the Customs House. Scott, James G. and Edward A. Wyatt *Petersburg's Story: A History*, Titus Optical Company, Petersburg, 1960 p.246
- ²¹⁴ Porter, General Horace *Campaigning With Grant*, Indiana University Press, Bloomington 1961 p.449 #21 Market Street, Residence of Thomas Wallace
- ²¹⁵ Horn, John *The Petersburg Campaign June 1864-April 1865*, Combined Books, Pennsylvania 1993 p.173
- ²¹⁶ Porter, General Horace *Campaigning with Grant*, Indiana University Press, Bloomington 1961 p.450
- ²¹⁷ Freeman, Douglass Southall *R.E. Lee, A Biography, Volume III*, Charles Scribner's Sons New York London 1935 p.425
- ²¹⁸ General Grant did not ask General Lee to relinquish his sword, nor did Lee offer, thereby putting to rest a popular ritual of formal surrender.
- ²¹⁹ Grant agreed to this provision, realizing that Confederate soldiers needed to return home with their horses in order to plow and resurrect their farmland.
- ²²⁰ Calkins, Chris M *The Final Bivouac, The Surrender Parade at Appomattox and the Disbanding of the Armies*, H.E. Howard, Inc., Lynchburg, Virginia 1988 p.208
- ²²¹ *Ibid.*, p.31
- ²²² Rodick, Burleigh Cushing *Appomattox: The Last Campaign*, Philosophical Library, New York 1965 p.180

- ²²³ *ibid.*, p.180
- ²²⁴ Shurz, Carl *Report on the Condition of the South*, Arno Press and the New York Times, New York 1969 p.106-108 Letter of Lt. General Grant concerning affairs of the South, Headquarters Armies of the United States, Washington D.C. December 18, 1865
- ²²⁵ This erasure persists into the present day as relic pirates plunder in a second growth forest that has grown up amidst parapets and trenches.
- ²²⁶ *The Index*, Petersburg, Va. October 10, 1867; quoted in the *Petersburg Progress-Index*, May 4, 1941
- ²²⁷ This party reportedly bribed a Union train operator to "take them to the front lines."
- ²²⁸ Robertson, James I Jr. Ed. "English Views of the Civil War: Unique Excursion to Virginia, April 2-8, 1865," *The Virginia Magazine of History and Biography*, 77 No.2, p. 201-12
- ²²⁹ *ibid.*,
- ²³⁰ Trowbridge, John T Gordon Carrol Ed. *The Desolate South, 1865-1866*, Duell, Sloan and Pierce, New York 1956 p.114
- ²³¹ *ibid.*, p.116
- ²³² *ibid.*, p.115
- ²³³ *ibid.*, p.117
- ²³⁴ *ibid.*, p.117
- ²³⁵ For the story of Reverend Talmadge and Poplar spring Meeting House refer to: Battle of Peebles Farm, in the War Narrative.
- ²³⁶ Confederate dead from the siege, (approx. 30,000) were buried in mass graves at The Blandford Church Cemetery, Petersburg. Those known dead number 2,025.
- ²³⁷ Calkins, Chris *The History of Poplar Grove National Cemetery*, in Trudeau, Noah Andre *The Siege of Petersburg*, National Park Civil War Series, Eastern National Park and Monument Association 1995 p.44
- ²³⁸ Record of Napoleon B. Hawes, Co. D 16th Regiment Va. Vols. *Compiled Service Records of Confederate Soldiers, State of Virginia*, National Archives Washington D.C. Microcopy 324, roll 575
- ²³⁹ *Petersburg Daily Index*, October 23, 1965 article on the announcement in the *Daily Index*, July 4, 1865 describing the Retreat near Fort Steadman in the vicinity of the Hare house
- ²⁴⁰ Jarratt's Hotel, *A Guide to the Fortifications and Battlefields Around Petersburg 1866*
- ²⁴¹ Jarratt's Hotel, *A Guide to the Fortifications and Battlefields Around Petersburg 1866* p.25
- ²⁴² Jarratt's Hotel, *A Guide to the Fortifications and Battlefields Around Petersburg, 1866* p.22
- ²⁴³ William Lemuel Peebles was born in 1844 and died in 1916 according to his youngest daughter, Mary Peebles Stevenson
- ²⁴⁴ William Lemuel Peebles secured a loan from Mr. Battle of North Carolina. He returned to work off the loan and courted Battle's daughter Elizabeth.
- ²⁴⁵ Stevenson, Mary B. *Petersburg Progress-Index*, September 29, 1963 The youngest daughter of William Lemuel Peebles writes in recollection of her childhood as described by her older sister, Anne Bradbury Peebles
- ²⁴⁶ Records of Dinwiddie County, Virginia Deed Book 13 p.629 March 29, 1875
- ²⁴⁷ Stevenson, Mary B. *Petersburg Progress-Index*, September 29, 1963 Stevenson speaks of this period as hard times for her father but does not give any particulars of his financial situation.
- ²⁴⁸ This small booklet is marked, "Published by order of The Jamestown Exhibit Committee, Dinwiddie County, Virginia" and lists no date of publication.
- ²⁴⁹ Stevenson, Mary B. *Petersburg Progress-Index*, September 29, 1963 The story continues that after meeting Peebles' two oldest sons while they were attending college in Schenectady NY, General Davis told them that he "built the tower" they responded by saying "yes, and our father chopped it down!"
- ²⁵⁰ Stevenson, Mary B. *Petersburg Progress-Index*, September 29, 1963
- ²⁵¹ Peebles, William Lemuel *Historic Dinwiddie County Virginia or The Last Long Camp*, Published by order of The Jamestown Exhibit Committee, Dinwiddie County, Virginia Date not listed.
- ²⁵² Letter of Margret C. Blaha, March 20, 1999, to H. Eliot Foulds, Historical Landscape Architect, Olmsted Center for Landscape Preservation, Brookline MA. p.3
- ²⁵³ Virginia Writers Project, *Dinwiddie County, The Countrey of Apamatica* Virginia Works Progress Administration Whittet and Shepperson Richmond Va. 1942 p.165
- ²⁵⁴ Agricultural production was measured in bushels. *United States Census 1860, 1870* Agricultural Census, Statistics of Agriculture, County Aggregates, Virginia.
- ²⁵⁵ Jones, Richard L. *Dinwiddie County Carrefour of the Commonwealth, A History* Whittet & Shepperson, Richmond, Virginia 1976 p.300
- ²⁵⁶ Henderson, William D. *Gilded Age City: Politics, Life and Labor in Petersburg, Virginia, 1874-1899*, University Press of America, Lanham, Md. 1980 p.339
- ²⁵⁷ *ibid.*, p.337

- ²⁵⁸ Virginia Writers Project p.165
- ²⁵⁹ Jones, Richard *Dinwiddie County: Carrefour of the Commonwealth, A History* Whittet, & Shepperson, Richmond, Virginia 1976 p.296
- ²⁶⁰ Virginia Writers Project, p.165
- ²⁶¹ Virginia Writers Project, *Dinwiddie County, The Country of Apamatica* Virginia Works Progress Administration Whittet and Shepperson Richmond Va. p.165
- ²⁶² Letter of Margret C. Blaha, March 20, 1999, to H. Eliot Foulds, Olmsted Center for Landscape Preservation, Brookline MA. p.1-2
- ²⁶³ Wallace, Lee A Jr. *A History of Petersburg National Military Park, Virginia* National Park Service 1957 p.23
- ²⁶⁴ Wallace, Lee A Jr. *A History of Petersburg National Military Park, Virginia* National Park Service 1957 pp.22-37 overview of chronology on establishing the park.
- ²⁶⁵ *Ibid.* p.39
- ²⁶⁶ Estimate for Care and Maintenance of the Petersburg National Military Park Fiscal Year 1930 March 22, 1928 p.2 National Archives Record Group #79 Box 50 QM 111 A-C
- ²⁶⁷ Davis, Dwight F. U.S. Secretary of War As quoted in 1930 Fiscal Year Report of Petersburg National Battlefield, cited in Wallace, *History of Petersburg National Military Park* p.39
- ²⁶⁸ Toms, Francis R. *The Petersburg National Military Park: A Report Concerning The Historical Fortifications Around Petersburg Virginia and the Establishment of these Battlefields as a Memorial to the Soldiers of the war Between the States* University of North Carolina Chapel Hill 1929 p.13
- ²⁶⁹ *Ibid.*, p.13-14
- ²⁷⁰ Report of Petersburg National Military Park Commission April 5, 1929 p.2 "Publicity" War Department, Petersburg, Virginia National Archives Record Group #79 Box 50
- ²⁷¹ *Ibid.*, p.2 "Acreage"
- ²⁷² *Ibid.*, p.3 "Plan of Park"
- ²⁷³ *Ibid.*, p.4 "Plan of Park"
- ²⁷⁴ Response of the Board of Officers, 69th Congress May 8, 1929 to Quartermaster General QM 688 p. 7-8 National Archives Record Group #79 Box 50
- ²⁷⁵ Report of Petersburg National Military Park Commission December 10, 1929 addressed to the Quartermaster General in Washington D.C. p.1 "Surveys" War Department, Petersburg, Virginia National Archives, Record Group #79 Box 50 sec. 688 misc.
- ²⁷⁶ *Ibid.*, p.1-2 "Future Progress"
- ²⁷⁷ *Ibid.*, p.14-15
- ²⁷⁸ Aaron, Louise for The Petersburg Progress-Index as cited in Wallace, Lee A Jr. *A History of Petersburg National Military Park Virginia, National Park Service* 1957 p.45
- ²⁷⁹ U.S. Army Quartermaster Corps Site Plan, File #61 September 16, 1929
- ²⁸⁰ U.S. Army Quartermaster Corps Site Plan, File #24 July 31, 1929
- ²⁸¹ This site was probably surveyed last, as the conditions described are certainly a surveyor's nemesis.
- ²⁸² U.S. Army Quartermaster Corps Site Plan, File #62 October 3, 1929
- ²⁸³ Dinwiddie County, Virginia Deed Book #56 p.473 Letter of B. Floyd Flickinger, Superintendent, Petersburg National Military Park, May 7, 1935 National Park Service, Re: Deeds of Lands in Petersburg National Military Park, National Archives, Record Group #79 Box 2543 Seventeen years earlier, William Lemuel Peebles promised to preserve those earthworks in perpetuity.
- ²⁸⁴ Letter of Sen. P.H. Drewry to Col. J. Clawson Roop, Director of the Budget, Treasury Department, Washington D.C. Jan.22, 1931 National Archives Record Group #79 Box 50 Entry 5
- ²⁸⁵ Report of the Petersburg National Military Park Commission, for Fiscal Year 1930 p.2 as cited in Wallace History 1957 p.43
- ²⁸⁶ Letter of B. Floyd Flickinger, Superintendent, Petersburg National Military Park, May 7, 1935 National Park Service, Re: Deeds of Lands in Petersburg National Military Park, National Archives, Record Group #79 Box 2543 Dinwiddie County, Virginia Deed Book #56 p. 8
- ²⁸⁷ Washington Post June 6, 1932 National Archives RG #79 Box 2532
- ²⁸⁸ *Ibid.*
- ²⁸⁹ Wallace, Lee A Jr. *A History of Petersburg National Military Park, National Park Service* 1957 P.47
- ²⁹⁰ Headquarters Military Park Camp No. 2 1364th Co. CCC (Veterans) Petersburg, Virginia History of CCC Veterans Company 1364, Petersburg, Virginia p.1 From Petersburg Park files N.P.S.
- ²⁹¹ *Ibid.* p.1
- ²⁹² The Progress-Index July 17, 1933

- ²⁹³ Arnold, F.H. *Forestry Policy for the Petersburg National Military Park*, National Park Service, October 10, 1933 National Archives Record Group 79 Box 2543 File 881
- ²⁹⁴ *Ibid.*, p.1 Present Conditions
- ²⁹⁵ *Ibid.*, p.1 Stand Treatment
- ²⁹⁶ *Ibid.*, p.2 Stand Treatment
- ²⁹⁷ *Ibid.*, p.2 Stand Treatment
- ²⁹⁸ *Ibid.*, p.2 Trench Protection
- ²⁹⁹ Memo: October 11, 1933 Arno B. Cammerer, Director, National Park Service, to Mr. John V. Colston, Camp Superintendent National Archives, Record Group #79 Box 2543 p.1-2 Cammerer further suggested that the park consider establishing compost pits to offset the expenses of buying artificial fertilizers.
- ³⁰⁰ Narrative Report covering operations at E.C.W. MP No.2, Petersburg National Military Park, from April 1, 1934- June 30, 1934 National Park Service, July 3, 1934 National Archives Record Group #79 Box 2541
- ³⁰¹ Letter of BPR Principal Highway Engineer, H.J. Spelman to A.E. Demeray, Associate Director, National Parks, Buildings and Reservations, March 9, 1934 United States Department of Agriculture, Bureau of Public Roads Washington D.C. National Archives Record Group #79 Box 2541
- ³⁰² Letter of A.E. Demaray to H.J. Spelman, Principal Highway Engineer, Bureau of Public Roads, March 14, 1934 United States Department of the Interior, Office of National Parks, Buildings and Reservations, Washington D.C National Archives, Record Group #79 Box 2541
- ³⁰³ Wallace, Lee A Jr. *A History of the Petersburg National Military Park, Virginia* National Park Service, 1957 p.59
- ³⁰⁴ Spalding, Branch Letter to Arno B. Cammerer, Director, N.P.S. April 3, 1936 National Archives Record Group #79 Box 2541
- ³⁰⁵ Spalding, Branch Letter to Arno B. Cammerer, Director, N.P.S. April 17, 1936 National Archives Record Group #79 Box 2541
- ³⁰⁶ Report of Raymond B. Poeppel, Resident Landscape Architect, Petersburg National Military Park, September 14, 1936, National Archives, Records of the Branch of Plans and Designs-Monthly Narrative Reports 1936-38 Box 1 Entry 30
- ³⁰⁷ Report of Landscape Work, Petersburg National Military Park, November 1936 National Archives Records of the Branch of Plans and Designs, Box 2 Entry 30
- ³⁰⁸ The Atlantic Coast Line traveled along the route established by the pre-Civil war era Petersburg and Weldon Railroad. This road move was to begin approximately 1000 feet south of Fort Dushane and connect south of the intersection of Vaughan road and west of the Atlantic coast Line.
- ³⁰⁹ Letter of J. Walter Coleman to Director, National Park Service, Washington D.C. February 24, 1937, National Archives Record Group # 79 Box 2540 a map of the Proposed Plan was included with the letter.
- ³¹⁰ Report of Associate Landscape Architect, Walter H. Sheffield to Superintendent, O.N. Northington, Petersburg National Military Park, October 1938 National Archives, Record Group # 79 Box 20
- ³¹¹ Wallace, Lee A Jr. *A History of Petersburg National Military Park, Virginia*, National Park Service 1957 p.60
- ³¹² Report of William J. Howard, Regional Wildlife Technician, in a letter to The Director, National Park Service, Washington D.C. July 8, 1937 p.1 National Archives Record Group #79 Box 2543
- ³¹³ Wallace, Lee A Jr. *A History of Petersburg National Military Park, Virginia*, National Park Service 1957 p. 91
- ³¹⁴ Letter of H.K. Bishop, Deputy Commissioner, Public Roads Administration, to Mr. Newton Drury, Director, National Park Service, Washington D.C. August 28, 1941 National Archives Record Group #79 Box 2541
- ³¹⁵ Memorandum of Thos. C. Vint, Chief of Planning, National Park Service, Washington, D.C. February 20, 1941 National Archives Record Group #79 Box 2540
- ³¹⁶ Letter of Congressman P.H. Drewry to N.P.S. Associate Director Demaray September 6, 1945 National Archives Record Group #79 Box 2540
- ³¹⁷ Memorandum of N.P.S. Associate Director A.E. Demaray to N.P.S. Director Drury, September 11, 1945 National Archives Record Group #79 Box 2540
- ³¹⁸ Memorandum of N.P.S. Director P.H. Drury to Associate Director A.E. Demaray, September 19, 1945 National Archives Record Group #79 Box 2540
- ³¹⁹ Conway, Martin R. *A History of Petersburg National Battlefield, 1957-1982*, History Division, National Park Service, Department of the Interior, Washington D.C. 1983 p.18
- ³²⁰ Letter of Congressman P.H. Drewry to Hon. Newton B. Drury, Director, National Park Service, October 16, 1946 National Archives Record Group #79 Box 2540
- ³²¹ Conway, Martin R. *A History of Petersburg National Battlefield, 1957-1982*, History Division, National Park Service, Department of the Interior, Washington D.C. 1983 p.18-20
- ³²² Letter of Petersburg National Battlefield Superintendent, Floyd Taylor to N.P.S. Regional Director Elbert Cox August 26, 1954 in Conway, *A History of Petersburg National Battlefield, 1957-1982* p.20

- ³²³ U.S. Department of Commerce, Bureau of Public Roads, Arlington, Virginia, Plans for Proposed Project 2A5, 10A1 Drawing #1532 Grading Drainage, Base Stone and Paving-Siege and Prince George Courthouse Roads I Fort Urmston to Fort Fisher-Prince George and Dinwiddie Counties, Virginia sheets 1, 2, 8, 9 of a set of 18
- ³²⁴ This 'eclipse' of a southern section of Fort Conahey's earthwork was the adverse result of the school house and community center built circa 1930, by St. John's Parish across the road.
- ³²⁵ Conway, Martin R. *A History of Petersburg National Battlefield, 1957-1982*, History Division, National Park Service, Department of the Interior, Washington D.C. 1983..p.20
- ³²⁶ Letter of Ed Bearss, to N.P.S. Chief Historian, June 15, 1966 as cited in Martin R. Conway *A History of Petersburg National Battlefield, 1957-1982*, History Division, National Park Service Department of the Interior, Washington D.C. 1983 p.21
- ³²⁷ *Ibid.*
- ³²⁸ Memorandum of Regional Director Elbert Cox to N.P.S. Director Hartzog, July 27, 1966, as cited in Martin R. Conway, *A History of Petersburg National Battlefield, 1957-1982*, History Division, National Park Service, Department of the Interior, Washington D.C. 1983 p.22-23
- ³²⁹ *Ibid.*
- ³³⁰ Letter of Director, Charles Marshall, Virginia State Office to Director, Northeast Region, March 26, 1973 as cited in Martin R. Conway, *A History of Petersburg National Battlefield, 1957-1982*, History Division, National Park Service, Department of the Interior, Washington D.C. 1983 p.24
- ³³¹ Conway, Martin R. *A History of Petersburg National Battlefield, 1957-1982*, p.64
- ³³² *Ibid.*, p.65
- ³³³ *Ibid.*, p.65
- ³³⁴ *Ibid.*, p.65
- ³³⁵ *Ibid.*, Appendix A Park Visitation, 1967-1981 p.72 this figure for attendance is possibly the record annual visitation in the history of the park.
- ³³⁶ Conway, Martin R. *A History of Petersburg National Battlefield, 1957-1982*, History Division, National Park Service, Department of the Interior, Washington D.C. 1983 p.26
- ³³⁷ *Ibid.*, Telephone interview, Ed Bearss with Former Superintendent Elms p.26

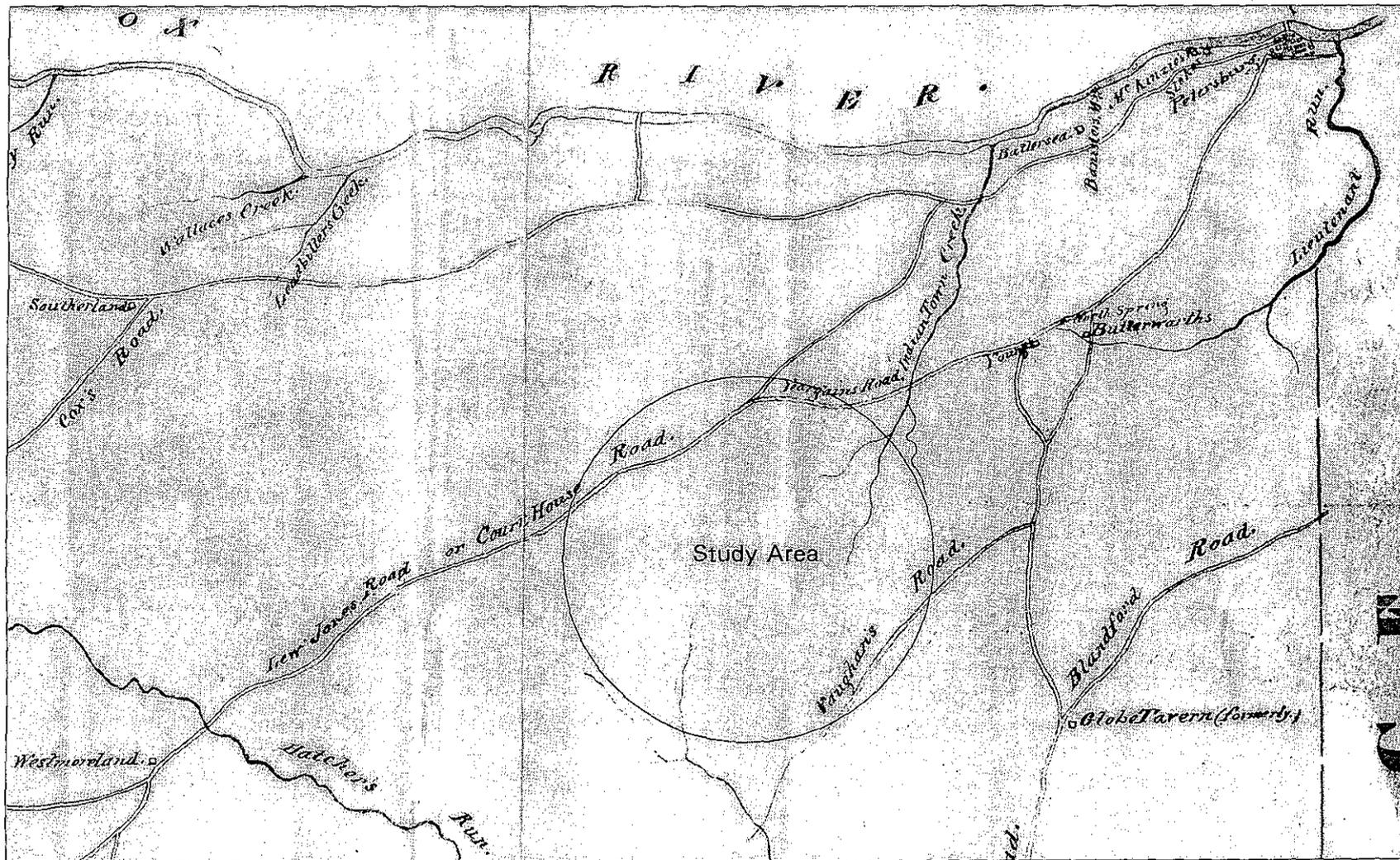


Figure 2.1: Detail from a map of the vicinity of Petersburg Virginia. John Wood, c. 1829. This map depicts most of Dinwiddie County's streams. A scarcity of roads is also evident. The place-name 'Indian Town Creek' is derived from a Native-American village, once located just upstream from Petersburg on the Appomattox River. The study area, occupying an area between two watersheds, is read as high ground. Confederate forces recognized the strategic value of this area when constructing fortifications early in the course of the Civil War. Courtesy Virginia State Library..

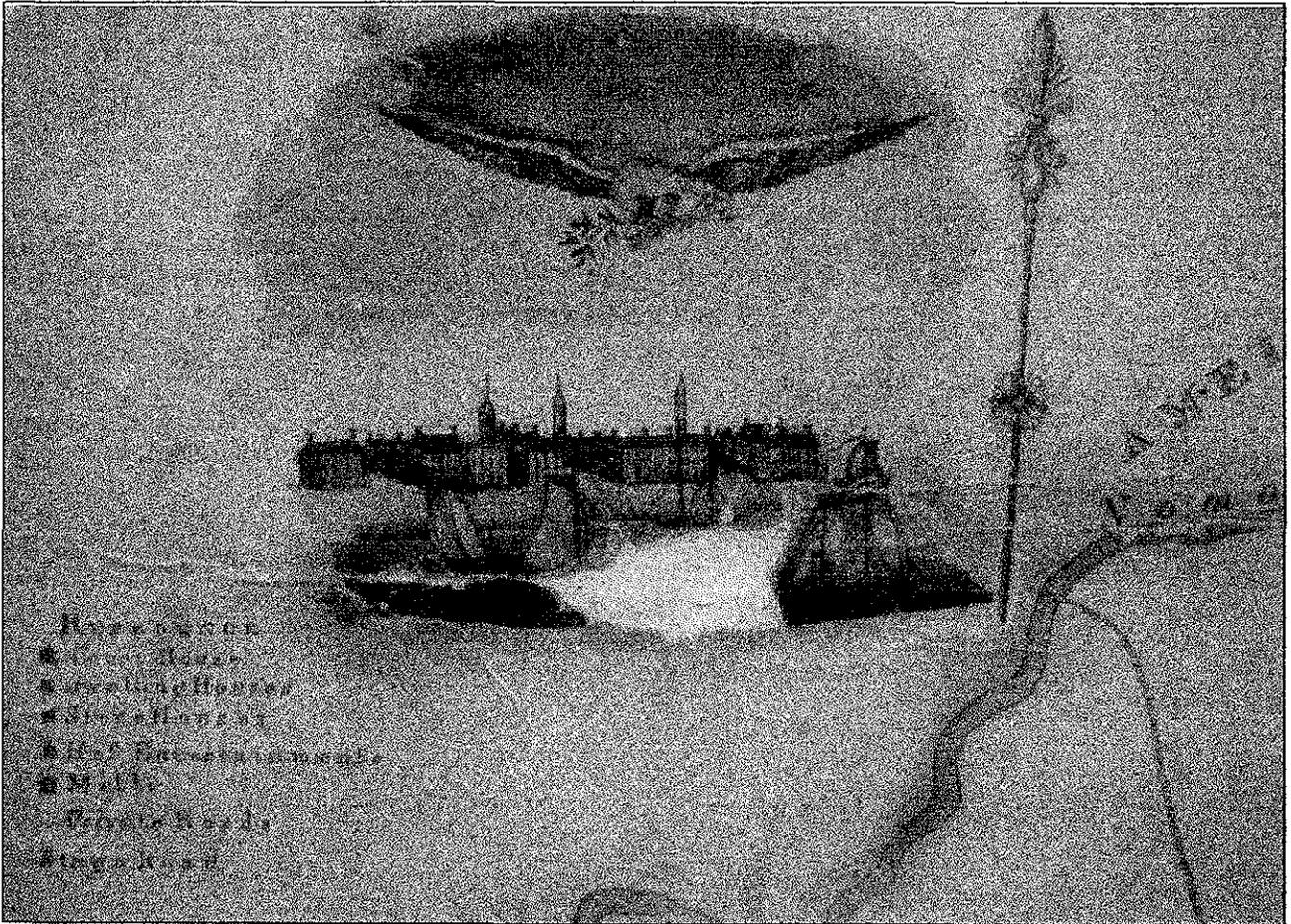


Figure 2.2: Detail from 1827 map of Petersburg, emphasizing regional hydrology and Petersburg's relationship with its waterfront. Isham Hargraves, Dinwiddie Co. Surveyor. Courtesy Dinwiddie County Court House. Photo by Roger C. Sherry.



Figure 2.3: Keiley Map. This map of 1854 clearly indicates the Boydton Plank Road, its toll gate and mile markers, measuring distances from Petersburg shown in the upper right. As crude as it may be, such a map would have been of service to Frederick Law Olmsted on his horseback ride south of Petersburg in 1853, a trip during which he became lost amongst the old fields and Loblolly Pines. Boydton Plank Road would eventually become a segment of modern day U.S. 1. Courtesy Virginia State Library.

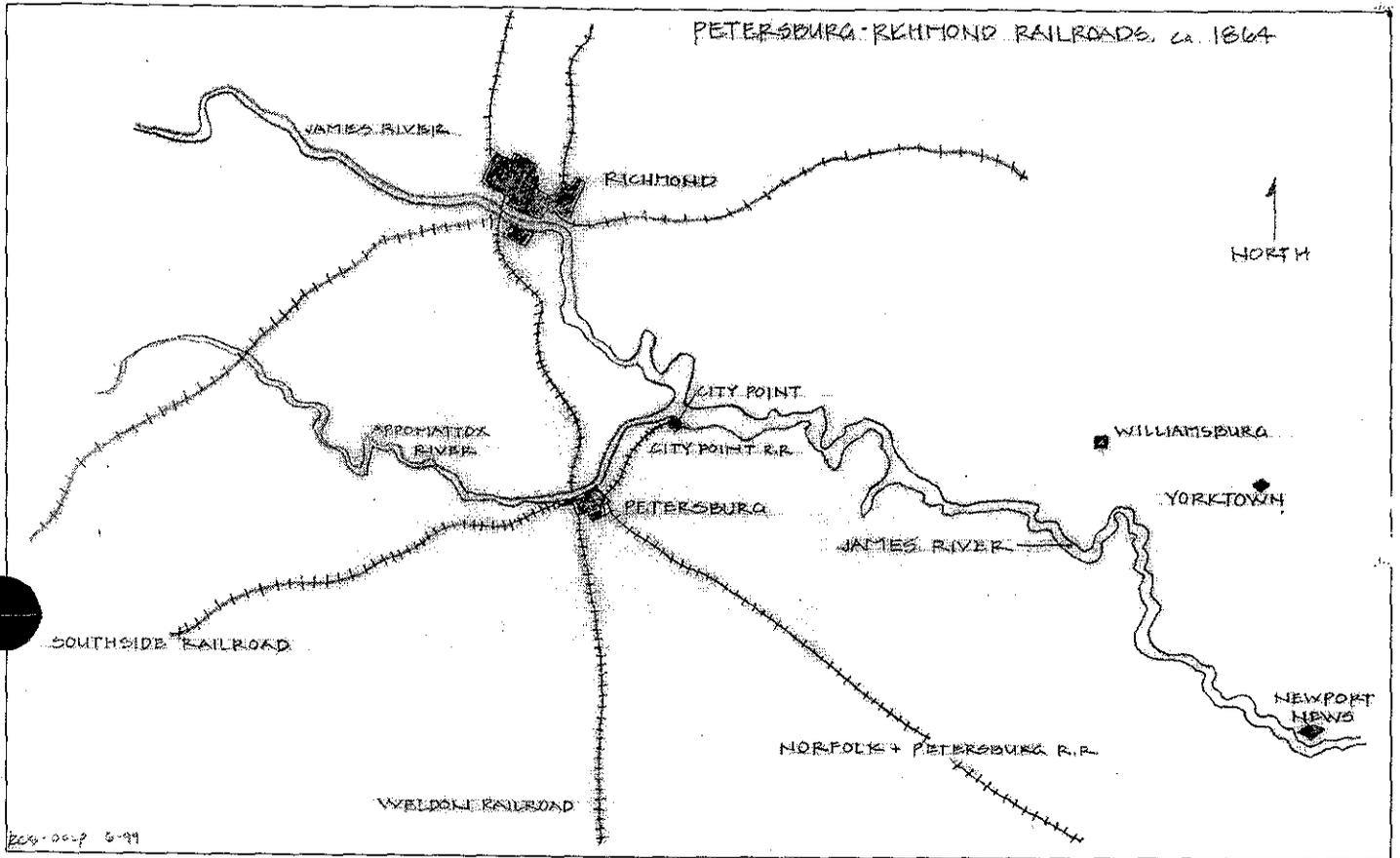


Figure 2.4: Five railroads emanated from Petersburg in 1864, forming a nexus of commerce and transportation. Graphic by Roger C. Sherry.

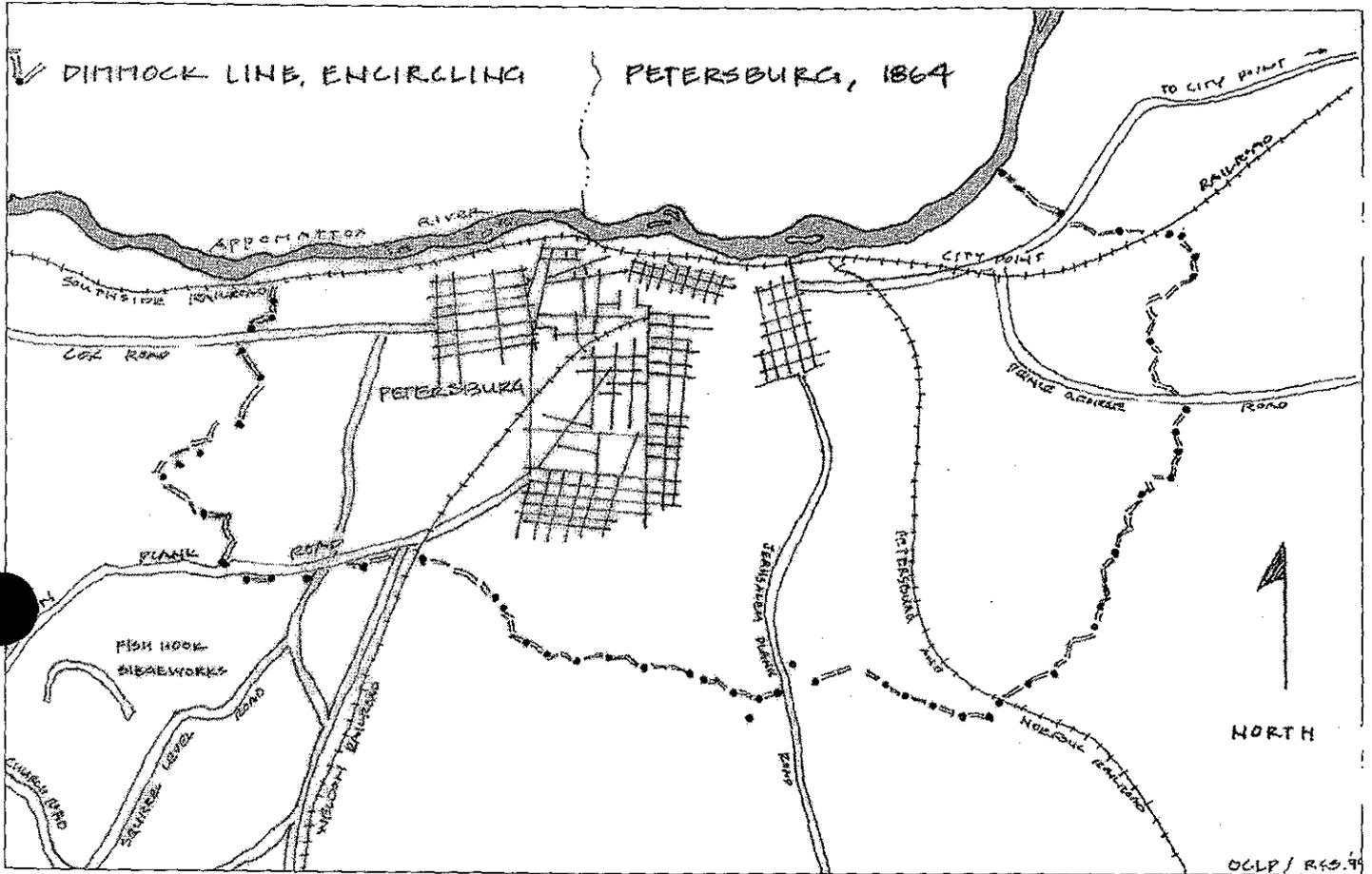


Figure 2.5: The earthen defenses of the Dimmock Line, built in part with slave labor, encircled Petersburg for over ten miles and included fifty-five artillery batteries. Graphic by Roger C. Sherry.

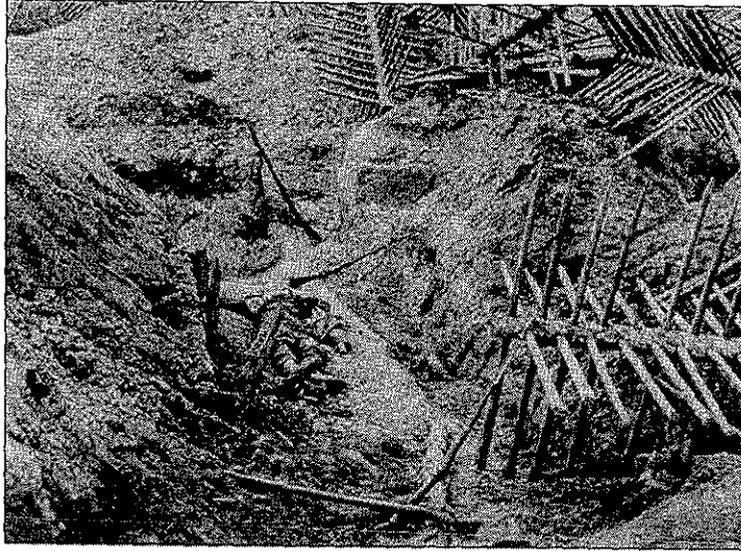


Figure 2.6: Rows of sharpened stakes placed out in front of fortification were used to help repel an attacking force. Library of Congress.

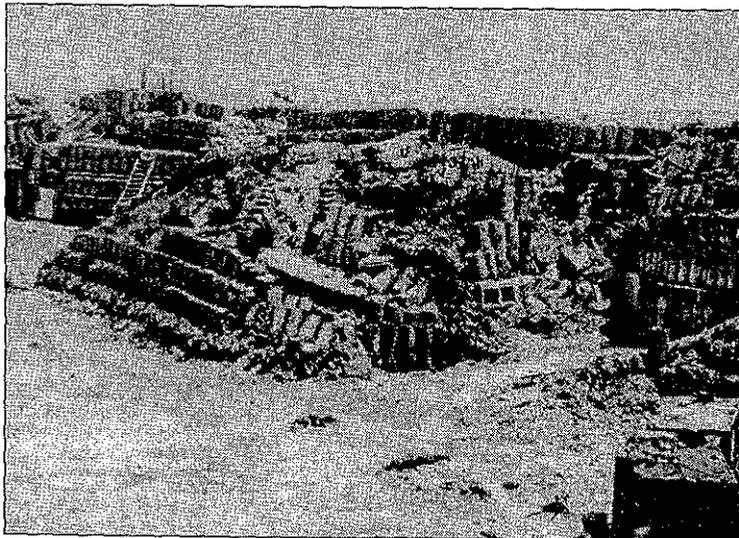


Figure 2.7: As artillery barrages reduced its masonry surfaces to rubble, Fort Sumter was revetted with gabions filled with cotton and sand - effectively making it into an earthen fortification - and more resistant to attack. Library of Congress

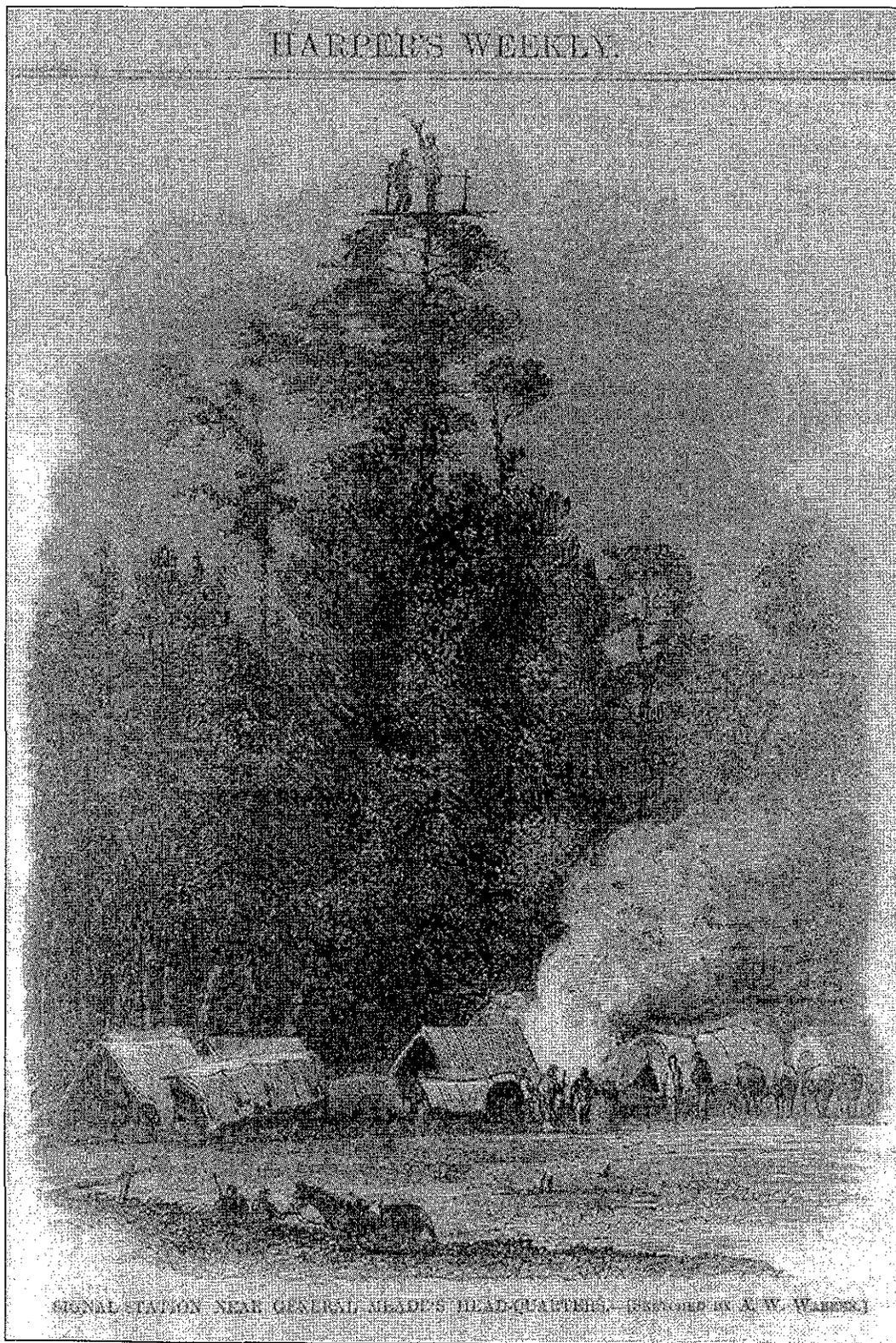


Figure 2.8: A typical Signal Corps lookout perched atop a pine tree commands a view of the surrounding terrain. Harper's Weekly 5 November 1864.



Figure 2.9: Print of Union troops arriving by train at the front 'before Petersburg.' The railroad quickly became a vital component of General Grant's siege on Petersburg, rushing men and material to the front lines. Frank Leslie's Illustrated Newspaper. 22 October 1864.



Figure 2.10: Federal troops heated captured southern rails over fires fueled by cross-ties, then bent them into forms popularly known as 'Grant's hairpins.' Harper's Weekly 31 December 1864.

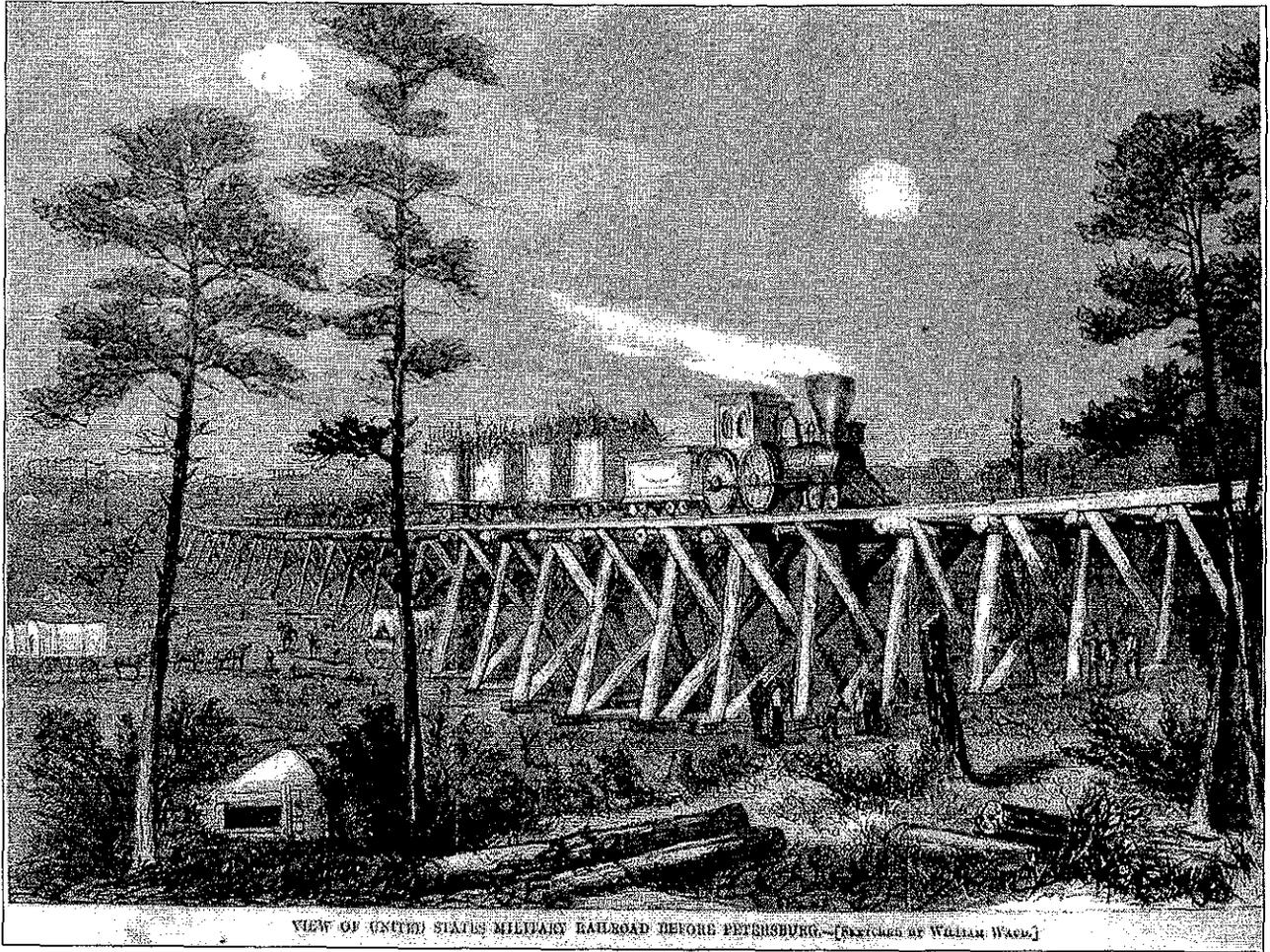


Figure 2.11: Print of U.S. Military Railroad on trestle. While the railroad responded to demands of the camps and adapted to their position, it simultaneously conformed to the topography of the landscape. Harper's Weekly, 5 November 1864.

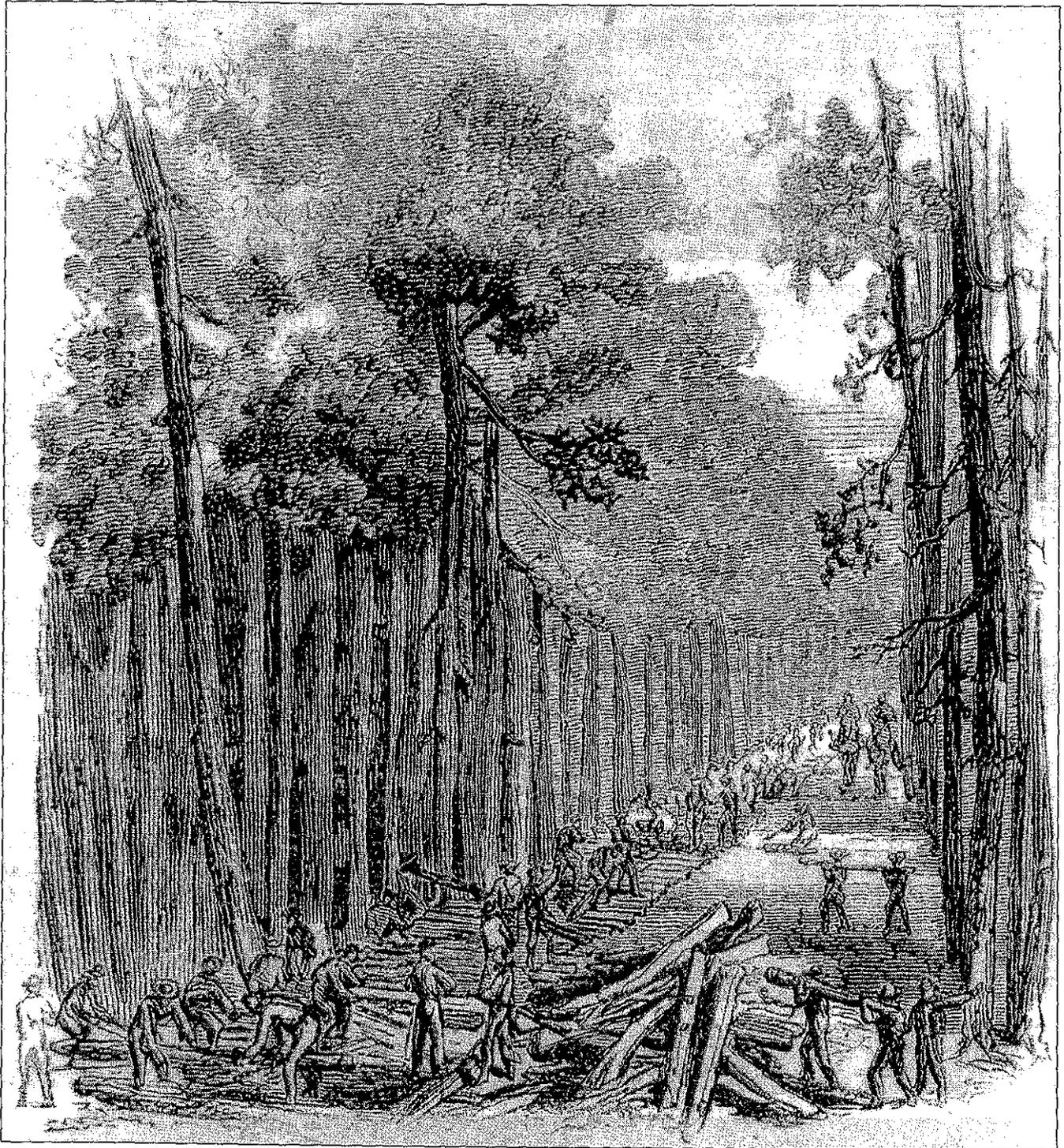


Figure 2.12: Federal troops cutting a railroad through dense forests south of Petersburg. Frank Leslie's Illustrated Newspaper. 1 October 1864.

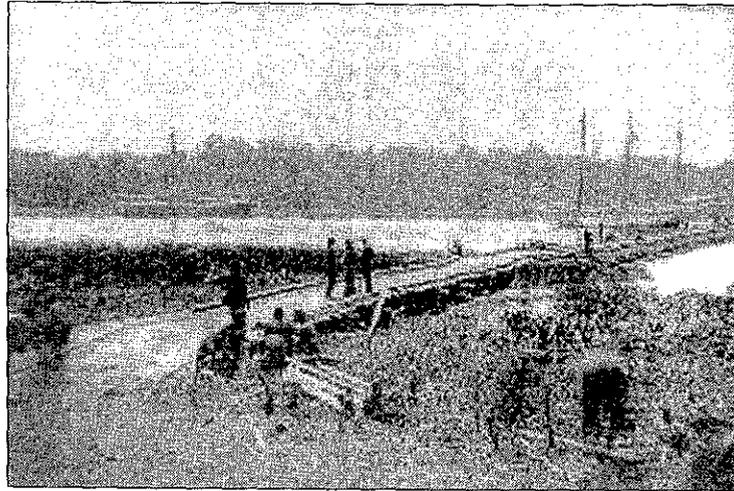


Figure 2.13: This pontoon bridge carried the Army of the Potomac towards Petersburg in June of 1864. Patriot Publishing Company.

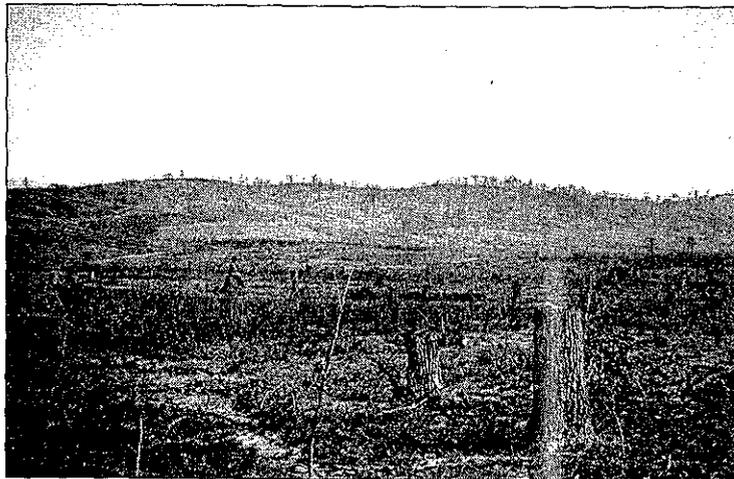


Figure 2.14: The landscape surrounding Petersburg was devastated by the armies to create fields of fire and to provide materials for construction. Library of Congress.



Figure 2.15: Sap rollers provided cover from sharpshooter's bullets as soldiers dug new trenches and traverses into fields of fire. This work was often accomplished at night. Alfred R. Waud, July 1864.

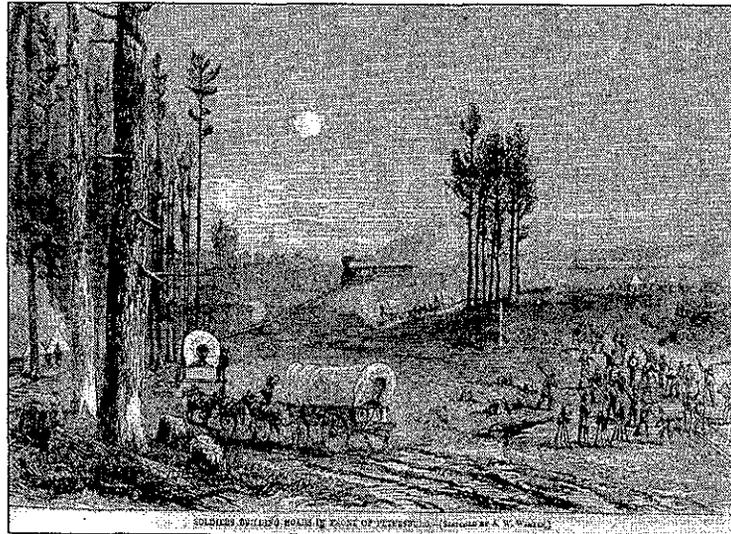


Figure 2.16: Clumps of trees stood as remnants of the previous forest amidst a changing landscape of militarized terrain around Petersburg. Harper's Weekly 5 November 1864.



Figure 2.17: Bombproofs built of logs and soil protected soldiers from artillery blasts, flying shrapnel, exploding shells and inclement weather. Library of Congress.

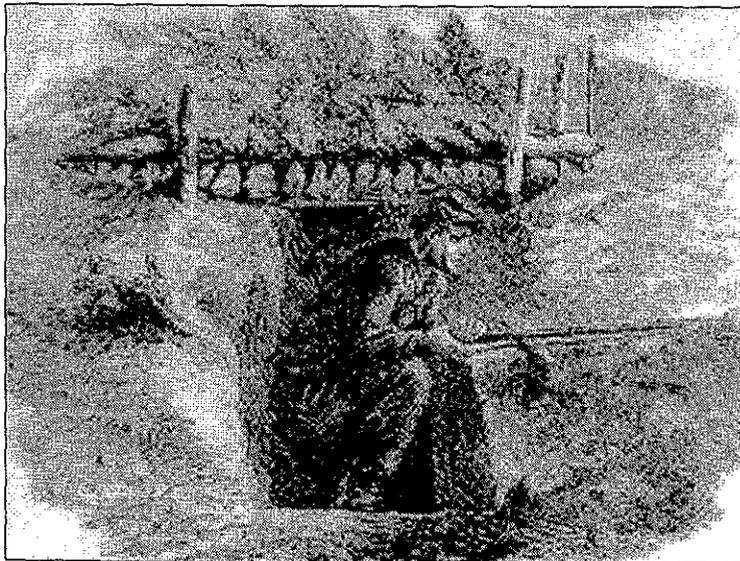


Figure 2.18: Sharpshooters and pickets hunkered down in makeshift rifle pits dug in advance of the fortified lines. Harper's Weekly, 5 November 1864.



Figure 2.19: Soldiers in the trenches were acutely aware of incoming sniper fire which was deadly accurate. Notice soldier pointing to the hole in his hat. Harper's Weekly 24 September 1864.



Figure 2.20: New agents from northern papers hawked headlines along rail sidings and behind the camps. Library of Congress.

SELPHO'S PATENT LEG and ARM.
516 BROADWAY.



The most perfect substitutes for lost limbs ever invented. ESTABLISHED 25 YEARS. Send for a Pamphlet. SOLDIERS SUPPLIED FREE by order of the SURGEON-GENERAL. 490-91

Figure 2.21: Advertisements featuring prosthetics appeared regularly in newspapers and weeklies. This ad appealed directly to Civil War veterans. Frank Leslie's Illustrated Newspaper, 22 February 1865.



Figure 2.22: This photo taken by Alexander Gardner shows an officer's tent adorned with pine boughs and foliage from the surrounding forest to create shade and 'individualize' the accommodations. Dover Press.

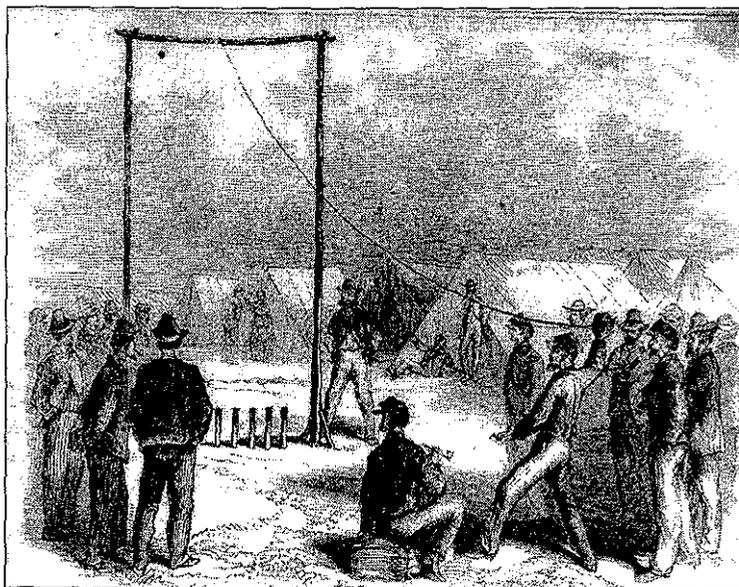


Figure 2.23: Camp amusements took many forms; here a popular game of ten pins was improvised from a log frame that was sometimes used as a gallows to execute deserters. Frank Leslie's Illustrated Newspaper, 3 December 1864.



Figure 2.24: Cockfighting was not generally sanctioned on Union lines. Alexander Gardner captured this rare scene on the Petersburg front. August 1864. Dover Press.



Figure 2.25: The Union 9th Corps passes the small Meeting House at Poplar Spring en route to Peebles farm. Frank Leslie's Illustrated Newspaper, 22 October 1864.



Figure 2.26: Colonel Norval Welch mounts the parapet while leading the 5th Corps charge on Fort Archer. He is fatally shot a moment later. Harper's Weekly, 22 October 1864.



Figure 2.27: Federal troops arrive at Warren Station to fight at Peebles farm 30 September 1864. Harper's Weekly, 22 October 1864.

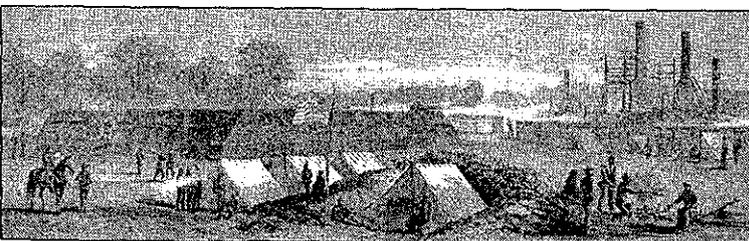


Figure 2.28: Following the Battle of Peebles Farm, Union Engineers directed construction of Fort Welch. The ruins of the Peagram house are situated just beyond the construction. Harper's Weekly, 5 November 1864.

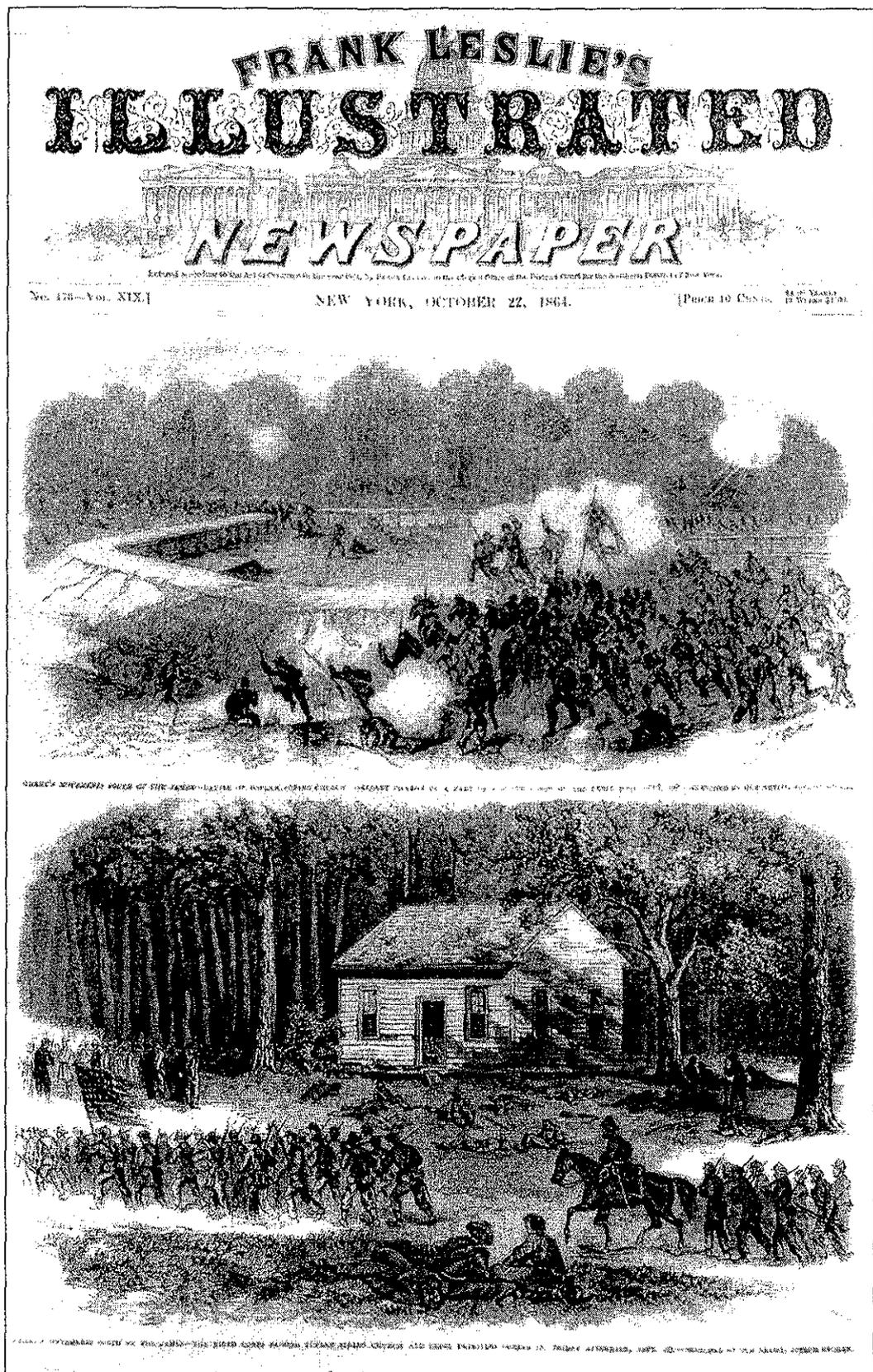


Figure 2.29: This front page engraving and its accompanying story, appeared three weeks after the Battle of Peeble's Farm. It depicts both the approach of the 9th Corps as they passed the meeting house, and the charge on Confederate Fort Archer. The battle also referred to as the "Battle of Poplar Spring Church." Frank Leslie's Illustrated Newspaper. 22 October 1864.

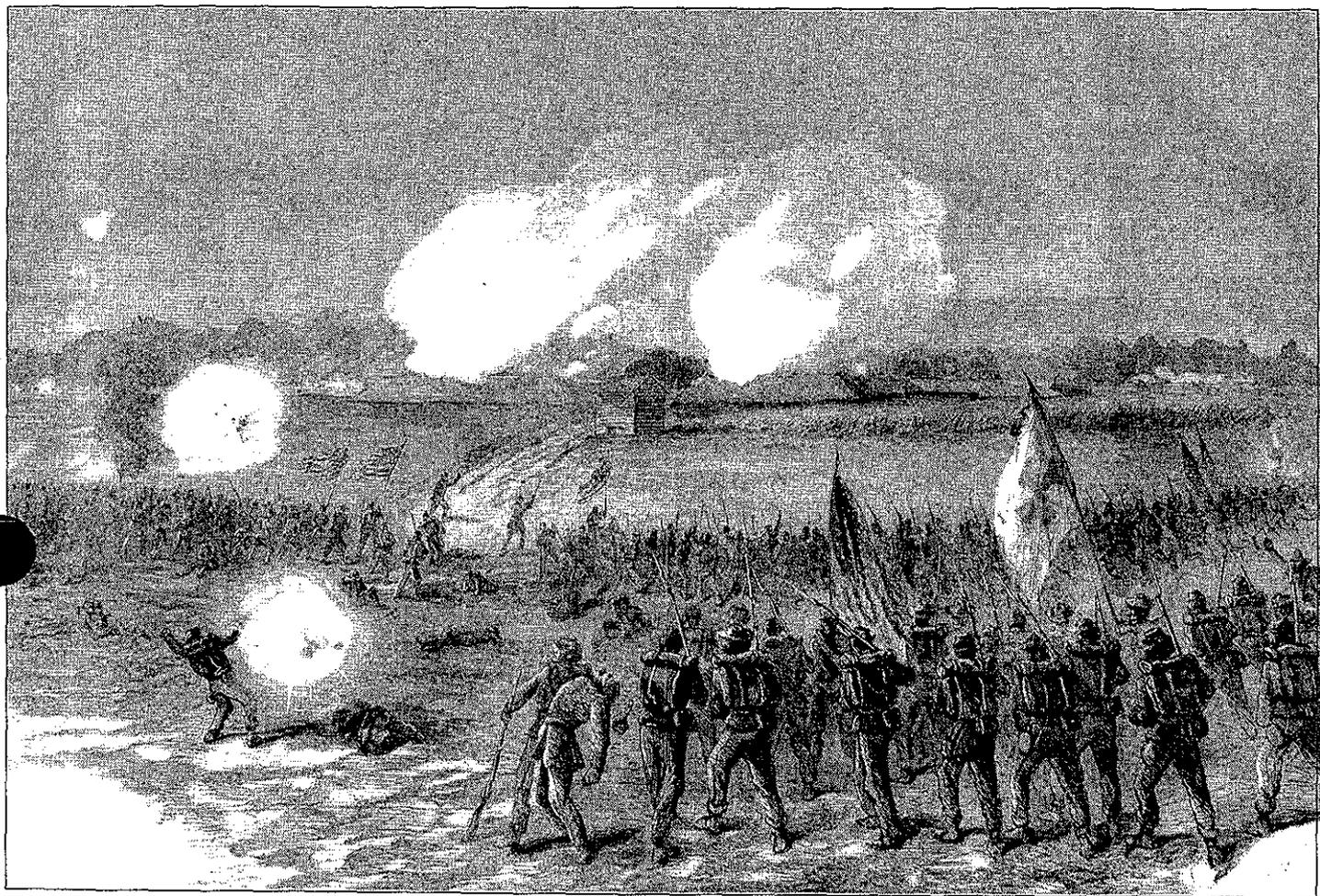


Figure 2.30: Harper's Weekly named the 5th Corps assault on Confederate positions at Peeble's farm the "Battle of Peebles Farm." The story and engravings appeared in the October 22 issue - the same day as Harper's rival, Frank Leslie's Illustrated Newspaper. Harper's Weekly 22 October 1864.

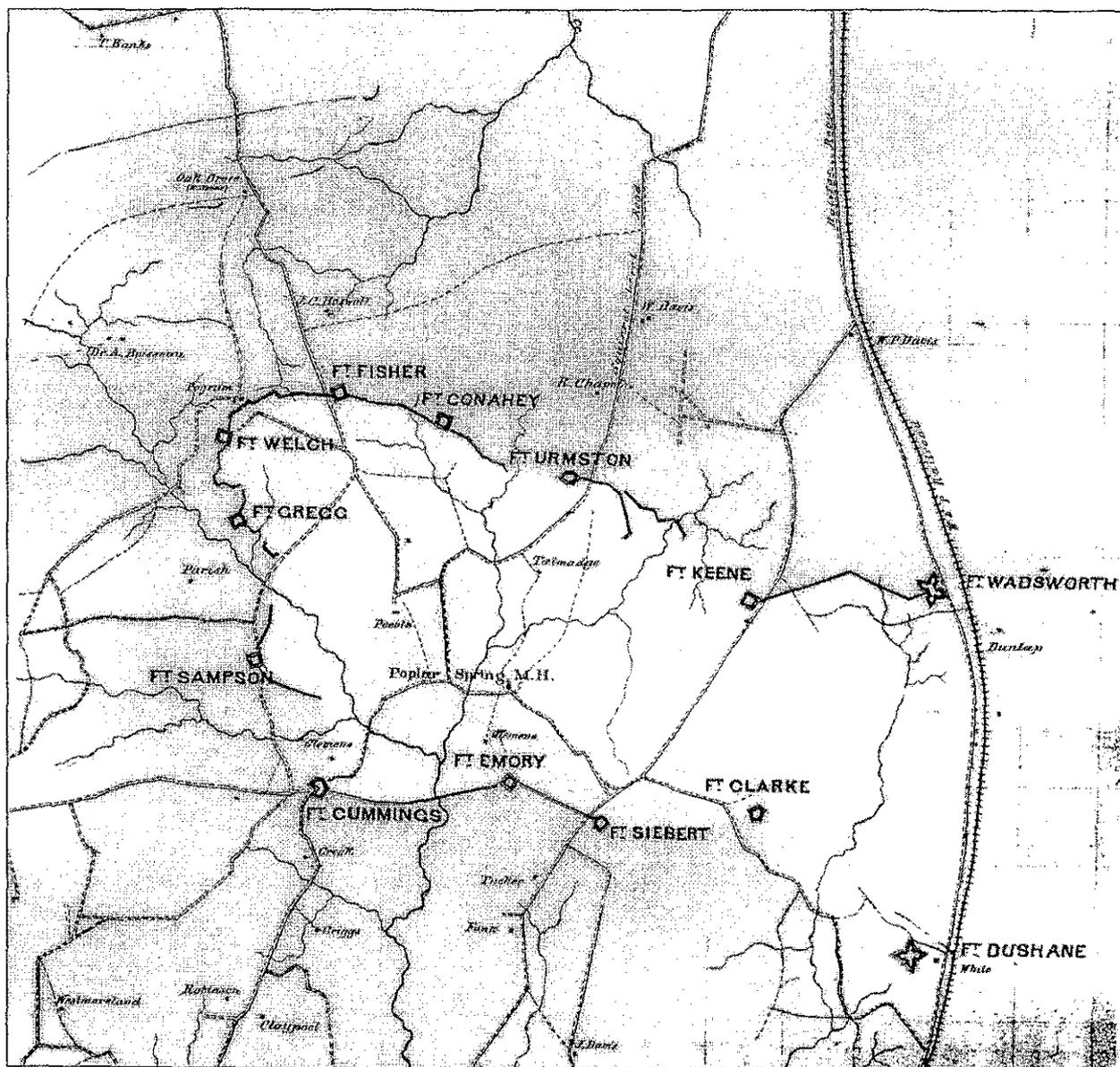


Figure 2.31: Union engineers created this map of existing fortifications early during the winter of 1864-1865. The map shows the original square footprint of Fort Fisher prior to its expansion. The map does not show the signal tower on Peebles farm which was not yet completed. Graphic shows Fort(s) Urmston, Conahey, Battery 27, Welch, and Gregg, the focus of this report, as part of a larger system of Union fortification penetrating into Confederate territory. National Archives.



Figure 2.32: This group of Federal engineers posed for the camera in front of their tent at Petersburg, 1864. Library of Congress.

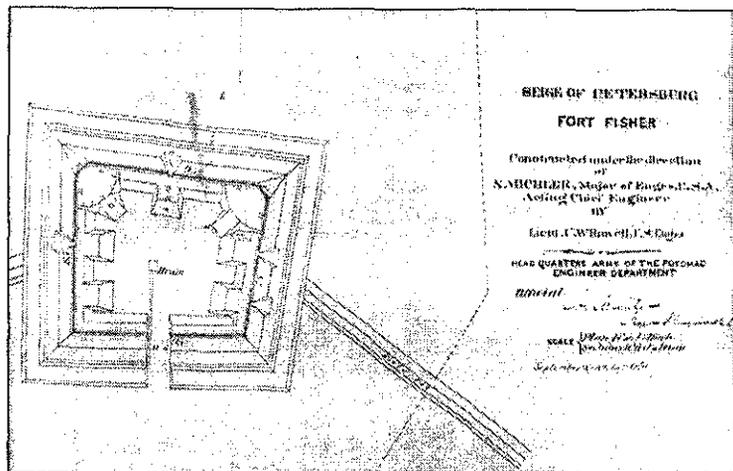


Figure 2.33: This tracing of the original design for Fort Fisher shows its original four-sided configuration prior to expansion. Petersburg NB park archives.

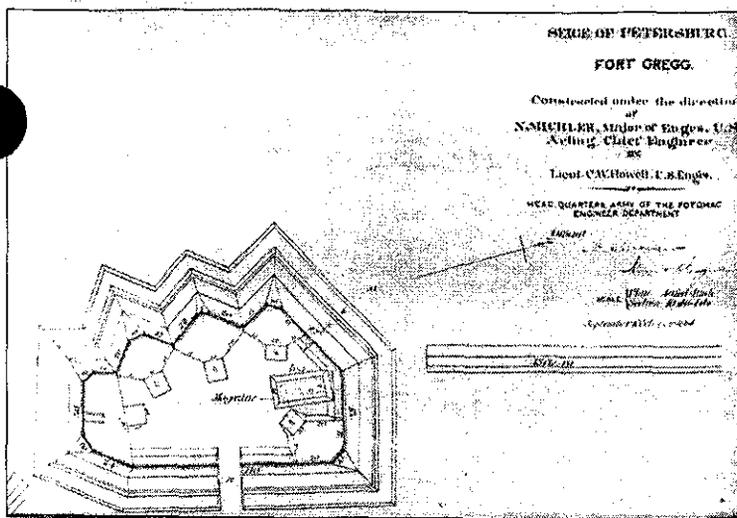


Figure 2.34: The dentate western face of Fort Gregg, shown in this measured 1864 tracing, covered over a 200 degrees battlefield terrain. Courtesy Petersburg NB archives.

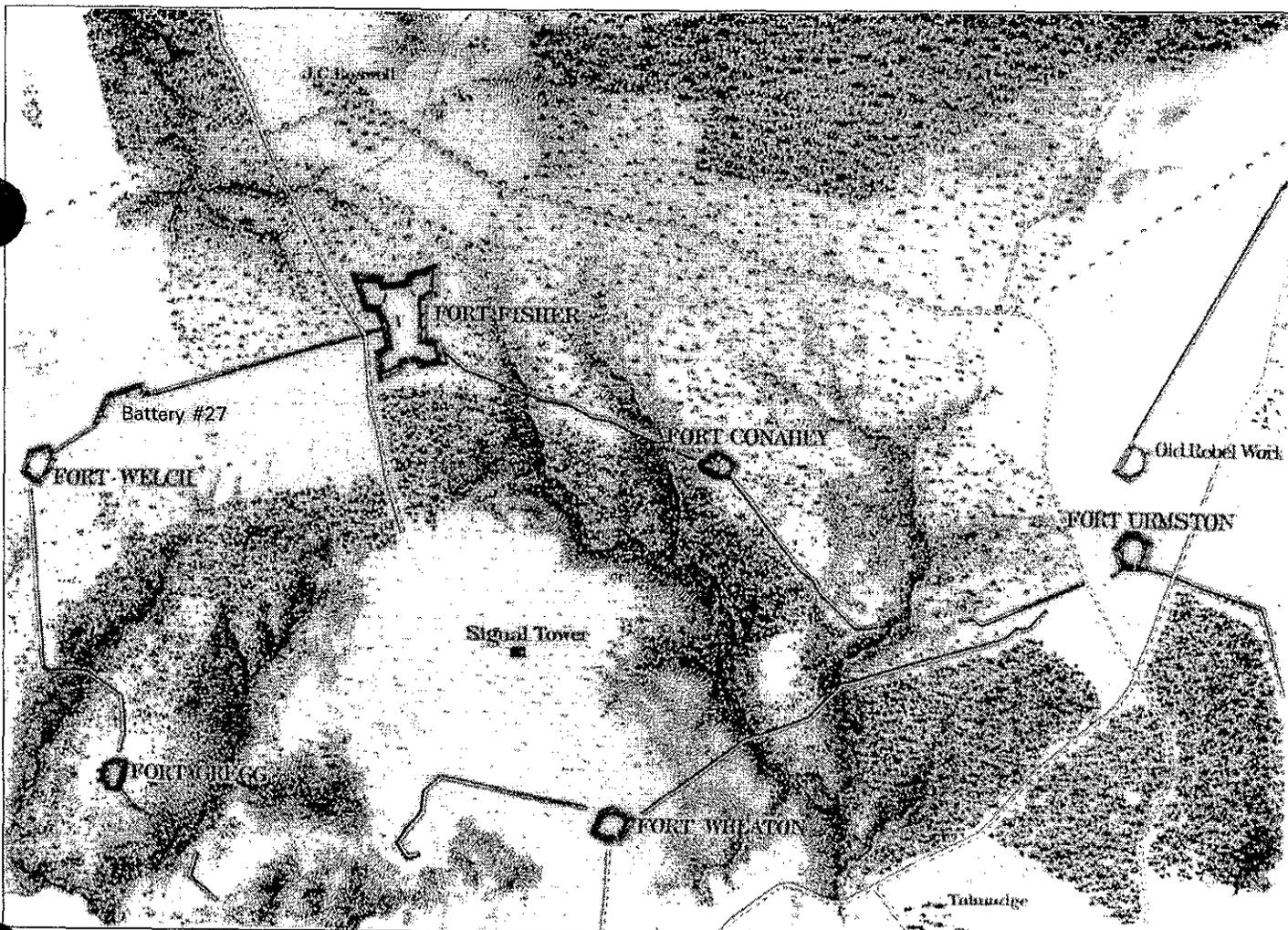


Figure 2.35: This map drawn under the direction of Colonel Michler following the end of the war in 1865, depicts with precise detail the existing terrain and final development of the Federal Left Flank and Fish Hook Siegeworks. Petersburg NB archives.

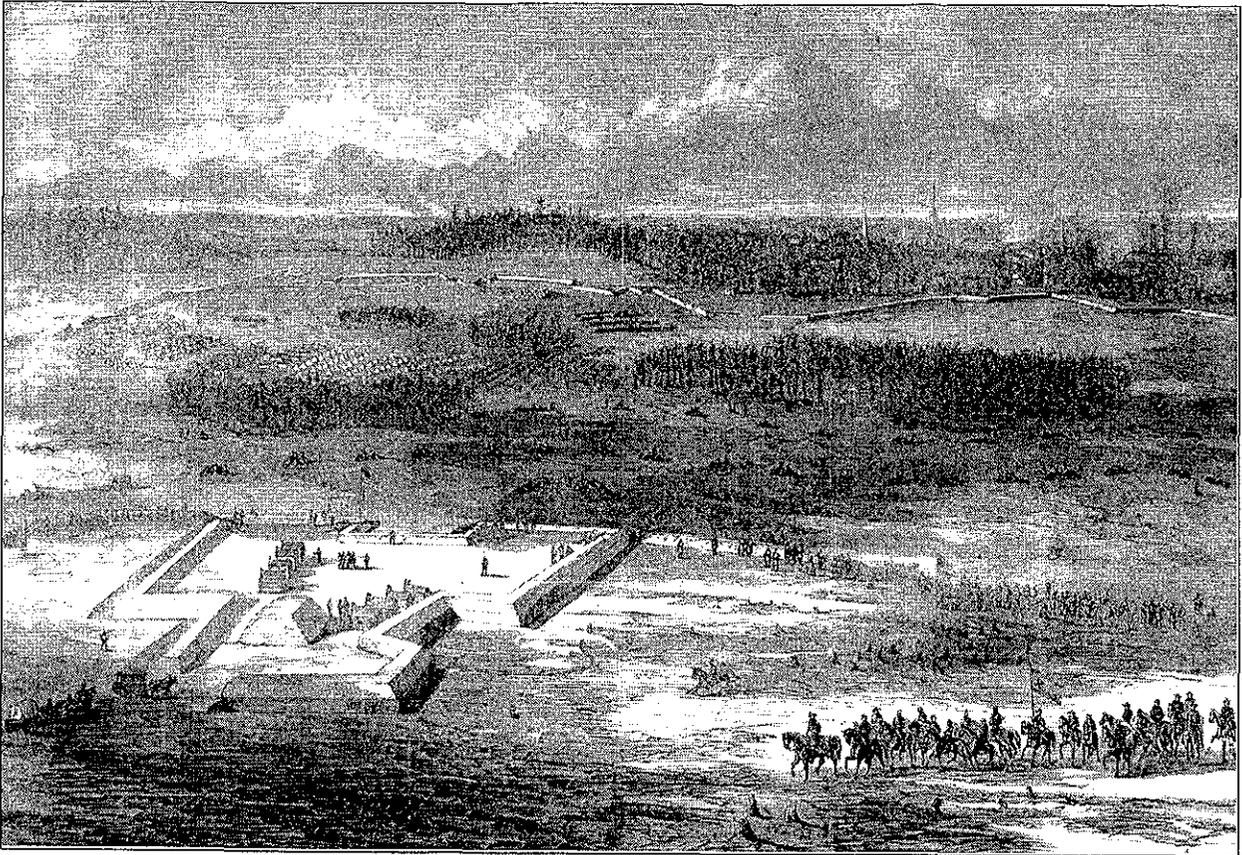


Figure 2.36: This engraving, probably made from a photograph taken in early 1865 from the nearby signal tower on Peeble's farm, shows work underway on Fort Fisher's expansion into a four-bastioned fort - the largest dug on the Union siegelines surrounding Petersburg. The Confederate camps, the Southside Railroad and Petersburg's steeples are visible in the distance. Library of Congress.

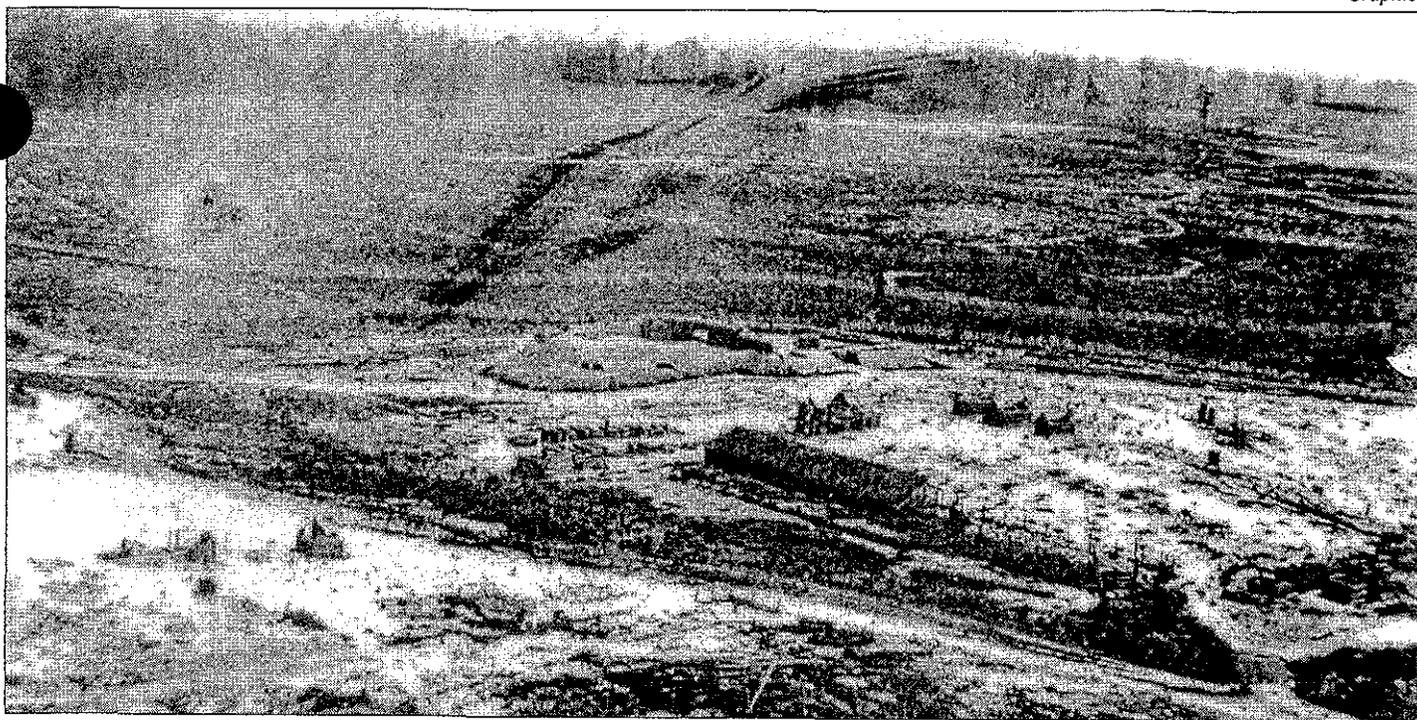


Figure 2.37: This photograph taken from the Union Signal Corps' tower at Peebles' farm, clearly documents the heavily slashed woodland north of the Federal Left Flank. Notice the casemate openings for artillery built into the fort, which was unusual for an earthen fort. Also evident is the log palisade which served as a traverse dividing the fort. The construction activity south of the fort is also interesting. Library of Congress.



Figure 2.38: This photograph shows the picturesque cabin of Colonel Michler, Commanding 50th N.Y. Engineers at Petersburg. Patriot Publishing.



Figure 2.39: This axonometric sketch of the 50th N.Y. Engineer's camp at Petersburg depicts the structures, organization, facilities and landscape of the site that eventually became the Poplar Grove Cemetery. Virginia Historical Society.

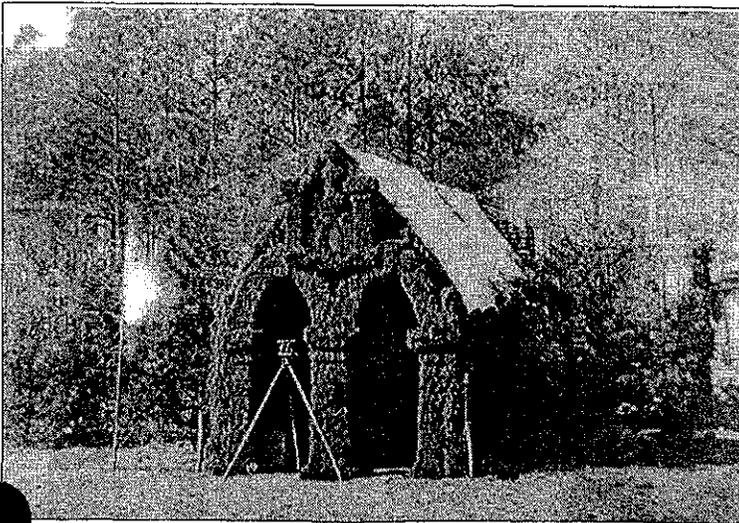


Figure 2.40: The headquarters tent of the 50th N.Y. Engineers is shown here covered in laurel. It resembled a topiary complete with Gothic arches and official insignia. Library of Congress.

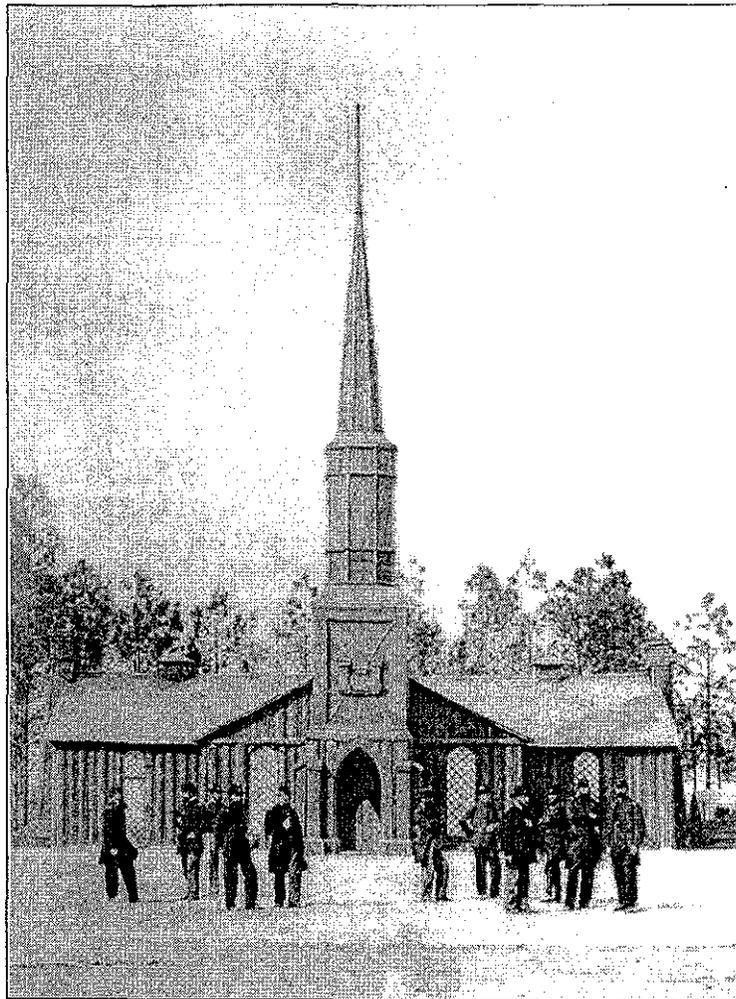


Figure 2.41: This chapel, considered the centerpiece of the Engineers' camp, functioned as both a religious and secular venue. Dover Press.

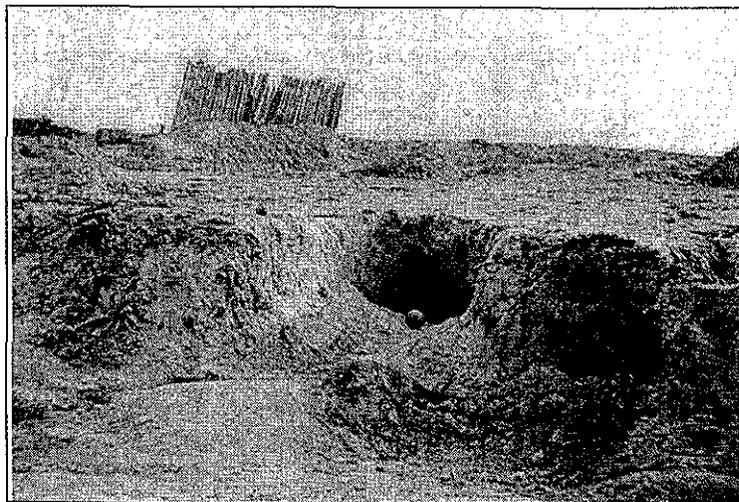


Figure 2.42: This view taken, in the aftermath of war, typifies the scene found at Petersburg in the late spring of 1865. Library of Congress.

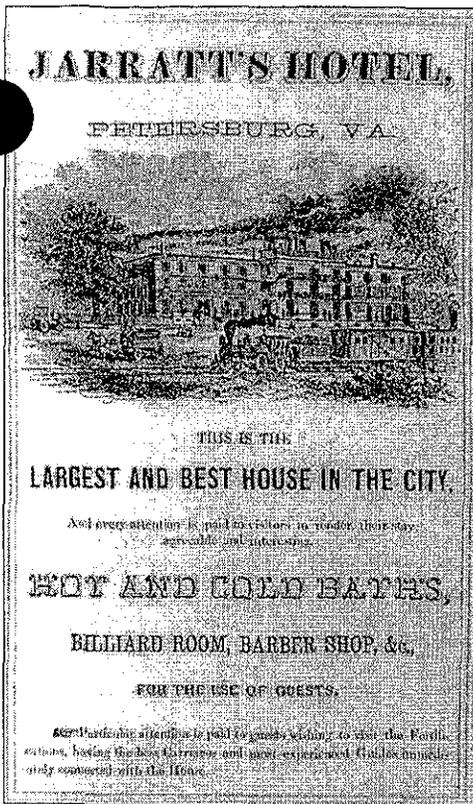


Figure 2.43: This brochure was privately printed as Petersburg's first battlefield tour guide. It included train timetables, advertising, and a site map by Major Michler of the U.S. Army Engineers. Library of Congress.

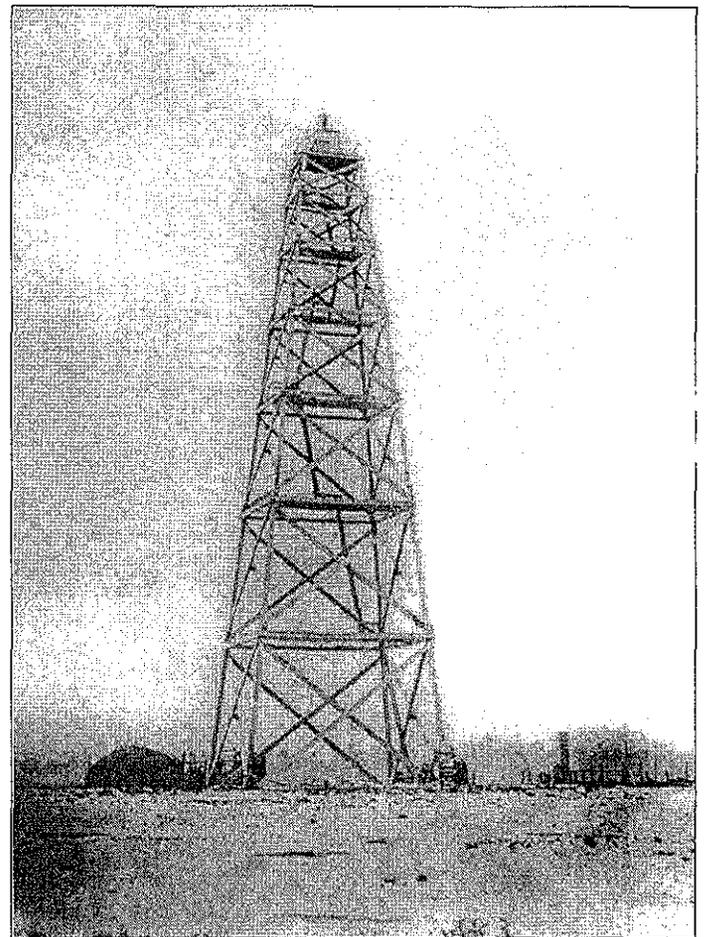


Figure 2.44: This photo of the Union signal tower, also documents the devastated conditions of the Peebles farm following the end of the war. Note the razed buildings and standing chimneys and hewn timbers. Library of Congress.



Figure 2.45: This dwelling, named 'Fort Fisher Farm' was built from timbers salvaged from the Federal signal tower by William Lemuel Peebles. The scale of the square porch supports is similar to the dimensions of the timbers used on the tower. Note the billygoat on the front walk. University of Virginia Special Collections.

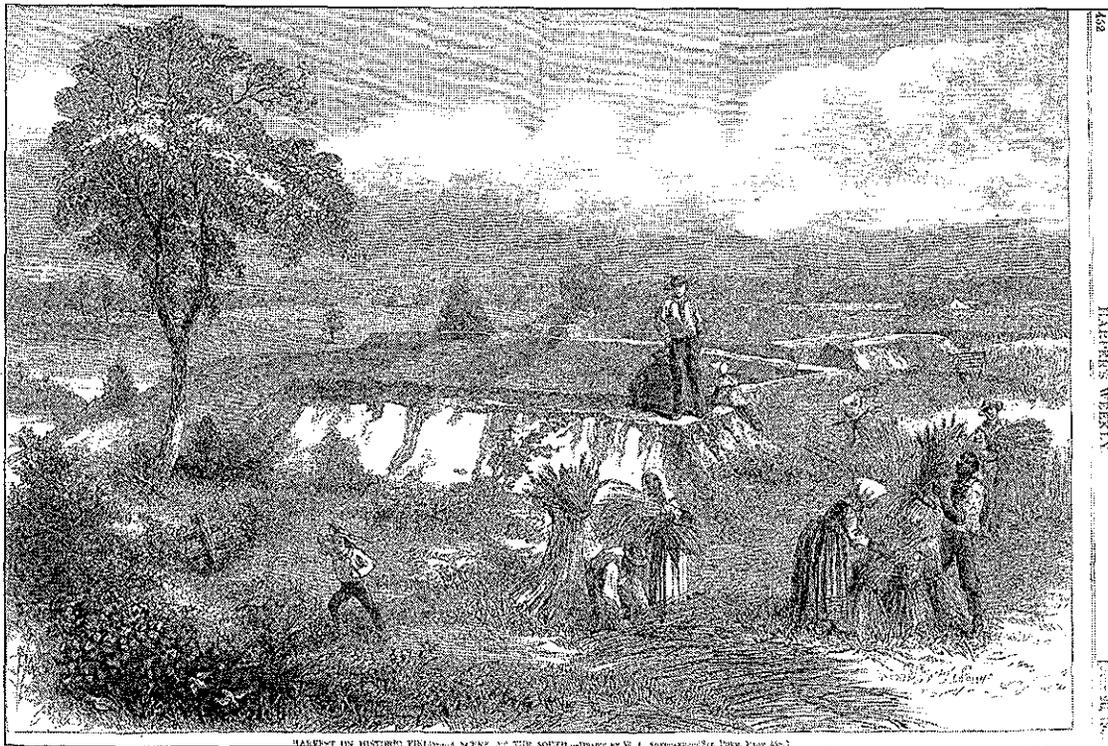


Figure 2.46: This genre scene from the 20 July 1867 edition of Harper's Weekly depicts the common practice of reusing battlefield landscapes for agriculture. Art such as this, which in this case was accompanied by poetry, promoted sectional healing after the war. Harper's Weekly.

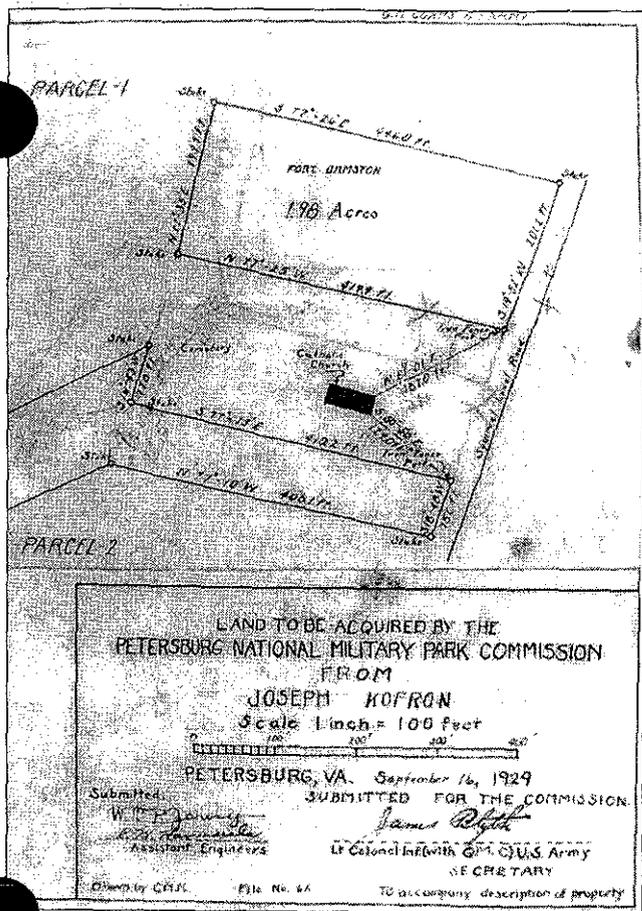


Figure 2.47: This Quartermaster Corps site plan shows land identified for acquisition in the area of Fort Urmston. Petersburg NB archives.

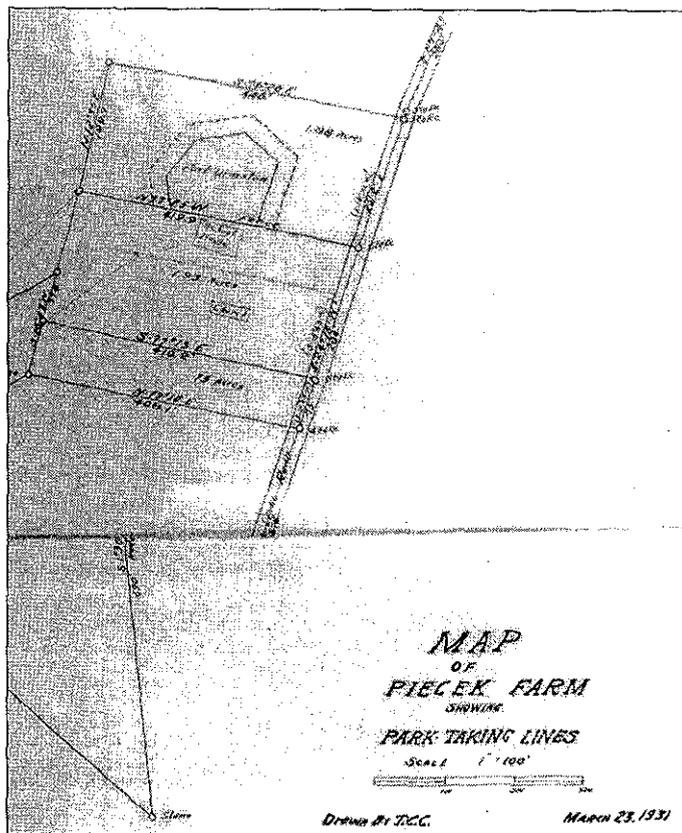


Figure 2.48: This map from 1931 shows proposed park taking lines and the southern parapets of Fort Urmston eclipsed by a fence and a schoolhouse. Pencil lines tentatively delineate an intended course for the NPS Flank and that would not be completed until 1963. Petersburg NB archives.

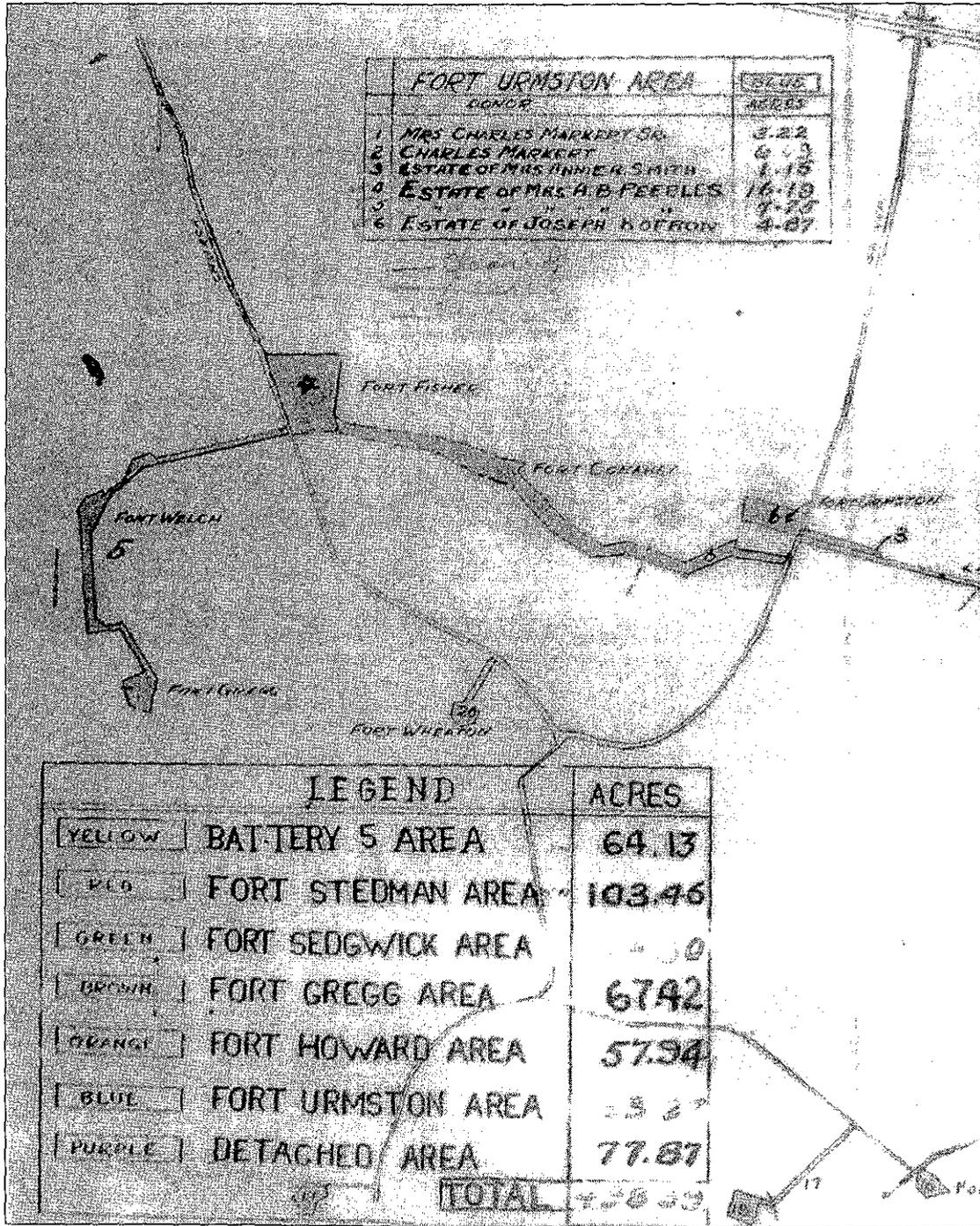


Figure 2.49: This working plan for the 'Fort Urmston Area' of the fledgling Petersburg National Military Park shows the limited extent of the real estate holdings planned for this outlying area. Being within a stable rural area, only the fortifications themselves were identified for acquisition, leaving little buffer against future development. Petersburg NB archives.



Figure 2.50: This photograph show CCC crew members removing dead limbs at Fort Fisher. Petersburg's CCC camp was comprised of World War I veterans. Petersburg NB archives.



Figure 2.51: This photograph taken during April of 1934, shows CCC members 'plugging' Bermudagrass into the parapets of Fort Welch. In addition to the Bermudagrass, it appears that small shrubs have been planted on the berm. Note the mid-succession pines in the background. Petersburg NB archives.



Figure 2.52: This image taken on 19 April 1934, shows Flowering Dogwood (Cornus florida), in bloom within the

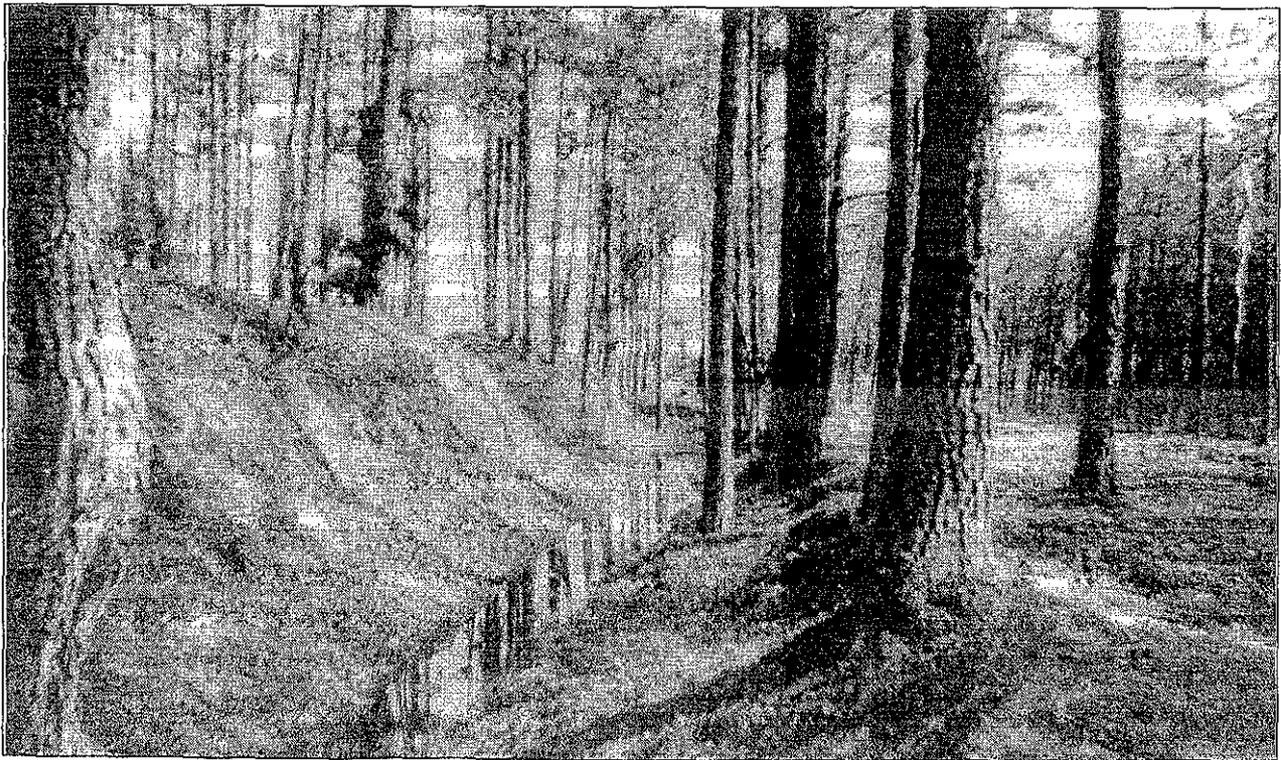


Figure 2.53: This view of Fort Welch's eastern parapet clearly shows the fish Hook access road to the right, mid-succession pines and hardwoods with a cleared understory immediately surrounding the historic fortifications. The



Figure 2.54: This aerial photograph, taken on 28 March 1937, documents the character of the landscape surrounding the Federal Left Flank and Fish Hook Siegeworks shortly after the NPS began its stewardship of the property. Patterns of tilled fields, pasture, young forest and woodland are apparent. The path from Fort Fisher west to Fort Welch is especially clear. This photo was taken prior to the construction of the final segment of Flank Road in this area. National Archives. FG6-64

EXISTING CONDITIONS

Overview

The Federal Left Flank and Fish Hook siegelines are situated west of the "Main Unit" of Petersburg National Battlefield. The Federal Left Flank, comprised of Fort Fisher, Fort Conahey, Fort Urmston and defensive 'curtains' connecting them, is set within a re-forested ecotone wedged between an 800-acre industrial site to the north and a suburban residential development to the south (Figure 3.1). Separated from their greater context by three roads, minimal woodlands, and a large earthen berm, this sliver of parkland exists as an anomaly. Its fate was sealed in the early 1930's, when local residents donated lands to establish a military park. At that time, pressure from agencies and the need for a protective buffer zone was not anticipated. Park Service boundaries were established at the very edges of trenchlines, severing fortifications from historically significant fabric. The resultant parkland footprint reads as a sylvan stencil printed over a matrix of development and change. Although a common forest straddles most boundaries, the disparate interests of ownership and use collide. A fourth fortification in the Federal Left Flank, Fort Wheaton, is barely discernable from its wooded surroundings. This important redoubt is currently landlocked within its historical context no longer under NPS control and potentially threatened by conflicting intentions (Figure 3.2).

The outlying property referred to as the Fish Hook Fortifications, is also sequestered within a forested tract that lies west of the Church Road. This parcel includes Battery 27, Fort Welch and Fort Gregg. Access to this appendage has traditionally been limited to a narrow, cleared track and foot trail which begins at Church Road and leads to distant Fort Gregg. The forts and siegelines of the Fish Hook stand among a mixed-species second growth forest which extends beyond park boundary lines. The character of the land surrounding this terminus of Federal siegelines has changed little since Park Service acquisition; remaining today as tilled, fallow, and mid-stage succession agricultural fields, mixed species forest, and first order streams, bogs and ponds (Figure 3.3). Excepting two residences on Church Road which border the access road entrance, this extremity retains various elements of nineteenth century pre-war, wartime, and post-war setting, and represents one of the few surviving naturalesque areas in the park. As a fortunate consequence the Fish Hook area is imbued with an enhanced setting and mood, offering excellent opportunities for interpretation and preservation.

Throughout the NPS stewardship of this property, both Left Flank and Fish Hook sites have been typically neglected and even considered for divestment. This disregard has wrought continual deterioration due to logging and clearing, introduction of invasives, animal burrowing, relic hunting and storm damage. Natural succession, and the proliferation of Poison ivy, *Rhus radicans* Honeysuckle, *Lonicera japonica*, Cat briar, *Smilax rotundifolia* and Tree of Heaven *Ailanthus altissima*, have overwhelmed the terrain and historic features, concealing them under a tarpaulin of nuisance vegetation and consequently limiting visitor access. In a 1998 report entitled, *Assessment of the Principal Earthworks Federal Fish Hook Line, Petersburg, Virginia*, David Lowe, GIS specialist for the NPS produced findings from extensive field surveys taken early that year. At the time Lowe stated, "Tree throw on the Fish Hook line was not found to be a problem generally, but storm damage could be catastrophic."¹ His prediction soon came to pass. In the short time elapsed since the report was published, several storms have battered the area. At Fort Fisher in particular, blow-down of several large

caliper trees has compromised the integrity of its earthworks and produced dangerous conditions at the site (Figure 3.4).

The following assessment of current conditions at Left Flank and Fish Hook properties includes relevant passages from the Lowe report, invaluable for its methodology in chronicling overall integrity at each site. Lowe's team conducted GPS surveys and compiled data based on three categories; Clarity of Detail, Damage Observed, and Setting. The total of ratings from each category measured the overall integrity of each site (Figure 3.5).

A second valuable study entitled, *Preserve Earthen Forts Report* was prepared by Dave Shockley, Resources Manager at Petersburg National Battlefield, and Betty Janes of Denver Service Center. It includes a value and cost analysis of treatment alternatives for the Left Flank and Fish Hook fortifications, and an inventory of tree species, referencing their size and location on the property.² In addition to these resources, impressions were formed from site visits at various times throughout the year. Aerial reconnaissance and bushwhacking in daylight and evening hours has helped to glean much from the experience of these unique places. Site analysis will focus on significant surviving features, setting, mood and existing vegetation; the aspect, slope and condition of the earthworks, and finally, their context and connection to other park sites and properties within the county.

Federal Left Flank

The Federal Left Flank is bounded on the west by Church Road, on the east by Squirrel Level Road, and to the south by Flank Road. Built by Federal engineers and troops following the Battle of Peebles Farm in October, 1864, these siegeworks guarded newly acquired land and camps to the south, while providing protection to extend the Union offensive westward. Built with the expediency and skill of an army seasoned by three years of war, and situated at the fringe of tilled fields on Peebles Farm, the redoubts, trenches and rifle pits faced well-entrenched positions of the Confederate's line protecting Petersburg. Heavy slashing to the north opened fields of fire and provided materials for construction. A remnant forest to the south separated them from the camps. When completed, these fortifications were interdependent and capable of cannonading an enemy onslaught.

The situation today is quite different. St. John's Catholic Church and cemetery, and single-story suburban residences mark the southwestern and southeastern corners of the Squirrel Level and Flank Road intersection respectively, while a newly approved suburban residential development infills the southern exposure between Flank Road and Church Road. At the eastern edge of Fort Urmston a small NPS Boundary marker announces arrival to this precinct. One hundred and fifty yards further north on Squirrel Level Road, the St. John's community center and parking lot carves a niche from surrounding woodlands. Opposing the fortifications to the north within former 'no-man's-land', sits a sprawling, 800 acre landscape intervention currently in final stages of construction. The Chaparral Steel Recycling plant comprises several large buildings, including a rolling mill, melt shop, shredder, and various storage sheds, scrap yards and paved parking fields (Figure 3.6). This large industrial facility will be accessed by trucks from Church Road and a railroad siding from the Norfolk Southern line. A large horseshoe-shaped earthen berm has been constructed north of Fort Conahey (Figure 3.7). The proximity of this berm, pressing on the NPS boundary, confuses visitors as its mass looms above the historic fortifications, dwarfing their size and stature. This contemporary rival earthwork planted in cultivated grasses is intended to diffuse noises originating at the site and hide the recycling plant from view. Its effectiveness

is debatable. From Fort Conahey the plant's largest building is highly discernable above the berm's crest, and the clamor of construction resonates across the landscape to adjacent earthworks, shattering the silence as far south as Fort Wheaton.

Fort Wheaton

Fort Wheaton, originally an integral part of the Union army camp at Peebles Farm, is now a satellite of the Federal Left Flank property (Figure 3.8). Its hexagonal footprint stands as a bermed island embedded within a wooded tract, five hundred yards due south of Fort Conahey off the Church Road. This redoubt, originally named Fort Archer, was dug by black slaves as part of Confederate defenses along the Squirrel Level Road and captured by Union troops in the Battle of Peebles Farm.³ Following the battle, Union engineers reversed Archer's sally port and refitted the work as a defensive battery. Fort Wheaton is one of two extant Southern earthworks in this Federal section of the park.⁴

The current NPS parcel straddles entrenchments of the Squirrel Level Line and runs south from Church Road, forming a narrow pipestem for 200 yards which leads directly to the fort. These earthworks transect a forest of large pines. Hiking and access is hindered by Cat briar, Blackberry, *Rubus speciosa*, and Blueberry, *Vaccinium angustifolium*, which grow among an understory of Sweet Gum, *Liquidambar styraciflua*, Holly, *Ilex opaca*, and Eastern Red Cedar, *Juniperis virginiana*. Lacking a cleared trail to follow, the visitor is encouraged to meander. Taking a path of least resistance, one naturally chooses the discernible crest of parapets that lead through the forest. On occasion, to avoid a fallen tree or dense brush, one is detoured down the scarp into the ditch. Leaf litter is abundant and few indications of erosion were found. Storm damage is evident here as several pines are up-rooted and snapped at their trunks.⁵

After entering the forest for twenty yards, one loses the visual connection to Church Road. Upon further exploration, the din of machinery emanating from Fort Conahey's new neighbor, Chaparral Steel, becomes apparent. The interior of Fort Wheaton is relatively clear of large trees and dense undergrowth.⁶ This allows exceptional visibility of the perimeter and surviving features, creating a sense of scale and boundary, and generating a strong sense of place within the forest. Parapets and ditches are grown up predominantly in pines, with several near and over 24" dbh.⁷ Nine snags stand on the site and an unusually deep layer of duff covers most of the landforms. A narrow road leading to a private residence follows Wheaton's southwestern exposure, compromising setting in that quadrant. Mood is altered as visitors are given an incongruous glimpse of automobiles, boats, bicycles and trailers. The property owner has granted the National Park Service use of his road to access the fort for periodic maintenance. Nearby on Church Road, an approved residential subdivision will further impact this site (Figure 3.9). Currently Fort Wheaton's narrow pipestem is difficult to find from Church Road. The lack of adequate signage, entry trail, and parking turnoff, when combined with a "No Trespassing" sign posted at the adjacent private road, discourages visitation to this site. Fort Wheaton is assigned a 'Fair' degree of Overall Integrity, David Lowe explains:

"The earthwork has experienced an overall softening of angles due to past erosion. There has been a great deal of casual visitation over the years, though little currently. The redoubt's basic features remain intact, but it is encroached upon from all sides. The park boundary follows the outer perimeter of the ditch. The neighboring landowner recently clear-cut right up to the park boundary,

*perhaps even burying or uprooting one of the property markers. Heavy equipment ruts come up to the edge of the redoubt's ditch at one or two places and may have caused some slumping of the counterscarp. The area has been sown in new pines that have grown into an impenetrable thicket. While the sense of place within the redoubt is strong, from without the viewer feels cramped and disoriented. The ground adjacent to gun platform #3 was disturbed by past logging or human digging. The original sally port of Fort Archer has eroded out, though erosion does not appear ongoing. The surrounding landscape has not been recontoured; meaning that some integrity of setting could be reclaimed."*⁸

Fort Urmston

Fort Urmston was built on the tilled fields of Chappell's Farm a few hundred feet south of a Confederate redan labeled on Colonel Michler's map as "*Old Rebel Work*."⁹ This land and cleared fields of fire to the northwest and northeast have since grown into a mature pine and oak-hickory forest, which has been periodically logged (Figure 3.10). St John's Parish community center and parking lot fronts the Squirrel Level Road just north of the fort.¹⁰ Urmston's north and northwestern parapets border Chaparral steel mill property. Fortunately, a substantial tract of forest obscures sightlines toward the mill and its berm from within the fort's enclosure. The abbreviated edges of Fort Urmston that press against the shoulder of Flank Road are in a particularly vulnerable position. Circa 1930, the southernmost section was severed from the fort. Parapets, two gun ramps, platforms and the original sally port were leveled to clear land for a schoolhouse across from St. John's Catholic Church¹¹ (Figure 3.11). Later in 1964, with the schoolhouse razed, the completion of the Flank Road right-of-way rendered that intervention permanent. Without adequate property fronting the fort, a visitor parking turnout was located across Flank Road adjacent to St John's cemetery.

Fort Urmston has suffered the detriment of logging and clearing operations during the 1960's. It is the first of two forts that caused Superintendent Mike Hill to comment regrettably on previous management practices, "...we (the N.P.S.) *really did the wrong thing at Urmston and Conahey, it was like scraping the paint off and not putting any back on.*"¹² The earthwork's outline is barely visible to an uninitiated visitor approaching from Flank or Squirrel Level Roads, as its interior and parapets blend amidst the shrub layer, standing snags and understory trees. The majority of tree growth is on parapets and in ditches, the peneplain is relatively free of trees yet covered with a vigorous growth of shrubs and vines.¹³ During winter months the random appearance of this earthwork is disguised among resident forest and scrub. Ironically, Fort Urmston is the closest of all fortifications to a road, yet motorists can easily drive past without noticing its profiles. Once parked in the designated area, approaching visitors must then negotiate access. Although a small, barely visible NPS boundary marker identifies the property, the absence of interpretive signage or a defined entry belies the fort's existence. Circulation through the site is also not prescribed, and similar to the approach to Fort Wheaton, visitors must create their own path. Distracted while weaving through poison ivy, brambles and saplings, one encounters the site without regard for historical features and topography. The experience is both disorienting and disappointing and offers a poor introduction to this section of the park. Once inside the fort, an audible and sometimes visual connection is maintained with Squirrel Level Road, Flank Road, and the adjoining woodlands. The overgrown condition of the peneplain, parapets, ditches and fields of fire, tends to interrupt its contextual relationship with adjacent areas of historical importance such as the *Old Rebel Work*, Squirrel Level Road

and neighboring Fort Conahey. Fort Urmston is at best then misunderstood and undervalued. Accordingly it has been rated 'Poor' for Overall Integrity, David Lowe writes:

*"Fort Urmston contains four gun platforms, two of which are very clear, and four gun ramps, three of which are in decent condition. The site was cleared within the last twenty years in a manner that was insensitive to surviving features, and the parapet has suffered serious erosion. Angles are blurred, and earth from the parapet has slumped into the water-filled ditch at several points. Undergrowth is heavy. The southern face was destroyed at some point by road construction, taking most of two gun platforms and ramps with it. Two old social trails cross the ditch and enter the redoubt at guns 3 and 5, causing severe compaction and subsequent erosion. A shallow ditch (drainage or relic hunting) was dug at some point behind gun ramps 2 and 3 and much of the spoil was thrown onto gun ramp #3. Tree throw has damaged the parapet in one place in the north face. The setting appears to have been at least moderately degraded for years. There is evidence of ground disturbance, probably due to logging, in the fields of fire to the north."*¹⁴

Approximately one-half mile of trenches stretch from Fort Urmston to Fort Conahey. These works, designed as infantry entrenchments have a frontal ditch, parapet and a rear trench. They survive in good condition, have softened profiles and an average relief of 1.5 meters. The works are covered in dense underbrush within mixed species wooded terrain, yet are recognizable from Flank Road which closely follows their line. At two places the Flank Road right-of-way has intercepted and eliminated these earthworks.

Fort Conahey

"This fort has cost more labour than any other, has afforded an admirable lesson in engineering, and is one of the sights to show strangers. Further than this, I doubt the value of its elaborations."

Col. Charles Wainwright U.S. Army, November 20, 1864

Fort Conahey, constructed as an exemplar of mid-nineteenth century military engineering, has been subjected to repeated acts of degradation. Built into a slope as a two tiered or casemated fortification, the structure relied on heavy timbers to reinforce its roof and upper gun emplacements (Figure 3.12). Artillery crews aimed cannon through embrasures, while protected from hostile fire in the chambers below. A stout log palisade bisected the interior, allowing for safe troop circulation (Figure 3.13). Following the war, Conahey fell prey to local scavengers in search of building materials. Lacking its original revetments the structure collapsed, diminishing relief and filling its ditches with spoil. Succession ensued and over time its profiles continually softened. Seventy years later the N.P.S. inherited an earthwork grown up in pines, hardwoods and thick underbrush. As in nearby Fort Urmston, lumbering and clearing regimes have encouraged erosion and further blurring of existing features. Overall integrity at Fort Conahey is considered 'Poor.' It is assigned the lowest values of all earthworks in this region of the park. David Lowe writes:

"The second story collapsed onto itself many years ago, burying many of these original features. Two gun platforms in the east face are better defined. At some point, the western portion of the ditch was filled in by work on Flank Road. The site was cleared of trees in the recent past and then allowed to grow up in pines and woody scrub. This tree clearing set off serious erosion, compounded by visitation that has

and neighboring Fort Conahey. Fort Urmston is at best then misunderstood and undervalued. Accordingly it has been rated 'Poor' for Overall Integrity, David Lowe writes:

*"Fort Urmston contains four gun platforms, two of which are very clear, and four gun ramps, three of which are in decent condition. The site was cleared within the last twenty years in a manner that was insensitive to surviving features, and the parapet has suffered serious erosion. Angles are blurred, and earth from the parapet has slumped into the water-filled ditch at several points. Undergrowth is heavy. The southern face was destroyed at some point by road construction, taking most of two gun platforms and ramps with it. Two old social trails cross the ditch and enter the redoubt at guns 3 and 5, causing severe compaction and subsequent erosion. A shallow ditch (drainage or relic hunting) was dug at some point behind gun ramps 2 and 3 and much of the spoil was thrown onto gun ramp #3. Tree throw has damaged the parapet in one place in the north face. The setting appears to have been at least moderately degraded for years. There is evidence of ground disturbance, probably due to logging, in the fields of fire to the north."*¹⁴

Approximately one-half mile of trenches stretch from Fort Urmston to Fort Conahey. These works, designed as infantry entrenchments have a frontal ditch, parapet and a rear trench. They survive in good condition, have softened profiles and an average relief of 1.5 meters. The works are covered in dense underbrush within mixed species wooded terrain, yet are recognizable from Flank Road which closely follows their line. At two places the Flank Road right-of-way has intercepted and eliminated these earthworks.

Fort Conahey

"This fort has cost more labour than any other, has afforded an admirable lesson in engineering, and is one of the sights to show strangers. Further than this, I doubt the value of its elaborations."

Col. Charles Wainwright U.S. Army, November 20, 1864

Fort Conahey, constructed as an exemplar of mid-nineteenth century military engineering, has been subjected to repeated acts of degradation. Built into a slope as a two tiered or casemated fortification, the structure relied on heavy timbers to reinforce its roof and upper gun emplacements (Figure 3.12). Artillery crews aimed cannon through embrasures, while protected from hostile fire in the chambers below. A stout log palisade bisected the interior, allowing for safe troop circulation (Figure 3.13). Following the war, Conahey fell prey to local scavengers in search of building materials. Lacking its original revetments the structure collapsed, diminishing relief and filling its ditches with spoil. Succession ensued and over time its profiles continually softened. Seventy years later the N.P.S. inherited an earthwork grown up in pines, hardwoods and thick underbrush. As in nearby Fort Urmston, lumbering and clearing regimes have encouraged erosion and further blurring of existing features. Overall integrity at Fort Conahey is considered 'Poor.' It is assigned the lowest values of all earthworks in this region of the park. David Lowe writes:

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removed the cover of leaf litter and compacted the earth on the northern face. Because large segments of parapet are showing greater than 40% bare earth, erosion would appear ongoing. Two gun platforms in the dentate north face are visible but poorly defined. There was evidence of relic hunting activity (at least three large holes). The setting of the redoubt has been seriously degraded by new construction adjacent to the park, which has completely reshaped the terrain, removing all historic integrity right up to the park boundary. Flank Road encroaches from the rear. This unique redoubt appears to have suffered unnecessarily from tree clearing without appropriate follow up."¹⁵

Arrival at Fort Conahey is marked by a convenient parking turnout and a well-placed interpretive sign which contributes a basic description of the site. These amenities induce visitors to stop and explore. A well worn path leads through a stand of young pines and over a land bridge through the original sally port.. This compacted trail continues, ushering a haphazard circulation amidst the dense interior of the site. Only twenty-three trees over 13" DBH. grow on Conahey's half-acre footprint. Predominately an oak hickory complex, these trees stand among ditch and parapet, affording the peneplain almost full sun and encouraging vigorous growth of the shrub layer.¹⁶ Surviving features are indistinguishable when cloaked in this herbaecous and woody underbrush, and the overall plan of the fort is incomprehensible. Visitors soon develop a tendency to venture toward the perimeter in hopes of finding a vantage point for orientation. On several occasions visitors were noticed adhering to a simple pattern. They explore the interior, climb the northern parapet, observe the dentate exposure, and survey the opposing fields. From the parapet elevation a nominal glimpse of the fort's interior, ditch and facing terrain is gained. Unfortunately, clear-cut land of Chaparral Steel presses against this boundary and a recent addition to the landscape, an adjacent berm rises fifty feet above present day fields of fire. Crane spires and the roofline of a mill structure loom over its ridge (Figure 3.14). A tree planting on the upper slope has been promised by Chaparral to screen the industrial complex from view.¹⁷ While roaming inside the fort, sound from cars passing on Flank Road dissipates and a calm pervades the space. During working hours however, the noise of ongoing construction emanate from Conahey's northern neighbor. Site work is projected to continue until early year 2000. In winter months the fort's perimeter is partially defined, giving a sense of scale and position, however, a visual connection to neighboring Fort Fisher is not established. By late April, the shrub layer had leafed out, obstructing sightlines to the fort's edges and the terrain beyond. In mid July a profusion of blueberries adorned the peneplain. Well into late fall, visitors will subconsciously gravitate to the high ground of parapets, attempting an assessment of the place. Without the benefit of interpretation and a cleared peneplain, they cannot understand significant features and fully appreciate this site. And as in the previous experience at Fort Urmston, the visitor emerges somewhat frustrated and disappointed.

Hydric terrain claims over two hundred feet of territory to the west of Fort Conahey. Rising at the western edge of this bog, a continuous curtain wall stretches for over four hundred yards before connecting with Fort Fisher. These works, closely paralleled by Flank Road, were manned by infantry and consist of a frontal ditch, parapet and rear trench. Out in front several holes are extant, most probably advance rifle pits of the Federal infantry. Excepting three breaks in the parapet and a few compacted areas, these works remain in good condition among understory and canopy trees. Approaching Fort Fisher their details become more obvious and clearly defined.

Fort Fisher

*"Today I have been in charge of a detail of 600 men at work on a fort called Fort Fisher...It rained all day, and we worked in the mud and water. This fort will be a strong one, and as it is in sight of the Rebels we shall have music before it is finished."*¹⁸

Lt. Colonel Elisha H. Rhodes

Fort Fisher is known as the largest earthen Civil War fort constructed by Federal forces during the Petersburg campaign.¹⁹ As the site where the Union army's breakout overwhelmed Confederate lines on April 2, 1865, this 4.3 acre, bastioned fort holds great significance and is frequently visited (Figure(s) 2.15-2.16). The current arrival and entry sequence at Fort Fisher is hardly commensurate with an historic earthwork of such stature. A parking turnout on the north side of Flank Road aligns with the original sally port. Nearby, at the southwest bastion, two large pines lay as casualties of a recent storm, one snapped, the other uprooted (Figure 3.17). Adjacent to the parking area sits a flat apron of sand, scattered oak leaves and pine needles, where a standard-issue N.P.S. interpretive wayside and garbage can welcome visitors. From this vantage one can reconnoiter Fisher's deep ditch and glimpse its interior through a break in its high-relief parapets. However, the magnitude of this earthwork precludes an understanding of the fort's geometry.²⁰ The absence of directional signage at this staging area momentarily baffles visitors, who then follow a compacted social trail down the counterscarp and up the salient to arrive on the penneplein. A less rigorous entry is available 150' feet west at the intersection of Church and Flank Roads, where in the late sixties, the south west bastion was re-contoured for machinery access. A wide earthen ramp begins at Church Road, filling the ditch of the southwestern bastion, and meeting grade at the gun platform inside. A simple log barrier controls vehicle access yet allows pedestrians to freely pass through (Figure 3.18).

Traffic flow on the Church Road (County Road 672) is relatively light except during peak travel times. A southbound straightaway leads into a tight-radius, left-handed curve just beyond Flank Road. In preparation for the curve, approaching motorists travelling at excessive speed, apply their brakes, causing tires to screech and squeal. Large trucks decelerate at this point, causing exhaust reverb. Conversely, vehicles travelling in the northbound direction accelerate heavily after completing the curve, creating greater levels of exhaust roar and emissions. From inside Fort Fisher, the noise of automobiles and trucks were audible at certain areas on the penneplein. In the warm season this disturbance was slightly less noticeable due to foliage.

The deep ditch encircling Fort Fisher is an indicator of prevailing climate, and during a visit in early March, one to two feet of standing water was visible. In wet seasons it is not uncommon to find the fort surrounded by a moat (Figure 3.19). By late April the sally port ditch was dry, yet beginning a few meters in either direction opaque, black water persisted, a product of cryptogamics and tannin leached from fallen oak leaves. Once inside the parapets, it is possible to comprehend various important features at Fort Fisher, and with the onset of leafless winter months, greater visibility is obtained. Anchoring the site, both the northeast and northwest bastions rise dramatically in opposing corners, and the main traverse forms a deep gully dividing over two hundred feet of the interior floor. Collapsed remains of two large magazines create hollows over six feet deep covered in a blanket of oak leaves. Gun ramps, gun platforms and banquettes are well preserved. At intervals embrasures are easily understood as they break parapet profiles. During the warm season, a thick shrub and understory layer obscures features and impedes circulation. As in other sites, catbriars and poison ivy grow profusely and the absence of a cleared, designated path encourages bushwacking, compelling explorers to venture along a datum. In the

case of Fort Fisher, evidence of compaction on the parapet crest strongly suggests they are frequently traveled and ironically, much to the detriment of the resource, this pedestrian right-of-way is relatively free of nuisance vegetation. In spite of shortcomings with circulation, Fort Fisher rates 'Good' in Overall Integrity. Lowe explains:

"The interior is rich in legible detail. There are positions for nineteen field guns, two with recessed platforms, four ramps leading to guns in the bastion angles, a large oblique traverse with a collapsed magazine, two smaller traverses in the northeast and northwest bastions, each with a large collapsed magazine, long segments of surviving banquette, particularly in the northeast bastion, and the remnants of the fort's drainage system. The drainage system is a particularly rare survival. Shallow ditches run from the fort's two northern bastions, conjoin, and then drain into a sump adjacent to the western face. The ditch of the central traverse drained into this sump, as well. A collapsed portion of the parapet next to the sump might be evidence of a culvert (wooden) that passed water out of the fort into the outer ditch. A similar slumping was observed on the opposite face. Isolated spots of erosion were seen in several places in the parapet. Two compacted areas appear have been caused by animals, particularly in the northeast bastion near gun #12 where a trail was worn along the outer edge of the parapet. Only one example of tree throw was found, adjacent to the parapet but causing little damage. When surveyed in April 1998, Fort Fisher received a higher mark for setting, despite its location at the intersection of Church and Flank roads. The terrain to the north and northeast was largely intact. On a follow-up visit in May, it was apparent that new construction on private property adjacent to the park had degraded the setting within the fort's northern and eastern fields of fire. Trees can be replaced but the contour of the land cannot be rehabilitated in any historically meaningful way." ²¹

Fort Fisher has over 230 substantial trees of various species growing within its perimeter. From any vantage point this produces a perspective of countless trunks merging to fill the field of view.²² Storms in the spring of 1999 dealt a heavy blow to resources. Mature, and top-heavy trees snapped at their trunks or were uprooted, forming large craters and exposed root balls. Massive trunks took down smaller trees as they fell, crashing into parapets they lay strewn across ditches and on the penneplein. Damage from a fallen, 43" caliber Red Oak on the northwest bastion was particularly devastating.

Heedless of these natural and unnatural disruptions, Fort Fisher evokes a strong feeling, delivering a powerful experience from either side of its earthen defenses. During a site visit in early spring when construction activity at nearby Chaparral Steel temporarily ceased, the whole place plunged into an eerie silence. As the din subsided, afternoon sunlight filtered through the canopy, igniting florescent white bracts of native dogwood and countless thousands of winged insects. Simultaneously birds chirped, squirrels barked, and a bullfrog groaned from the depths of a sodden ditch dug by soldiers one hundred and thirty-four years ago

Fish Hook Fortifications

Fast track construction of defensive works at the intersection of Peebles and Peagram's farms occurred simultaneously with those at the Left Flank. By late October 1864, Fort Welch and Fort Gregg were

completed, stitching the leading edge of Federal fortifications to the landscape. With new ground now secured behind a continuous line of entrenchments, the Union army relaxed its offensive, enabling troops to dig in and prepare for the coming winter. Responding to a Confederate buildup in January of 1865, Union engineers dug Battery 27, bolstering defenses in the western segment of their lines.²³

Across from Fort Fisher on Flank Road a large N.P.S. sign announces, "*Now Leaving Petersburg National Battlefield.*" Turning right onto Church road and driving north, the ditch and parapets of Fort Fisher are clearly legible. Across the road, behind a horizontal log barricade, an unmarked swath leads through a stand of pine into ten acres of siegelines, rifle pits and fortifications referred to as the Fish Hook Line. To access this area, one must walk from the parking area at Fort Fisher, and decipher a combination of misleading and inadequate signage. Since its entrance is not posted, the Park Service sends a confusing message to an unfamiliar visitor to this location, suggesting that Fish Hook fortifications are no longer within Petersburg National Battlefield (Figure 3.20). Consequently, these earthworks encapsulated in their overgrown domain, embody one of the most powerful and rewarding experiences within the park.

Approach to the Fish Hook Fortifications

The trail leading to Battery 27 runs west in a straight line for 550 yards. Tunneling through a wood of tall pines and crowded undergrowth, this passage forms a cathedral-shaped void, rising from a floor of duff to the underside of the canopy (Figure 3.21). At its edge, poison ivy and blackberry are prolific and Virginia creeper, cat briar and honeysuckle wind their way up host trunks and over shrubs, framing the walls of this long and narrow avenue. At midday the space remains cool and shaded. By late afternoon, oblique rays of sunlight illuminate the climbers and the understory of dogwood, holly, hickory, sweet gum and tulip poplar. This landscape's link with the past is strengthened by its distance from Church Road and as one ventures further in, the din of a modern world is left behind.

Looking south through the edge of the woods, cleared and early-stage succession fields are visible. In one section, young conifers grow in ordered rows. The northern margin of this right-of-way is defined by a continuous line of entrenchments averaging 1½ to 2 meters of relief. These works orient the visitor directly 'behind the lines' of a re-forested 'no-man's land.' Then abruptly, one hundred and fifty yards in from Church Road, the woods halt at an agricultural field currently sown in hay.²⁴ From behind the parapets an exceptional vista extends across this clearing to its northern edge, where a dark forest forms an ominous boundary. The setting is exceptional. Within these near-silent woods surviving features resound an historical chord of slashing, defenses and fields of fire. Few locations within the park reflect such an association to the period of significance. The mood here primes a visitor for the experience ahead, where in a few hundred yards one will descend upon Siege Battery 27 and discover more unique attributes of the Fish Hook line (Figure 3.22).

Battery 27

Within a dense and tangled copse, infantry breastworks abruptly rise to nearly three meters forming the salient of Siege Battery 27 (Figure 3.23). The scarp of this formidable gun emplacement courses for 132 meters, forming a three-sided facade. Four earthen traverses buttress the articulated defensive edge, metering positions for eleven artillery pieces and two magazines. Embrasures and gun platforms, apparent during leafless seasons, become more difficult to decipher when under the pervasive cover of

poison ivy, briar and honeysuckle. A profusion of over eighty trees which grow on this siege battery contributes to its misunderstanding and diminished overall feeling. *Ailanthus altissima* volunteers incongruously, towering fifty feet above parapets. Several large native holly, *Ilex opaca*, and various species of fern also inhabit the site. The earthwork is categorized as, "generally in excellent condition with crisp profile," and assigned the highest marks, along with Fort Welch, for Overall Integrity.²⁵ "It is a well-preserved example of an artillery position constructed late in the war. The battery has a clean profile with well-defined angles. It is rich in detail with four large traverses, all sharply defined, eight positions for large caliber guns, and a probable mortar platform, as well as two magazines constructed behind the parapet in the angles of the traverses. Little damage was noted in the interior, except for a large animal burrowing in the magazine adjacent to gun # 8."²⁶

Indeed, the features and details of this earthwork are well preserved, yet for the visitor who happens upon Battery 27, the effect is more akin to the discovery of a lost ruin in a tropical jungle. Its orientation to the siegelines, proximity to the trail, (the westernmost gun ramp is actually eclipsed by the trail) and accessible parapets, coax visitors to mount the work and peer into opposing terrain. The region is now heavily forested and, unlike during the Civil War, views are limited.²⁷ As in the Left Flank fortifications, the aspect of Battery 27 replicates the experience of a Union soldier as defender. The effect is heightened here by the exposed flank of this unenclosed salient, where at various positions behind its facade and traverses, one can sense the importance of complimentary fire from curtain walls and adjacent forts. Unfortunately from this location, Fort Fisher seems distant and a visual connection cannot be made to neighboring Fort Welch. This 'lack of communication' encourages further exploration down the trail, to discover the next link in the chain of defenses.

During several visits, at this remote location en route to Fort Welch, the combination of forest preserve and prevailing westerly winds masked the sounds of civilization. One morning, after the screeches of automobiles and rumble of construction at Chaparral Steel had dissipated, the distant whine of a train whistle wafted through the pines. This quiet and contemplative place remains timeless.

Fort Welch

This pentagonal redoubt was established at the western frontier of the new Federal estate created after the Battle of Peebles Farm. Fort Welch has weathered the passage of time in this remote location and is today considered the finest surviving earthwork in the western range of the park.²⁸ The fort sits at the intersection of two logging and agricultural roads, in the midst of a maturing, re-established woodland (Figure 3.24). During the war, this high ground tucked into a corner of Peagram's farm looked to the north and east over furrowed fields. The earthwork loomed above a source of two first-order streams which flow to the south and west, and after considerable slashing, these swales were exposed to create a firing range. Welch's parapets encloses 0.8 acres and rise to over 3.7 meters from its ditch, where standing water was found during each site visit throughout the year. The presence of this moat complicates access and when coupled with a steeply-angled scarp dressed in gnarly scrub, Fort Welch is nearly impossible to enter. In warmer months copious stands of Poison ivy grow in a wily habit reaching up over two feet from the ground, fending off visitors at the perimeter. These factors have spared the earthwork from degradations caused by human intervention. David Lowe writes: "Fort Welch is a small redoubt with steep slopes and well defined angles that is filled with interesting survivals—nine gun positions with platforms and ramps, four embrasures with good definition, a magazine, and segments of surviving banquette connection gun platforms...Little damage to the interior was observed, although animals are

*burrowing into the parapet in at least four places, primarily in the northwest face. This infestation might easily worsen and begin doing serious damage to the parapet. The terrain in the immediate vicinity has remained largely undisturbed and thus retains high integrity."*²⁹

Inside the fort, a discontinuous canopy allows sunlight to bolster an extremely dense undergrowth. Eleven substantial trees grow on the interior, with the majority populating the parapets and ditch.³⁰ Species are predominantly pine. A large caliper, hollow oak and two dead pines stand on the parapet and moat, posing a potential hazard to both visitors and the earthwork. An understanding of the fort's geometry and features is difficult to grasp while standing on the peneplain. Climbing onto the banquette offered little help, but insured a view deeper into the opposing forests, north, west and southwest. A visual reference to Battery 27 was not possible, yet overall the setting of Fort Welch, atop its slight promontory, promotes both a strong feeling of protection from behind its indomitable walls as well as a command over the landscape.

En route to Fort Gregg

Leaving Fort Welch, a road trace runs westward beyond the park trail and another continues north west, both disappear into the woods. The visitor must turn left onto a trail which follows the curve of the fortifications, yet at this junction there is no distance or directional marker to Fort Gregg, 550 yards to the south. As one rambles down a gentle slope through tall pines and Tulip Poplars, the essence of the Fish Hook experience is finally understood. This sylvan walking circuit is like no other within the park. Recently, the trail has been cleared of saplings and deadfall. Sections of log obstructions have been cut out and set along the wayside, defining a narrow woodland avenue. Trees are marked to blaze the way which covers gradual grade changes, although a hiker subconsciously refers to fragmented berms, trenches and rifle pits dug by Union soldiers, which form a datum at the western edge of the right-of-way.

Walking deeper into the woods through a low lying bog, a trickle of water is heard in the distance where a newly-built wooden bridge crosses a small stream. On several occasions while journeying out to Fort Gregg, a variety of mushrooms and morels were observed, along with several species of birds and small mammals. In this remote and still precinct, a strong association with the past is felt as each step marks the foot fall of a soldier dispatched to a far outpost to defend vulnerable terrain. The importance of an interconnected line of works is readily understood. Out here, deep in the Fish Hook, the visitor reflects on the distance and orientation of each node of support passed along the way of this historic military landscape.

Fort Gregg

The irregular signature of Fort Gregg encloses half an acre, forming the terminus of the Fish Hook siegeworks. Gregg's parapet walls rise to a relief of 3.7 meters from the floor of a mature mixed species forest painted in dappled light. This isolated redoubt holds the high ground and was designed for six field guns to ward off attack from two hundred degrees of approach (Figure 3.25). Inherent in its plan and unique among siege fortifications in the park, is Fort Gregg's dentate, western facade. Articulated with seven facets, this saw-toothed exposure enabled a barrage of *enfiladed* artillery fire. Standing on the parapet crest affords an excellent survey of this earthen arrangement whose profiles survive slightly eroded, and planted in tall Pines and Poplars. From this vantage, long views into the firing range are

gleaned through the relatively clear understory of a tall-canopy forest beyond. Looking back into the peneplain, this six-sided redoubt is filled with saplings of Black Cherry, *Prunus serotina*, Sweet Gum, *Liquidambar styraciflua*, and Tulip Poplar, *Liriodendron tulipifera*. The ground is covered in duff, with Low Bush Blueberry, *Vaccinium angustifolium*, Honeysuckle, *Lonicera japonica*, and Blackberry, *Rubus speciosa*, competing for available light. Wood Fern, *Polystichum acrostichoides*, grace the shaded recesses of salient and counterscarp. Canopy is represented by tall pines and poplars distributed throughout the earthwork, with over thirty-five specimens exceeding 12" caliper.³¹ The absolute isolation of Fort Gregg at the end of the Fish Hook has encouraged animals and relic pirates to appropriate the terrain.

*"Animal burrowing is a severe problem. Foxes and ground hogs have dug at least seven large burrows and appear to have a system of linked tunnels within the parapet. This could lead eventually to a collapse of the parapet from within. Several eroded areas in the southern face may have resulted from old burrows...The parapets fronting the west face have experienced past erosion, almost to the level of the gun platforms. A now unused social trail enters the fort at gun # 2. There was evidence of recent relic hunting in at least two locations- between guns #1 and #2 and in the outside of the north face. Although Fort Gregg is farthest removed from a public access point, it has been visited heavily over the years, probably by local children and more recently relic hunters. Logging occurred, perhaps in the 1960's but was not heavy-handed. The redoubt retains a strong sense of place, but its small size tends to magnify the negative effects of damage."*³²

Visitors find a threshold into Fort Gregg through its original sally port on the eastern facade, which conveniently appears as a finale to the approach trail. Inside, visibility to the perimeter is good, and surviving features are recognizable. By this juncture of Fish Hook exploration, partially obscured and softened details of gun ramps, platforms and magazines are more readily observed and Gregg soon becomes a familiar entity, comfortable in scale and presence. However, excepting the recent trail maintenance this spring, there is little semblance of civilized terrain anywhere near Fort Gregg. This setting in remote woodlands can be equal parts peaceful and foreboding- Fort Gregg has no visual connection to other forts and is well beyond earshot of settlement. During a visit in April, just after dusk came the repeated crackling of rifle fire- obviously from local residents off in the distance, yet reminiscent of an eternal musket volley resounding deep within these woods.

Endnotes for Existing Conditions

¹ Lowe, David *Assessment of the Principle Earthworks Federal Fish Hook Line, Petersburg, Virginia*, Cultural Resources GIS Washington D.C. June 1998 p.2

² *Preserve Earthen Forts Report* includes a thorough cost analysis of Treatment Alternatives based on results of a "Choosing By Advantages" meeting held at the Customs House, Philadelphia, June 11, 1998 A narrative account of the meeting entitled, *Petersburg Journal*, by Roger C. Sherry, is included in the report. An extensive tree survey conducted by Brian Hall in March 1988 inventories species, DBH and location.

³ Refer to the "Battle of Peebles Farm" for more on the history of Fort Archer and the Union assault.

⁴ The other Confederate Fort in this region is labeled on Colonel Michler's map as "Old Rebel Work" It s situated to the north of Fort Urmston; on land owned by Chapparral Steel.

- ⁵ On an April 14, 1999 site visit, R. C. Sherry noticed several (4) Loblolly Pine that were snapped and/or uprooted.
- ⁶ The Shockley Report inventories only 12 trees on the interior of Fort Wheaton. Of eleven pines, 4 are over 20"DBH. The lone oak measures 13"DBH
- ⁷ Dave Shockley inventories 67 trees at Fort Wheaton overall. The majority are Pine excepting 5 Oak, 3 Holly, 1 Cedar and 1 Sweet Gum
- ⁸ Lowe, David *Assessment of the Principle Earthworks of the Fish hook Line*, p.10
- ⁹ This earthwork, Confederate Fort Bratton, part of the Squirrel Level Line, was filled in by Union troops immediately following the Battle at Chappell's Farm, on 10.1.64 and is only slightly visible today from a northern aspect. This earthwork is on land owned by Chaparral Steel. During an RCS telephone interview on 4.23.99 with Carol Tyrer, Archaeologist and Principal of Cultural Resources Inc. in Williamsburg, Va. She assured me that "Old Rebel Work is on Chaparral's radar screen and it will be granted preservation status.
- ¹⁰ This property is currently owned by Chaparral Steel and granted for use by St. John's parish.
- ¹¹ Refer to: Post War History, "Development of Federal Left Flank" See Map of Picek Farm 1931
- ¹² Shockley, Dave with Betty Janes, DSC *Preserve Earthen Forts Report* NPS North East Region, Petersburg National Battlefield July 21, 1998 Excerpt from Roger C. Sherry, "*Petersburg Journal, Customs House, Philadelphia June 11, 1998*" p.1
- ¹³ Shockley, Dave *Preserve Earthen Forts Report*, NPS Northeast Region, Petersburg National Battlefield, July 21, 1998 Fort Urmston section, a detailed map of existing tree cover shows 10 trees on peneplain.
- ¹⁴ Lowe, David *Assessment of the Principal Earthworks Federal Fish Hook Line, Petersburg, Virginia* Cultural Resources GIS, Washington DC June 1998 Pg. 10
- ¹⁵ Lowe, David *Ibid.*, p.11
- ¹⁶ Shockley, Dave *Preserve Earthen Forts Report* Fort Conahey Assessment and Map.
- ¹⁷ R. C. Sherry interview with Superintendent Mike Hill at Petersburg NB April 14, 1999 on recent park history and Chaparral's promised site amenity.
- ¹⁸ Rhodes, Elisha Hunt Robert Hunt Rhodes, Ed. *All For The Union, The Civil War Diary and Letters of Elisha Hunt Rhodes*, Orion Books, New York 1991 Diary entry of February 17, 1865 p.214
- ¹⁹ Bearss, Ed As stated in a letter to N.P.S. Chief Historian June 15, 1966 in: Martin R. Conway, *A History of Petersburg National Battlefield, 1957-1982*, History Division, National Park Service, Dept. of the Interior, Washington D.C. 1983 p.22-23
- ²⁰ Fort Fisher measures close to 500 feet by 400 feet at its longest and widest dimensions.
- ²¹ Lowe, David *Ibid.*, p.8
- ²² Shockley Report: included in tree inventory of Fort Fisher, 15 standing snags and two Oaks at 43" DBH.
- ²³ For a more detailed account of the expansion of the Federal lines Refer to preceding Site History: Evolution of the Left Flank and Fish Hook Siegeworks, "Strengthening the Left Flank: Expanding Fort Fisher, constructing Battery 27 "
- ²⁴ This agricultural field is visible in a 1937 aerial photograph of the area and is situated on land of Peagram's farm, ca. 1864. Re: aerial photo. During the war the land was in forest until slashed by Federal troops to create fields of fire opposite new rifle pits and entrenchments October 1864 see Michler Map of Fish Hook
- ²⁵ Lowe, David *Assessment of the Principal Earthworks Federal Fish Hook Line, Petersburg, Virginia* Cultural Resources GIS, Washington DC June 1998 p. 6 and p. 21
- ²⁶ Lowe, David *Ibid.*, p.7
- ²⁷ In 1865, Battery 27 faced fields of Peagram's farm, and considerable slashing to the east had opened a firing range towards Fort Fisher. The site of Peagram's farmhouse is a few hundred feet off the parapet to the northwest.
- ²⁸ Lowe, David *Ibid.*, p.6
- ²⁹ Lowe, David *Ibid.*, p.7
- ³⁰ Shockley Report: Of the 51 recorded trees on Fort Welch, 15 are deciduous, the remainder are pine, 11 are on the interior of the fort the remaining 40 populate the ditch and parapet.

³¹ Shockley Report Of the 52 recorded trees on Fort Gregg, 24 are deciduous and 28 are Pine The largest five trees are: Pine at 25", 22", 21", 21" DBH. and one deciduous (Poplar) at 22" DBH.

³² Lowe, David *Ibid.*, p.9



Figure 3.1: Detail of USGS Quadrangle map for Petersburg, Virginia. This map helps to establish the landscape context for the existing conditions of the historic Federal Left Flank and Fish Hook Siegeworks. United States Geological Survey.

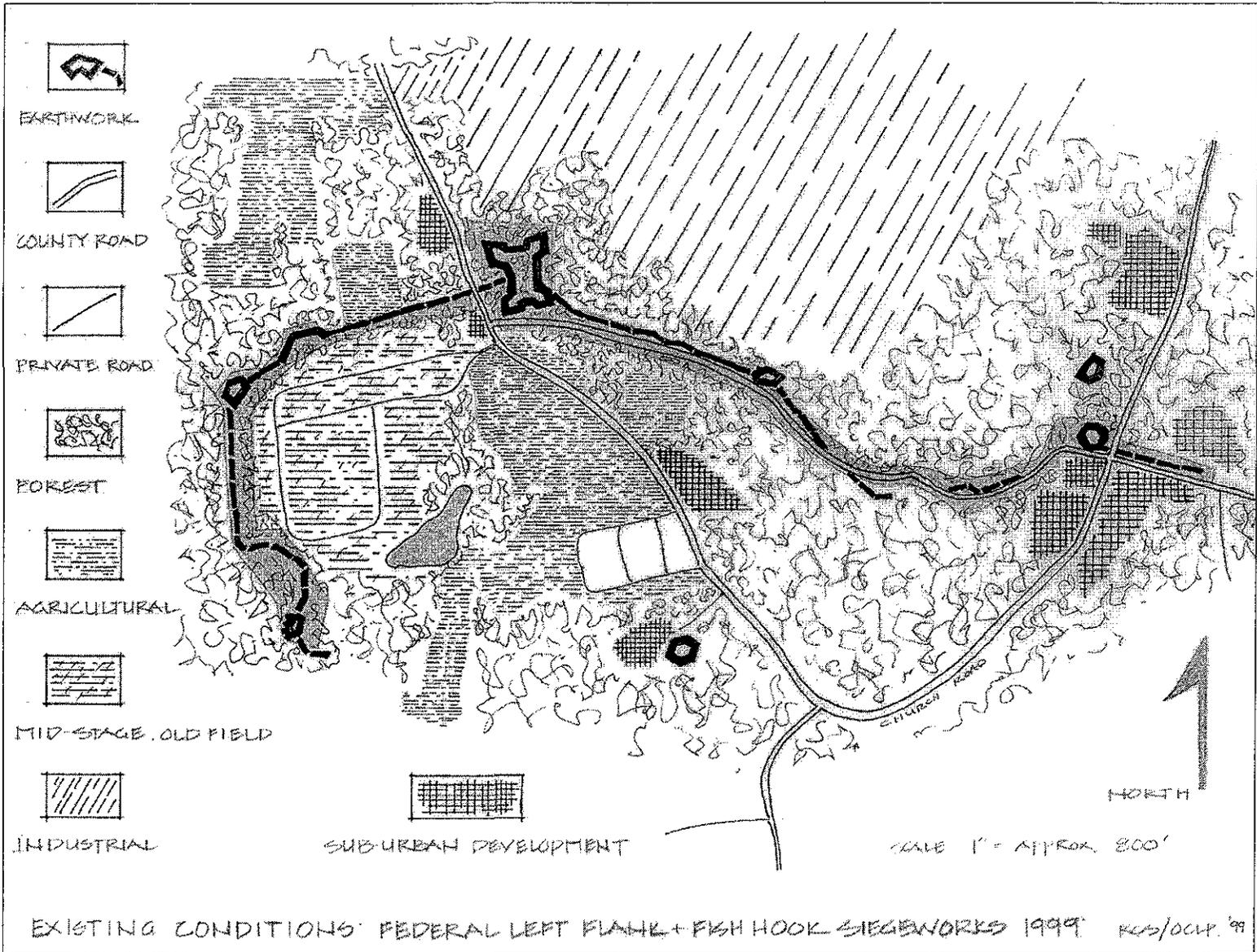


Figure 3.2: Diagram documenting land-use patterns at the Federal Left Flank and Fish Hook Siegeworks, 1998. Roger Sherry.

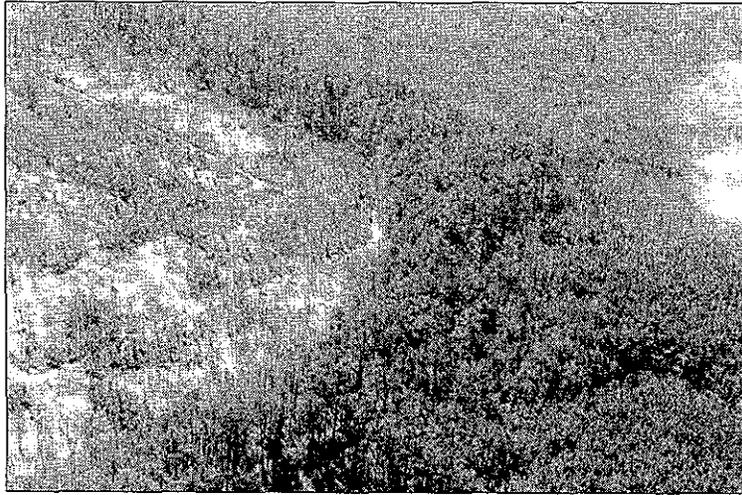


Figure 3.3: This aerial photograph taken from 3000 feet shows the arc which gives the Fish Hook area of the park its popular name. This illustration shows how something as abstract as a property line will result in a tangible pattern on the landscape. Photo by author.



Figure 3.4: Storm induced blow-down of large caliper trees such as this on the parapets of Fort Fisher create a potentially dangerous condition for visitors and work to destroy the physical integrity of the historic earthworks. Photo by author.

Figure 3.5: Chart excerpted from 'Assessment of the Principal Earthworks - Federal Fish Hook Line, Petersburg, Virginia.' Prepared June 1998 by NPS Cultural Resources GIS, Washington, D.C.

Assessment of the Principal Earthworks Federal Fish Hook Line, Petersburg, Virginia				
	Clarity of Detail +	Damage Observed +	Setting =	Overall Integrity
FORT WELCH	4	4	4	12 good
SIEGE BATTERY	4	4	4	12 good
FORT FISHER	4	4	2	10 good
FORT GREGG	3	2	4	9 fair
FORT WHEATON	3	3	2	8 fair
FORT URMSTON	2	1	1	4 poor
FORT CONAHEY	1	1	1	3 poor

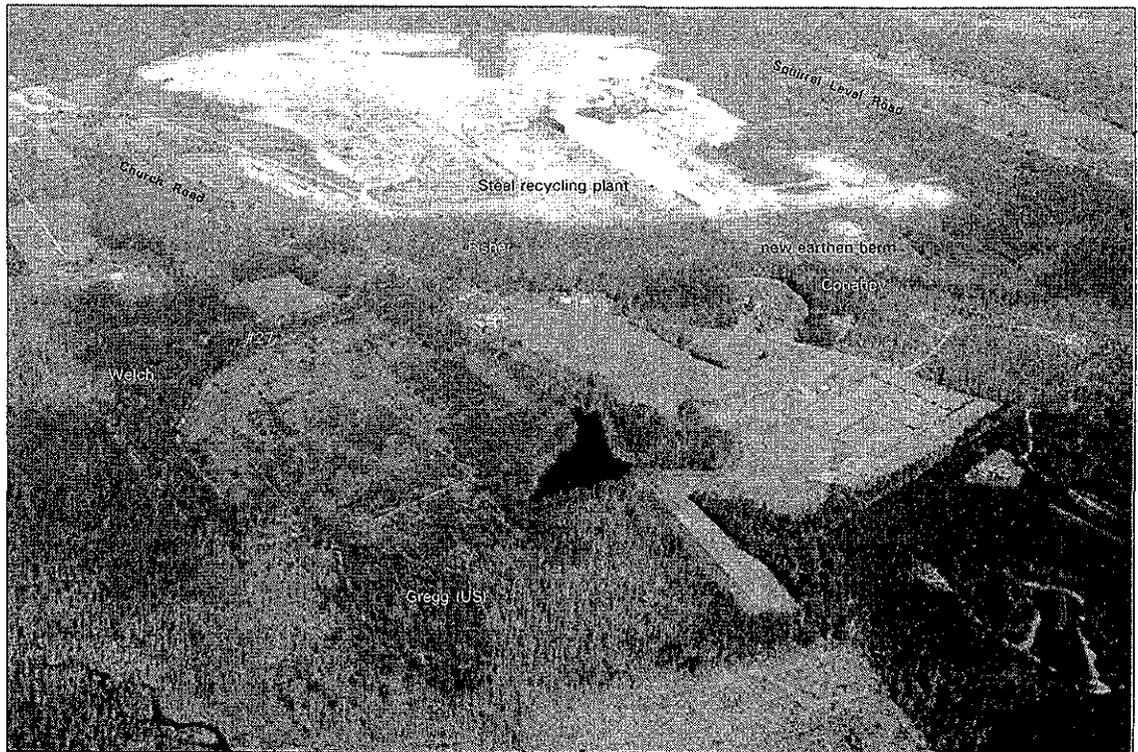


Figure 3.6: This aerial view looks north toward the newly constructed steel recycling plant, now pressing close to the boundary of the Federal Left Flank. Note the arc of the Fish Hook area to the left and foreground. A light dashed line is added to this figure to aid visibility. Photo by the author.



Figure 3.7: This aerial view of Fort Conahey shows its proximity and scale compared to the oversized earthen berm installed by the steel recycling plant. The berm was intended to block the steel plant from view. Fort Conahey and the berm have been outlined with a light grey line for visibility. Photo by the author.

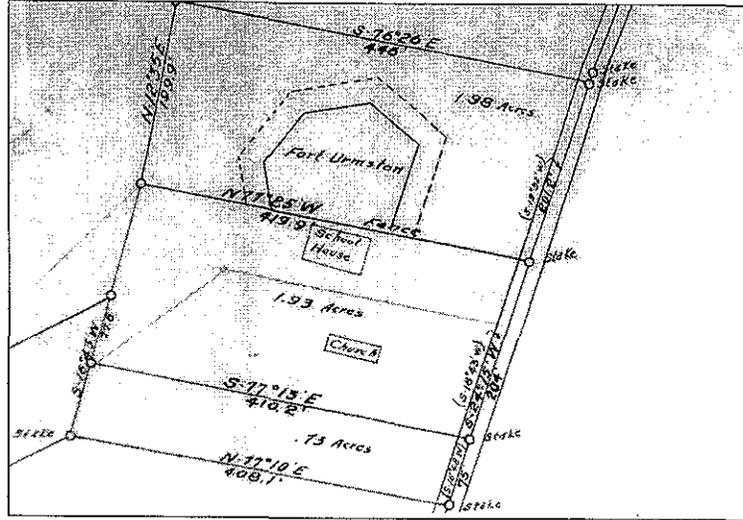


Figure 3.11: During the early 1930's, the southern parapet of Fort Urmston was leveled to provide a level setting for a school house associated with the St. John's Catholic Church. Petersburg NB archives.

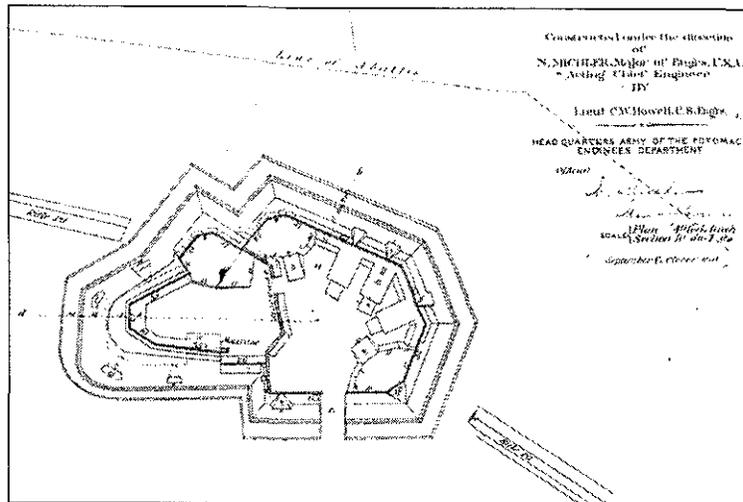


Figure 3.12: U.S. Army Engineers plan of Fort Conahey, 1865. Petersburg NB archives.

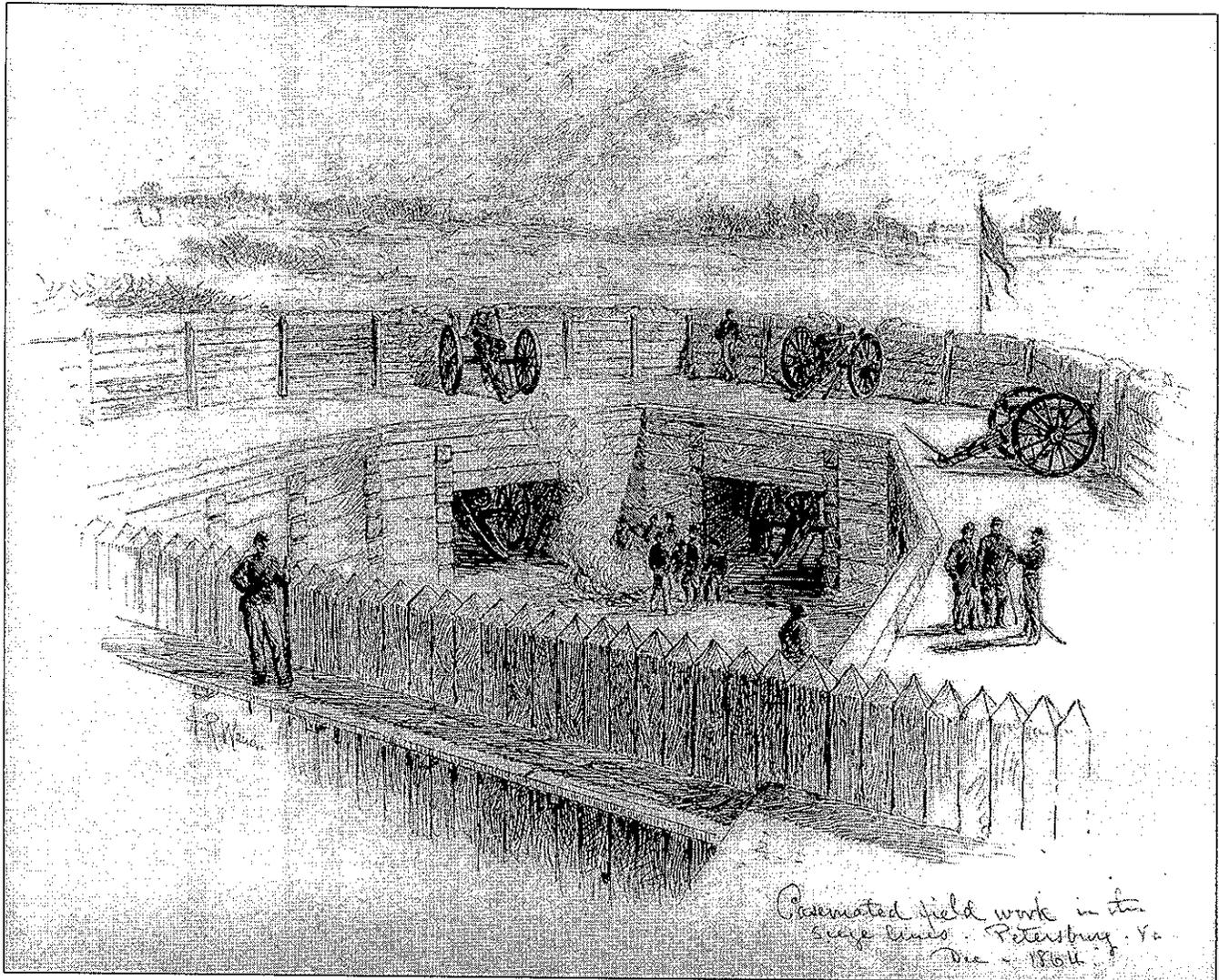


Figure 3.13: This drawing by Alfred Waud, made in 1864, shows Fort Conahey's casemated design, upper level and interior traverse, all constructed of heavy timber. Taking notice of the great quantity of timber used in the construction of this fort, it is easy to see how valuable these materials would have been to local residents during the austere years following the war. The salvage of these timbers, of course, led to the fort's deterioration. Library of Congress.

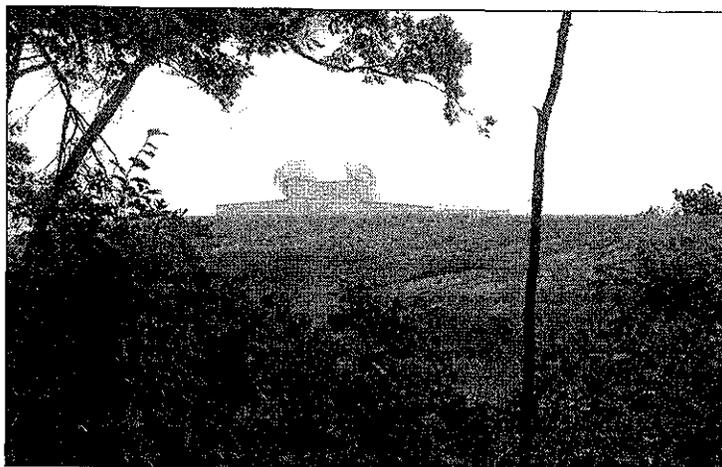


Figure 3.14: This photograph shows the upper section of the Chaparral Steel Recycling Plant, from a vantage point within the interior of Fort Conahey. As is apparent in this view, the facility looms high above the new earthen berm intended to screen the view. Photo by the author.

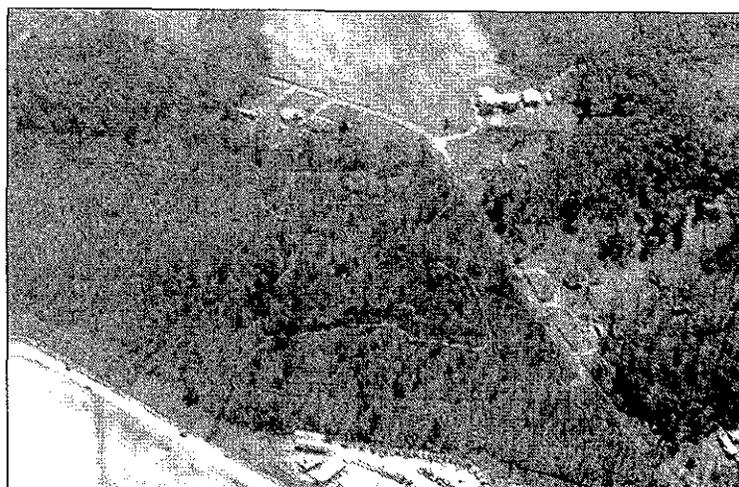


Figure 2.15: Oblique aerial photograph of Fort Fisher from the north, looking south. This view establishes a context for Fort Fisher's current setting, amidst blocks of woodland, bordered by Flank Road to the south and Church Road to the west. The cleared land of the steel recycling plant is seen in the foreground to the left. A light grey line has been added to this graphic to aid in visibility of the fort. Photo by the author.



Figure 3.17: The interpretive wayside at Fort Fisher welcomes visitors arriving from Flank Road. Recently, tall pines have blown down onto parapets and across ditches. Photo by the author.



Figure 3.18: This view of Fort Fisher's southwest bastion shows the original ditch filled with soil to create a ramp for park maintenance vehicles. Photo by the author.



Figure 3.19: This view looks east into the standing water of Fort Fisher's southern ditch where a pine tree has recently been up rooted by strong winds. Flank Road is seen to the right. Photo by the author.

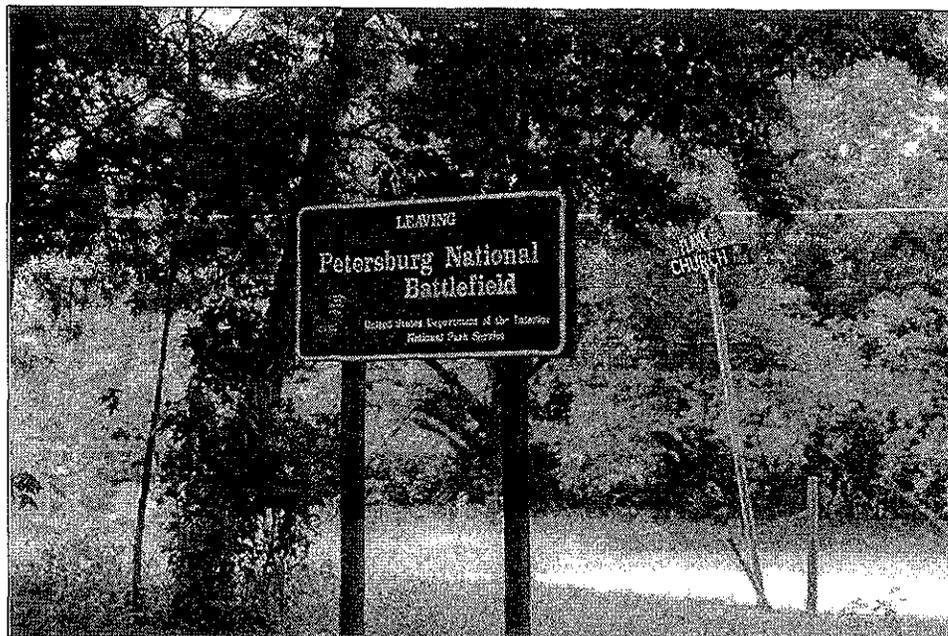


Figure 3.20: This sign is located at the western terminus of Flank Road at its intersection with Church Road. The sign is a bit misleading in that it disregards the NPS land holdings comprising, Battery #27, Fort Welch, Fort Gregg (US) and Fort Wheaton further to the west. These westernmost sites must be visited on foot. Photo by the author.

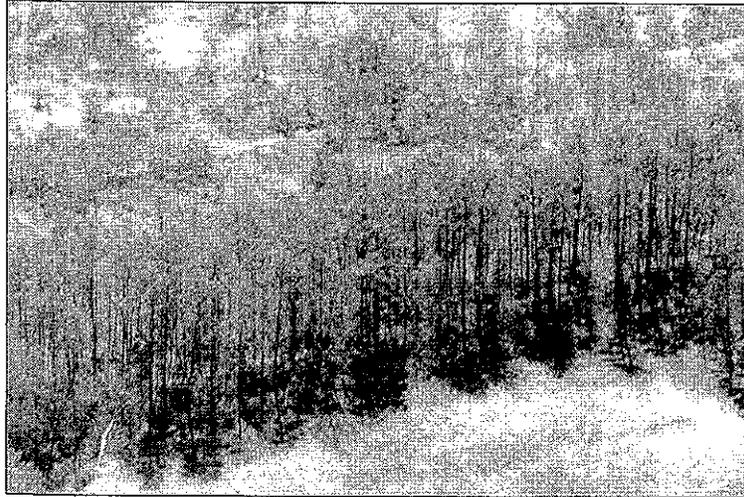
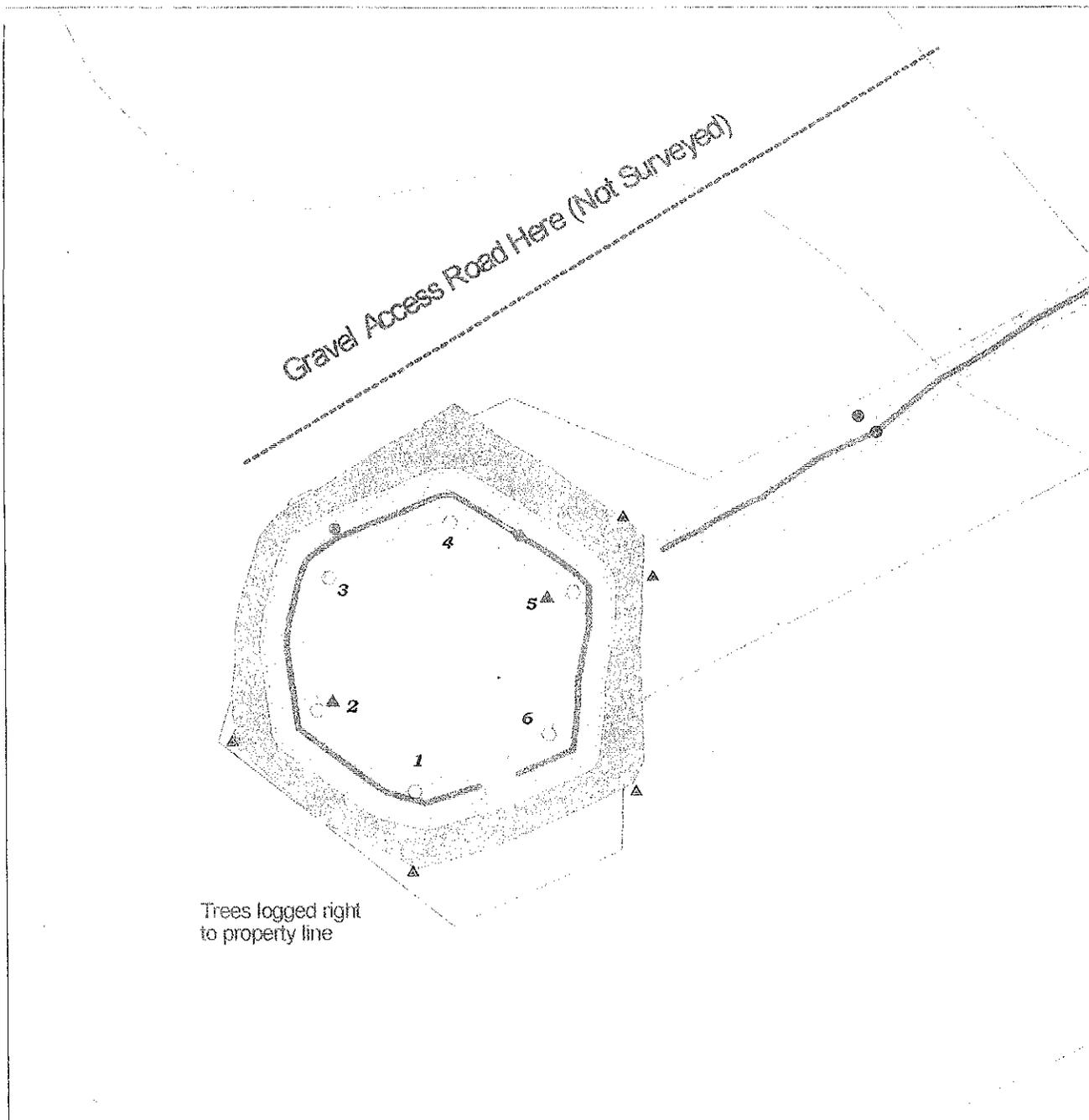


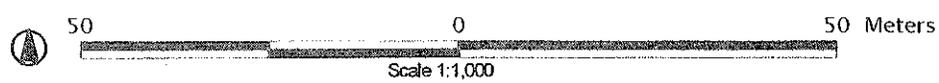
Figure 3.21: This aerial view of the Fish Hook access trail shows the thin strip of trees between cultivated and fallow farm fields, which form an arched void above the trail. Photo by the author.



Figure 3.22: This photograph shows the open fields north of the rifle pits parallel to the Fish Hook trail. These remote earthworks offer a more secluded and contemplative experience than the earthworks along Flank Road. Photo by the author.

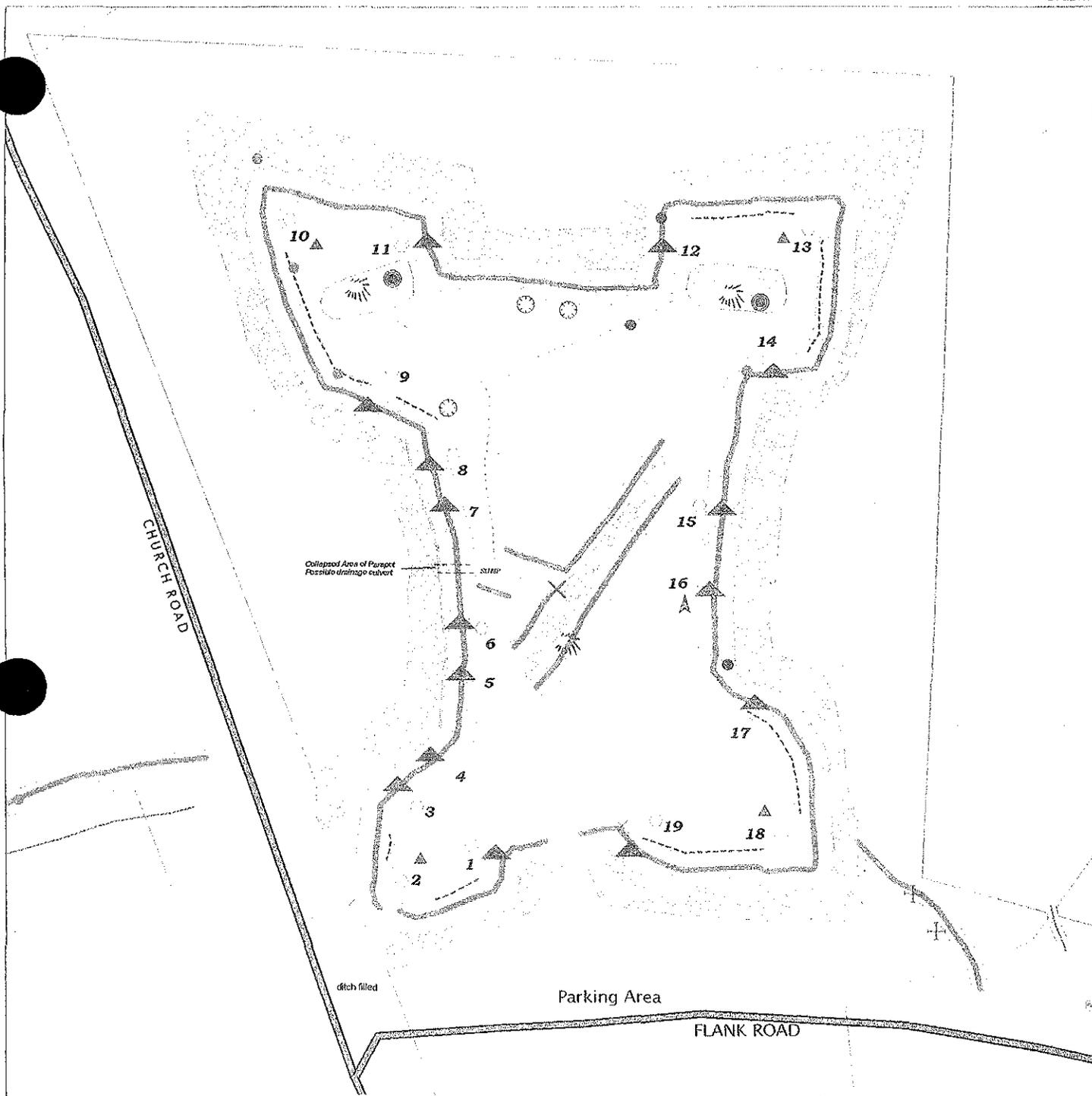


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|---------------------------|----------------------|
| X Break in Parapet | ▲ Survey Marker |
| ⊥ Balk | ● Observed Damage |
| ⊥ Traverse | ● animal burrowing |
| ▲ Magazine | ● compaction |
| ● Hump | ● erosion |
| ○ Hole | ● human digging |
| ▲ Embrasure | ▲ intrusion |
| ● Gun Platform | ● tree throw |
| ▲ Gun Ramp | |
| ▲ Firing Step (banquette) | |
| ▲ Ditch | |
| Parapet | |
| good | Parapet Buffer |
| fair | Dry Ditch |
| poor | Standing Water |
| Tree Line | Area of Fort |
| Trail | Park Boundary (USGS) |

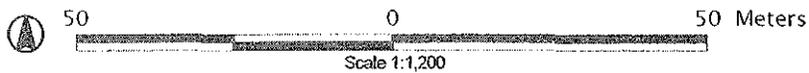


Petersburg National Battlefield FORT WHEATON April 1998

National Park Service
Cultural Resources GIS Facility, Washington DC
Cultural Landscape Report for Federal Left Flank and Fish Hook Siegeworks



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| X Break in Parapet | ▲ Survey Marker |
| ⋮ Balk | ⊙ Observed Damage |
| ⋮ Traverse | ⊙ animal burrowing |
| ⊙ Magazine | ⊙ compaction |
| ⊙ Hump | ⊙ erosion |
| ⊙ Hole | ⊙ human digging |
| ▲ Embrasure | ⋮ intrusion |
| ▲ Gun Platform | ⊙ tree throw |
| ▲ Gun Ramp | |
| ▲ Firing Step (benquette) | |
| ⋮ Ditch | |
| ⋮ Parapet | |
| ⋮ good | Parapet Buffer |
| ⋮ fair | Dry Ditch |
| ⋮ poor | Standing Water |
| ⋮ Tree Line | Area of Fort |
| ⋮ Trail | Park Boundary (USGS) |



Petersburg National Battlefield FORT FISHER April 1998

National Park Service
Cultural Resources GIS Facility, Washington DC

Cultural Landscape Report for Federal Left Flank and Fish Hook Siegeworks

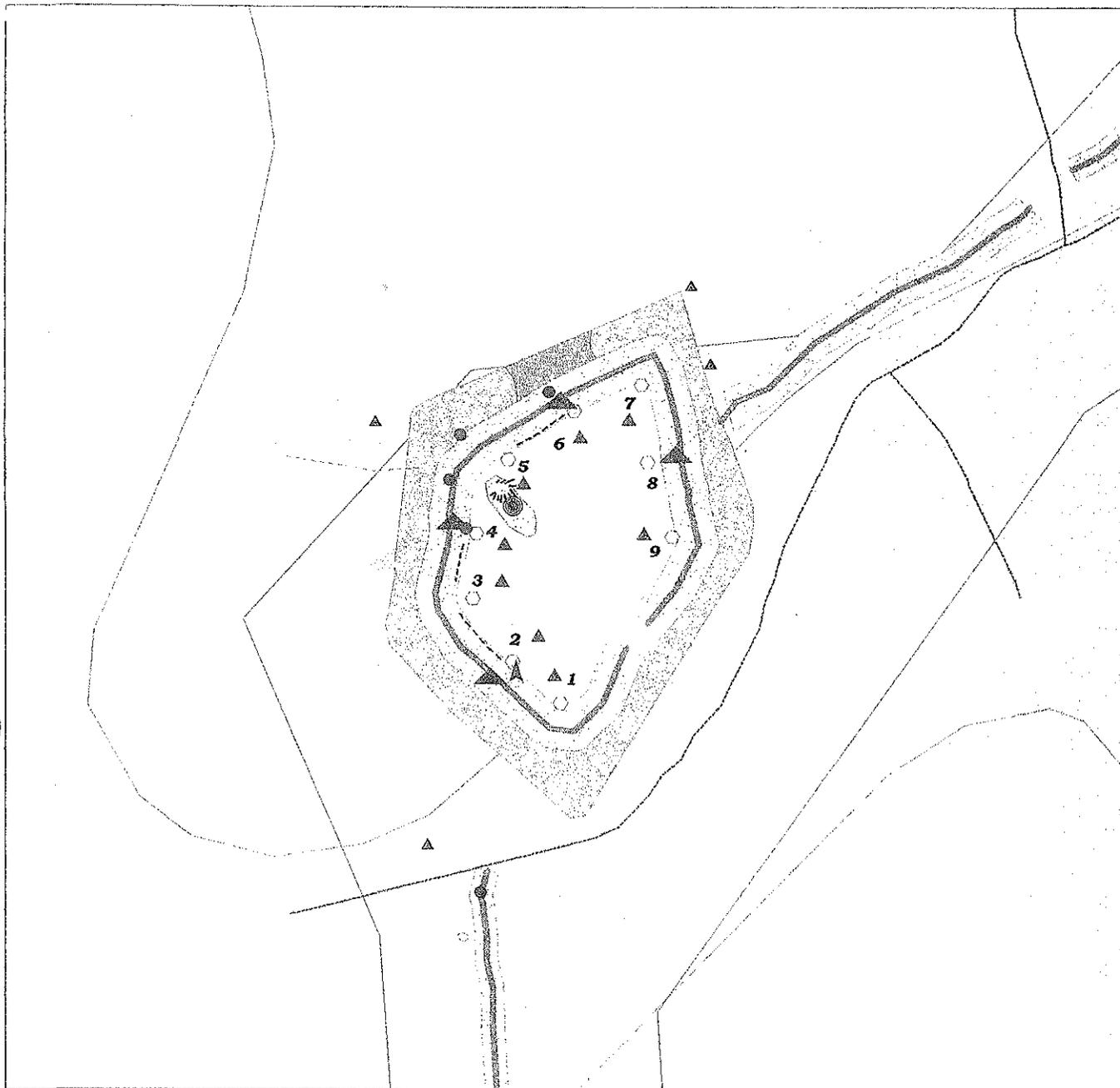


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| ⊥ Balk | ○ Observed Damage |
| ⊢ Traverse | ● animal burrowing |
| ▲ Magazine | ● compaction |
| ● Hump | ● erosion |
| ○ Hole | ● human digging |
| ▲ Embrasure | ● intrusion |
| ▲ Gun Platform | ● tree throw |
| ▲ Gun Ramp | |
| ▲ Firing Step (banquette) | |
| — Ditch | |
| Parapet | |
| ▲ good | Parapet Buffer |
| ▲ fair | ○ Dry Ditch |
| ▲ poor | ○ Standing Water |
| ▲ Tree Line | ○ Area of Fort |
| ▲ Trail | ○ Park Boundary (USGS) |

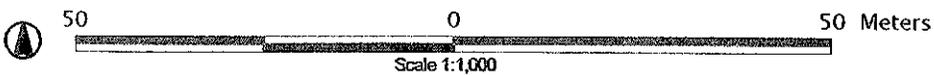


Petersburg National Battlefield SIEGE BATTERY April 1998

National Park Service
Cultural Resources GIS Facility, Washington DC

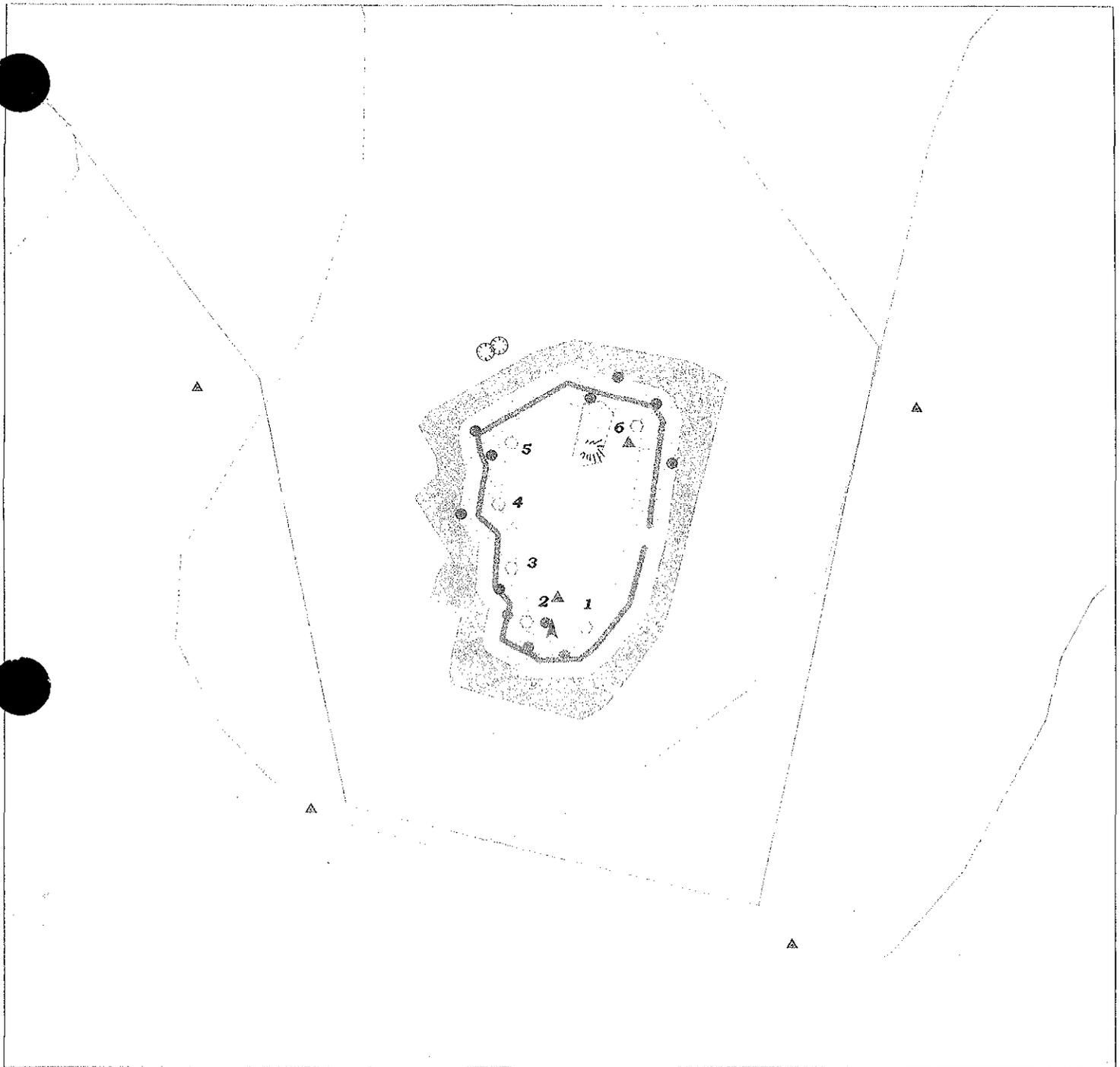


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| ✕ Break in Parapet | ▲ Survey Marker |
| ⊕ Balk | ● Observed Damage |
| ⊕ Traverse | ● animal burrowing |
| ☀ Magazine | ● compaction |
| ⊙ Hump | ● erosion |
| ⊙ Hole | ● human digging |
| ▲ Embrasure | ✕ intrusion |
| ○ Gun Platform | ● tree throw |
| ▲ Gun Ramp | |
| ⊕ Firing Step (banquette) | |
| ⊕ Ditch | |
| Parapet | |
| good | ▨ Parapet Buffer |
| fair | ▨ Dry Ditch |
| poor | ▨ Standing Water |
| Tree Line | ▨ Area of Fort |
| Trail | □ Park Boundary (USGS) |



Petersburg National Battlefield FORT WELCH April 1998

National Park Service
Cultural Resources GIS Facility, Washington DC



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|---------------------------|------------------------|
| ✕ Break in Parapet | △ Survey Marker |
| ⊥ Balk | ⊙ Observed Damage |
| ⊥ Traverse | ⊙ animal burrowing |
| ☀ Magazine | ⊙ compaction |
| ⊙ Hump | ⊙ erosion |
| ⊙ Hole | ⊙ human digging |
| △ Embrasure | ⊙ intrusion |
| △ Gun Platform | ⊙ tree throw |
| △ Gun Ramp | |
| △ Firing Step (banquette) | |
| △ Ditch | |
| △ good | |
| △ fair | |
| △ poor | |
| △ Tree Line | |
| △ Trail | |
| | △ Parapet Buffer |
| | △ Dry Ditch |
| | △ Standing Water |
| | △ Area of Fort |
| | △ Park Boundary (USGS) |



Petersburg National Battlefield FORT GREGG April 1998

National Park Service
Cultural Resources GIS Facility, Washington DC

Cultural Landscape Report for Federal Left Flank and Fish Hook Siegeworks

SIGNIFICANCE AND INTEGRITY

Significance

In justifying the original creation of Petersburg National Military Park, a 1926 House of Representatives report recognized the significance of military operations at Petersburg to the American Civil War, writing:

*"Manassas was, in the largest sense, the beginning of the [land] war; Gettysburg was the high tide of hostilities on both sides, but Petersburg was the final field where the fratricidal struggle was fought to a finish."*¹

Current National Register Status

As a result of the National Historic Preservation Act of 1966, Petersburg National Battlefield was administratively listed on the National Register of Historic Places, yet an official nomination form was never completed. Over thirty years later, this deficiency has not yet been rectified. Preparation of a National Register nomination for the park remains in draft.

The draft nomination of Petersburg National Battlefield to the National Register proposes that the park property is significant under National Register Criterion A- for its association with the American Civil War as an event in American history. Specifically, the property is significant in the area of Military History, for its association with the 1864-'65 Siege of Petersburg, the longest unbroken campaign against a single American city in the history of the United States. The park is also proposed as eligible for Register listing under Criterion A, due to its contributions to broad patterns in our history, and for its significance in the area of Conservation. As a national military park established by Congress in 1926, Petersburg National Military Park [Battlefield] was established, *"to commemorate the campaign and siege and defense of Petersburg, Virginia in 1864 and 1865."*

Properties are also eligible for National Register Status if they are associated with the lives of persons significant in our past. The Federal Left Flank and Fish Hook Siegeworks may be considered eligible for National Register Status under Criterion B- for association with individuals whose activities are significant within a local, state or national historic context. Of the many individuals associated with the Federal Left Flank, none could be more significant than Union General Meade, Commander of the Army of the Potomac, who made his headquarters at this site.

Relating to the cultural resources of the Federal Left Flank and Fish Hook Siegeworks, the draft nomination identifies the park as significant in part for the survival of, *"the extensive network of earthworks constructed during the siege."*² These surviving earthworks may be found eligible for the National Register under Criterion C, for their embodiment of distinctive characteristics of a type, period, or method of construction, or that represent the work of master craftsmanship. Under National Register Criterion C, the Federal Left Flank and Fish Hook earthen fortifications may be found significant in the area of Engineering, specifically the subfield of Military Engineering. Trench or position warfare, developed to sophistication during the final year of the American Civil War is frequently cited as a

precursor to the tactics of 1914-1918, employed during the First World War in Europe. Engineering and technology played a pivotal role in the siege 'before Petersburg' in 1864-1865. This came about due to the recent development of rifled ordnance, which rendered masonry fortifications obsolete, and General Grant's tactical use of the steam railroad to rapidly deploy soldiers and material to critical areas along the front lines. In addition, the United States Signal Corps adapted nascent electronic communication technology to warfare, with strategic use of the telegraph.

The design of the Federal Left Flank and Fish Hook siege works evolved from French precedents modified in response to emerging technology. According to military historian Jay Luvaas, the American Civil War was, "...in short, a total war, the first great war fought with the tools and weapons of the Industrial Revolution."³ Federal Left Flank and Fish Hook Siegeworks were constructed late in the war by accomplished military specialists, and survive as exemplars of military engineering. As such, these structures fulfill the requirements of National Register Criterion C, in their embodiment of distinctive characteristics and master craftsmanship.

The Federal Left Flank and Fish Hook Siegeworks may also be eligible for National Register listing under Criterion D, for their ability to yield information important to history. As ruins, these earthworks hold in their soil the fabric of warfare and military camp life, which in the future may lead to a greater understanding of the Siege of Petersburg.

Evaluating the Military Significance of the Federal Left Flank and Fish Hook Siegeworks

During 1966, one hundred years after the siege, the National Park Service sought to divest much of its landholdings in the subject area of this report to local municipalities. Ironically, this was the same year that saw passage of the National Historic Preservation Act. In an appeal against the proposed divestiture, former Chief Historian of the National Park Service, Edwin C. Bearss made the following argument on behalf of retaining the property:

"...Except for the attack of July 30 at the Crater, all Union movements aimed at compelling the Army of Northern Virginia to abandon Petersburg from June 18, 1864 were directed against the Confederate right. The loss of Flank and Defense Roads will defeat the purpose of acquiring the area of Five Forks because we will have given up vital ground in telling the story of ten months of Union effort to turn Lee's right."⁴

The significance of these earthworks located southwest of Petersburg, may be attributed to their physical embodiment of Union strategy during the siege. There is also significance in the greater landscape that these fortifications occupy- the site of the Battle of Peebles' Farm, which preceded their construction.

The Battle of Peebles' Farm

Throughout the spring of 1864, General U.S. Grant waged a costly and unsuccessful campaign aimed at taking the Confederate capital of Richmond, Virginia. Severely criticized for squandering soldier's lives, he realized the futility of his tactics and adopted a new strategy; by focusing attention on capturing Petersburg, a major railroad hub thirty miles to the south, he planned to cripple Richmond by cutting its

source of supply. By mid June, Grant's Army of the Potomac crossed the James River and massed 130,000 strong, at the eastern margins of Petersburg,. The city sat with its back to the Appomattox, River entrenched behind ten miles of earthen defenses dug two years earlier by Confederate engineers and black slaves. Confederate forces were outnumbered by almost ten to one. The ensuing Battle of Petersburg raged on for four days. Unable to break the southerner's defenses and resolve, Grant resigned his forces to a stalemate. He commented, "*I am perfectly satisfied that all has been done that could be done...Now we will rest the men and use the spade for their protection until a new vein can be struck.*"⁵ Both sides dug in deeper initiating a siege that would endure for 9 ½ months.

During the summer months Grant launched an offensive pushing southwestward- encircling Petersburg with intentions of ultimately turning the right flank of his adversary, General Robert E. Lee. Each successful move added more land to Federal control and severed another railroad leading to the city. By late September the remaining rail link was within the Union's grasp. On September 30, Union General Warren's Fifth Corps, marching under orders to capture the South Side Railroad, were met by stout Confederate opposition entrenched just west of Squirrel Level Road. Fighting began when Union troops mounted a fearless attack on Fort Archer, a Confederate redoubt situated amidst the fields of Peebles' Farm. General Warren described the scene to a New York Herald correspondent: "*a more magnificent charge was never made by any troops in any war.*"⁶ The Battle of Peebles' Farm continued for three days resulting in over 1300 Confederate casualties and more than double that for the Federals.

Although the Union effort failed to capture the South Side Railroad, the outcome of the battle resulted in extending their siegelines west for three miles, effectively tightening the noose around Petersburg. and further straining attenuated Confederate resources. On this newly-gained land Union forces constructed Forts Urmston, Conahey, Fisher, Battery 27, as well as Forts Welch and Gregg. Confederate Fort Archer was modified and renamed Union Fort Wheaton. General George Gordon Meade quickly established his sixth Corps Headquarters at the Peebles' house site, accompanied by the tallest signal tower of the siege built by Federal engineers. Within five weeks, the engineers and troops extended the U.S. Military Railroad to supply this westernmost camp with a terminal named Patrick Station. This railroad, for the first time in military history, carried troops and supplies to, from and between the front lines of battle. The railroad also brought dignitaries and statesmen to this remote region to observe fortifications which were then considered exemplars of military earthwork engineering. Included among these visitors was President Abraham Lincoln and Secretary of War, Edwin Stanton. During the final days of the siege Fort Fisher, Battery 27 and Fort Welch would become a pivotal staging ground for assembling troops in the final Union assault on Petersburg's defensive lines. On April 2, 1865 this frenzied charge, referred to as the "breakthrough", was signaled by a canon fired from Fort Fisher, the largest earthen fortification dug during the siege.

Civil War Sites Advisory Commission Assessment

According to the Civil War Sites Advisory Commission, in its *Report on the Nation's Civil War Battlefields, Technical Volume II: Battle Summaries*, there were approximately 10,500 armed conflicts occurring during the Civil war ranging from major battles to minor skirmishes. Out of these thousands, only 384 conflicts were identified by the commission's scholars as principal battles. As part of their work, the commission has classified the 384 principal battles of the Civil War into four categories based on an evaluation of their historical significance. Class A and B battlefields represent the principal strategic operations of the war. Class C and D Battlefield usually represent operations with limited tactical

objective of enforcement and occupation. As part of this effort, the commission has identified the Battle of Peebles' Farm as a Class B battlefield for its direct and decisive influence on the Petersburg-Richmond Campaign of June 1864-March 1865. This evaluation ranks the significance of the Battle of Peebles' Farm as within the top two percent of the approximate 10,500 armed conflicts of the American Civil War and within the top forty percent of the 384 principal battles.⁷

Perhaps more germane to the many of the surviving earthen fortifications, which are the focus of this cultural landscape report, the commission has ranked the final Union assault on Petersburg, or "Breakthrough" of April 2, 1865 as a Class A battlefield for its having a decisive influence on the Appomattox Campaign of March-April 1865, and for having a direct impact on the course of the war. In relative terms of historical significance, the commission's evaluation places the Union Breakthrough at Petersburg in the company of battlefields such as Gettysburg and First and Second Manassas. The earthen fortifications addressed as the subject matter of this report, specifically Fort(s) Urmston, Conahey, Fisher, Battery 27, Welch and Gregg all shared a role in support of that decisive final Union assault, and may attribute much of their individual significance to an association with this pivotal event in American history.

Integrity

It has been discussed earlier in this report that Civil War earthworks were designed and built as temporary constructions and not intended to endure beyond their initial requirements. In addition to this, the timeworn effects from natural forces coupled with debilitation from human interventions has altered the appearance of these historic structures and elevated their status to that of ruins. This understanding is essential when making an assessment of integrity. The integrity of these constructions is reinforced by their survival and their ability to recall the past.

In relating the evocative power of ruins, J.B. Jackson reminds us that : "A monument can be nothing more than a rough stone, a fragment of a ruined wall...a tree, or a cross. Its sanctity is not a matter of beauty or of use or of age; it is venerated not as a work of art or as an antique, but as an echo from the remote past suddenly become present and actual."⁸

The National Register recognizes seven aspects of integrity for historic properties. These are; *location, design, setting, materials, workmanship, feeling and association*. Aspects of integrity deemed most important for evaluation are dependent upon a property's proposed significance. If the earthen fortifications are proposed as most significant for association with a battle or campaign, then aspects of design and workmanship may be of less importance than location and setting. If the earthen fortifications are proposed as significant in the history of military engineering, as a distinctive type, period or method of construction, the retention of aspects of design and workmanship will have greater importance in evaluating integrity. In the case of the Federal Left Flank and Fish Hook Siegeworks, both scenarios seem to apply.

While evaluating integrity is largely subjective, the surviving earthen fortifications which are the subject of this study retain high integrity in five of the seven aspects, these being *location, setting, design, materials and association*. The aspect of setting is somewhat threatened by suburbanization and industrialization within several areas, yet remains high in the western region of the Fish Hook. The aspect of workmanship is somewhat compromised due to the absence of supporting structures and

features, continual erosion and successional vegetation on the earthworks structures. While perhaps diminished due to deterioration of design elements, aspects of design integrity survive in the outline and relief of earthen parapets and ditches, the working surfaces of the historic fortifications. Association ranks high given the site's connection to people and events which occurred during the siege war.

In supplement to National Register definitions of integrity, which were originally developed to assess the material authenticity of historic buildings, one can reference the work of the Civil War Site Advisory Commission, which has assessed the integrity and ranked the preservation priority of the 384 principal battlefields of the American Civil War. The commission has identified Petersburg's Breakthrough Battlefield (VA089), with which the study area of this report is associated, as a Priority I Battlefield, having critical needs for coordinated nationwide action by the year 2000. In placing the Breakthrough in this category, the commission has evaluated the integrity of the battlefield as ranging from good to fair, having moderate to high threats, with less than twenty percent of the core area protected.

The Commission regards the battlefield of Peebles' Farm (VA074), as a Priority II Battlefield, for having opportunities for comprehensive preservation. This is especially true recognizing the overlap between the Peebles' Farm and Breakthrough battlefield(s)- recalling that on Peebles' Farm, the Left Flank and Fishhook fortifications were built. The commission's evaluation of the integrity of the Peebles' Farm battlefield is "good to fair," having low threats with less than twenty percent of the core battlefield area protected. However, considering the recent development of the industrial complex to the north, joined with accelerated suburban development and a proposed highway bypass through the heart of the site, subsequent evaluations by the Commission may well identify the Peebles' Farm battlefield as among the most threatened in the nation.

Endnotes for Significance

¹ As quoted by Gray and Pape, Inc. *Draft National Register Nomination for Petersburg National Battlefield*, 75 percent submission, Section 8, p 4. 12 August 1996. Gray and Pape's citation of this quote refers to US Dept. of Interior, National Park Service, Petersburg, Virginia, "Statement for Management," (Washington, D.C.: Government Printing Office, 1995) 4.

² Gray and Pape, Inc. *Draft National Register Nomination for Petersburg National Battlefield*, 75 percent submission, 12 August 1996.

³ Luvas, Jay *The Military Legacy of the Civil War, The European Inheritance*, University Press of Kansas, Lawrence, Kansas: 1988 Luvas' book is especially interesting for a discussion of the influence of the American Civil War on a European reliance on earthen fortifications during World War

⁴ Conway, Martin *A History of Petersburg National Battlefield: 1957-1982* Washington, D. C.: History Division, National Park Service, 1983, p 21. Ltr., Bearss to Chief Historian, June 15, 1966.

⁵ McPherson, James M. Ed. *Battle Chronicles of the Civil War* Mac Millen 1989 p. 57

⁶ Trudeau, Noah Andre *The Last Citadel*, Brown and Company, Boston, 1991 p.213

⁷ Civil War Sites Advisory Commission, *Report on the Nation's Civil War Battlefields - Technical Volume II: Battle Summaries*. Prepared for the Committee on Energy and Natural Resources, United States Senate and the Committee on Natural Resources, United States House of Representatives. Washington, D. C.: National Park Service, 1998.

⁸ Jackson, J.B. *The Necessity for Ruins*: University of Massachusetts Press, Amherst, Massachusetts 1980. p.91

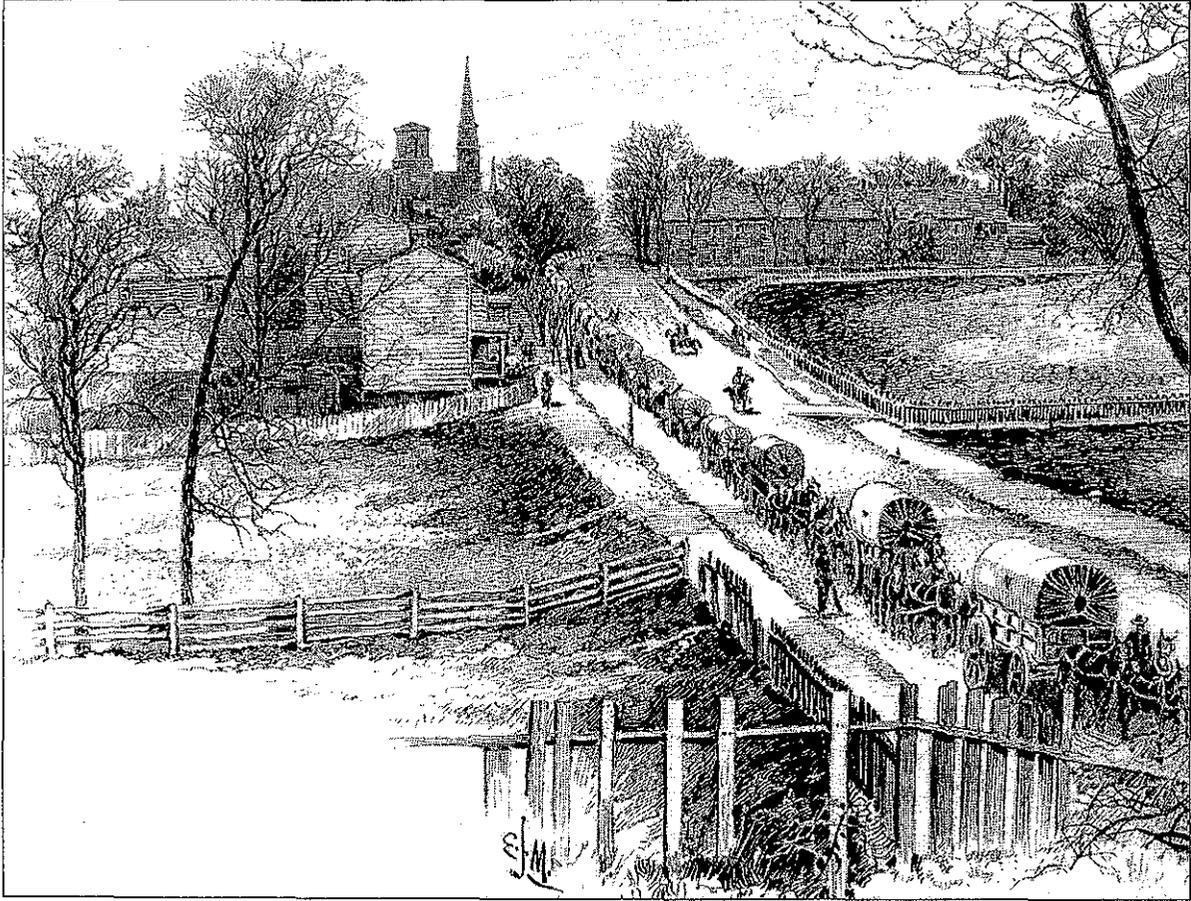


Figure 4.1: Union wagon train entering Petersburg - 2 April 1865. Edwin J. Meeker. For its role in the Union 'Breakthrough' on April 2nd, the Federal Left Flank and Fish Hook Siegeworks are closely associated with what the Civil War Sites Advisory Commission considers a 'Class A' battle, owing to the decisive influence on both the Appomattox Campaign, and to the course of the war.

TREATMENT RECOMMENDATIONS

The purpose of these recommendations

Preservation of the surviving earthen fortifications was established as a primary objective of Petersburg National Military Park in 1926 with the passage of its enabling legislation:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in order to commemorate the campaign and siege and defense of Petersburg, Virginia, in 1864 and 1865 and to preserve for historical purposes the breastworks, earthworks, walls and other defenses or shelters used by the armies therein the battle fields at Petersburg, in the State of Virginia, are hereby declared a national military park..."

Originally administered under the Department of War, Petersburg National Military Park was transferred to the National Park Service in 1933, during the first months of Franklin Roosevelt's presidency. Since the transfer, the agency went on in 1937 to develop its first formal policies regarding the treatment of historic sites and structures, responding to the passage of the Historic Sites Act of 1935. These policies embraced then current international historic preservation principles and included the remarkable qualitative statement, *"Better preserve than repair, better repair than restore, better restore than (re)construct."*² Since the 1930's NPS policies have been continually refined through passage of subsequent law and public policy. These policies are intended to provide the philosophical basis for the National Park Service's long standing traditions in the stewardship of cultural property. Since the creation of the park in 1926, there have been no changes to policy or approach that would contradict the primary goal of preserving the physical forms of the historical earthworks.

The purpose of this historic landscape preservation project is consistent with the enabling legislation and current management policies of the National Park Service, and has been included in the original project agreement which has led to the preparation of this Cultural Landscape Report;

"...protect and preserve selected Civil War earthen forts and breastworks related to the Siege of Petersburg. This will be accomplished by completing a thorough survey of the project earthworks, identifying the major threats to the resource, developing a preferred alternative for a long-term management of the earthworks system, developing a treatment plan that outlines an approach to vegetation management and visitor access and implementing the treatment plan to ensure long-term resource preservation."³

Up to this point, this Cultural Landscape Report has concerned itself with a survey of the historic development and existing conditions of the surviving "Left Flank" and "Fish Hook" siegeworks. The following section of the CLR identifies the major threats to the earthen fortifications at Petersburg National Battlefield and documents the process through which a preferred alternative has been developed for their site specific treatment. These recommendations are targeted specifically at the earthworks in the study area, and should not be made to serve as a general guide for the treatment of earthworks elsewhere.

Threats to earthworks preservation

The preservation of historic battlefields requires a broad approach which takes into account both preservation of physical remnants of military engagement, as well as less tangible aspects such as the historic character of the property. Historic character may be threatened by developments off-site, which are beyond the immediate control of park managers. This is certainly true of NPS properties lying to the southwest of Petersburg, Virginia. Here both suburban and industrial development have pressed against park boundaries, compromising the character of what has, until recently, been a stable rural setting. The resolution of these off-site issues is beyond the immediate scope of this project. The following examination of threats to the Federal Left-Flank and Fish Hook siegeworks will be focussed on those threats existing within the park boundary. The resolution of these on-site issues relating to the preservation of physical landforms offer a significant challenge to park managers.

Mass Wasting

Mass wasting is a term used by physical geologists to describe gravitational effects on landform. For example, highway widening projects often cut into roadside embankments, steepening slopes beyond the angle of repose- the angle at which soils are stable given their physical properties. Stony and sandy soils will have a naturally steeper angle of repose than soils composed of fine clays. Both the artificially steep embankments of Civil War earthworks and that of a widened highway are at risk of either slow mass-wasting processes or rapid mass-wasting events. Mass-wasting and soil erosion are natural processes which eventually soften profiles and reduce the steep slopes of earthen parapets to gentle undulations. It is a matter of time - an inevitability. Nevertheless, the intention of this project is to provide recommendations which will minimize the effects of this process.

Slow mass-wasting processes are typified by slump, earth flow and creep. Slump is the intermittent movement, or slipping, of a mass of earth or rock along a curved plane. A slump is most likely to occur after a heavy rain, on a steep slope with deep, clay-rich soils. Earth flows are more fluid, shallower, and smaller than slumps. Creep is the slowest and least noticeable, but most widespread of the slow mass-wasting processes. Creep involves an entire slope, and is characterized by very slow movement of soil or rock material over a period of several years. Slope creep is commonly cited as the reason that fenceposts, lightpoles, and trees on steep slopes often lean after a period of years. Slow mass-wasting processes occur from the relationship between soil physics and gravity - they are processes at work independent of vegetative cover.

Rapid mass-wasting is an event rather than a process. It is perceptible movement. Avalanches and landslides create rapid mass-wasting. These events are briefer in duration, more damaging and occur on relatively steep slopes. Wind-throw of large trees, figures in the equation of mass wasting on engineered earthworks. Soil disturbed and unvegetated by such an event is soon subjected to the more prosaic processes of sheet and rill type soil erosion.

Soil Erosion

Recent studies of Civil War earthworks have generated a healthy discussion pertaining to optimal vegetation for erosion control on earthworks.⁴ Current literature generally cite the superiority of forest cover for erosion control. Forest cover has indeed been found effective in preserving many Civil War

old age, topple during storm events, causing the upheaval of tons of soil- which is the primary component of the historic resource. Falling limbs and massive trunks further impact the landforms. These well-known risks are routinely considered in the design and management of engineered landforms such as high-hazard earthen dams and solid-waste landfills, where the growth of trees is discouraged.

Parallel with the preparation of this report, a consensus has been reached regarding the size of trees permitted to grow on, or within striking distance of, an earthen parapet. National Park Service discussions presently use twelve inches at breast height as a rule-of-thumb to judge trees which meet the lower threshold of risk to the historic landform.⁵ The rationale behind this understanding may be supplemented with the knowledge that canopy heights greater than thirty-three feet are of inconsequential value for erosion control as rain drops accelerate to terminal velocity within that distance.⁶ Furthermore, younger forests are also more efficient producers of biomass, leaf and litter, that comprises protective forest duff. In regarding large mature trees, benefits are outweighed by inherent risks.

Foot traffic and maintenance equipment

Foot traffic over earthworks, which is difficult to manage, poses a cumulative threat to the historic resource. The natural human desire to view one's surroundings from a prospect is satisfied by climbing onto an earthen parapet. This tendency is reinforced on sites where earthworks are overgrown in aggressive plant species. Poison ivy, cat briar and honeysuckle, create a dense cover obscuring the legibility of features and encouraging the public to bushwhack over parapets and through ditches and details. Dry soils at the top of earthen berms are typically less vegetated and present the clearest, most logical route for a walker to follow through a wooded site. Foot traffic is by no means eliminated where earthworks are managed in exposed sites under grass cover. Even in the presence of signs and personnel directing visitors to do otherwise, curiosity will tempt visitors to the top of the parapet. On a non-forested site, visitor foot traffic is supplemented by park personnel and equipment required to maintain grass cover. Physical disturbance due to maintenance activities may be minimized by mowing with specialized slope or boom mowing equipment and limiting cuts to once or twice per growing season. Allowing tall grass to grow on the parapets helps to dissipate the erosive energy in rainfall and further discourages foot traffic by making it awkward and uncomfortable.

Vandalism and Relic Hunting

Petersburg and other Civil War sites are targets of vandals and relic-hunters, who use metal detectors to illegally locate and unearth artifacts. This activity is usually done at night in remote park areas with dense vegetative cover. Assessments of the Left Flank and Fish Hook siegeworks have documented several instances of damage from relic hunters who excavate earthworks and then flee with their quarry. Relic hunting is a longstanding practice on these lands that began in 1865, when local citizens salvaged remnants of the nine-month siege in an attempt to rebuild their lives. Today, people are still drawn to these sites as to buried treasure, hoping to find as little as a shell fragment or brass button. Instead, what they are most likely to find is one or more of the thousands of metal slugs scattered over the earthworks by the NPS in the 1970's, intended to discourage the practice.⁷ Relic hunters, who work under cover of darkness are aware that their practice is illegal, yet when apprehended offer the weak excuse that, "they didn't know they were in a national park," confessing to a lesser charge that they were simply trespassing on vacant private land. Where one is looking for an alibi, a tangle of shrubs, vines, and wind-blown trees create more than a place to hide, these conditions serve as an invitation to plead ignorance, and accuse the stewards of the land with its abandonment. The negative perceptions created by neglected, historic

earthworks under woodland cover has posed an ongoing public relations and law enforcement challenge to the National Park Service.

Animal damage

Evidence of fox holes and ground hog dens are found throughout the Left Flank and Fish Hook siegeworks, and are particularly prevalent in sites with dense cover. These small mammal habitats reflect a healthy site ecology, yet unfortunately, subterranean excavations can disrupt the integrity of surviving historic landforms and features. An animal management policy should be instituted to relocate species from sensitive historic sites

Reaching Consensus on Vegetation Management

The "Choosing by Advantages" (CBA) process is used extensively by government agencies and the private sector to evaluate various interventions and projected outcomes by identifying and comparing the relative advantages of each according to a set of criteria. It has been adopted by the National Park Service as a tool for making rational decisions. A meeting held in Philadelphia on 11 June 1988 applied the CBA process to developing a vegetation management approach for Petersburg National Battlefield's Left-Flank and Fish Hook siegeworks.⁸ The process involved the establishment of six factors essential to the purpose of the park, and weighed alternatives by comparing the utility of four different vegetative treatments in fulfilling management objectives. The four vegetation alternatives identified during this exercise were:

Table 5.3: CBA Vegetative Treatment Alternatives:

Left Flank and Fish Hook Earthworks

1. No Action n/a

2. Manage forest to eliminate trees exceeding 12" DBH risk threshold

Selective removal of trees greater than 12" diameter at breast height, promoting vigorous growth of young trees and shrubs (Johnson).

3. Removal of all trees/Revegetate with grasses

Removal of all woody vegetation and hydro-seed with a non-native turf-type grass for fast and effective erosion control. Native plants to be encouraged to colonize after initial treatment.

4. Manage Individual Hazard Trees

Identify individual trees posing a hazard to the historic earthworks and prescribe action accordingly. This may involve pruning to reduce canopy size, weak limbs, or complete removal of the tree depending on evaluation (Johnson).

Recognizing the subjectivity inherent in selecting factors and assigning relative value, a multi-disciplinary group of National Park Service professionals was assigned the task. This group included both Petersburg National Battlefield management and staff as well as an interpretive specialist and natural and cultural resource professionals from NPS central offices.⁹

These factors were listed as: Preservation of the Landform, Interpretive Value, Visitor Safety, Access, Maintainability, and Effect on Other Resources. Numerical values were assigned each factor with

fortifications, as *succession* to woodland has traditionally been used as a default treatment, often justified for valid budgetary reasons. However, there are also case studies where, earthworks have been more actively managed under mixed herbaceous cover with success.

The science of predicting soil erosion helps make the case that either woodland or herbaceous cover may serve effectively in controlling erosion. In the United States, the origins of soil erosion forecasting began in 1929 when Congress funded nationwide soil erosion research. This research effort was focused on the compilation of a large database to be used in concert with the Universal Soil Loss Equation (USLE) under development by soil conservation pioneer Walter H. Wischmeier. The USLE, and its offspring, have since become the basis of a technique for numerically evaluating effects of climate, soil properties, topography, agricultural and conservation practices, and other variables that effect the rate of soil erosion, and its effects on natural resources. The USLE database is made up of the results of the empirical analysis of more than 11,000 plot-years of research data from forty-seven locations in twenty-four states. The USLE and USLE database remain the predictive tool employed by the Natural Resource Conservation Service, formerly the Soil Conservation Service. The equation for predicting soil loss due to erosion for both the USLE and R (revised) USLE is:

Table 5.1 Universal Soil Loss Equation

$$A = R \times K \times LS \times C \times P$$

Where:

- A = estimated average annual soil loss in tons/ acre caused by sheet and rill erosion.
- R = rainfall erosivity factor
- K = the soil erodibility factor.
- LS = the slope length and steepness factor.
- C = the cover and management factor.
- P = the support practice factor.

Arriving at the factors to be entered into the equation are themselves made up of a number of variables. As an exercise, equalizing all variables in the equation other than the "C" vegetative cover and management factor, will help to isolate the quantifiable benefits of one cover type versus another. Comparison of "C" factors in use by soil scientists will permit some generalizations regarding the potential for erosion in land under forest cover to land under grass cover (see appendix). The greater the numerical value of the factor directly correlates to greater risk of erosion.

Cover Type	"C" Factor Range
Forested or wooded land	.009-.0001
Grassland	.0011-.005

It can be implied based on the range of values for the USLE "C" factor that, all other factors being equal, it is possible for a vigorous stand of grasses to do an equal or better job of preventing erosion than a poor stand of trees or woody vegetation. Conversely, a weak population of grasses and forbs will underperform a stand of healthy woodland. The success of a vegetative cover recommendation for erosion control and earthwork preservation is therefore dependent upon a careful assessment of site-specific conditions.

Both grass and tree cover, if thriving and well-managed, have the potential to yield erosion predictions of less than one ton/acre/year. A common rule of thumb employed in visualizing soil loss in tons/acre/year requires one to imagine one ton of soil, spread out over an acre of ground, and realize that this thin layer would be measured in thousandths of an inch, the thickness of a piece of notebook paper. In such a stable condition, erosion may be measured in inches, over one thousand years! However, this does not preclude the fact that an earthwork might undergo deformation and change through mass-wasting as well as other biological and physical disturbances.

Where USLE "C" factors for different vegetative cover types are close in value, and where both factors in application yield soil loss predictions of less than one ton per acre per year, the usefulness of cover type as a predictor of soil loss becomes statistically insignificant. Whatever distinction there is between grass and trees for erosion control is not helpful when they both have the potential to be equivalent and valid options. Evaluating the broad choice between grass cover and woody vegetation may be better assessed against other management objectives.

Hazard Trees

Focussing on minimizing physical disturbances to historic earthworks is of greatest potential benefit for earthworks preservation at Petersburg National Battlefield. Major and minor disturbances are the agents that destabilize earthworks, subjecting exposed soil to the effects of water and wind.

Recently, discussions involving effective earthworks management have focused on the benefits of forest canopy at Petersburg, evaluating the ability of forest canopy to dissipate the erosive energy of rainfall, against the risks that large trees pose to landforms. Frequent local storm events have demonstrated that the mature forest covering the earthworks has entered into a disturbance phase of its life cycle, raising concerns that the stability of the earthworks is now threatened.

The hazards posed by the senescence of mature trees are of concern to public safety as well as the preservation of surviving earthworks. These trees, with sail-like canopies and structural defects due to

old age, topple during storm events, causing the upheaval of tons of soil- which is the primary component of the historic resource. Falling limbs and massive trunks further impact the landforms. These well-known risks are routinely considered in the design and management of engineered landforms such as high-hazard earthen dams and solid-waste landfills, where the growth of trees is discouraged.

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These factors were listed as: Preservation of the Landform, Interpretive Value, Visitor Safety, Access, Maintainability, and Effect on Other Resources. Numerical values were assigned each factor with

Preservation of the Landform serving as the "anchor" factor after being assigned the maximum 1000 point value (Table 5.5 Chart: CBA Factors and Values).

Factor	Max. Value	Rationale
Preservation of Landform	1000	Assigning a percentage of this maximum point value to a vegetative treatment serves as a relative assessment of ability to preserve the physical earthen landforms. Enabling legislation cites primary purpose of park to "preserve for historical purposes the breastworks, earthworks, walls"...etc.
Interpretive Value	900	Assigning a percentage of this maximum point value to a vegetative treatment alternative serves as an relative assessment of its ability to further a visitor's understanding of historical events, personalities or concepts. NPS Organic Act itself encourages a management approach striking a balance between the competing purposes of preservation and public "enjoyment."
Visitor Safety	600	Assigning a percentage of this maximum point value to a vegetative treatment alternative serves as an relative assessment of ability to minimize hazards to visitors caused by falling limbs, awkward footing, etc.
Access	800	Assigning a percentage of this maximum point value to a vegetative treatment serves as an relative assessment of ability to afford physical and/or visual access to the historic resources.
Maintainability/ cost effectiveness	850	Assigning a percentage of this maximum point value to a vegetative treatment alternative serves as relative assessment of potential effectiveness from a budgetary and park operations perspective.
Effect on other resources	800	Assigning a percentage of this maximum point value to a vegetative treatment alternative serves as relative assessment of effects on other natural and cultural park resources, including archaeology and endangered plant and animal species.

Summary of CBA Alternatives

Alternative 1. No Action

This alternative maintains the status quo, that of earthworks under forest cover. Erosion protection under this alternative comes from forest canopy and leaf litter. The threat of wind-thrown trees remains. This alternative was assigned inferior values for *Preservation of Landform* and for the three factors relating to public visitation. Values assigned this alternative for *Maintainability/Cost* and *Effect on Other Resources* were superior to other options.

Alternative 2. Remove trees > 12" DBH

This alternative would encourage the growth of forest understory by allowing additional sunlight to reach the forest floor. Concern with this alternative was that a large percentage of trees on site are greater than 12" DBH, and this treatment would remove most of the forest cover without providing for an immediate vegetative cover. Allowing the understory to recover would require one to two growing seasons. During this time unprotected soil would be subject to sheet and rill erosion. This treatment was assigned lower values against all factors than the *No Action* alternative.

Alternative 3. Removal of all trees, re-vegetate with grasses

Since the forest cover over earthworks in the Left Flank area of the park tend to be even-aged and generally greater than 12" DBH, this treatment would remove the threat of windthrow and at the same time provide for an immediate substitute cover of grasses. This alternative was assigned the highest values among the four choices for the factor, *Preservation of Landform* and the lowest values of the four for its potential *Effect on Other Resources*. Regarding the factors, *Interpretive Value*, *Visitor Safety*, and *Access*, (all three relating to public visitation) this alternative was assigned twice the aggregate value of the other three treatment options.

Alternative 4. Manage for Hazard Trees

This alternative requires the periodic assessment of individual trees growing on or near an earthwork by a professional forester or certified arborist. Determination of risk would be made by evaluating tree size, height, species, health, location, weight distribution and orientation, soil composition and physics, drainage, root mass, adjacent trees, etc., rather than by arbitrary measurement of diameter at breast height. Prescriptions resulting from this assessment would be flexibly employed and may involve pruning to reduce canopy size, weak limbs, or outright removal of the hazardous tree. This alternative would further permit management to reduce the size of trees over the earthworks in phases, achieving the same result as Alternative 2, without the negative impacts of a large scale intervention.

As a result, this alternative was rated generally highly, especially in terms of the factors, *Preservation of Landform* and *Effect on Other Resources*. Ratings of value for *Maintainability* were generally equivalent with Alternative 3. Values for factors related to visitation and use, such as *Interpretive Value*, *Visitor Safety*, and *Access* are below values for Alternative 3 / *Remove All Trees*, for the earthworks east of Church Road, owing to the increased density of understory and reduced visibility that this alternative would tend to promote.

Due to unique conditions found at each fortification, the four Alternatives were evaluated for each of six Factors in a fort by fort basis, resulting in a numerical score. Values were assigned through debate and discussion among the multi-disciplinary group (Table 5.5: Chart: Site Specific CBA).

Table 5.5: "Choosing By Advantages" A Site Specific Evaluation of Alternatives at Petersburg's Left-Flank and Fish Hook

ALTERNATIVES																
FACTORS	1			2				3			4					
	No Action			Remove Trees > 12" dbh				Remove All Trees			Manage Hazard Trees					
	Ur/Co	Fisher	27/W/G/Wh	Ur/Co	Fisher	27/W/G/Wh	Ur/Co	Fisher	27/W/G/Wh	Ur/Co	Fisher	27/W/G/Wh				
Preservation of Landform 1000	500	500	800	200	200	400	1000	1000	1000	700	700	1000				
Interpretive Value 900	400	500	27/Wh	W/G	500	200	27/Wh	W/G	900	900	27/Wh	W/G	450	500	27/Wh	W/G
			800	800			700	500			900	700			900	900
Visitor Safety 600	200	50	300	400	200	500	600	600	600	300	300	450				
Access 800	50	100	600	50	50	400	800	800	800	50	100	700				
Maintainability/Mgt. Cost 850	850	850	850	600	550	200	600	600	27/Wh/W	G	600	500	700			
									400	300						
Effect on Other Resources 800	800	800	800	600	600	600	200	100	100	700	700	700				
T O T A L S	2800	2800	4150	2150	1800	2700	4100	4000	3250	2800	2800	4450				

CBA Conclusions:

Application of the CBA process began with an evaluation of the four vegetation alternatives, applied according to the six factors against Fort Fisher, the largest and most prominent of the seven fortifications. This process was then duplicated for the remaining six properties in an attempt to make prescriptions as site-specific as possible. As an exercise, the CBA process pointed park management toward two alternatives for earthworks vegetation management. These were Alternatives 3 and 4; *Remove all Trees*, and *Manage Hazard Trees*, respectively. Alternative 2, *Remove Trees > 12" DBH* was recognized through the process as much too arbitrary in its assignment of risk and inadequately providing substitute vegetation for erosion control. While the work-session was designed to consider each fortification individually, the process revealed similarities and differences which allowed them to be categorized or grouped as follows:

Left Flank Earthworks	Fort(s) Urmston, Conahey and Fisher	Preferred Alternative Identified: <i>Remove All Trees</i>
Fish Hook Earthworks	Fort(s) Welch, Gregg, Wheaton and Battery 27	Preferred Alternative Identified: <i>Manage Hazard Trees</i>

Proximity to a public road serves as one of the primary contextual distinctions between these two groups of earthworks. Flank Road, constructed in 1963-1964 by the National Park Service to connect Fort Urmston, Fort Conahey and Fort Fisher, runs immediately to the south, conveniently adjacent to the earthworks. Prior to the acquisition of the Five Forks Unit, Flank Road's intersection with Church Road at Fort Fisher marked the furthest point on the park driving tour. Beyond Fort Fisher, the driving tour led the visitor north on Church Road to survey Confederate lines of defense. Union Forts Welch, Gregg, Wheaton and Battery 27, west and southwest of Church Road, were left to those visitors enthusiastic enough to leave their cars behind and invest in a twenty minute walk through the woods.

The proximity to the road was critical in evaluating the factors, *Interpretive Value*, and *Access*. For the earthworks adjacent to Flank Road, this circumstance did indeed contribute to high evaluations for the alternative *Remove All Trees*. However, as the CBA process developed, evaluation of factors with respect to remote earthworks was found roughly equivalent between the two viable treatments. This can be understood in view of the group's recognition that automobile access, while an opportunity to serve a larger public, is not necessarily superior to pedestrian access, and that interpretive value is not necessarily measured in visitor counts.

The younger composition and vigorous forest covering the remote Fish Hook fortifications, which are smaller in size than those east of Church Road, lead to higher *Preservation of Landform* evaluations for the *Manage Hazard Trees* alternative on these four sites. This evaluation was coupled with higher values for *Effect on Other Resources* accruing to this light-handed approach, resulting in the identification of *Manage Hazard Trees* as the preferred alternative for the more remote earthworks.

Proposed Refinement to CBA Alternative 3:

Since the completion of the CBA work session in June of 1998, the construction of an 800 acre industrial facility north of the Left Flank earthworks (Urmston, Conahey and Fisher) has challenged one of the assumptions informing the CBA process. A forested buffer between park property and the industrial site was delineated in the initial planning stages to screen development from view.

Regrettably, this proposed buffer was clear-cut to the boundary of Fort Conahey. The Army Corps of Engineers ordered the developer to construct a large earthen berm to shield their facility from view. Unfortunately, the industrial structure currently looms over the berm, visible from National Park Service holdings. This gigantic earthen berm has become a dominant landscape feature, visually dwarfing the Federal earthen fortifications of 134 years ago.

Pursuing the third alternative *Remove All Trees* from the *Choosing by Advantages* work-session would eliminate an existing visual barrier between NPS property and the imposing industrial site. The adjacency of the industrial plant calls into question the judiciousness of strictly applying the treatment *Remove All Trees* within the northern portion of Fort Conahey. Alternative 3, identified through the CBA process might be profitably revised for interpretive effectiveness by retaining trees on NPS lands up to the industrial site boundary, and suggesting that the industrial facility preserve any remaining trees as well. This fringe of trees would help to screen views of the berm and steel mill until tree and other vegetative cover is re-established on the berm and buffer strip.

Refining Vegetative Treatments at Petersburg National Battlefield

Barren fields marked by extensive excavations once characterized the battlefields and siegelines at Petersburg. Following the removal of the structural elements designed to hold the soil in place, endemic vegetation competed with introduced plants encroaching from agricultural fields, as the new rank and file volunteering on the compacted soils. Native species including Poverty Grass, Virginia Wild Rye, Broomsedge, and Indian Grass grew alongside non-native species such as Orchard grass, Timothy, Clover, Rye Grass and a variety of introduced Fescues.¹⁰ This diverse mix of plants commonly found during the post-war period were well adapted to the variable conditions of the disturbed landscape. In 1883, a visitor to nearby Fort Sedgwick described the existing condition of these plant communities inhabiting the earthworks:

*"...parapets were intact, but the fort had grown up in tall grass and young pines...rifle pits...were found to be splendidly preserved by the deep-rooted grass which prevented erosion better than the original wooden revetments."*¹¹

A successional forest of Oak, Hickory and mixed conifers cover the earthworks today. Component layers of decomposed leaves and needles [duff], herbaceous plants, shrubs and climbing vines, have combined to protect the earthworks from erosion. However this forest has entered into a disturbance regime and at several sites in many places the size and weakened condition of mature trees threaten the earthworks. The hazards posed by this declining woodland, combined with management's objective to present these cultural landforms to the visitor more legibly, form the basis for the decision to remove the trees and re-establish grass cover at three of the seven sites in the study area of this report.

Native and Non-Native

This findings of this report suggests that grass and woody vegetation may both serve as valid options for erosion protection on earthworks. Where grass and herbaceous plant cover is identified as fulfilling a greater number of management objectives over woody vegetation, as has been the case with three of the seven sites considered under this project, the question then logically turns to developing the prescription for which specific grasses to use. Various prescriptions have been made over the decades. New Deal "make-work" crews planted Bermuda Grass and honeysuckle during the 1930's in an effort to keep the soil on the earthworks. During this period, the Department of the Interior's *Manual of Emergency Conservation Work* generally specified the use of native plants in national parks, but made an exception for areas of lawn, military parks, and cemeteries where non-native grass seed was found acceptable.¹² Since that time, this exception has continued to serve as the normative approach for earthwork vegetation in a non-forested situation. During the 1974 National Earthworks Preservation Conference held in Petersburg, grass, generically, was identified as the superior vegetative cover from the standpoint of earthwork maintenance.¹³

This approach was revisited first in 1983 when a National Park Service sponsored report prescribed the use of "native ground cover or sod" on earthworks, making reference to a proposed treatment of Union Fort DeRussy, one of the Circle Forts surrounding Washington, D.C.¹⁴ In 1989 the promotion of native grasses for earthworks management was reinforced in a new report entitled, *Earthworks Landscape Management Manual*, prepared for the NPS by Andropogon Associates.¹⁵ This report encouraged the maintenance of taller grass cover where earthworks are not forested, and also recommended the use of native species. The recommendation of native plants followed the reasoning that indigenous species are superior for erosion control and earthwork preservation and more economical to maintain by virtue of their long period of adaptation to regional climatic and soil conditions. The use of native plants on the level surfaces of earthen fortifications, the surfaces on which visitors would be permitted to walk, was not strongly encouraged by the 1989 manual.

Guidance on earthworks management has since been further refined, this time the National Park Service collaborating with the Georgia Trust for Historic Preservation. This most recent volume, *Guide to Sustainable Earthworks Management*, builds on the recommendations in the earlier *Manual*, providing additional helpful guidance in establishing native species on earthworks.

Native grasses have been used successfully to promote biodiversity within meadows and utility rights-of-way where erosion control is not the primary issue. Yet the reports cited above, and anecdotal accounts of success where native grasses have been prescribed exclusively have not persuaded battlefield park managers to ignore their valuable first-hand experience in caring for fragile earthworks. Native grass use as erosion control cover on steeply sloped earthworks is currently being field tested and evaluated. This includes field tests of native grasses at Petersburg National Battlefield. As information is collected recommendations for using native herbaceous plants for earthwork preservation will be further refined. Several battlefield park managers have become more aware of the desirable aspects of native vegetation, yet have expressed caution regarding changing practices that have been effectively used at their parks to protect important earthworks. Until substantial research and field trials on the efficacy of native grasses for erosion control is completed, a park's successful track record in protecting its resources with proven materials and methods may serve as a compelling reason to continue current practices. The selection of an optimal seed mix prescription for the cleared earthworks at Petersburg National Battlefield will depend upon the outcome of experimental field trials performed at the park.

Convergence of Outcomes

The resource management and maintenance staff of Petersburg National Battlefield are recognized within the NPS. for their valuable experience in revegetating earthworks not under forest cover. Based on this experience, the park has drawn conclusions leading them to employ a prescription of a non-native turf type grass, known commonly as "Tall Fescue." The choice of this non-native grass variety was identified and evaluated as part of the "Choosing by Advantages" decision making exercise undertaken in June of 1998. Its use was identified as part of the "Preferred Alternative" for three of the seven fortifications under consideration and was originally recommended to the park by the Natural Resource Conservation Service. The single-stem, improved turf- type Tall Fescue, which the park has been employing to control erosion on earthworks, is listed as minimally invasive on various national lists, yet is widely planted regionally, including parcels adjacent to the study area. This is largely due to Tall Fescue's documented success in controlling erosion and providing a durable, low maintenance ground cover.

The land surrounding Petersburg, Virginia has been settled for almost four hundred years. The battlefield property is a profoundly disturbed landscape. The passage of time and depth of human intervention here constitute a fundamental difference between Petersburg National Battlefield and larger national parks where wilderness values predominate. At Petersburg, as elsewhere in the highly settled east, the co-existence of native and non-native species is a common occurrence. Given the place and circumstances, prescribing either a native plant restoration or alternately a non-native monoculture, will result in a convergence of outcomes. Following either initial scenario, a mix of non-native and native species will eventually prevail on the property unless high levels of specialized maintenance is directed at its prevention. This has been documented at Petersburg National Battlefield after the passage of five years, where earthworks initially seeded with Tall Fescue, have been colonized with a variety of native plants.¹⁶ Without periodic over-seeding and continual maintenance which ensures the success of turf-type cultivars, the park's experience has shown that populations of native grass increase proportionally over time.

Developing Vegetation Alternatives at Petersburg National Battlefield

A three-step process is suggested for developing vegetation alternatives for use on earthworks following the removal of forest cover. The process should;

1. Assess site conditions and operational considerations.
2. Establish criteria to evaluate species and select practicable options.
3. Specify vegetation alternatives that are compatible with site conditions and objectives.

Assessing site conditions:

The following site conditions need to be carefully assessed to insure that a plant species is adaptable to, and will provide cover for a specific earthwork.

Aspect: How much sunlight is available during the day? A southern-facing slope will support different plants than a northern facing slope.

Slope: Will the slope of the earthwork allow for successful establishment of plantings, will it allow for maintenance if required?

<i>Soil_type:</i>	What are the relative proportions of sand, silt and clay?
<i>Soil_horizon:</i>	Will the soil support deeply rooted plants or will shallow rooted plants be needed? Is the topsoil layer adequate to support grasses?
<i>Soil_chemistry:</i>	Is soil pH and fertility sufficient to support vigorous plant growth?
<i>Hydrology:</i>	Is the site part of a greater watershed, or wetland? Is it well drained, or poorly drained? Is it hydric, mesic, or xeric? Are their seasonal variations in site conditions?
<i>Access:</i>	Is the earthwork accessible to maintenance equipment, machinery and delivery of materials?

Considering Park Operations

After assessing site conditions, the park's operational parameters need to be considered. Recommendations should be weighed against operational factors, answering the question, "are these recommendations practical; given budgetary, regulatory, procurement and maintenance constraints?" These factors serve as a important "reality check" and include:

<i>Cost:</i>	Is the cost of seeds and plants, establishment and maintenance affordable?
<i>Pests/Disease:</i>	Are there any known plant pests or diseases in the region that will adversely impact the propagation and health of proposed vegetation?
<i>Regulatory:</i>	Are there any local, state or federal restrictions on planting certain species?
<i>Source/Quality:</i>	Are there adequate sources of seeds and plants available to establish and maintain the desired density of vegetative cover?
<i>Maintenance:</i>	Are park maintenance resources available to meet the 'time and materials' requirements of a proposed vegetative cover?

Establishing Criteria: Finding an optimum plant palate for earthworks

A thorough evaluation of existing site conditions and park operations will help inform the plant selection process and lead to determining a practicable and sustainable vegetative treatment for the earthworks at Petersburg NB. Forecasting performance against the following criteria should be considered when evaluating a species for application on earthwork sites with forest cover removed, and with forest cover significantly thinned, as well as in cleared areas with remnant specimen trees.

1. **Erosion Control:** The ability of a plant to hold soil once leaf litter produced by forest cover is removed. Stoloniferous and rhizome-forming root systems are known to work best here.. On applications where the slope is too severe for effective hydro seeding, (over 200%) specify commercial erosion control blankets (ECB) of ash-fiber matting, coco-jute liners etc. These products are compatible with plantings, biodegradable and will not compromise future archaeological procedures.

2. Maintenance: The ability to reduce or streamline site maintenance. Plants that do not require the application of fertilizers reduce maintenance cost. Plants that have an acceptable terminal growth habit do not need cutting. Plants that establish vigorous cover will gradually inhibit colonies of aggressive plants and woody growth. Plants with a seasonal cutting cycle, or bi-annual burning regime offer greater efficiency, allowing less intense management. This is particularly important on applications where steep parapet slopes demand the careful attention of maintenance crews.
3. Compatibility: The ability of a plant to co-exist as a member of a healthy, diverse community of species. This is an assessment of a plant potentially invasive characteristic with the scale of value ranging from benign (4) to invasive (1). Allelopathic species are not conducive to creating healthy and diverse plant communities.
4. Sustainability: Ability of a plant, once established, to thrive and suppress woody growth, invasives and volunteers, maintain its cover type and require minimal input of resources (water, nutrients, pH regulators, pest control, maintenance, etc.).
5. Range: The habitat of a species can vary from small ecotones, to broad regions to entire continents. This range is a valuable criteria for earthworks plant specification. Although endemic species are the optimal choice for encouraging bio-diversity on the site, other factors affect plant selection.¹⁷ In pursuit of promoting natural habitats, endemic species are accorded superior evaluations. Conversely, the introduction of exotic species may discourage complex biological relationships. The evaluation scale ranges from (4) endemic to the site, (3) endemic in similar region yet highly adaptable, (2) indigenous to the area, (1) not commonly associated with the region.
6. Deterrent: The ability of a plant to discourage people from climbing on or digging in the earthworks. In the strategic battle to keep visitors off the earthworks- the park usually loses. Plants can become a manager's ally in this conflict. A practicable application of ground cover with an intrinsic ability to repel or discourage visitors from "trooping over the works" is key in treatment recommendations. Plants with aesthetic appeal that also telegraph advance warnings of caution of uneasiness, or create doubt or mystery (what lives in there?) are optimal for this application.
7. Soil Recharge: Legumes and other nitrogen fixing plants have the ability to replenish the ground with nutrients due to a symbiotic relationship of their roots with soil. The application of these species in the plant palate may eliminate the need for chemical fertilizers, contributing to the health or 'benign' state of the site.
8. Establishment: The ability of plant to establish itself quickly and economically, protecting the soil from erosion. Plants with a vigorous growth rate score high in this category. The extent and cost of planting procedures must be considered. Self-seeding plants rate high (4) hand-planted and plugged varieties requiring labor intensive procedures score low (1).

A Practicable Taxonomy of Plant Species for Earthwork Fortifications:

The following chart (Table 5.7), was developed as a tool to assist in formulating vegetative recommendations for the Federal Left Flank and Fish Hook Siegeworks at Petersburg NB. Chart nomenclature sets parameters for plant specification on earthworks by measuring a species' conformity against eight criteria and assigning a performance value from 1 to 4 in each category. A plant which performs well in one category may perform poorly in another. Prioritizing criteria becomes the responsibility of managers, choosing from the best possible combinations of plants that score high across the field. Although OCLP and other consultants can suggest priorities and recommend plants, ultimately park managers must use their judgement based upon site conditions and park maintenance resources. This chart is offered as a helpful tool to guide managers toward making well-informed decisions. Values assigned in this chart are an assessment by the author based upon research performed for this report. Others using the chart to make a similar evaluation may arrive at different values.



Table 5.7: A Practicable Taxonomy of Plant Species for Left Flank and Fish Hook Earthworks at Petersburg N.B.

S P E C I E S	Erosion Control	Maintenance	Compatibility	Sustainability	Range	Deterrent	Soil Recharge	Establishment	TOTALS
Full Sun									
<i>Andropogon virginicus</i> Broomsedge*	3	3	3	3	4	4	3	4	27
<i>Cynodon dactylon</i> Bermuda Grass	4	3	1	4	1	1	1	3	18
<i>Eragrostis curvula</i> Weeping Love Grass	4	4	2	3	2	4	2	2	23
<i>Eragrostis spectabilis</i> Purple Lovegrass	3	3	3	3	4	3	2	3	25
<i>Eupatorium fistulosum</i> Joe Pye Weed*	2	3	4	3	3	3	4	3	24
<i>Festuca duriscula</i> Hard Fescue	4	3	2	4	2	2	1	4	24
<i>Festuca glauca</i> Blue Fescue	4	3	2	3	1	2	1	4	20
<i>Schizachyrium scoparium</i> Little Bluestem*	3	3	4	3	4	4	3	3	27
Partial shade / sun									
<i>Aristida purpurescens</i> Arrowfeather Threawn	3	3	4	3	3	3	2	3	24
<i>Agrostis gigantea</i> Redtop*	3	3	4	4	4	3	2	3	26
<i>Agrostis perennans</i> Autumn Bentgrass*	3	3	4	3	4	3	3	3	26
<i>Agrostis stolonifera</i> Creeping Bentgrass	4	3	3	3	4	3	3	3	26
<i>Chamaecrista fasciculata</i> Partridge pea *	2	4	3	3	4	3	4	3	26
<i>Festuca elatior [pratensis]</i> Tall or Meadow Fescue	4	3	2	4	2	2	1	4	22

Seed Mix Alternatives:

Following the *development* and review of preliminary recommendations which were a part of preparing this Cultural Landscape Report, park management decided to proceed with an Environmental Assessment (EA) of the proposed earthwork treatment. The EA document is currently being prepared under the coordination of the National Park Service Natural Resource Management Division - Philadelphia Support Office. The following five seed mix alternative were selected for evaluation in consultation with staff at the N.P.S. Philadelphia Systems Office. For additional information on the characteristics of individual species making up the five different mixes please see appendix.

Seed Mix Field Trials

During discussions relating to planning the Environmental Assessment of the proposed earthwork treatment, park management decided to conduct a qualitative, short-term field trial to evaluate the effectiveness of four alternative seed mixes against current practice in controlling erosion and preserving the historic earthen fortifications at Petersburg National Battlefield. Criteria for evaluating the success of the various alternatives center on an estimate of density of plant cover, expressed as a percentage of total plot area, and the rapidity with which that cover is established. Though perhaps an imperfect measure, plant density was identified to serve as the primary criteria for evaluating the five different seed mixes. For the purpose of the proposed field trial density estimates will be further documented photographically. The trial period for the evaluation was established to last for 90 days following planting, after which a preferred alternative will be selected, however the test plots are to remain in place over multiple growing seasons to evaluate longer term criteria. Planting for the field trial is forecast for spring of the year 2000. The field trial has been designed by staff at the Olmsted Center for Landscape Preservation, subject to input and critique from National Park Service regional and park staff, and an outline of its procedures appear as an appendix to this report. The superintendent and staff of Petersburg National Battlefield has been identified as bearing the responsibility for initiating and documenting the field trial. The responsibility for judging the success of the five different alternatives and choosing the preferred alternative have been determined to rest with the park superintendent.

Choice of vegetative cover to be planted as part of the earthworks treatment project are subject to the results of the field trial of the five different alternatives shown below.

Seed Mix Alternatives

All mixes are listed in pounds per acre

Mix #1

8lbs. Wild Virginia Rye,

5lbs. Little Bluestem,

3lbs. Purple top

2lbs. Side Oats Grama,

2lbs. Round Headed Bush Clover, *Lespedeza capitata* Note: Request that seed be inoculated substitute w/ Partridge pea,

1lbs. Broomsedge,

1lbs. Indian Grass,

Native Species:

Elymus virginicus

Schizachyrium scoparium

Tridens flavus

Bouteloua curtipendula

Lespedeza capitata Note: Request that seed be inoculated

Chamaecrista fasciculata (depending on availability)

Andropogon virginicus

Sorghastrum nutans

Treatment Recommendations

1lbs. Joe Pye Weed *Eupatorium fistulosum*
substitute w/ Creeping Phlox, *Phlox stolonifera* (depending on availability)

Mix #2

Native and Non-Native Species:

5lbs. Canadian Wild Rye, *Elymus canadensis*
10lbs. Hard Fescue, *Festuca duriuscula*
2lbs. Little Bluestem, *Schizachyrium scoparium*
2lbs. Purple top, *Tridens flavus*
1lbs. Side Oats Grama, *Bouteloua curtipendula*
2lbs. Round Headed Bush Clover, *Lespedeza capitata* Note: Request that seed be inoculated
substitute w/ Partridge Pea, *Chamaecrista fasciculata* (depending on availability)
1lbs. Broomsedge, *Andropogon virginicus*
1lbs. Indian Grass, *Sorghastrum nutans*
1lbs. Joe Pye Weed *Eupatorium fistulosum*
substitute w/ Creeping Phlox, *Phlox stolonifera* (depending on availability)

Mix #3

Native and Non-Native Species

5lbs. Canadian Wild Rye, *Elymus canadensis*
substitute w/ Silky Wild Rye, *Elymus villosus* (depending on availability)
10lbs. Red Fescue, *Festuca rubra*
2lbs. Little Bluestem, *Schizachyrium scoparium*
2lbs. Purple top, *Tridens flavus*
2lbs. Side Oats Grama, *Bouteloua curtipendula*
2lbs. Round Headed Bush Clover, *Lespedeza capitata*
Note: Request that seed be inoculated substitute w/
Partridge pea, *Chamaecrista fasciculata* (depending on availability)
1lbs. Broomsedge, *Andropogon virginicus*
1lbs. Indian Grass, *Sorghastrum nutans*
1lbs. Joe Pye Weed, *Eupatorium fistulosum*
substitute w/ Creeping Phlox, *Phlox stolonifera* (depending on availability.)

Mix #4

Native and Non-Native Species

5lbs. Canadian Wild Rye, *Elymus canadensis*
substitute w/ Silky Wild rye, *Elymus villosus* (depending on availability)
8lbs. Single-stem Tall Fescue, *Festuca pratensis*
5lbs. Red Fescue, *Festuca rubra*
2lbs. Little Bluestem, *Schizachyrium scoparium*
2lbs. Purple Top, *Tridens flavus*
2lbs. Side Oats Grama, *Bouteloua curtipendula*
2lbs. Round Headed Bush Clover, *Lespedeza capitata* Note: Request that seed be inoculated
substitute w/ Partridge pea, *Chamaecrista fasciculata* (depending on availability)
1lbs. Broomsedge, *Andropogon virginicus*
1lbs. Indian Grass, *Sorghastrum nutans*
1lbs. Joe Pye Weed, *Eupatorium fistulosum*

substitute with Creeping Phlox, *Phlox stolonifera* (depending on availability)

Mix #5	Non-Native Turf cultivar
30lbs. Single stem Tall Fescue	<i>Festuca elatior</i> / <i>Festuca pratensis</i>

Notes on seeds and species:

- Virginia, Canadian, and Silky Wild Rye are employed as nurse grasses. These species will germinate first and prevent erosion during the transition period from clearing to established grass cover. They are shade-tolerant and self-seeding if not mown preceding inflorescence. They will die off in 3-5 years, allowing long-lived species a necessary period of time to establish on the site
- Tall Fescue is an excellent cover on poor dry soils, commonly found on the inverted profiles of earthworks.
- Red Fescue is rhizomatous, providing erosion control and will thrive in hydric conditions often found at the base of a parapet ditch. Red Fescue also grows in shade, which is found on north-facing slopes, under sentinel trees, and in grove conditions.
- Side Oats Grama. are also included in these respective mixes to provide quick vegetation on the site. They are rhizomatous, short-lived (2-5 years); eventually they will disappear through succession.
- Bluestem is drought tolerant and has great longevity, but will not tolerate full shade.
- For hydric and lightly shaded areas in the lower sections of earthwork ditches, substitute Little Bluestem with native, Autumn Bentgrass, *Agrostis perennans*
- For hydric areas typically found in earthwork ditches, an alternative planting of Creeping Bentgrass, *Agrostis stolonifera*, may be hand broadcast and raked in, prior to hydro-seeding. Creeping Bentgrass grows well in fresh water marshes and hydric fields.
- For limited areas of partial sun to shade, substitute Little Bluestem with Red Fescue, which is shade tolerant and rhizomatous, forming an erosion controlling sod. Field trials can determine the invasive characteristic of this plant at Petersburg, before including it into final mix.
- For limited areas of shade and hydric conditions, substitute Tall Fescue with Red Fescue to insure adequate cover.
- Bush Clover, Little Bluestem, Purple Top, Red Fescue Side oats and Creeping Phlox will provide erosion control, as their rhizomes and stolons form a dense mat in the soil. This compliment of diverse species offers good cover and rooting, and is visually appealing.
- Both Bush Clover and Little Bluestem require a nurse grass prior to their establishment, they perform well in partial shade as well as full sun. Bush Clover has yellow to white flowers and provides food for birds.
- Both Creeping Phlox and Joe Pye weed have showy pink and purplish flowers that attract butterflies. The height and color they attain will provide visual interest and create a 'human scale' helpful in understanding and interpreting earthworks.
- Bush Clover and Partridge Pea are nitrogen-fixing legumes, compatible with grasses and most helpful in re-charging soil, curtailing the necessity of chemical fertilizers.

- In these mixes the long-term character of the site will be provided by the Broomsedge, Purple Top, Little Bluestem, Round-headed Bush Clover and Indian grass. These species have fibrous roots that will hold soil in place, preventing erosion.
- Due to their high seed counts, when planting native seeds, agronomists and horticulturists recommend applying 10 to 20 pounds [#s] of seed per acre. [15#s is usually considered optimal] An abundance of seed will adversely affect germination by causing greater competition among seedlings.
- Seed Counts: Bush Clover: 80,000 seeds/ # Little Bluestem: 165,000 / # Broomsedge: 500,000 / # Purple Top: 452,000 / #

Implementing Treatments: Left Flank and Fish Hook Siegeworks

Based on the "Choosing By Advantages" process outlined above, this project has identified two vegetative for the Left Flank and Fish Hook Siegeworks. The first of those alternatives would leave the earthwork forested, while managing for hazardous and risk-prone trees. The second of the alternatives would remove forest cover, and install a replacement grass cover. Careful implementation of either of these two alternatives require that a number of component steps be followed. These steps are outlined below.

1. *Managing sites for hazard trees* ("Choosing by Advantages" Alternative #4)

Four out of the seven earthworks in the study area are recommended by this report to be left wooded and managed for individual hazard trees. These earthworks includes Fort Wheaton, Battery 27, Fort Welch and Fort Gregg. Task involved in implementing this treatment include:

- Clean all trees of dead and diseases branches and clean all trunks of lower snag branches and limb up remaining trees to eight feet on fort interior to facilitate safe visitor circulation.
- Remove all deadfall from areas near proposed trails. Other deadfall may be left to decompose as nutrients to regenerate the forest floor.
- After evaluation by a qualified arborist, trees identified as presenting an unacceptable risk to historical features and visitors shall be clearly marked. Depending on the advice of the arborist, the tree may be pruned to lighten the canopy, to remove dead limbs, or be removed altogether. Special care is to be taken when felling trees in the vicinity of historical features or healthy trees. Minimum impact techniques should be employed, just as one would use when taking a tree down in the vicinity of a valuable building. Boles of trees should be felled onto collected brush to cushion impact. Avoid skidding trees over duff and creating gullies into topsoil. Stumps are to be flush cut with surrounding grade.
- Identify standing snags which pose no threat to cultural resources or visitors and retain to encourage wildlife habitat. Taller more dangerous snags may be topped to reduce height to retain as a wildlife den tree.
- Carefully cover tree roots with bark and wood chips, mulch and soil in proximity to foot trails, to avoid trip hazards and protect trees.

2. Clearing the site for planting of tall grass cover *(Choosing by Advantages Alternative #3)*

Three fortifications at the Left Flank, consisting of Forts Urmston, Conahey and Fisher are recommended by this report for clearing and replacement cover in tall grass. Component tasks involved in this treatment include:

- In early spring as plants leaf out, all overgrown areas of the fortification should be treated with a application of an approved broadleaf herbicide, as per label instructions.
- All saplings and shrub layer vegetation should be cut to ground level and removed from site. Smaller plants should be cut with a mulching lawn mower or a tractor mounted boom mower that will not damage the earthwork.
- Soil samples should be taken from various locations on the site and subjected to laboratory analysis to determine existing nutrient and pH levels.
- All trees to be removed from peneplain, parapets ditches and fields of fire within striking distance of features, except those listed in Figure 5.13. Special care is to be taken when felling trees in the vicinity of historical features. Minimum impact techniques should be employed. Contracted tree crews should be closely supervised by NPS resource protection staff at all times.
- Trees proposed to remain on site are identified as "Extant" in Figure 5.13 Extant Tree Schedule, and should be clearly marked at base of trunk and breast height, and protected with temporary construction fencing to drip line.
- Deciduous stumps to be cut flush with grade and treated with a application of an approved herbicide according to label directions within eight hours of cutting to discourage suckering. A second application may be necessary.
- Grind all Conifer stumps to 6" below grade and cover with topsoil.
- Immediately prior to seeding, carefully rake all leaf litter, duff and undecomposed organic matter from parapets, ditches and interior ground of fort. Special attention must be given so as not to disturb the valuable layer of top soil that lies beneath. This layer is essential in establishing a healthy grass cover.
- Aerate soil with a spike type aerifier. Do not disturb soil more than 2" in depth.
- Amend soil serving as the seed bed with limestone and fertilizer based on laboratory analysis.
- Hydro-seed areas of parapets, ditch, bombproofs, magazines and traverses before seeding the flat interior and approaches to fort. Carefully follow hydro-seeding procedures outlined supplementary recommendations.
- Due to the delicacy and small size of many native seeds, care must be taken during application with a hydro-seeder. Specialists in the native seed industry generally recommend a first application of native seeds through a hydro-seeder in water alone, followed with an immediate, application of cellulose mulch and fertilizer.¹⁸ This technique insures adequate contact between seed and soil, creates a protective layer of mulch and eliminates the risk of fragile seeds being trapped in the mulch layer where they may perish through exposure and lack of moisture. When a mix of native and non-native seed is specified; following the initial 'native sequence', a second application will include non-native seed, cellulose mulch and fertilizer.
- The application of Aspen-fiber, erosion control blankets is highly recommended for installation on all earthworks with greater than a 1:1 slope (45 degrees). This application will insure against erosion and

washing of seed before grasses can establish a effective cover. Erosion control blankets are typically made from biodegradable fibers, covered with photo-degradable polypropylene netting. Proper application as per manufacturers instructions will not threaten the integrity of earthworks.

Supplementary Recommendations

In addition to the two fundamental recommendations outlined above, supplementary recommendations have been tailored to meet the specific needs of the Left Flank and Fish Hook Siegeworks at Petersburg NB. The additional recommendations listed below also refer to schematic drawings which accompany this report, see Figure(s) 5.7 - 5.14.

Preserving specimen trees

On several sites, healthy existing trees are proposed to remain on site to create a grove, enhance interpretation, or reference specific terrain. National Park Service personnel should be present and responsibly administer all logging operations, and devote careful attention to trees marked for preservation. In the design proposal for Fort Fisher, specimen trees which mark the four bastions are referred to as "Sentinel Trees." Selected trees proposed to remain on the northwestern park boundary between Fort Conahey and the industrial site will help to screen views of the neighboring facility (Refer to Figure 5.13: Extant tree schedule).

A qualified arborist shall check the age and condition of trees. Only trees with a healthy crown and root structure and a maximum caliper of 12" to 16" are to be selected. Trees with noticeable disease, crotch failure, leaning or weak habit should not be utilized. Pine species should not be utilized as they are more susceptible to blow down. Sentinel and grove trees should be identified with non-permanent paint and/or surveyor's tape at the base of their trunk and at breast height. Temporary tree fencing should also be set at the drip line to protect root systems and trunks from equipment and machinery.

Managing Sites with Tree and Grass cover for Interpretive Value:

Two relatively small areas of the Federal Left Flank are proposed within the recommendations of this report to be managed as open groves for interpretive value and informal circulation. These are; the narrow strip of land west of Fort Fisher to the boundary of Church Road, and the densely wooded area east of Fort Urnston extending east to the shoulder of Squirrel Level Road.

After hazardous trees have been removed from these areas, selectively thin and prune remaining canopy trees and understory vegetation. Larger trees should have their lower branches 'limbed up' to sixteen feet above ground level. Saplings and underbrush, including aggressive vines and briars, should be removed to create the effect of a grove and to facilitate views of the earthworks from Squirrel Level, Flank and Church Roads. Management of these areas should also place a high value on the retention of native hardwoods, existing dogwood and holly, and the removal of invasive species such as *Ailanthus altissima*. In areas lacking sufficient leaf litter, shade-tolerant grass should be planted according to this report's seed mix recommendations.

Planting Proposed Trees and Shrubs:

The schematic designs for several fortifications of the Left Flank and Fish Hook specify the planting of additional trees and shrubs. Procedures for a low impact planting method are detailed in Figure 5.11: Minimum Intervention Planting Detail. This method minimizes ground disturbance by adding soil at or above grade. Aerate compacted soil below grade to facilitate root establishment. Raised planting beds are constructed with a gravel sub-surface to facilitate drainage. Geotextile filter fabrics are specified for weed control. Also recommended is the application of a 4" to 6" layer of shredded bark mulch over newly planted areas to the edge of drip lines, or the edge of planting beds to facilitate the retention of moisture and protect plant roots from maintenance equipment.

Salvaging site resources:

The second growth woodlands of Forts Urmston, Conahy and Fisher may provide many of the materials specified in proposed design interventions. During clearing operations attention should be given towards salvaging, storing and recycling site resources. Several large caliper trees survive as products of a transformed landscape wrought by civil war. They should be revered for their 134 year tenure on site. Harvesting these resources should be approached with a sensitivity consistent with practices during the period of significance; where trees felled by soldiers were used first for fortifications, then for structures and dwellings and finally, for fuel.

Mature trees, proposed for use as components of site constructions can be identified by non-permanent paint and tape markings at base and at breast height. After being inventoried by age and location, they should be transported to a holding area within the park, then utilized in the construction of proposed site furnishings such as benches, bridges, seats and railings- all components used and touched daily by visitors. Refer to: Figure 5.14: Tree Recycling Schedule. In this way, the forest will once again provide for site amenities. Proposed structures may be identified by the trees that provided the materials. For example: *"This entrance bridge to Fort Fisher is built of logs cut from a red oak that stood on the north-west bastion of this fort for 134 years."* Enabling Civil War enthusiasts and park benefactors to 'sponsor' construction of a bridge or other built project, will give the community a permanent affiliation with the park. Such investment programs may help expense the project and ensure a public pride of place much like the 'donation of lands' program instituted at Petersburg during the early 1930's.

Wood chips and shredded bark mulch, a by-product of logging and clearing, can be made on site, stockpiled and used as protective ground cover for proposed tree and shrub plantings. Leaf litter [duff] which is to be carefully removed from parapets, peneplain, ditches and fields of fire, should be retained in a designated composting area of the park for future use in soil amendments.

Maintenance

After treatment, maintenance is an often forgotten aspect of landscape stewardship, yet one critical to the long-term success of a project. In Virginia, grassland is a transient stage of a progression from bare ground to hardwood forest. Where management objectives require that a parcel of land be held in such a transitory state, diligent maintenance is required.

For weed control in the establishment year of planting, the earthwork sites at Petersburg should be mowed twice to a height of six inches as many grasses store their energy for re-growth in the four inches

of growth just above the soil. Mowing should cut the first growth of the season and then again in the fall. In subsequent years, the site should be mowed only once in March or April, depending upon weather conditions, to prevent growth of successional woody vegetation.

Monitoring and selective pruning of woody growth and invasive species should be conducted periodically. Registered-use, broadleaf herbicides should be applied according to principles of Integrated Pest Management to control nuisance plants such as poison ivy and honeysuckle. Based on regular monitoring, soil areas where grass cover is poorly established should be re-tested for fertility and pH, appropriate amendments made, and promptly over-seeded with an approved seed mix.

Schematic Designs for the Left Flank and Fish Hook Siegeworks

All Sections, Plans, Elevations and Construction Details designed and drawn for the Left Flank and Fish Hook Siegeworks are Schematic Design Proposals, and not intended for immediate construction. Due to the lack of recent survey data and the generally overgrown and inaccessible conditions at these sites; topography, contours, tree sizes and locations, and positions of site amenities are approximate and not drawn to exacting dimensions and scale. It is advised that preceding construction of any site amenities, all measurements, dimensions, elevations, grades and footprints should be verified in the field by qualified park service personnel to insure the protection of sensitive and irreplaceable site resources.

Figure 5.1	Proposed Site Plan of Fort Urmston and Fort Conahey
Figure 5.2	Proposed Site Plan of Fort Fisher
Figure 5.3	Proposed Site Plan of Fort Welch and Fort Gregg
Figure 5.4	Proposed Site Plan of Fort Wheaton and Battery 27
Figure 5.5	Elevation of Parapet Overlook
Figure 5.6	Section of Parapet Overlook
Figure 5.7	Section/Elevation of Sally port Bridge and Access Ramp
Figure 5.8	Section/Elevation of Sally Port Bridge Typical
Figure 5.9	Section through Grove, Fort Fisher Typ.
Figure 5.10	Sections/Details: Raised Wooden Walkway, and Above Grade Stone Dust Trail
Figure 5.11	Sections/Details: Wooden Gun Platform w/Ramp, Min. Intervention Planting, Log Bench, Rustic Sign, Rustic Fence
Figure 5.12	Construction and Joinery Details:
Figure 5.13	Extant Tree Schedule
Figure 5.14	Tree Re-cycling Schedule

Left Flank Siegeworks: Forts Urmston, Conahey, Fisher and Wheaton

Fort Urmston

Fort Urmston, is situated on the northwest corner of the Squirrel Level-Flank Road intersection, marking the eastern edge of the Federal Left Flank. Strategically positioned, it once guarded Squirrel Level Road and its construction in 1864 began the westward extension of Union lines immediately following the Battle of Peebles' Farm. Fort Urmston's southern parapets were removed in the early 1930's. Later in 1964, its footprint was exposed to the shoulder of newly-completed Flank Road. The following treatment recommendations will help Fort Urmston to once again serve as a sentry post signaling visitor arrival at the Left Flank region of the park (Figure 5.1: Proposed Site Plan of Fort Urmston).

Vegetative Treatment

Fort Urmston is currently overgrown, and in degraded condition. To a visitor either driving or walking on adjacent Flank Road, Urmston's earthworks are obscure. When passing on nearby Squirrel Level Road the fort is completely invisible. To encourage visitor interest, facilitate a better understanding of Fort Urmston's profile setting and location and to increase opportunities for interpretation, existing vegetation on earthworks, peneplain and adjacent fields of fire within the park boundary should be cleared and planted in tall grasses, as per CBA alternative #3 using the seed mix judged most successful in park field trials. Tall grass cover will accentuate the height of the parapet and help to deter visitors from climbing these escarpments. Large caliper, hazard trees on fields of fire within range of ditches and parapets should be cleared from the site. Selected hardwood and pine species should be salvaged for use as components in the construction of site amenities (Figure 5.14: Tree Recycling Schedule). The parkland to the east of Fort Urmston, extending to the shoulder of Squirrel Level Road, is vegetated with mixed-species canopy trees, and a dense understory and shrub layer which is physically and visually impenetrable. Clearing the shrub layer, and aggressive vines in this very public area, followed by a selective thinning of the understory, including the pruning and removal of unhealthy trees, will further enhance recognition and appreciation of Fort Urmston from the road. In this area as well as on fields of fire, special consideration should be given to encourage the growth of existing native species of Dogwood, Black Cherry, Sassafras, and Holly. The resultant grove between the fort and Squirrel Level Road should be planted in shade-tolerant grasses and canopy trees should be limbed up to sixteen feet. This treatment will provide views and help define this strategic site from within the fort as well as from both Squirrel Level and Flank Roads.

To assist the understanding of Fort Urmston's original boundary and configuration, its southern parapets and sally port, which have been destroyed, are proposed to be redefined by a simple planting scheme. A row of Dwarf Southern Waxmyrtle, *Myrica cerifera* var. *pumila*, planted on axis with a dashed indicator line painted across Flank road, connects with a row of similar plants on the southern side of the road within N.P.S. property lines. The perimeter of this planted arrangement marks the fort's original footprint. Dwarf Waxmyrtle is also planted along the edge of Flank Road. A break in the planting will allow access through a portal, on the approximate location of the original sally port. Planting two full size Southern Wax Myrtle pruned to a height of five feet will achieve the effect of compression experienced during entrance though the historic sally port. Dwarf Waxmyrtle may be expected to grow to a height of thirty to forty-eight inches. After two to three seasons, plant rows should be trimmed annually to

encourage the informal shape of a naturalesque hedge. This evergreen edge will not obstruct views into and out of the fort yet will serve to discourage intrusions, ushering visitors toward the sally port. All shrubs are to be planted as outlined previously in "Supplementary Recommendations," in this chapter (Figure 5.11: Minimum Intervention Planting Detail).

Circulation

With excessive vegetation cleared and the proposed planting scheme in place, visitors will be able to see the fort and its entrance from a distance at the parking turnout. An interpretive sign set just east of the entrance defines a small reception area. Once through the sally port and inside the fort, a circular trail of compacted stone dust directs circulation on the fort's penneplain. The trail widens into interpretive niches set across from surviving features. Raised wooden gun ramps and platforms which adapt to the configuration of existing features allow visitors to engage the parapet and view both the penneplain and fields of fire. From these vantage points, an understanding of relationships to Squirrel Level Road and "Old Rebel Work" can be appreciated. Sections of a rustic tripod and sapling fence form a barrier where necessary, to protect accessible landforms and surviving features from visitor foot traffic. This simple circulation pattern assists visitors in understanding Fort Urmston's small scale, and mitigates visitor contact with features, perimeter earthworks and adjacent terrain. All grades approaching and within the fort are intended to be compatible with regulations concerning universal accessibility. The adjacent grove between the fort and Squirrel Level Road may encourage visitors to meander under shade while viewing the exterior of the fort and may result in an informal network of benign social trails in this exterior area.

Interpretation

Interpretive sign posts positioned at the entrance and trail waysides are proposed to discuss the details, history and significance of Fort Urmston. Since the fort's original purpose was to guard the Squirrel Level Road and extend the Left Flank, the newly established connection and view of both Squirrel Level and Flank Roads will strengthen this appreciation. At the entrance, interpretive waysides should focus upon strategic location, construction and Fort Urmston's relative position in the Federal expansion of siegeworks following the Battle of Peebles Farm and the skirmish at Chappell's Farm. A brief discussion of St. John's Catholic Church, schoolhouse and the construction of Flank Road might also be included. Marking Flank Road with an outline of paint will represent parapets destroyed in the early 1930's and define the original 'trace' of the fort. Interpretive waysides inside the fort should focus upon surviving details and features, relevant defensive and firing positions, and make reference to important adjacencies, such as "Old Rebel Work," the defense of Squirrel Level Road, and Fort Urmston's interdependence with Fort Conahey. The intent of interpretation here should not only explain inherent values of Fort Urmston but discuss the concept of linked fortifications, creating an expectation in the visitor of other forts and experiences to be discovered further west along the Left Flank and Fish Hook siegeworks.

Signage

Fort Urmston comprises the eastern portal of the Federal Left Flank section of the park. The existing N.P.S. sign at the northwest corner of the Flank and Squirrel Level Road intersection should be amended to read, "Entering Petersburg National Battlefield, Left Flank Siegeworks." Directly across the street, on the southern shoulder of Flank Road a similar sign should read, "Leaving Petersburg National Battlefield, Left Flank Siegeworks." To announce the site from Squirrel Level Road, two standard N.P.S. signs identifying the site by directional arrows should be erected. One to serve the northbound lane, positioned

on the east shoulder, fifty feet south of the Flank Road intersection. The other to mark arrival to the southbound lane positioned on the west shoulder fifty feet north of the intersection. A small sign at the parking turnout southwest of the fort should designate parking, pavement should be marked for priority handicapped parking and access. A proposed interpretive sign set east of the sally port entrance will communicate arrival to the fort.

Site Constructions

A rustic interpretive sign is proposed to be located six feet to the east of the sally port entrance. A six foot wide trail of compacted stone dust, built above grade leads into and around the peneplain. The trail is designed with a slight crown and graded shoulder to accommodate drainage and unimpeded movement of park maintenance equipment on site. Rustic, tripod-sapling fences are situated at sensitive areas throughout the fort between the path and surviving features. In two places along the interior path, raised wooden gun ramp covers are proposed to protect the actual historic earthen features below. These constructions conform approximately to the shape of existing features and are set slightly above grade on cross ties. Opposite each gun ramp, an interpretive signpost is set into a widened area of the trail to allow unobstructed circulation (Figure(s) 5.11 -5.12).

Fort Conahey

Fort Conahey is situated amidst a forested tract west of Fort Urmston and adjacent to Flank Road. This bi-level, casemated earthwork, originally a proud and unique example of military engineering on the Federal Left Flank, has suffered continual collapse, degradation and erosion since it was abandoned in 1865. The fort is currently in a degraded condition and covered in dense growth. It is wedged beneath the oversized berm of an industrial complex to the north and the Flank Road right-of-way to the south. Despite its contemporary neighbors, Fort Conahey offers great potential for interpretation and presents a valuable experience for the visitor to the Left Flank (Figure 5.1: Site plan Fort Conahey).

Vegetative Treatment

Consistent with its historical significance, enclosure is key to the experience at Fort Conahey. Historically, on the lower level, the design allowed occupants framed views of the terrain through casemates designed for artillery. Exposed upper level platforms set artillery behind a parapet, firing both *en barbette* and through embrasures. Views of opposing terrain were limited to these breaks in the parapet. Circulation on the interior ground, upper deck and along the main traverse was protected from enemy sniper fire. The traverse which once bisected the fort, was originally built as a heavy timber palisade with an elevated catwalk. A proposed planting of Southern Wax Myrtle, *Myrica cerifera* is intended to divide the fort in a similar fashion. When allowed to reach a height of eight feet and pruned into a hedge, this planted form will replicate the experience of a log palisade.

To enable a better understanding of Fort Conahey, its earthworks and peneplain should be cleared and planted in tall grasses. Fields of fire to the northwest, and east should be cleared for a fifty foot buffer and planted in tall grasses as well. Treatment of these areas should adopt specifications in Treatment Alternative #2 (CBA Alternative #3) followed by planting in tall grass using a seed mix alternative found most successful in park field trials. Fields of fire to the north should be managed for hazard trees and where bare areas of ground are encountered, planted in tall grasses using the seed mix alternative judged most successful in park field trials. This will aid in screening views of the large berm and upper structure

of the steel recycling facility situated immediately to the north. Since the N.P.S. boundary lies at the northern edge of Fort Conahey's ditch, permission to initiate these treatments, as well as the proposed plantings of Eastern Red Cedar on the crest and base of the berm, must be secured from the owner of the neighboring industrial property. Currently this berm, originally planted in annual rye grass which has not survived the summer drought of 1999, is in degraded condition. From inside Fort Conahey its barren, windswept profile dominates the northern viewshed; its exposed southern aspect is devoid of topsoil-etched with rills, ruts and deep gullies of exposed aggregates and fill. It is essential to the experience at Fort Conahey that this berm, required as a pre-condition to the adjacent industrial development, be managed to serve its intended purpose as a buffer. In its current state, the berm threatens park resources and creates an eyesore for park visitors. To remedy this situation, this non-historic landform should be replenished with topsoil, covered with erosion control blankets and planted in tall grasses consistent with those prescribed for Fort Conahey. Proposed trees should be planted on the slope of the berm in planting pits and covered with mulch to the drip line. Annual monitoring and maintenance should be required until a permanent and healthy plant community is established on this non-historic landform.

To the south, on Fort Conahey's exposure to Flank Road, clearing of all vegetation and planting of tall grasses is recommended between the outer ditch perimeter and the road shoulder. These grasses should be maintained as turf to feature the relief of Conahey's earthworks, allow visitors to assemble at the entrance and create a well-kept, welcoming appearance from the roadside and parking turnout.

Circulation

The proposed treatment for Fort Urmston provides for a six-foot wide stone dust path, originating at the parking turnout to the east, leading via an existing land bridge through the historic sally port. The trail leads into the fort following the edge of a waxmyrtle hedge to the west. A spur trail breaks off to the east leading visitors through tall grass to an interpretive wayside placed between two gun platforms on the eastern parapet. As the primary trail continues north twenty-five feet beyond the spur, a break in the myrtle hedge turns the trail into the western section of Fort Conahey's interior. Since the fort is currently impacted by unfortunate views of its northern industrial neighbor, it is best at this point to direct visitor attention away from these non-historic features. Beyond the waxmyrtle threshold the trail splits to form an elongated loop which ushers visitors to an interpretive niche at the westernmost exposure in the direction of neighboring Fort Fisher. Circulation on the peneplain will benefit from tall grass cover bordering the trail, intended to encourage visitors to stay on the prescribed course and refrain from climbing onto significant earthen features.

Interpretation

The dentate face of Fort Conahey was designed by engineers to dovetail with bastions of Fort Fisher, creating a field of impenetrable enfiladed fire. Although this connection is no longer easily understood due to the forested tract grown up between and in front of these forts, it is essential in realizing the inherent value of Fort Conahey. The proposed interpretive sign at the fort's western exposure should discuss this link to neighboring Fort Fisher and the intentions of slashing fields of fire as well. Central to understanding the present degraded condition of Conahey's earthen forms is the story of its disintegration following the war. This explanation, along with sketches and photos of its original prominence, will serve the visitor well if displayed within interpretive signage at the entrance. A third interpretive sign placed at the end of the eastern spur trail will explain existing features, discuss artillery batteries and the relationship to neighboring Fort Urmston to the east.

Site constructions:

Construction of site amenities proposed at Fort Conahey are minimal due its current condition and location. The above-grade stone dust trail allows visitor access to the interior while a continuous, rustic tripod-sapling fence is situated throughout the fort at the base of surviving features. This fence, which is designed to minimize below grade disturbance, continues through the sally port and fronts the outer ditch of the southern exposure. When seen from the Flank Road, it creates a psychological barrier, framing the perimeter of the earthwork at the edge of the grass apron (Figure 5.11).

Fort Fisher

Prominently situated at the corner of Flank and Church Roads, Fort Fisher is the largest earthen Federal fort constructed during the Petersburg siege, receiving steady visitation throughout the year from visitors who venture into the Left Flank area of the park. Historically, this 4.3 acre earthen fortification guarding Church Road was the stronghold of the Federal left, and as the staging area for the Union 6th Corps advance is directly related to the final assault on Petersburg's defensive lines. Fort Fisher has the potential to provide an exceptional visitor experience. Its extensive acreage allows for an unencumbered arrangement of interpretive waysides, trails and observation platforms. Its surviving features are in excellent condition offering a vivid and broad representation of military engineering of the period. Treatments prescribed for Fort Fisher are consistent with results of the CBA Guidelines for Left Flank and Fish Hook properties and are drawn on the proposed site plan for vegetation, circulation and interpretation (Figure 5.2: Proposed Site Plan of Fort Fisher).

Vegetative Treatment

Fort Fisher is currently forested, its features mostly inaccessible and hidden by dense vegetation. The prevailing route visitors use to experience the fort is uncontrolled, random and destructive to surviving resources. To develop a clear understanding of this important site, facilitate interpretation, and enhance the visitor experience, it is necessary here to clear earthworks, ditches, peneplain of canopy and understory trees, saplings, shrubs, vines and nuisance species as per Treatment Alternative #2 (CBA Alternative #3). This clearing project is proposed to be immediately followed by establishing tall grasses using one of the seed mix alternatives found most successful following park field trials. The eastern, northern and western fields of fire beyond of the fort are to be cleared and planted in grass for a protective and interpretive buffer of fifty to sixty feet, or relative to the striking distance of larger trees to the parapets. Beyond this buffer, continuing to the N.P.S. boundary and west to the Church Road, the existing forest is to be managed for hazard trees and selectively thinned of aggressive understory to encourage a greater diversity of species. In the area between the fort and the public road, the shrub layer and nuisance species should be thinned and remaining canopy trees limbed up to sixteen to eighteen feet. Bare areas on the ground plane at this location are to be planted in shade-tolerant grasses. This treatment will present Fort Fisher more legibly from Church Road.

When clearing the interior of Fort Fisher, careful attention is necessary to preserve one healthy canopy tree in each corner bastion of the fort. Proposed to stand as "sentinel trees," they will offer shade, cover and provide visual interest. The trees selected for this role should be younger specimens which would have a better chance of successfully adapting to their new open growing conditions. Within the four-acre expanse of Fort Fisher these sentinel trees will mark its bastions and also provide an understanding of scale and distance. Several canopy trees on the peneplain northwest of the main traverse are proposed to

remain as well, forming the basis of a small grove. Trees identified to remain are listed in Figure 5.13: Extant Tree Schedule. Within this grove, ground cover will be of shade tolerant grasses, mulch and seasonal leaf litter, and a copse comprised of existing American Holly, *Ilex opaca* and proposed Dogwood, *Cornus florida*, and Red Bud, *Cercis canadensis* will create an understory with dappled light. This grove is intended as a respite from the summer sun, an interpretive niche for gathering and a refuge for quiet reflection and commemoration. A similar planting treatment is designed for the arrival sequence on the front apron of Fort Fisher along the Flank Road. This area is to be planted in a utility turf species currently used by the park at its developed areas and managed as mown turf, to allow free visitor movement on the apron. A proposed staggered line of Dogwood and Redbud planted parallel to Fisher's southern parapets will welcome visitors by shading a pair of interpretive signs and picnic tables. In early spring these flowering trees will produce colorful blooms to memorialize historical events of the spring of 1865.

Circulation

Currently, access to Fort Fisher is random and destructive. Most visitors disembark from automobiles on the turnout on Flank Road, and after reading the interpretive sign juxtaposed by a trash receptacle, proceed along a compacted social trail which leads down to the ditch and up the scarp through the original sally port. For those who currently venture towards the west to survey the fort's exterior, a second entrance becomes apparent via another well worn trail leading over a ramped earth land bridge which fills the ditch of the southwest bastion. This land bridge, installed in the 1960's to facilitate maintenance, should be removed thereby reestablishing the original footprint and profile of the earthwork. For a large portion of the year, Fort Fisher's ditch typically presents a barrier of standing water and muck. The proposed excavation of the non-historic entrance, will eliminate alternative access and restrict entry through the original sally port. At that historic location on the southern parapet, a new proposed log bridge will span the existing ditch. The bridge would be connected to a curving ramp that meets grade at the exterior approach and the interior of the fort. Visible from the parking area as an obvious threshold to the fort's interior, the proposed bridge is intended to conform to ADA standards and if constructed would eliminate the current entry sequence confusion. The log bridge is also designed to accommodate lightweight vehicles and maintenance equipment (Figure 5.7: Section-Elevation of Sally Port Bridge and Access Ramp).

Inside Fort Fisher, existing vegetation is so dense that a reasonable circulation is prohibited, and visitors are forced to explore the fort along the only clear route- the sparsely vegetated parapet crest. This course is most destructive to the resource. To alleviate this condition an interior circulation is proposed which grants visitors a seemingly unlimited access, yet assigns them to a prescribed path- designed to prevent endangering resources. The rationale here is simple; give visitors a fair chance to experience and view the "works" and their curiosity will be satiated. Deny them access and the tendency to explore will become irresistible. With this logic in mind, a low-impact, raised wooden walkway connects from the sally port bridge and ramp to the fort's interior, constituting the primary passage (Figure 5.10: Section of raised wooden walkway). This walkway is graded to meet ADA specifications. Just past the ramp to the east a spur trail surfaced in stone dust is proposed to lead visitors to explore the area of the southeast bastion, then wind back north where it detours to a niche providing a view of the main traverse. This secondary trail would continue north bordering the terreplein, then turns west where it finally connects to the central grove (Figure 5.10: Section of above-grade stone dust trail). From its first intersection, the wooden walkway leads north along the peneplain towards the main traverse. Here situated at an

interpretive wayside is found an exceptional 'long view' of this prominent and important feature. The wooden walk then winds through uneven terrain to the grove. Within this grove, rustic bench seating set into a raised planter wall serves as a mount for interpretive signage. The proposed wooden platform is enlarged here to provide ample space for the exhibit and seating (Figure 5.9: Section through grove). At this location, the retention of a grove of young canopy and understory trees will provide welcome shade in summer, creating a place for relaxation and reflection, and form a destination and turn-around for the handicapped access trail originating at the existing parking turnout.

Extending from this central grove, another stone dust trail leads north through tall grass cover where it intersects with a transverse trail meandering to the east and west. The eastern trail forms a loop which circles around a magazine situated in the northeast bastion. Here, an interpretive niche is situated opposite a wooden gun ramp and platform which allows a view over the parapets into the ditch and northeastern fields of fire. From the gun platform's elevation in this extreme quadrant, visitors gain an appreciation of the surviving magazine's crater-like landform as well as the scale of the peneplain, traverse and distant bastions. Returning along the trail to the west visitors will encounter on the northern parapet an elevated parapet walk and lookout. This structure, straddling the parapet crest, affords an exceptional view of the fort and its surrounds as well, and is intended to accommodate small groups (Figure 5.5, 5.6, Section and Elevation of Parapet Overlook). An interpretive niche is situated opposite its stairway. The trail then continues west, circulating closely around another magazine and bringing visitors to a hidden wooden gun ramp and platform situated on the northwest bastion. This elevated platform provides glimpses of Church Road, northwestern fields of fire, the northeast bastion and surviving features on the peneplain. An interpretive niche is proposed just opposite this location. Doubling back on the trail will return the visitor to the grove and wooden walkway leading the way out through the sally port, arrival apron and parking turnout.

Once outside the fort, circulation is decidedly informal. Although a prescribed trail is not proposed to be built on fields of fire beyond the parapets of Fort Fisher, the tall grass cover will undoubtedly become etched with a benign social trail. Such a trail in this area will afford curious visitors an alternative view of Fisher's formidable works from an attacker's perspective. It is important however to note that, historically Fort Fisher did not ward off an enemy attack, although many southern deserters were received through its defenses.

Interpretation

Fort Fisher offers many fine surviving examples of military earthwork features, providing an excellent opportunity for interpretation. On the arrival apron, two displays with graphics and explanations of the fort's history and development, including Meade's headquarters, Patrick Station and the Federal signal tower, should pique curiosity and encourage entry. Five interpretive areas are distributed throughout the fort's interior. The first interpretive wayside, positioned at the long view of the main traverse might discuss its purpose, scale and function including interesting facts such as interior drainage. The niche placed in the interior grove may recount the 6th Corps massing and canon signaling the breakout on April 2, 1865. The proposed interpretive wayside at the parapet overlook could include an explanation of adjacent banquettes, embrasures and the effectiveness of enfiladed fire toward the ditch and firing range north to 'no-man's land.' A mention of hardship endured by Confederate troops in the winter of 64-65 including trading and migration across the lines would be appropriate. The proposed niche at the base of the northwest bastion might possibly discuss Fort Fisher's stance at the Church Road and its relationship to the outlying siegeworks of the Fish Hook to the west. The niche at the northeast bastion should explain

its link with the defenses of Fort Conahey and the Left Flank line, then discuss the details of artillery platforms, ordnance and interior appointments such as the adjacent powder magazine.

Signage

The existing NPS sign on southern side of Flank Road across from Fort Fisher might be amended and relocated to address treatment recommendations proposed for the Fish Hook and Left Flank. The sign which reads "Leaving Petersburg National Battlefield" should be removed from its current position and relocated to Church Road approximately one hundred feet south of the intersection with Flank Road, on the eastern side of the northbound lane. There it can advise motorists heading south on Church Road that they have passed the Federal Left Flank and Fish Hook Siegeworks of Petersburg National Battlefield. On the other side of Church Road, facing northbound traffic, a new sign should read, "Entering Petersburg National Battlefield, Federal Left Flank and Fish Hook Siegeworks." A third sign should be erected on the western shoulder of the southbound lane of Church Road, approximately two hundred feet north of the entrance to the Fish Hook Trail. It should announce arrival to the area when facing the southbound traffic and departure to northbound traffic.

Site Constructions

The constructions designed for Fort Fisher are intended to control circulation, increase provide views, protect resources and enhance the overall visitor experience. These proposed site amenities will help transform this important fort into a more desirable destination. Wooden picnic tables and benches placed on the arrival apron amid shade trees will allow visitors to enjoy a rest area. Trash and recycle bins are to be provided and maintained. The ramped entry walkway and log bridge carries pedestrians, maintenance machinery and lightweight vehicles over the ditch, through the sally port and onto the peneplain, preventing compaction and damage to earthworks. Simple, rustic details are appropriate to the character of the place, without attempting to mimic period construction techniques. On the peneplain, the elevated wooden walk ushers pedestrians and wheelchairs over a dry and secure passage. Spur trails of compacted stone dust over gravel are built above grade and crowned for drainage, providing a solid footing. Both trail systems are free of vegetation and encumbrances. In the grove, a crib wall of logs taken from the site frame one side of a planting bed for flowering trees. On the other side of the planter a log wall supports a horizontal seat surface of flat sawn, rot-resistant White Oak. Gun ramps and platforms are installed on the northwest and northeast bastions at shallow angles just above grade. These allow access to and views from gun emplacements, yet keep visitors from treading on the historic resources. Rustic log interpretive signposts are installed at important interpretive opportunities. Resting on the center of the northern parapet, a log and timber overlook platform allows visitors to survey the fort's interior as well as the fields of fire from an elevation equivalent to the parapet crest. Providing this substitute vantage point will alleviate the destructive desire of visitors to scramble up to the top of the works. This structure is designed to minimize ground disturbance as all load-bearing posts are carried on 6"x6" pillow blocks of pressure-treated pine. A rustic tripod and sapling fencing, fabricated from trees cleared from the site, is proposed to be placed throughout the fort. These minimalistic structures, too weak to support a person yet tall enough to prevent straddling, are designed to dissuade most curious visitors from trooping over the earthworks.

Fort Wheaton

This fort holds the distinction of being the only Federal fortification in this region of the park that was not erected by Union soldiers. In fact, it was dug by black slaves earlier in the war when Petersburg was constructing its own earthen defenses. This redoubt, originally named Fort Archer, was once part of the Confederate, Squirrel Level Line and connected to another fort due north of Fort Urmston referred to on period maps as, "Old Rebel work."

Vegetation

The interior ground of Fort Wheaton is relatively clear of large trees and dense undergrowth. This offers exceptional visibility and a feeling of accessibility to perimeter details and parapets. The interior experience offers the visitor an acute sense of scale and boundary. Following the direction of CBA Alternative #4, Fort Wheaton is to be managed for hazard trees. Based on the assessment of a certified arborist, those trees found to be risk-prone on parapets, ditches, peneplain and in range on the fields of fire should be carefully removed. A deep layer of leaf litter covers Fort Wheaton's sandy loam. Areas where this cover is non-existent or too thin to prevent the regeneration of a healthy understory should be prepared for the planting of shade-tolerant grasses. Parapets and ditches with inadequate leaf cover should be prepared for grass seeding as well with special attention given to slopes of 1:1 or greater. These should be covered with erosion control blankets after seeding. It is important to include fast-growing nurse grasses in the seed mix to insure quick vegetative cover during the critical transition period following clearing. Consistent with seeding recommendations elsewhere, this area should be replanted with the seed mix found to be most successful during park field trials. A grove proposed on the peneplain is comprised of several large canopy trees and an additional planting of ten Dogwood set into above-grade, log planters (Figure 5.9: Section through Grove, Typ). A staggered double row of twenty Eastern Red Cedar is proposed to be planted just west of the fort. This evergreen fence should adequately screen an adjacent residential property from view. The proposed trail and shoulders which leads into Fort Wheaton along Confederate earthworks from the Church Road is to be cleared of brush and nuisance vegetation and managed for hazard trees. Open areas that receive sunlight should be planted in shade-tolerant grasses. Trail shoulders should be covered with leaf litter and a layer of shredded bark mulch. A general clearing and clean-up at the Church Road trailhead will announce arrival to the entrance of Fort Wheaton.

Circulation

Most visitors arrive at unmarked Fort Wheaton by car and encounter a parking dilemma. Are they to park on a dangerously narrow shoulder of Church Road, or trespass onto the nearby private residential driveway to the west? A more logical solution, in the absence of a new parking turnout, would be to develop a cooperative agreement with the private cemetery one-quarter mile to the west on Church Road. Then visitors might be directed to park there and walk to the Fort Wheaton's access trailhead. Currently the site of the proposed trail along Confederate earthworks is overgrown and impassable. This access way should be cleared and prepared with compacted gravel and a stone dust surface (Figure 5.11: Stone dust trail). The trail would lead directly to an interpretive niche at the northeast bastion, then turn south to bring visitors to the existing sally port. A section of the trail between the niche and sally port crosses beyond NPS property lines, and would also require the agency to obtain an easement or permission from current owners. If such access is not possible, an alternative is proposed that will bring visitors to the west from the interpretive niche where they climb to a stile-type crossing over the northern parapet. Park

maintenance crews will then continue to access the fort via the private residential drive to the west. The preferred scheme where the existing sally port entrance is accessed via a proposed ramp and log bridge, is designed for use by maintenance equipment and lightweight vehicles as well as visitors, and meets ADA requirements. Inside the fort, circulation occurs on a looped stone dust trail that directs visitors to a historic gun ramp fitted with a protective wooden platform and interpretive niche in the northeast bastion, the optional stile crossing, and the gun ramp/platform on the northern parapet. The trail then continues its circuit through the interior grove where rustic log benches created from trees cleared at Fort Fisher, and log seat walls allow visitors a place to rest and reflect.

Interpretation

The interpretive niche at the northeast bastion greets visitors after their walk along extant Confederate earthworks. Here is an opportunity to discuss the 5th Corp's charge in the Battle of Peebles' Farm, and the history of original constructions along the Dimmock Line. Worthy of mention on interpretive signage at the sally port bridge, is the modification of Fort Archer by Union forces, as well as the role as Fort Wheaton as a secondary defense in the Union effort. From the elevated position on the gun platform in the northeast bastion, a visitor can understand the orientation of the fort to the Dimmock line. On interpretive signage at the penneplain below, a graphic and written explanation might be given of the extent of southern defenses surrounding Petersburg, and of Fort Wheaton's relative distance from that city.

Site Constructions

An overlook platform with a stile type crossing will allow visitors to cross the northern parapet and enter the fort if the preferred entry route is not possible. The preferred entry, via the Union sally port, is by means of a log bridge spanning the ditch and wooden ramps to meet grade. Simple rustic tripod and sapling fencing will discourage visitors from scrambling into the ditches nearby, and frame the interpretive niche. Inside the fort, an above-grade trail is constructed of compacted gravel and stone dust, slightly crowned for drainage. Rustic log crib walls and seat walls are proposed for the interior grove. These should be constructed of cedar logs. The seat surface should be of rot-resistant White Oak (Refer to notes in Figure 5.9: Section through grove). Two above grade gun ramps and platforms are proposed for the northeast and northern parapets. From this vantage an excellent view of the fort's interior, earthen details and views out to the Dimmock Line and fields of fire can be obtained.

Signage

Currently Fort Wheaton is easily bypassed by park visitors as no signage exists along the Church Road to announce an access point. An invisible pair of concrete boundary markers define the thin strip of park property leading to the fort. Following implementation of these proposed site interventions, proper signage should be erected along both sides of Church Road identifying the fort. A parking area should be designated and sign-posted as well. These minor enhancements will facilitate visitation to this site,

Fish Hook Siegeworks:

Battery 27, Fort Welch, Fort Gregg

Access trail:

Opposite the western parapets of Fort Fisher, a wide access trail leads from the shoulder of Church Road to the Fish Hook Siegeworks. This entrance is proposed to be marked by a proposed planting of six native Dogwood trees, three flanking each side. The existing log barrier should remain to prohibit entry of unauthorized vehicles, but a narrow cutout to the south is needed to allow unimpeded pedestrian flow leading to the main trail. This entrance should be properly furnished with a mounted trail map to familiarize visitors with the site. The remote location of these western siegeworks has eluded popularity, and currently most visitors are unaware of historic resources sequestered in this range of the park. The rare enthusiast who ventures out in the Fish Hook will be rewarded with a sublime experience. This area still evokes a wartime likeness, producing strong feelings of apprehension and surprise as one follows along rifle pits and breastworks punctuated by steeply-profiled fortifications which seem to erupt from the forest floor. Few places in the park offer this affinity with the past, a time before rampant slashing, when fields and woodlots were found in a peaceful, undisturbed condition.

The existing Fish Hook access trail runs for 550 yards to Siege Battery 27. Cleared for a width of ten to twelve feet and covered in a thick layer of duff, this right of way carves a cathedral-shaped void through a strip of mixed species forest. A continuous line of earthworks averaging a meter in height comprise its northern margin. At intervals, the forest opens up to views of fields which lay beyond the works, duplicating the open character of the historic fields of fire. These slumped parapets and swollen ditches should be managed for hazard trees, and selectively thinned of aggressive nuisance vegetation to encourage a greater diversity of species. Following this landscape treatment approach will help foster a feeling of traveling behind the lines from one fort to another under protection of the Union fortifications. An interpretive niche is placed a few hundred feet down the trail from Church Road. At this location, a discussion of these invaluable infantry works connecting fortifications and protecting an extended line is appropriate. Encumbrances, bare and pot-holed sections of this trail should be repaired with soil and a thick layer of shredded bark mulch. The surface should also be slightly crowned to facilitate drainage and possible compaction from passing emergency vehicles and park maintenance equipment. The privately owned, adjoining properties on either side of the N.P.S. Fish Hook parcel are agricultural, mid-stage old field and successional forest tracts. The character of these lands adds much to the overall setting at the Fish Hook Siegeworks, effectively buffering parkland from development as well. To insure the existing setting, mood and character of the Fish Hook property is perpetuated, the adjacent parcels should be protected. The National Park Service may pursue the acquisition of "less-than-fee" scenic easements on the parcels abutting current park holdings. If this is not realizable, a campaign encouraging present owners to secure conservation and/or agricultural easements would insure the landscape integrity and preserve this valuable buffer and viewshed.

*Battery 27**Vegetation*

The landscape of Battery 27 is so densely overgrown that its characteristic features are mostly obscured from view. Although the selected CBA Treatment Alternative recommended for Battery 27 is

to, "manage for hazard trees," it is important to mention here that this site will benefit significantly by selective pruning and clearing. Currently a variety of tree species stand precariously on the parapets, traverses, peneplain and ditches of this open sided work, including specimens of *Ailanthus altissima* which rise to fifty feet. A dense blanket of poison ivy, briar and honeysuckle covers the ground plane. To facilitate an appreciation and better understanding of Battery 27, this shrub layer, consisting of aggressive species should be thinned and managed to encourage a greater diversity of woodland species. Promoting a lower growing ground cover will accentuate the high relief and sharp angles of Battery 27. Consideration should also be given to retaining existing American Holly and Eastern Red Cedar as sentinel trees, which pose no threat to the historic earthworks, and will provide scale and visual interest throughout the year. Open areas devoid of adequate leaf litter should be protected with erosion control blankets on slopes greater than 1:1 and planted with shade-tolerant grasses until the slope can be colonized by native understory species. The peneplain should be planted with grasses in open areas as well, to help define the unique spatial characteristic of this fortification. Proposed plantings of dogwood trees cluster at each confluence of the stone dust trail, marking a formal entrance from either direction along the wider Fish Hook trail (Figure 5.4: Proposed Site Plan of Battery 27).

Battery 27's footprint bears closely on N.P.S. boundary lines established in the early nineteen-thirties. The encroaching forest populates fields of fire and obscures views from the work to Fort Welch, its strategic neighbor nearby to the southwest. Managing for hazard trees and selective thinning of canopy, understory trees and shrub layer to the limit of park property will create a margin of open space to offset escarpments from forest cover and help visitors to visualize opposing terrain from behind the earthwork's formidable defenses.

Circulation

Battery 27 is situated directly alongside and parallel to the Fish Hook trail. Its orientation is easily understood as a continuum of the siegelines, and its immediate accessibility encourages a visitor to mount the parapet and peer beyond into the northern terrain. Since Battery 27 is an unenclosed earthwork, its visitor sequence is laid out as a simple detour off the existing access trail. When approaching from Church Road, a proposed stone dust spur trail branches off northward towards the earthwork a few yards past the easternmost escarpment. An interpretive wayside is placed at this intersection, highlighted by a proposed planting of *Cornus florida*. The smaller foot trail leads visitors close by the northern traverse where it continues its arc west toward the northwestern hinge of Battery 27's footprint. Here, an elevated overlook which conforms to this angle is proposed to sit atop the parapet. From this vantage, visitors are afforded excellent views of fields of fire as well as the historic arrangement of gun positions, traverses and peneplain. An interpretive sign borders each side of the overlook entrance stair. The proposed trail continues from this interpretive niche in a southerly direction through an interior grove and then reconnects with the wider Fish Hook trail. That intersection is also marked with a planting of dogwood.

Interpretation

As in previous fortifications of the Left Flank, the proposed site plan of Battery 27 is intended to portray the defenses and experiences of the Union army. This effect is garnered from interpreting the protected side of a formidable escarpment with an obviously vulnerable back. Such an orientation communicates a quick understanding of the siege battery concept. Traverses that flare off the facets of the leading edge are well-defined and prominent. From a position on the proposed parapet overlook, one senses a command of the terrain and protection from incoming fire. This can be explained in the

interpretive signage at the base of the parapet overlook, along with the arrangement and function of traverses, gun positions and the asymmetrical articulation of a work so essential to defending a critical area of terrain. The interpretive wayside at the trail intersection may appropriately discuss the history and ad-hoc development of Battery 27 in response to the sudden Confederate build-up opposing this vulnerable segment of the Federal line. Historically, this fortification stood at the edge of Peagram's farm fields and held a clear view of the open terrain to the northwest. This can be portrayed perhaps through the use of Colonel Michler's maps. Since there are no direct sight lines to Fort Welch, visitors will need to consult interpretive media to understand this strategic connection.

Site Constructions

With the exception of the stone dust trail loop and proposed plantings of dogwood trees within the grove and at trail entrance intersections, proposed site construction at Battery 27 is limited to the angled parapet overlook. Accessed by a stair, and designed to trace the earthwork's angle, this structure protects the resource while providing the visitor an elevated prospect with desirable views of surrounding terrain, significant surviving features, and an understanding of the battery's defensive footprint.

Fort Welch

Continuing along the Fish Hook access trail towards the southwest one soon arrives at Fort Welch. This is the first enclosed fort encountered deep in the woods, far removed from the hum and distraction of twentieth century development. Fort Welch has been described as the finest surviving earthwork in this region of the park. Its sheer parapets on five sides dive into deep trenches, which in some areas are filled almost year-round with tannic black water. The combination of sharp relief, standing water and densely tangled vegetation make this fort virtually impenetrable (Figure 5.4: Proposed Site Plan of Fort Welch).

Vegetative Treatment

To transform Fort Welch into a visible and understandable site and to protect the integrity of its valuable surviving features, a minimum of impacts are proposed. The treatment initiatives proposed during the June 1998 "Choosing by Advantages" work session, suggest that Fort Welch should be left forested but managed for hazardous trees. Clearing a hazard tree buffer beyond Fort Welch's parapets to the N.P.S. boundary line, and managing for aggressive scrub and nuisance vegetation is further proposed to encourage a greater diversity of plant species. On the fort's parapets, ditches and penplain, hazard trees should be phased for removal within three years. Deadfall should be cleared from areas proposed for visitor circulation. All open areas devoid of adequate leaf litter within the fort and on the earthworks should be planted in shade-tolerant grasses, and left to colonize with native woody plants. Uncovered slopes with a grade of 1:1 or greater remain vulnerable to erosion and should be protected with erosion control blankets and planted in shade tolerant grasses.

Circulation

A log bridge and ramp of similar design to that proposed at Fort Fisher will provide access to Fort Welch from the Fish Hook trail. Located at the original sally port, this structure will accommodate visitors as well as park maintenance personnel and lightweight vehicles. When arriving at the interior from the bridge ramp, the wooden walkway intersects with a stone dust loop trail configured in the shape of an expanded figure-eight. This form conveys interior circulation to within a reasonable distance of

several significant features as well as to a pair of site constructions. To discourage off-trail access, rustic fencing is proposed at intervals where landform features meet grade on the peneplain. The intent here is to bring visitors close to an appreciable view of gun ramps and platforms, magazines, traverses and embrasures, without tempting them to climb over the works. Halfway into the first loop in the northeastern quadrant of the fort, a wooden ramp and gun platform is proposed. This structure which allows views over Welch's tall parapets is designed to protect the landform beneath. Continuing on the loop trail pedestrians are directed past another earthen ramp before the trail crimps inward, skirting the base of the fort's large magazine. Once past it, the trail curves again to face a second wooden gun ramp and platform which conforms roughly to the shape of its host landform. From here visitors can view fields of fire to the northwest and survey the parapets, peneplain and arrangement of defensive landforms within this well preserved fortification. As the trail returns toward the entry ramp a narrow path exits, leading toward a notch in the southern bastion. A rustic log bench is located in this shaded place, intended for rest, repose and reflection.

Interpretation

An interpretive wayside is proposed for the entrance to the fort aside the entry ramp. Here a description of events at Peebles' Farm leading to construction of this fort on the margin of Federal territory would be helpful. A mention of a fast track, seven day construction timetable, including an original line drawing of Union army engineers, would help visitors understand the extant earthwork before them. Once inside the fort an interpretive niche is proposed at the base of each constructed gun ramp and platform. Explanations regarding artillery batteries and ordnance on this western-most Federal frontier can be offered at these locations, along with statistics on Fort Welch's impressive escarpments. Specifically, on the northwestern gun platform a narrative and image of the nearby Peagram house ruins can be displayed, graphically placing this exceptionally preserved redoubt in an historical frame.

Site Constructions

Rustic tripod and sapling fences flank either side of the entrance apron, funneling all approaching foot traffic over the wooden ramp and log bridge. This fencing is also proposed at strategic locations inside the fort to discourage the more curious and adventurous enthusiasts. Gun ramps are constructed using a minimum impact design, resting on pillow blocks at grade. Likewise, a low impact, crowned stone dust trail constructed above grade organizes interior circulation. A final site construction consists of a simple log bench fabricated from large oak timbers cleared on Fort Fisher.

Signage and connections

Leaving Fort Welch, just beyond the southern bastion a rarely used agricultural road runs due west beyond the park boundary into a pine forest, eventually leading to the former site of the Peagram House. Beyond this intersection a visitor must make a left turn to follow the curve of the Fish Hook. Further along another road trace heads southwest. This random collection of sylvan byways causes confusion for the visitor. A directional marker with orientation is necessary here to direct visitors onward to Fort Gregg and to keep them within N.P.S. property. Following a few paces along the Fish Hook trail, rifle pits re-emerge in the underbrush, providing a familiar datum of earthen defenses that guide explorers of this remote region to its extremity, Union Fort Gregg. A few hundred yards before arriving at Fort Gregg, the trail enters a lowland and crosses a perennial stream. A recently constructed bridge should be extended to provide dry crossings during intervals of high water.

Forest cover in this area tends to be more mature with a higher canopy and sparse understory. Sitelines are good and the trail is well marked and easily navigated due to recent maintenance. The surface should be supplemented in areas with soil and shredded bark mulch, and managed for hazard trees, limbs and nuisance vegetation to preserve its pristine wooded character. Rifle pits and infantry parapets are covered with a adequate layer of leaf litter, yet should be routinely cleared of aggressive nuisance vegetation to encourage a greater diversity of species in this area.

Fort Gregg

Fort Gregg stands as a outpost in the woods of the Fish Hook. This outlying fort enjoys a quietude only found among dense woods, and its mature high-canopied forest setting provides long sitelines into surrounding terrain. For a graphic representation of the following treatment recommendations refer to Figure 5.3: Proposed site plan for Fort Gregg.

Vegetative Treatment

Fort Gregg is grown up with tall pines, oak and Tulip Poplars with a mixed understory consisting of Sweet Gum saplings, *Liquidambar styraciflua*, and occasional cherry, Red Cedar, dogwood and holly. Earthworks and many areas on the peneplain are covered in a deep cushion of duff. The fort is scheduled for management of hazard trees according to CBA findings. A selective understory thinning, mainly of a profusion of sweet gums, and a clearing of aggressive shrubs will encourage a greater diversity of species in this area and open the fort's interior for unrestricted views. American Holly, cherry, cedar and dogwood should remain, since these trees offer shade, scale, and beauty and are easily managed. Young Sweet Gums should be carefully selected to be retained as specimen trees. With the proposed partial thinning of trees, open areas of bare soil receiving partial sunlight should be planted in shade tolerant grasses for erosion protection, and left to re-colonize with native woody plants. Large trees growing on dentate faces must be carefully removed to prevent damage from storm induced wind-throw and to reestablish a clear profile for successful interpretation of this fort's unique landforms. Large unhealthy trees in fields of fire within threatening range of earthworks should be removed, while those out of range should be retained as wildlife habitats. After clearing operations on earthworks, any bare soil areas should be amended followed by seeding with shade-tolerant grasses and the installation of erosion control blankets on any slopes greater than 2:1

Circulation

Since the trail to Fort Gregg has been recently cleared, access to the site is unencumbered, providing a valuable experience of 'movement behind the lines.' When approached from a northerly direction, the fort's steep parapets rise dominantly from the surrounding landscape. The access trail skirts the northernmost bastion and parallels the rear eastern exposure where visitors enter the fort's interior through the historic sally port via an existing land bridge. A proposed simple, meandering loop trail of stone dust will circulate visitors to relevant sections of the interior and provide access to significant features. Movement originating at the eastern sally port is directed toward Gregg's more important western exposures.

Just past the fort's magazine a short stem trail leads off the primary trail to the northwest face where an interpretive niche and parapet overlook are to be located. From this elevation on the parapet crest the configuration and details of Fort Gregg are well understood. Returning to the trail and continuing south,

it then passes a shaded wayside where a rustic log bench can be found. Further along, an interpretive niche is set opposite a wooden gun ramp and platform which straddles one of three saw-toothed landforms facing western terrain. Here, visitors can survey the prominence of Fort Gregg relative to 180 degrees of opposing terrain, as the landscape drops off significantly from the northwest to southeast. The trail then returns to the sally port in the eastern facade.

Interpretation

The proposed interpretive signage niche set outside Fort Gregg's entrance also establishes a terminus of the Fish Hook trail. It is important to mention here that Fort Gregg was dug on high ground beyond the western fringe of Peebles' Farm to maintain a critically defensible position. This vulnerable leading edge of the Union lines faced great exposure to a possible enemy flanking attack. At this point these lines of entrenchments and fortification turned, then doubled back in an easterly direction, protecting the interior camps from the south. Considerable slashing of the surrounding forest had occurred in this area to clear fields of fire as well as access to camps. This can be understood when referencing the current agricultural field to the east. The Signal Tower was most likely visible from Fort Gregg across this field. Inside the fort, two interpretive areas should discuss the unique aspects of earthen defenses found at this site, the degree of enhanced military engineering by this late stage of the war and the efficiency and value of articulated works when defending large stretches of terrain. A mention of adjacent Fort Welch to the north and Fort Sampson to the distant south is valuable in understanding the context of Union army occupation, and adequately portrays how the Fish Hook is but a remnant of a vast network of Federal positions which once marked this landscape.

Site Construction

The constructed elements designed for use at Fort Gregg have been proposed for other sites within the Left Flank and Fish Hook siegeworks and described in previous passages. A minimum of intrusion at Fort Gregg is proposed and all constructions are intended to utilize minimum impact building techniques. Archaeological resources will be further protected by these low impact interventions. An above grade stone dust trail organizes circulation and allows access to a wooden parapet overlook and an at grade wooden gun ramp accessing a gun platform. Other site amenities include a rustic log bench fabricated from oak timbers cleared from Fort Fisher, and rustic, tripod and sapling rail fencing placed across sensitive thresholds to deter trespassing on the fort's significant features.

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Treatment Endnotes

¹ An Act to establish a national military park at the battle fields of the siege of Petersburg, Virginia, approved July 3, 1926 (44 Stat. 822).

² The origin of the statement "better preserve than repair, better repair..." can be first attributed to French archeologist A.N. Didron who in 1839 set down the early injunction to would-be preservationists; "it is better to preserve than to restore and better to restore than to construct." (Bulletin Archeologique, Vol. 1, 1839). This citation is also referred to by Richard H. Howland in "Travelers to Olympus" in *With Heritage So Rich*, (New York: The Preservation Press, 1983) 172.

³ Draft Project Agreement, Petersburg National Battlefield - "Preserve Historic Earthen Forts." 17 March 1998. The "Purpose" of the final agreement was simplified on 20 March 1998 to " 1. Protect and preserve select Civil War earthen forts from damage caused from wind thrown trees, erosion and inappropriate recreational activities on the forts. 2. Showcase important forts by removing vegetation that blocks the visitors view of these structures, and , 3. Ensure preservation and interpretation treatment to forts can be maintained by existing maintenance staff in a cost and time efficient manner.

⁴ A thoughtful and knowledgeable approach to earthwork management is put forth in the following reports: *Managing Earthworks Under Forest Cover*, Dr. James Johnson, 1998 90% Draft, *Guide to Earthworks Management*, NPS and Georgia Trust for Landscape Preservation, 1998

Assessment of the Principle Earthworks, Federal Fish Hook Line, Petersburg, Virginia Draft June 1, 1998 David Lowe, NPS Cultural Resources GIS The Manual for Earthworks Management, Andropogon Associates Inc., 1989

⁵ Johnson, James. *Managing Earthworks Under Forest Cover*, 1998, p. 15.

⁶ USDA-SCS Field Office Technical Guide, Section 1-C Table 5, *USLE Undisturbed Forest Land "C" Factors Note 2*; "Canopy height is measured as the average fall height of water drops from falling from the canopy to the ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 feet."

⁷ Letter, Regional Director to Associate Director, May 28, 1974, WOF. As quoted by Conway, *A History of Petersburg National Battlefield, 1957-1982*, p. 63-64.

⁸ For a narrative of the meeting in Philadelphia, see Appendix: Petersburg Journal, Customs House, Philadelphia, Roger C. Sherry June 11, 1998

⁹ Attending the meeting: Mike Hill, Petersburg Park Superintendent; Dave Shockley, Chief of Resource Management; Ed Baron, Chief of Maintenance; Bob Page, Historical Landscape Architect, WASO; Dave Reynolds, Natural Resources Group Manager; Russ Smith, Chief of Interpretation, MARO; Eliot Foulds, Historical Landscape Architect, OCLP; Roger Sherry, Cultural Landscape Architect UVa./OCLP

¹⁰ While the occurrence of species cannot be certified for a site specific location, the prevalence of non-native species in the area prior to the Civil War are well documented. See, Jefferson, Thomas, William Peden Ed. *Notes on the State of Virginia*, 1785 University of North Carolina Press Chapel Hill, 1955 Eighty-five years preceding the Civil War, Jefferson lists "our grasses" as Lucrene, St.Foin, Burnet, Timothy, Ray and Orchard grass, red, white, and yellow clover, greenswerd (sic), blue grass and crab grass. p.43. Charles Flint's, *Practical Treatise on Grasses and Forage Plants*, of 1858 offers an excellent pre-war description of grasses and their common names. For example, Meadow Fescue (*festuca pratensis*) or Randall Grass in Virginia was most common around farm houses, an excellent pasture grass, it ripens to seed well before others, a prolific breeder. Red Fescue, (*festuca rubra*) was found in dry pastures and in sandy soils; and Indian or Wood Grass, *Andropogon nutans* grows on barren soils and sandy plains, flowers from July to September.

¹¹ Wallace, Lee A Jr. *A History of Petersburg National Battlefield to 1956*, History Division, National Park Service, Department of the Interior Washington D.C., 1983 From: Cornelius H. Benson "Yank and Reb," A History of a Fraternal Visit by Lincoln Post, No. 11 G.A.R. of Newark N.J. to Robert E. Lee Camp, No. 1 Confederate Veterans and Phil. Kearney (sic) Post, No. 10 G.A.R. of Richmond, Va., October 15th to October 18, inclusive, Newark: M.H. Newhut, Printer, 1884, pps.110-111

¹² As quoted in Progress Report of August 1933, 1104th Co. CCC Ellsworth-Bar Harbor Roadside Development, National Archives, Waltham, MA)

¹³ Earthwork Preservation Conference Report, 27 December 1974, WNRC. As quoted by Conway, "A History of Petersburg National Battlefield: 1957-01982, p. 64.

¹⁴ Soil Systems Inc., *Vegetative Threats to Historic Sites and Structures*, prepared for The National Park Service, National Capital Region, 1983, p.74.

¹⁵ Andropogon Associates, *Earthworks Landscape Management Manual*, National Park Service, 1989.

¹⁶ "Management Strategy Eight: Enriching Native Species" found in: *Guide to Sustainable Earthworks Management*, National Park Service in assn. with the Georgia Trust for Historic Preservation, 1988. p. 70-72.

¹⁷ Chapman defines Endemic as, "confined to a particular area" in: Chapman. G.P. *The Biology of Grasses*, Wye College University of London, U.K. CAB International, Walingford U.K. 1996 p.241

¹⁸ Ernst Conservation Seeds, Meadville, PA

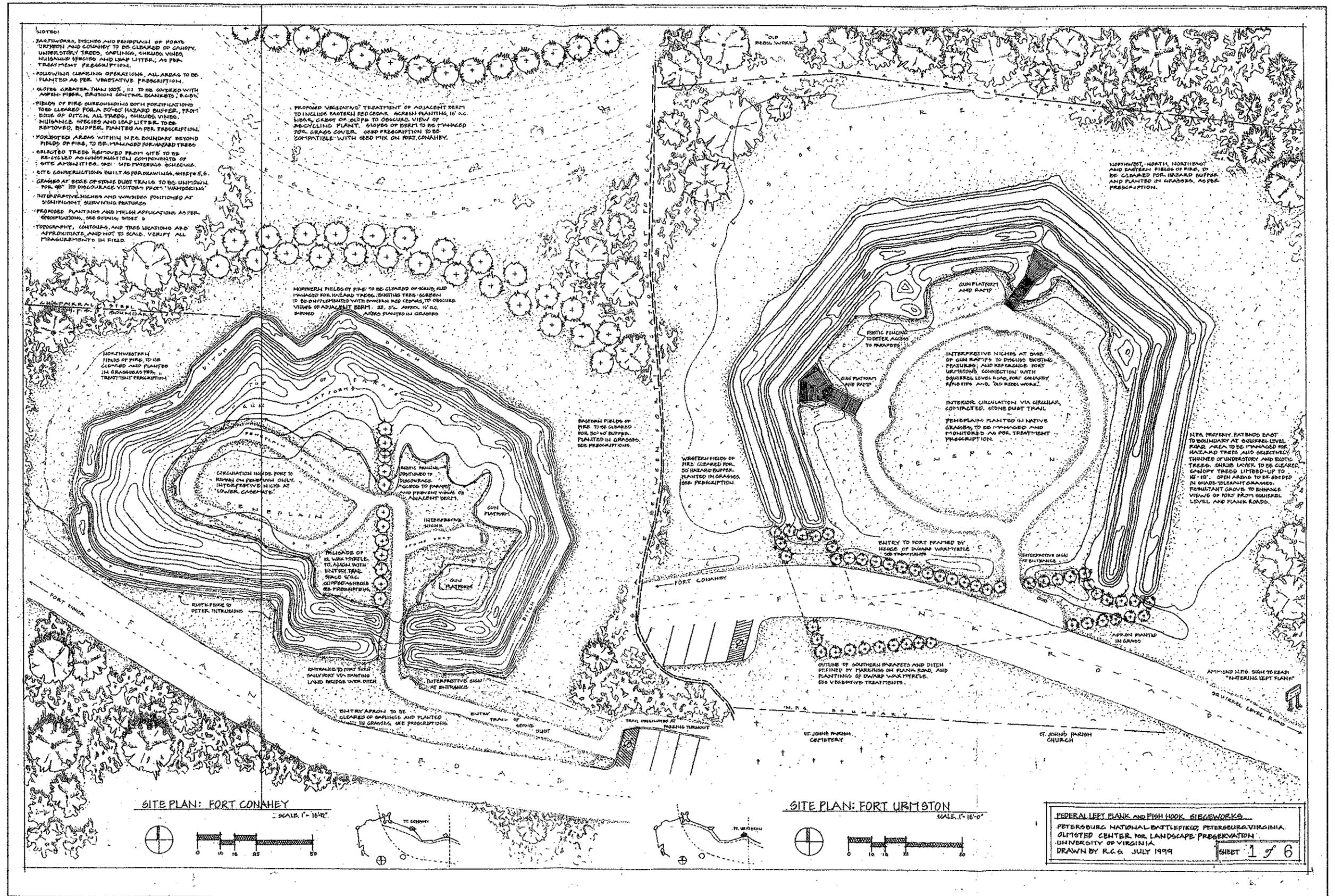


Figure 5.1: Proposed Site Plan of Fort(s) Urmston and Conahey.

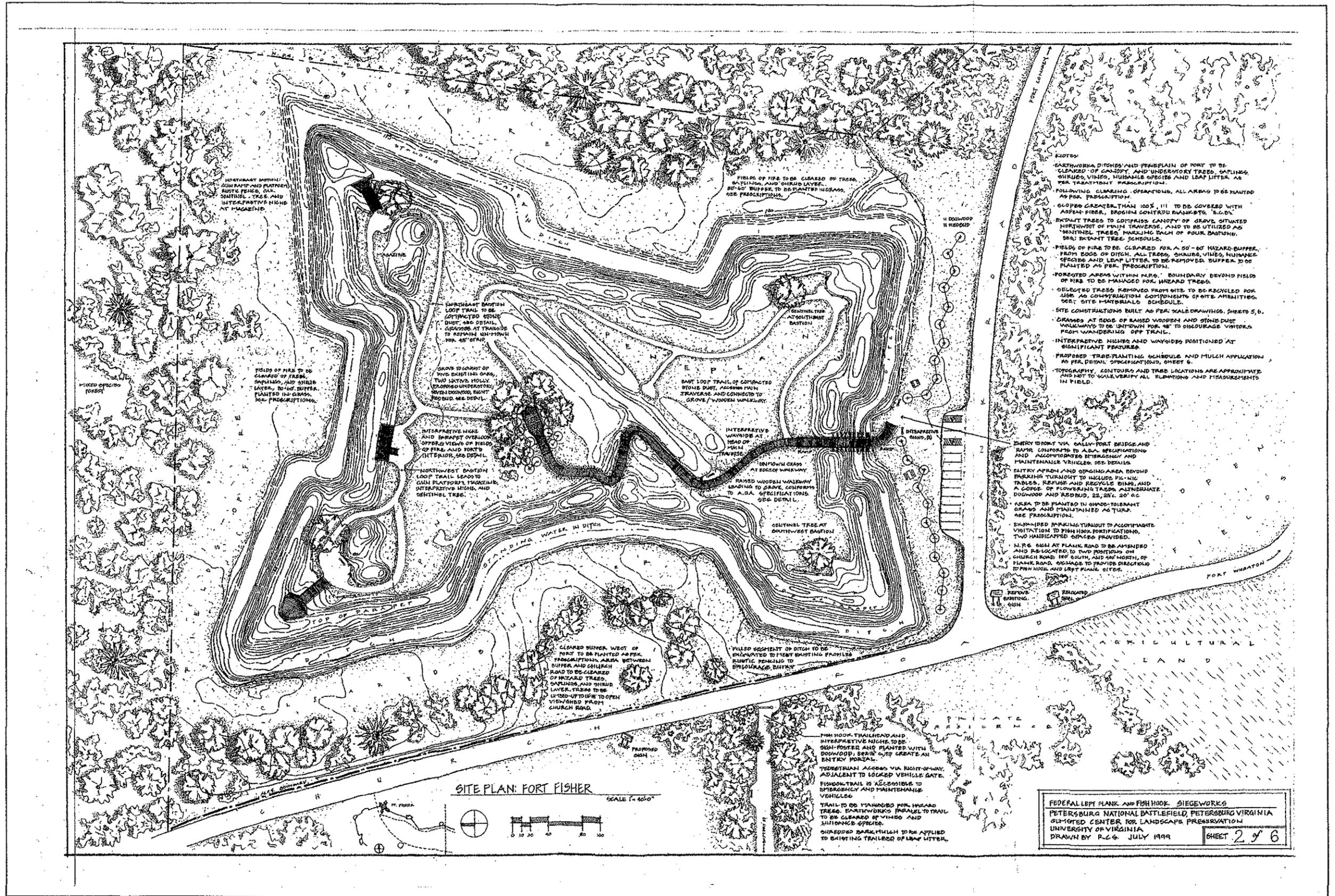


Figure 5.2: Proposed Site Plan of Fort Fisher.

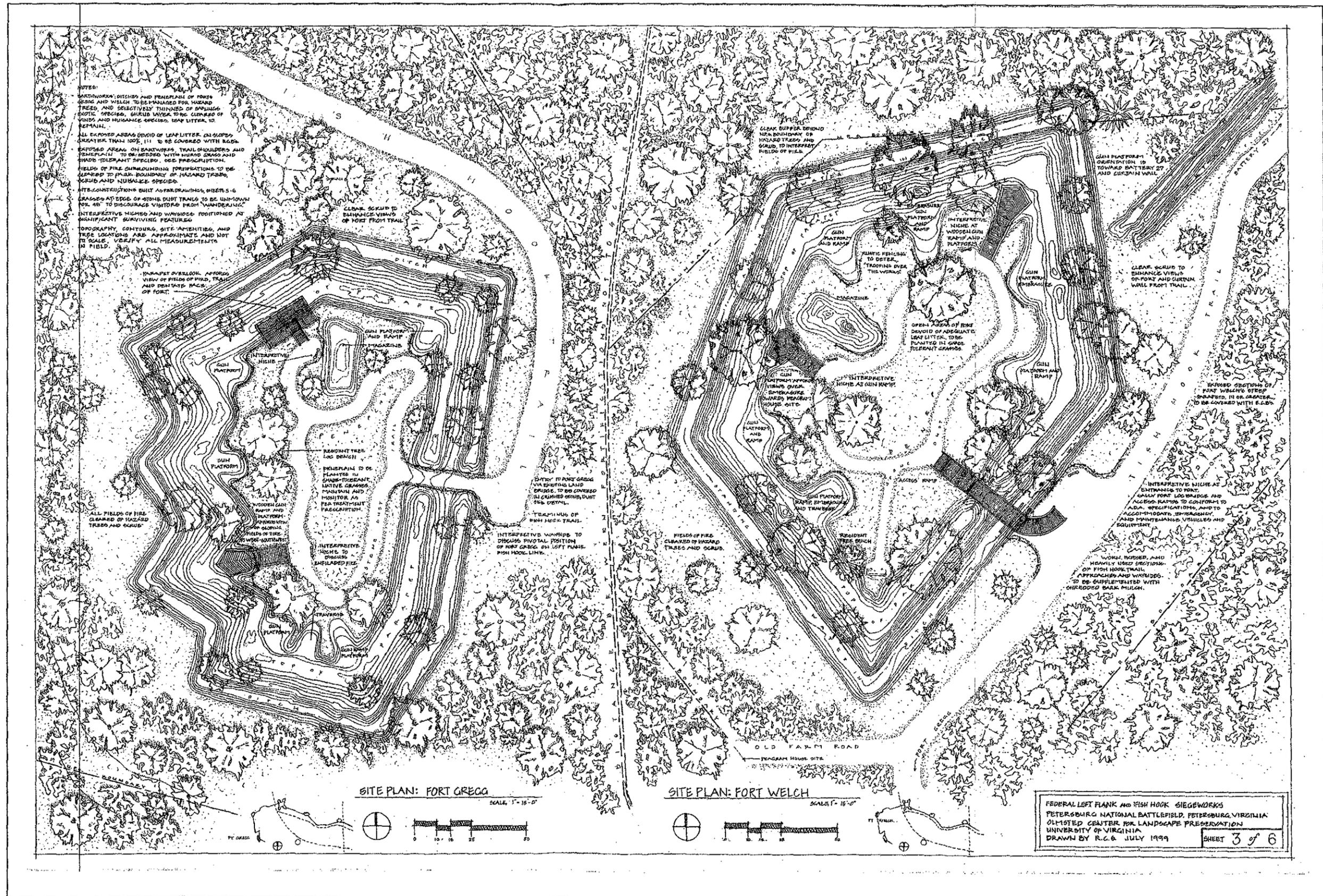
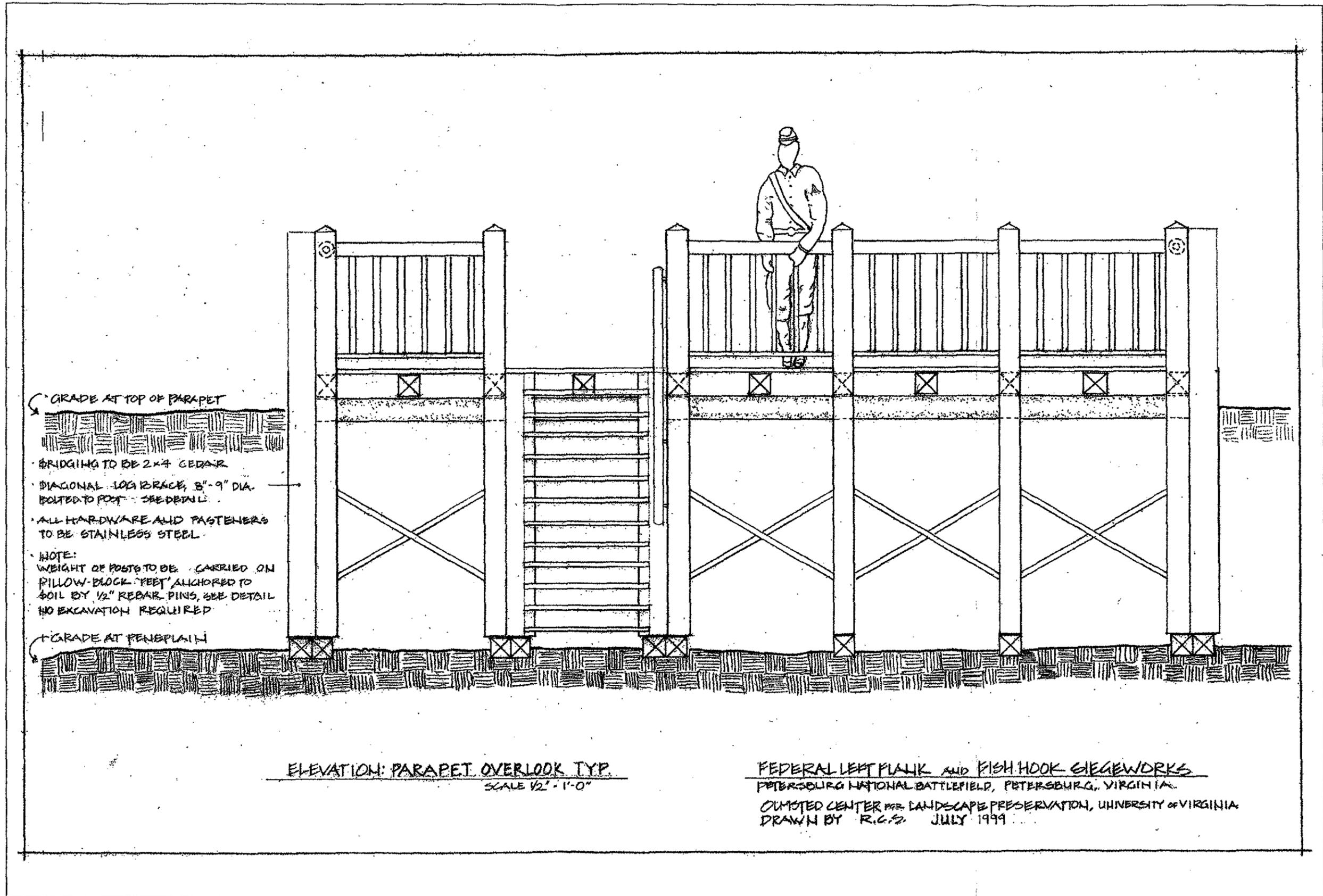


Figure 5.3: Proposed Site Plan of Fort(s) Welch and Gregg.



GRADE AT TOP OF PARAPET

BRIDGING TO BE 2x4 CEDAR

DIAGONAL LOG BRACE, 8"-9" DIA.
BOLTED TO POST - SEE DETAIL

ALL HARDWARE AND FASTENERS
TO BE STAINLESS STEEL

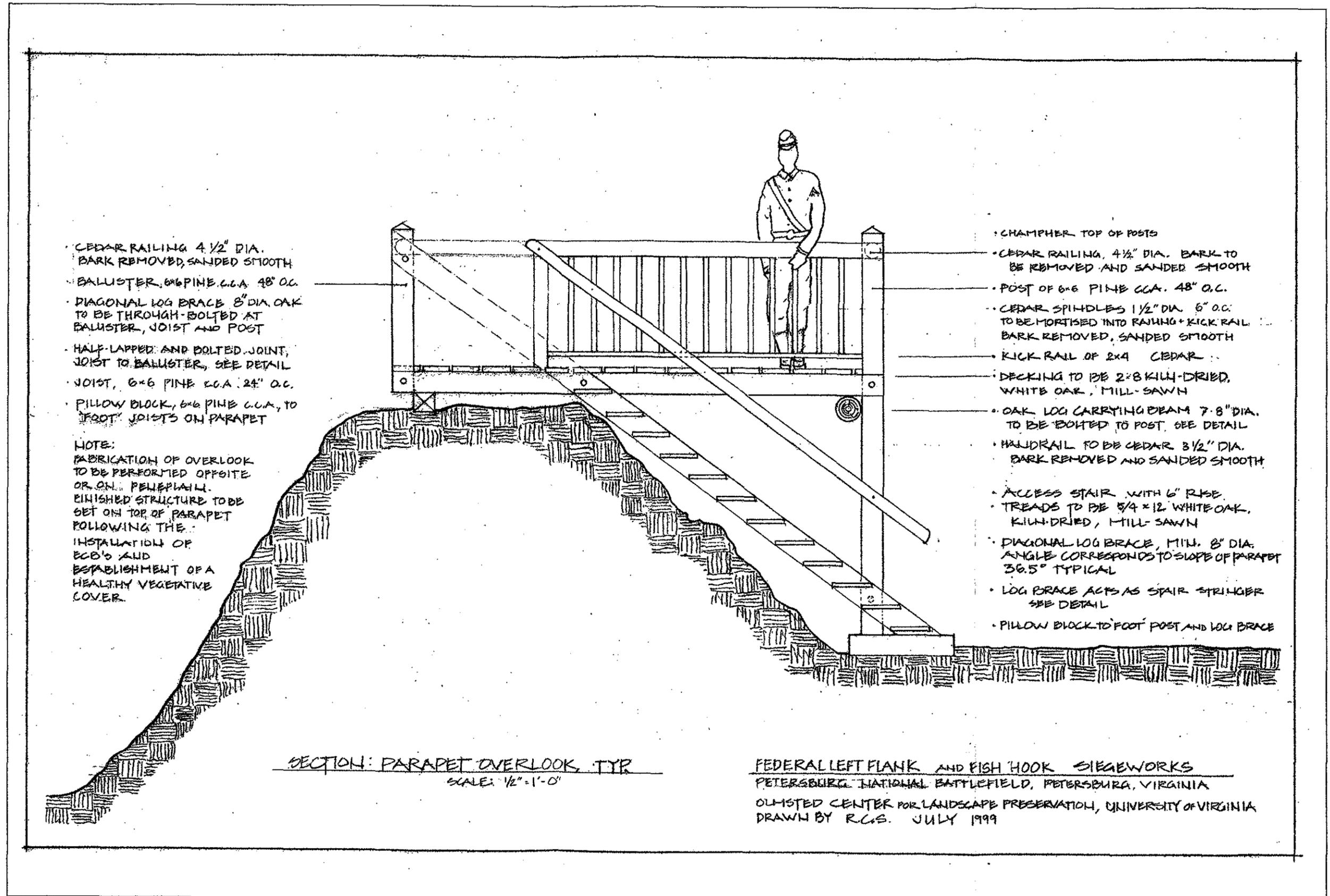
NOTE:
WEIGHT OF POSTS TO BE CARRIED ON
PILLOW-BLOCK "FEET" ANCHORED TO
SOIL BY 1/2" REBAR PINS, SEE DETAIL
NO EXCAVATION REQUIRED

GRADE AT PENEPLAIN

ELEVATION: PARAPET OVERLOOK TYP.
SCALE 1/2" = 1'-0"

FEDERAL LEFT FLANK AND FISH HOOK SIEGEWORKS
PETERSBURG NATIONAL BATTLEFIELD, PETERSBURG, VIRGINIA
OLMSTED CENTER FOR LANDSCAPE PRESERVATION, UNIVERSITY OF VIRGINIA
DRAWN BY R.C.S. JULY 1999

Figure 5.5: Proposed Elevation of Parapet Overlook.



- CEDAR RAILING 4 1/2" DIA. BARK REMOVED, SANDED SMOOTH
- BALUSTER, 6x6 PINE C.C.A. 48" O.C.
- DIAGONAL LOG BRACE 8" DIA. OAK TO BE THROUGH-BOLTED AT BALUSTER, JOIST AND POST
- HALF-LAPPED AND BOLTED JOINT, JOIST TO BALUSTER, SEE DETAIL
- JOIST, 6x6 PINE C.C.A. 24" O.C.
- PILLOW BLOCK, 6x6 PINE C.C.A. TO "FOOT" JOISTS ON PARAPET

NOTE:
 FABRICATION OF OVERLOOK TO BE PERFORMED OFFSITE OR ON PELLEPLAIN. FINISHED STRUCTURE TO BE SET ON TOP OF PARAPET FOLLOWING THE INSTALLATION OF ECB'S AND ESTABLISHMENT OF A HEALTHY VEGETATIVE COVER.

- CHAMFER TOP OF POSTS
- CEDAR RAILING, 4 1/2" DIA. BARK TO BE REMOVED AND SANDED SMOOTH
- POST OF 6x6 PINE C.C.A. 48" O.C.
- CEDAR SPINDLES 1 1/2" DIA. 6" O.C. TO BE MORTISED INTO RAILING + KICK RAIL. BARK REMOVED, SANDED SMOOTH
- KICK RAIL OF 2x4 CEDAR
- DECKING TO BE 2x8 KILN-DRIED, WHITE OAK, MILL-SAWN
- OAK LOG CARRYING BEAM 7-8" DIA. TO BE BOLTED TO POST. SEE DETAIL
- HANDRAIL TO BE CEDAR 3 1/2" DIA. BARK REMOVED AND SANDED SMOOTH
- ACCESS STAIR WITH 6" RISE
- TREADS TO BE 5/4 x 12 WHITE OAK, KILN-DRIED, MILL-SAWN
- DIAGONAL LOG BRACE, MILL. 8" DIA. ANGLE CORRESPONDS TO SLOPE OF PARAPET 36.5° TYPICAL
- LOG BRACE ACTS AS STAIR STRINGER SEE DETAIL
- PILLOW BLOCK TO "FOOT" POST AND LOG BRACE

SECTION: PARAPET OVERLOOK, TYR
 SCALE: 1/2" = 1'-0"

FEDERAL LEFT FLANK AND FISH HOOK SIEGEWORKS
 PETERSBURG NATIONAL BATTLEFIELD, PETERSBURG, VIRGINIA
 OLIVESTED CENTER FOR LANDSCAPE PRESERVATION, UNIVERSITY OF VIRGINIA
 DRAWN BY R.C.S. JULY 1999

Figure 5.6: Proposed Section of Parapet Overlook.

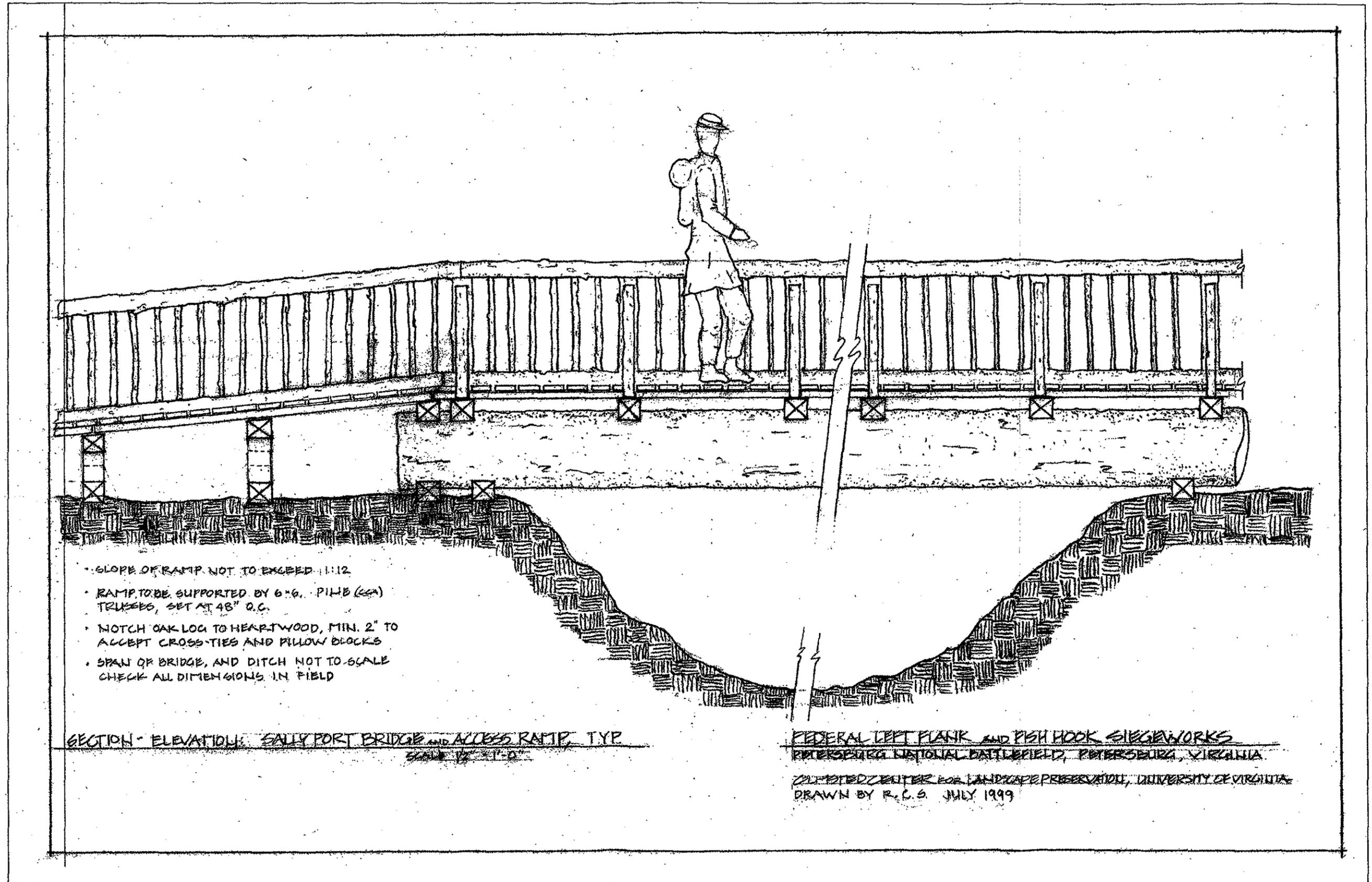
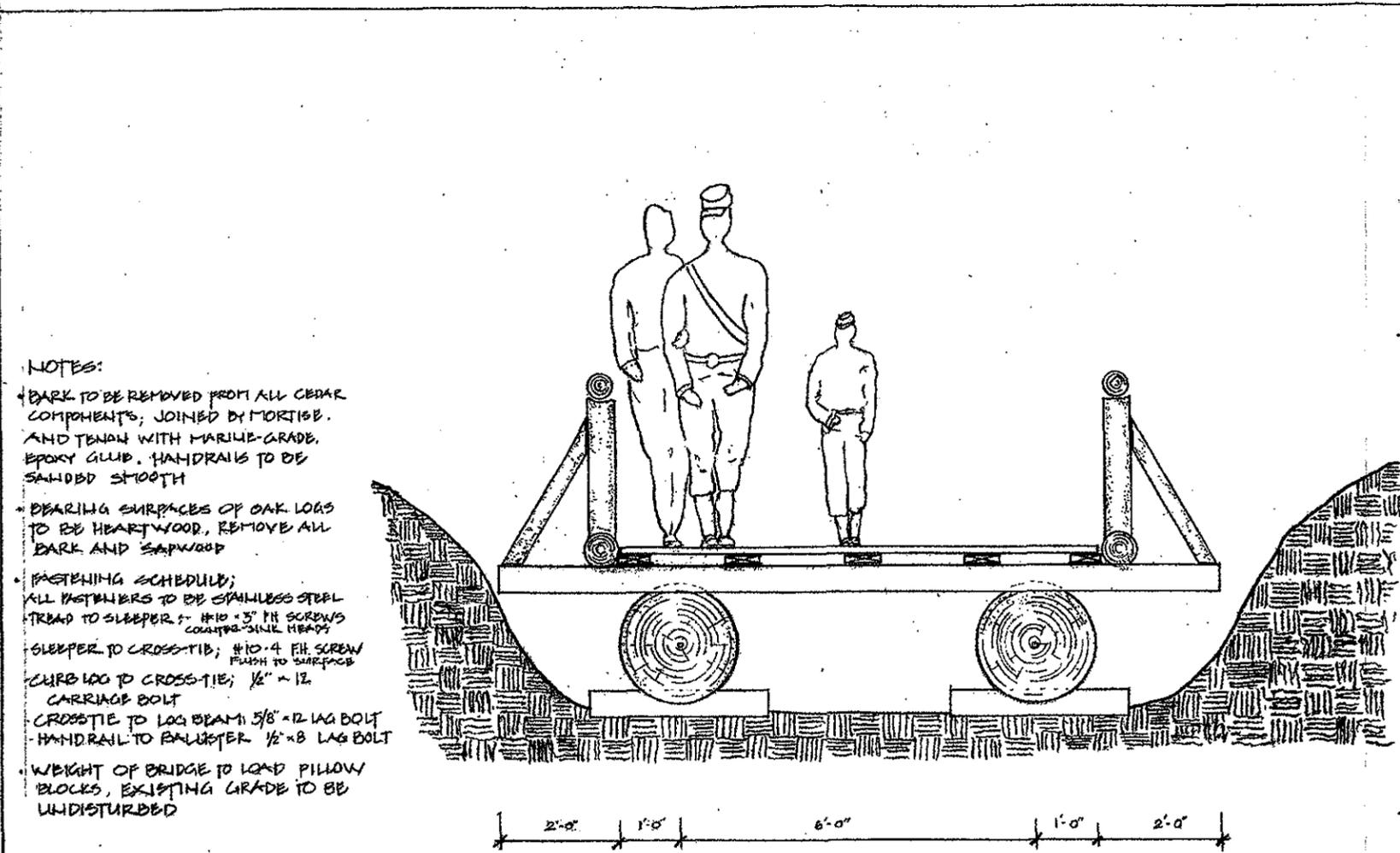


Figure 5.7: Proposed Section-Elevation of Sally Port Bridge and Access Ramp.



NOTES:

- * BARK TO BE REMOVED FROM ALL CEDAR COMPONENTS; JOINED BY MORTISE AND TENON WITH MARINE-GRADE, EPOXY GLUE. HANDRAILS TO BE SMOOTH SMOOTH
- * BEARING SURFACES OF OAK LOGS TO BE HEARTWOOD, REMOVE ALL BARK AND SAPWOOD
- * FASTENING SCHEDULE;
ALL FASTENERS TO BE STAINLESS STEEL
TREAD TO SLEEPER: #10 x 3" PH SCREWS
COUNTER-SINK HEADS
SLEEPER TO CROSS-TIE; #10-4 PH SCREW
FLUSH TO SURFACE
CURB LOG TO CROSS-TIE; 1/2" x 12"
CARRIAGE BOLT
CROSS-TIE TO LOG BEAM; 5/8" x 12 LAG BOLT
HANDRAIL TO BALUSTER 1/2" x 8 LAG BOLT
- * WEIGHT OF BRIDGE TO LOAD PILLOW BLOCKS, EXISTING GRADE TO BE UNDISTURBED

- CEDAR HANDRAIL 4" DIA.
- CEDAR BALUSTER 5" DIA.
- CEDAR BRACKET 4" DIA.
- CEDAR CURB LOG 6" DIA.
- WHITE OAK TREAD BOARDS TO BE 9/4 x 6 MILL-SAWN, KILN-DRIED 1/4" SPACING FOR DRAINAGE
- SLEEPERS TO BE 2" x 8 PINE, CCA, 24" O.C.
- CROSS-TIES TO BE 6" x 6 PINE CCA, 48" O.C.
- WHITE OAK LOG BEAM MILL 22" DIA.
- PILLOW BLOCKS TO BE 6" x 6 PINE CCA, BLOCKS PRE-DRILLED TO ACCEPT 1/2" RE-BAR ANCHOR PINS

SECTION ELEVATION; SALLY-PORT BRIDGE TYP
SCALE: 1/2" = 1'-0"

FEDERAL LEFT FLANK AND FISHHOOK SIEGEWORKS
PETERSBURG NATIONAL BATTLEFIELD, PETERSBURG, VIRGINIA

OMITTED CENTER FOR LANDSCAPE PRESERVATION, @UNIVERSITY OF VIRGINIA
DRAWN BY R.C.S. JULY 1999

FEDERAL LEFT FLANK AND FISHHOOK SIEGEWORKS
PETERSBURG NATIONAL BATTLEFIELD, PETERSBURG VIRGINIA
OMITTED CENTER FOR LANDSCAPE PRESERVATION
UNIVERSITY OF VIRGINIA
DRAWN BY R.C.S. JULY 1999

SHEET 5 of 6

Figure 5.8: Proposed Section-Elevation of Sally Port Bridge - Typical

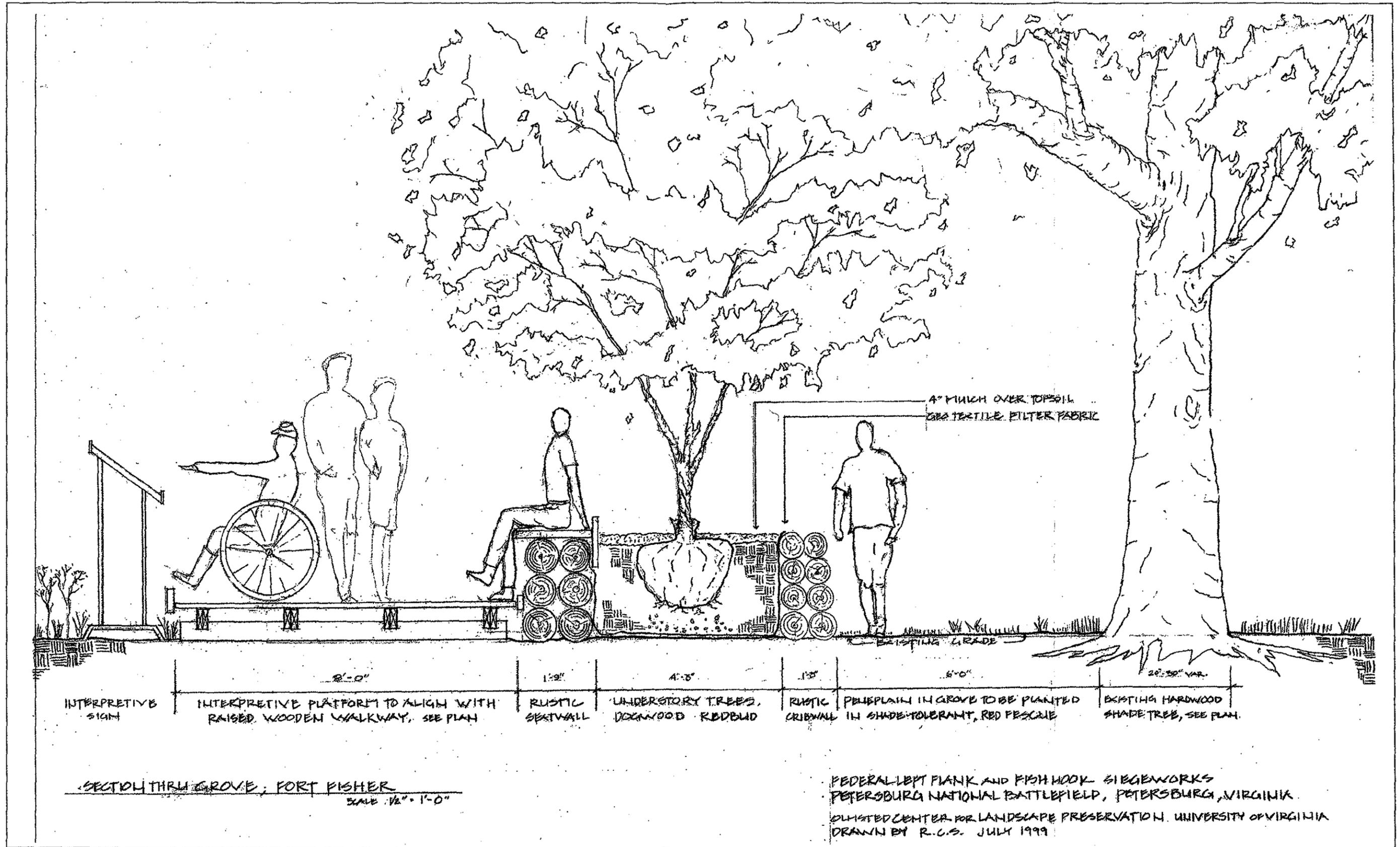


Figure 5.9: Proposed Section thru Grove, Fort Fisher and Typ.

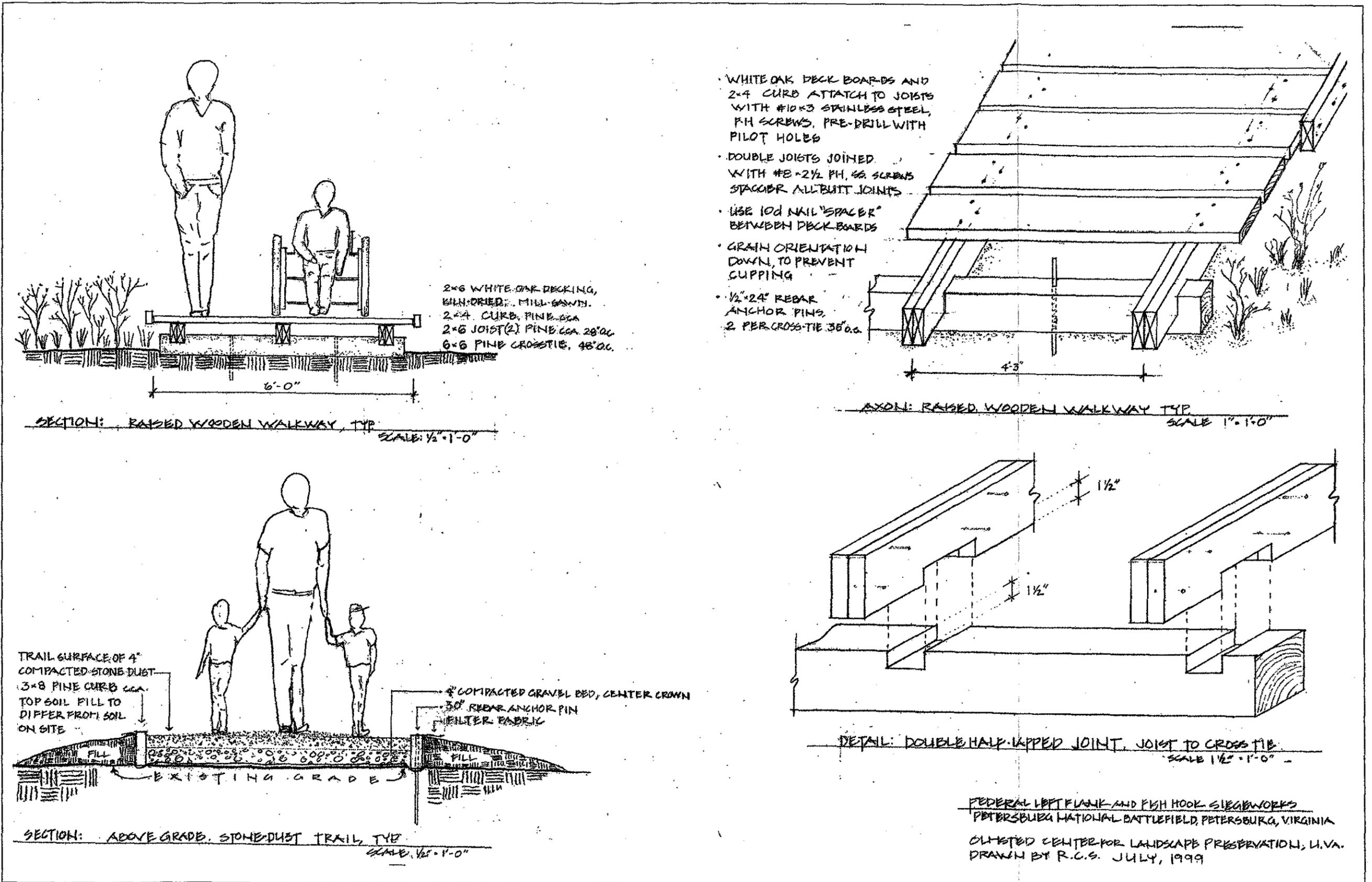


Figure 5.10: Proposed Section and Details - Raised Wooden Walkway/Above-grade Stone Dust Trail.

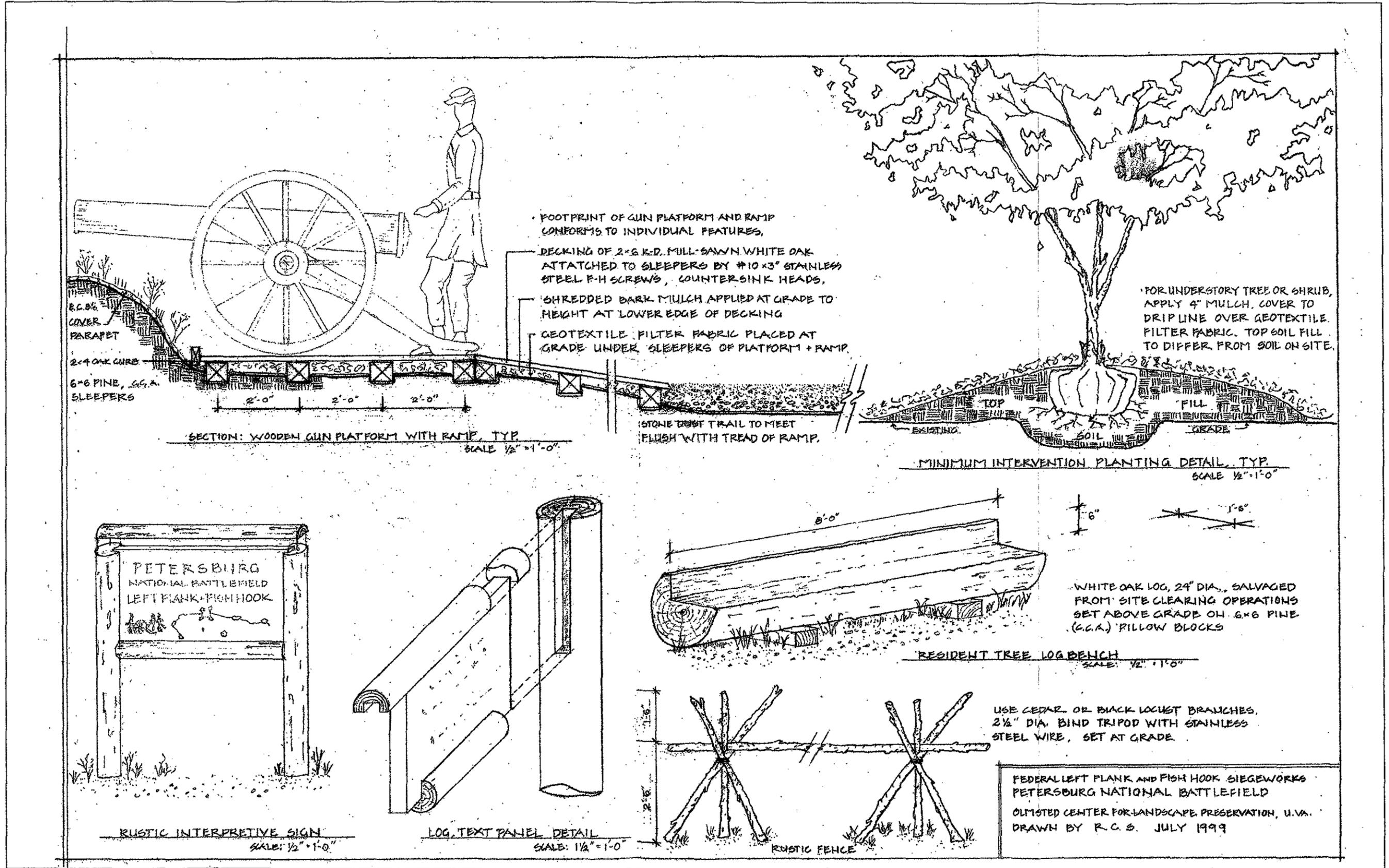


Figure 5.11: Sections and Details: Wooden Gun Platform with Ramp to Stone Dust Trail, Min. Intervention Planting Detail, Tree Log Bench, Rustic Sign and Fence.

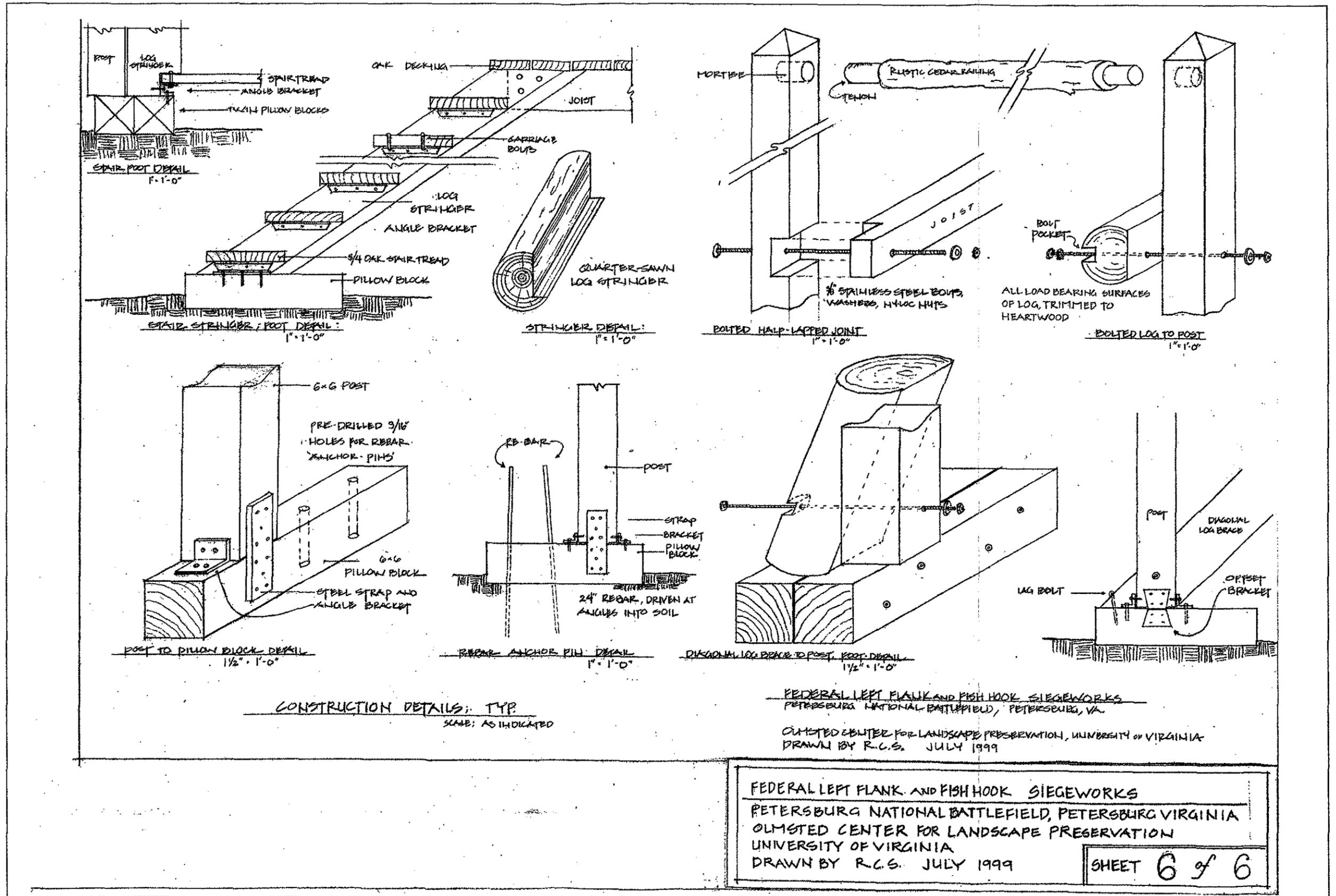


Figure 5.12: Proposed Construction and Joinery Details.

Figure 5.13: Extant Tree Schedule

Fort Urmston, Fort Conahey and Fort Fisher are scheduled for clearing and cover in tall grass. The following list of healthy trees are proposed to remain on these sites to create groves, enhance interpretation, reference specific terrain and screen views of development. In the design proposal for Fort Fisher, specimen trees intended to mark the four bastions are referred to as "Sentinel Trees."

Petersburg NB resources personnel should administer all logging operations by contracted tree crews and devote careful attention to trees marked for preservation. Preceding the clearing process, these trees are to be labeled "EXTANT" and shall be clearly marked with non-permanent paint and surveyor's tape at base of trunk and at breast height. Trees shall be protected with temporary construction fencing at drip line. Number designation, location and caliper [dbh] correspond to the tree inventory listed in: *Preserve Earthen Forts* July 21, 1998 compiled by Dave Shockley, Chief of Resources, Petersburg National Battlefield. See Appendix.

Fort	Location	Tree # and Caliper	Design intention
Urmston	Eastern field of fire	Assorted hardwoods, pine and Holly	Grove
Conahey	Northern field of fire	Assorted hardwoods and pine	Screen and buffer
Conahey	Northeastern field of fire	Assorted hardwoods and pine	Screen and buffer
Conahey	Northwestern field of fire	Assorted hardwoods and pine	Screen and buffer
Fisher	Northeast bastion	Oak #203 15"c.	Sentinel Tree
Fisher	Northwest bastion	Oak #218 14"c.	Sentinel Tree
Fisher	Southwest bastion	Hickory #13 16"c.	Sentinel Tree
Fisher	Southeast bastion	Oak #46 14"c.	Sentinel Tree
Fisher	Peneplein, NW of traverse	Oak #231 36" base, double leader 24"c.	Grove
Fisher	Peneplein, NW of traverse	Oak #232 18" dbh	Grove
Fisher	Peneplein, NW of traverse	Oak #233 14" dbh	Grove
Fisher	Peneplein, NW of traverse	Oak # 234 36" base, double leader 18"c.	Grove
Fisher	Peneplein, NW of traverse	Oak # 235 24" dbh	Grove
Fisher	Peneplein, NW of traverse	Holly # 236 twin, 8"c.	Grove
Fisher	Western field of fire	Assorted hardwoods and pine	Grove

Figure 5.14: Tree Recycling Schedule

Natural resources of the Left Flank and Fish Hook Siegeworks can provide many of the materials specified in proposed design interventions. Prior to clearing operations attention should be given to the salvage, storage and recycling of these valuable site resources. Selected hardwood, pine and cedar species proposed for use as components of site constructions should be clearly marked by non-permanent paint and surveyor's tape at base of trunk and at breast height. Following an inventory noting age and location, they can be removed to a designated holding area within the park, until utilized in the construction of proposed site furnishings. Refer to Schematic Drawings, Figures 3.7 to 3.18. Wood chips and shredded bark mulch, a by-product of logging and clearing, can be produced on site, stockpiled and utilized as a protective cover for trails and proposed tree and shrub plantings. Leaf litter [duff] which is to be carefully removed from parapets, peneplein, ditches and fields of fire (before planting of grasses), should be retained in a designated composting area of the park for future use in soil amendments. Following the initial clearing at Forts Urmston, Conahey and Fisher, ongoing park maintenance- including managing for hazard trees at the Fish Hook sites and Fort Wheaton, will also provide a continual supply of recyclable resources, assuring a sustainable supply of materials for site amenities within the park.

Fort	Location	Tree #	Caliper required	Design intention
Urmston	Peneplein / parapet	Assorted Oak, Cedar and Pine		Bark chips
Urmston	Peneplein / parapet	Assorted Oak and Pine		Shredded mulch
Urmston	Peneplein	Pine #'s 41, 44, 48, 50, 51, 52,	1-1/2" c.	Spindle
Urmston	Peneplein	Pine #'s 41, 44, 48, 50, 51, 52,	5" c.	Baluster
Conahey	Peneplein / parapet	Hickory #'s 2, 10	3"-4" c.	Handrail
Conahey	Peneplein / parapet	Hickory #'s 2, 10	4"-5" c.	Railing
Fisher	Peneplein / ditch	Pine/cedar #'s 2,3,4,5,7,8,9,11,	2-3 "c	Rustic Fence
Fisher	Peneplein / parapet	Pine/cedar #'s 17,18,19,50,51,53,54	6" c.	Curb log
Fisher	Peneplein / parapet	Oak #'s 14, 45, 123, 209, 222	22"-24" c	Beam
Fisher	Peneplein / parapet	Oak #'s 217, 222, 225	24" c.	Bench
Fisher	Central traverse	Oak #'s 70, 72, 74,	10" c.	Stair stringer
Fisher	Peneplein / parapet	Oak #'s 30, 31,	6" c.	Sign post and rail
Fisher	Peneplein	Oak #'s 14, 15, 178, 182	8"-9" c.	Diagonal brace
Fisher	Ditch	Oak #'s 119, 121, 122, 125, 126	6"-8" c.	Log cribwall tie
Fisher	Central traverse	Oak #'s 77, 78, 186, 188	7"-8" c.	Carrying beam
Fisher	Peneplein	Pine #'s 55, 65, 99, 100	4" c.	Railing bracket

APPENDIX A
'CHOOSING BY ADVANTAGES' 11 JUNE 1998

A case for preserving the cultural landscape while providing access and site interpretation.

Introduction

The following report is based upon proceedings held within the National Park Service Mid-Atlantic Headquarters offices on June 11, 1998. The focus of the meeting was a Life Cycle/Value Analysis for various treatment alternatives for the **Fish Hook Fortifications** at Petersburg, Virginia. The meeting was chaired by Betty Janes of the N.P.S. Denver Service Center. At the onset, Ms. Janes put forth the primary objective for this meeting: to determine the treatment recommendations which hold the most value to the N.P.S. at Petersburg. To achieve this end, she adopted a procedure of "Choosing, by Advantages" [CBA]. This process outlines "Factors" essential to the purpose/mission of the park and assigns them a priority value 0-1000. Treatment "Alternatives" are reviewed for each of the various sites of the Fish Hook Line [forts and earthworks] and are then given a relative percentage of the factor value. Accordingly, a highly valuable Treatment Alternative is assigned a greater percentage of Factor value for a specific site; an unfavorable alternative will be awarded a relatively low Factor value. The merits of this process are to assign fairly, through debate and discussion, the relative value of treatment alternatives- vis-a-vis, factors to specific park sites. The ensuing discussion provided an open forum that aired the disparate views held by various disciplines within the National Park Service.

In attendance were: Mike Hill, Superintendent, Petersburg NB, Dave Shockley, Chief of Resource Management at Petersburg NB, Ed Baron, Chief of Maintenance, Petersburg NB, Bob Page, Cultural Landscape Architect WASO, Dave Reynolds, Natural Resources Group Mgr. N.P.S., Russ Smith-Chief of Interpretation N.P.S., Eliot Foulds-Historical Landscape Architect Olmsted Center, and Roger Sherry- OCLP/U.Va. Cultural Landscape Research & Design Fellow.

Problem Statement

Opening the meeting, superintendent Mike Hill defined the inherent management problems and dilemmas facing the park. Prompted by a question from Dave Reynolds as to any new plans for "interpretation" on the Fish Hook line, Hill stressed the current need for a greater interpretive campaign for these resources. Hill pointed out the various threats to the setting of Forts Urmston, Fisher and Conahey presented by recent suburban development along Flank Road to the south and a steel recycling plant under construction to the north. Furthermore, the integrity of the earthworks is threatened by the presence of mature trees growing on and about the landforms. Blow down of these large trees can cause severe damage and increase the possibility of erosion. He suggests that careful removal of these trees is recommended. However, a dilemma exists in that these standing trees protect landforms[when in full canopy] from the buffeting of rains and also supply an essential ground cover of leaf litter, acting as the primary defense against soil erosion. While cutting down trees may eliminate the possibility of damage from blowdown it could actually add to the possibility of erosion due to insufficient leaf cover. Pointing out as examples Forts Urmston and Conahey, Superintendent Hill recognized that previous clear-cut treatments lacked the necessary follow-up procedure-establishing a protective cover. This resulted in rendering those landforms vulnerable to the ravages of erosion and have consequently caused their degradation. Recognizing the dangers of this incomplete approach he said, "we really made a mistake at Urmston and Conahey, we did the wrong thing...its like scraping the paint off and not putting any back on."

The assembled group referred to a recent report compiled by David Lowe, Cultural Resources GIS Washington, D.C. entitled, *Assessment of the Principal Earthworks Federal Fish Hook Line, Petersburg, Virginia*. June 1998. Lowe's report clearly states in the section entitled Earthworks Husbandry, "the superiority of mature forest canopy as protection." Warning of the inherent danger of tree throw on the Fish Hook line it suggests that storm damage could be catastrophic. The Lowe report goes on to state that, "The greatest damage to earthworks occurs when all large trees are removed without providing a new parapet cover." Once this protective canopy is removed the leaf litter cover is washed away with the next storm, erosion then begins to soften the profiles of the landforms. The solution in this case is to properly and efficiently make the transition from canopy/leaf litter to live vegetative cover [grasses]. This "transition [is]...the most dangerous time of the process." According to Lowe, "Grasses need to be sown and cultivated, while maintaining a protective surface cover."

After a considerable group discussion on the merits of grass cover, succession, and maintenance regimes, it was recognized by the group that the most effective method to span this transition period is Hydro-seeding with single stem fescue a non native hybrid grass. This method is currently used at Petersburg Park. Its application in field conditions has not resulted in a uniform monoculture, but instead has stood as a "nurse crop into which sensitive native plants can colonize. Mowing once or twice annually [depending on the conditions and interpretive value of a site] will effectively control woody succession.

To further complicate matters at Petersburg, other threats lurk in the forests of the Fish Hook line wreaking potential havoc on its delicate landforms. Falling trees, suburban development and industry notwithstanding, persistent foes of these cultural resources include; burrowing animals- such as foxes and groundhogs, relic hunters who dig holes and pits, visitors trampling social trails and children playing and bicycle riding.

CBA Process

Now better acquainted with the problems facing the site, the group set out to delineate factors relevant to the park's mission and to define a listing of "Treatment Alternatives". To reach this juncture several reports were cited and referred to for their valuable and pertinent information.

Fish Hook Line Tree Inventory June 1998 Dave Shockley

Managing Earthworks Under Forest Cover January 1998 James Johnson of Virginia Tech

Assessment of the Principle Earthworks, Federal Fish Hook Line June 1998 David Lowe NPS/GIS

Earthworks Landscape Management Manual 1989 Andropogon Associates.

The conversation critiqued the various Factor categories proposed; Preservation of structures, Interpretive value, Maintainability, Access and some additional factors were created. Dave Reynolds suggested a category that emphasizes the impact upon other park resources, such as Archaeology, referring to a park mandate that implies protection for all resources within the park. Eliot Foulds stated, "Here is a situation where cultural resources and natural resources are in apparent conflict with each other...a standoff." Bob Page added, "We should always consider the affect on other resources even though they may not be as significant." Superintendent Hill, expressed the management bind that these multiple resource goals have placed him in, "it is the fundamental dilemma of the park...we've got [118] historic structures made of dirt...they are the substrate for natural resources to live on." Dave Shockley expressed the need for a Visitor Safety Factor, due to the danger of falling branches and deep holes caused by animals and rotting stumps. Dave Reynolds raised the question of the interpretive value of sites relative to the preservation of structures, opening a discussion on the disparity of interpretive potential between various sites. For example, forts Fisher and Conahey both possess high interpretive potential in the area of military engineering. Fisher, unique because its size [the largest of the Petersburg front] has surviving features such as drainage ditches, not found anywhere else, where Conahey is unique for its casemates.

Ed Baron stated, "We have Fort Lee right next door...constantly sending military classes over here." Mike Hill embellished, "There is a new demand for studying military engineering, they use the Civil War as a point of departure for modern warfare and training modern officers ...there is definitely a demand out there." Moving towards establishing factors for interpretive potential, Bob Page explained, "When we are looking at interpretive value...if something is unique at one of those forts, there is a higher need to protect and preserve it...because it gives you an opportunity there that you don't have potentially someplace else. We're looking at those things that have an incredibly high value for interpretation because they are not one of several." Dave Reynolds offered a caveat to separate interpretive value from research value. The former is directed towards the education of the general public, the latter is considered for special interest groups such as archaeologists, military historians and Civil War enthusiasts. It was agreed by the group that for the purposes of this exercise only the interpretive value for the general public will be considered. Regarding public access it was agreed that access to and within the sites is not necessarily limited to physical accessibility. Roger Sherry suggested that visual access is equally important to the factors of interpretation and preservation and mentioned, "In some instances, restricting access to the visual may be a preferred treatment for interpretation and actually foster resource preservation."

Establishment of Factors, Values and Alternatives

Preservation of Structures [landforms]	1000	Purpose of the park is to preserve for historical purposes the earthworks, breastworks, walls, forts and other structures
Interpretive Value	900	To interpret to the public the integrity and significance of the site and it's structures
Visitor Safety	600	To protect people from falling objects, holes from rotting stumps and ground creatures.
Access	800	Rating of physical and visual access and restrictions
Maintainability	850	Ability to maintain treatment over time, [improve efficiency and sustainability
Effect on Other Resources	800	Minimize the effects upon other resources i.e. water quality, soil erosion and drainage, archaeology, endangered species

Treatment Alternatives:

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. No Action {no husbandry} 2. Remove Trees over 12" dbh 3. Remove all trees 4. Manage for Hazard Trees | <p>Tree husbandry on trees on or within falling distance of earthworks</p> <p>Hydroseeding with single-stem fescue as a nurse grass to encourage native plant colonies</p> <p>Selectively log trees posing a potential danger to landforms</p> |
|--|--|

Categorizing the Earthworks

A discussion on a methodology for the categorization of forts and landforms followed the charting of factors and alternatives. Because of site specific characteristics it was generally agreed that the forts be divided into separate categories. Fort Fisher due to its size and unique character defining features was placed its own category. Likewise Forts Urnston and Conahey due to their recent degradation, proximity to the Flank Road and potentially high interpretive value, were classified in one category. Forts Wheaton, Gregg, Welch and Battery 27 were grouped together because they are situated in woodlands and are protected by forest canopy. Also, since they are not adjacent to a paved road, visitor access is limited. Battery 27 and Fort Welch are in excellent condition. Forts Gregg and Wheaton are in fair condition. In the Interpretive Value Factor, Battery 27 & Welch were separated into a sub-category due to their high integrity of surviving details, [gun platforms, embrasures, ramps etc.] and because of an existing foot path that offers pedestrian access. In the Maintainability Factor, Forts Wheaton, Welch and Battery 27 were combined in one group and Fort Gregg was given its own category, this was necessary in assigning value to Alternative #3, because Fort Gregg will be most difficult to maintain since it has no vehicular access.

Methodology and Rationale for Fort Fisher

With the organization of forts into respective groups, members assigned a value to each Treatment Alternative relative to Factors. Ms. Janes suggested that Alternatives for Fort Fisher be discussed first. Their rationale is as follows:

Preservation of Structures:

Alternative #1 No action / no husbandry.

This treatment allows for a vigorous forest creating protection through canopy and ample quantities of leaf litter. However the constant threat of wind throw makes this alternative less than desirable.

This treatment was assigned 500 points

Alternative #2 Removing all trees over 12" dbh.

This treatment will actually encourage the forest understory and give the fast growing trees like Loblolly pine and sweet gum a jump start. Loblolly, a species especially prone to blow-down could become a recurring threat to the earthworks. It is also recognized that removing 12" dbh trees will severely limit the supply of leaf litter which cover the site and prevents erosion. This alternative creates recurring detrimental effects upon the site. This treatment was assigned 200 points.

Alternative #3 Removal of all trees.

In the case of Fort Fisher, because of the width of its walls and the design of the earthworks, removal of all trees and seeding is recommended as the best Treatment for Preservation. Fisher's walls are so steep that the leaf litter doesn't remain on the slope. Leaves are deposited in gullies or the moat [ditch], leaving the landforms vulnerable to erosion. Therefore a mass removal of trees combined with hydro-seeding is ultimately more efficient than selective cutting of hazard trees or Alternative #2. This treatment was assigned 1000 points.

Alternative #4 Manage for Hazard trees.

It is difficult to accurately predict when a tree growing on the peneplain will fall upon the earthwork. Storms can blow down healthy trees as well as sick trees, also it is difficult and expensive to access trees for removal within the forest and removal is sometimes disruptive or damaging to the earthworks. This Alternative is necessary in cases where large trees pose an immediate threat to resources but in terms of Preservation of Fort Fisher the risk here is not visible. This treatment was assigned 700 points.

Interpretive Value:

Alternative #1 No action / no husbandry.

Left to present management levels the significant characteristics of this site will continue to degrade over time. The existence of forest and undergrowth will tend to inhibit the interpretive ability of the site. This treatment was assigned 500 points.

Alternative #2 Removing all trees over 12"dbh

As explained earlier, this treatment will contribute to an increased degradation of the earthworks on this site, creating irreversible damage and inhibiting interpretive value.

This treatment was assigned 200 points.

Alternative #3 Removal of all trees.

This treatment will serve to create the highest degree of Interpretive value. Cleared earthworks securely covered in native grasses will protect the site's resources as well as offering visibility contributing to a greater understanding of integrity and significance. This treatment was assigned 900 points.

Alternative #4 Manage for Hazard trees.

Although removing dangerous trees will protect landforms, the Interpretive capacity of the site will not necessarily be enhanced by this treatment. Vigorous undergrowth and erosion will persist, threatening the integrity of the earthworks. This treatment was assigned 500 points.

Visitor Safety:

Alternative #1 No action / no husbandry

Obviously a policy of no action here on this site will drastically increase the potential danger to the visitor over time. An unacceptable solution. This treatment was assigned 50 points.

Alternative #2 Removing all trees over 12"dbh

Removal of the larger trees, as stated earlier, will contribute to erosion due to inadequate leaf litter, and create a muddy condition following a rain. Removal of 12"dbh trees will also encourage invasives [such as poison ivy] and a greater density in the understory which will adversely affect visitor safety. This treatment was assigned 200 points

Alternative #3 Removal of all trees

Lumbering the trees and establishing a ground cover mix of native and non-native grasses will lessen the danger of falling limbs and holes from rotting stumps. This is by far the safest alternative. This treatment was assigned 600 points.

Alternative #4 Manage for Hazard trees

Removal of the trees deemed hazardous will increase visitor safety, yet the other current dangers to park visitors will not be eliminated by this treatment. Safety precaution is only reduced to half. This treatment was assigned 300 points.

Access:

Alternative #1 No action / no husbandry

Physical and visual access is poor on the existing site, with a policy of no action in place, access would surely not improve. This treatment was assigned 100 points.

Alternative #2 Removing all trees over 12"dbh

With the removal of the larger trees and the subsequent increase in succession, including invasives and a vigorous understory, physical and visual access would certainly deteriorate relative to existing conditions. This treatment was assigned 50 points.

Alternative #3 Removal of all trees

With the application of this treatment the visual and physical access to the fort from within and without would improve dramatically. This treatment was assigned 800 points.

Alternative #4 Managing for Hazard trees

Clearing select dangerous trees would not necessarily have a positive effect upon access, the effect would be similar to treatment #1. This treatment was assigned 100 points.

Maintainability:

Alternative #1 No action / no husbandry

No action is obviously by far the cheapest maintenance regimen. Assigned 850 points.

Alternative #2 Removing all trees over 12" dbh.

Large trees can be logged and allowed to fall on top of each other to buffer the ground from impact and spare damage to the earthworks. This would require periodic yet infrequent maintenance. Assigned 550 points.

Alternative #3 Removal of all trees

The most cost effective method for logging is a clear cut operation followed by a mowing schedule. This would require semi-annual mowing of established turf. Assigned 600 points.

Alternative #4 Manage for Hazard trees

Since there is no access for heavy equipment, trees that present a hazard must be selectively logged, cut in manageable pieces and carefully removed from the site, a labor intensive and expensive undertaking. Assigned 500 points.

Effect on Other Resources:

Alternative #1 No action / no husbandry

Although a policy of No Action may contribute a negative affect upon factors of preservation, interpretation, safety and access; in terms of resource degradation the negative effect here will certainly be minimal. Assigned 800 points.

Alternative #2 Removing all trees over 12" dbh

Large tree removal [12" dbh or greater], will disrupt the habitat of various species and create a possible disturbance of known and potential archaeological sites. Assigned 600 points.

Alternative #3 Removal of all trees.

This treatment, will have the greatest impact upon other resources. Woody plant diversity and existing species will suffer. Ecotones will be altered from center to edge. The initial result will be a monoculture of grass until native species can establish. Assigned 100 points

Alternative #4 Manage for Hazard trees

Standing snags and trees in a degraded condition create habitat for species, such as the woodpecker. Their removal will adversely effect those species. However, the site will maintain species diversity and other resources [archaeology] will be relatively undisturbed. Assigned 700 points.

With the completion of assigning values for Treatment Alternatives to their relative Factors for Fort Fisher the group then began the task of assigning values for each of the other forts in the Fish Hook Line. The rationale remained constant for the other forts and was applied in terms relevant to each successive category. Issues of integrity, significance, efficiency, etc. were weighed at each instance, the results of which are too lengthy to cover within the scope of this report. Please refer to the attached chart for the final value assignments.

Conclusion

Highest Values Obtained for Treatment Alternatives:

Treatment Alternative #4 for Forts Wheaton, Welch Gregg and Battery 27.....	4450 points
Treatment Alternative #3 for Forts Urmston and Conahey.....	4100 points
Treatment Alternative #3 for Fort Fisher.....	4000 points

Lowest Values Obtained for Treatment Alternatives:

Treatment Alternative #2 for Forts Wheaton, Welch, Gregg and Battery 27.....	2700 points
Treatment Alternative #2 for Forts Urmston and Conahey.....	2150 points
Treatment Alternative #2 for Fort Fisher.....	1800 points

According to this process, the resultant values assigned to Treatment Alternatives point the way to a clear direction for future park management policy. Forts that possess a potentially high degree of interpretive value and are currently threatened by detrimental pressures[Fisher, Urmston and Conahey] should be given a higher management priority i.e. Treatment #3. The results of pursuing Treatment #3, will: 1. Prevent cultural resource degradation. 2. Enhance interpretive value. 3. Improve safety. 4. Promote access and sustainability. Forts Wheaton, Gregg, Welch and Battery 27 will be managed with Treatment #4, attempting to insure against windthrow and relying upon protective forest cover to stabilize these sites for the immediate future.

"Choosing By Advantages" A Site Specific Evaluation of Alternatives at Petersburg's Left-Flank and Fish Hook

FACTORS	1				2				3				4			
	No Action				Remove Trees > 12" dbh				Remove All Trees				Manage Hazard Trees			
	Ur/Co	Fisher	27/W/G/Wh		Ur/Co	Fisher	27/W/G/Wh		Ur/Co	Fisher	27/W/G/Wh		Ur/Co	Fisher	27/W/G/Wh	
Preservation of Landform 1000	500	500	800		200	200	400		1000	1000	1000		700	700	1000	
Interpretive Value 900	400	500	27/W/Wh	W/G	500	200	27/W/Wh	W/G	900	900	27/W/Wh	W/G	450	500	27/W/Wh	W/G
			800	800			700	500			900	700			900	900
Visitor Safety 600	200	50	300		400	200	500		600	600	600		300	300	450	
Access 800	50	100	600		50	50	400		800	800	800		50	100	700	
Maintainability/Mgt. Cost 850	850	850	850		600	550	200		600	600	27/W/Wh	G	600	500	700	
Effect on Other Resources 800	800	800	800		600	600	600		200	100	100		700	700	700	
TOTALS	2800	2800	4150		2150	180	2700		4100	4000	3250		2800	280	4450	

APPENDIX B

UNIVERSAL SOIL LOSS EQUATION/REVISED UNIVERSAL SOIL LOSS EQUATION - 'C' FACTORS

RUSLE Grassland "C" Factors: Natural Resource Conservation Service Technical Guide - Section I - Erosion Prediction - April 1995

Hay land "C" Factors for establishment year		Factor "C"
Previous Crop/High Residue	Spring Seeding	.13
Previous Crop/Low Residue	Summer Seeding	.15
Established Meadows		
Grass (5% Bare Ground)		.005
Legume (5% Bare Ground)		.005
(20% Bare Ground)		.01
(40% Bare Ground)		.02

RUSLE Undisturbed Forest Land "C" Factors: USDA-SCS Field Office Technical Guide Section I-C Table 6 - March 1989

Pct. of area covered by canopy of trees and undergrowth	Percent of area covered by duff	Factor "C"
100-75	100-90	.0001-.001
70-45	85-75	.002-.004
40-20	70-40	.003-.009

RUSLE "C" Factors for Permanent Pasture, Grazed Woodland and Idle Land: USDA-SCS Field Office Technical Guide Section I-C Table 5 - March 1989 (*1)

Vegetative Canopy			Percent cover that contacts the soil surface (*5)					
Type and Height (*2)	Pct. cover (*3)	Type (*4)	0	20	40	60	80	95+
No appreciable canopy		G	0.45	0.20	0.10	0.042	0.013	0.003
		W	0.45	0.24	0.15	0.091	0.43	0.011
Tall grass, weeds or short brushes with average drop fall height of less than 3 ft.	25	G	0.36	0.17	0.09	0.038	0.013	0.003
		W	0.36	0.20	0.13	0.083	0.041	0.011
	50	G	0.26	0.13	0.07	0.035	0.012	0.003
		W	0.26	0.16	0.11	0.076	0.039	0.011
	75	G	0.17	0.10	0.06	0.032	0.011	0.003
		W	0.17	0.12	0.09	0.068	0.038	0.011
Appreciable brush or brushes, with average drop fall height of 6.5 feet.	25	G	0.40	0.18	0.09	0.040	0.013	0.003
		W	0.40	0.22	0.14	0.087	0.042	0.011
	50	G	0.34	0.16	0.08	0.038	0.012	0.003
		W	0.34	0.19	0.13	0.082	0.041	0.011
	75	G	0.28	0.14	0.08	0.036	0.012	0.003
		W	0.28	0.17	0.12	0.078	0.040	0.011
Trees, but no appreciable low brush. Average drop fall height of 13 feet.	25	G	0.42	0.19	0.10	0.041	0.013	0.003
		W	0.42	0.23	0.14	0.089	0.042	0.011
	50	G	0.39	0.18	0.09	0.04	0.013	0.003
		W	0.39	0.21	0.14	0.087	0.042	0.011
	75	G	0.36	0.17	0.09	0.39	0.012	0.003
		W	0.36	0.20	0.13	0.84	0.41	0.11

Notes: *1) The listed C values assume that the vegetation and mulch are randomly distributed over the entire area.
 *2) Canopy height is measured as the ave. fall height of water drops from falling from the canopy to the ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 feet. Rain drops reach terminal velocity after a 33 foot fall.
 *3) Portion of total area surface that would be hidden from bird's-eye-view by canopy
 *4) G = cover at the surface is grass, grasslike plants, or decaying compacted duff. W = cover at surface is mostly broadleaf herbaceous plants (as weeds with little lateral-root network near the surface) or undecayed residues or both.
 *5) The portion of a grass or weed cover that contacts the soil surface during a rainstorm and interferes with water flow over the soil surface is included in the "cover of the surface." The remainder is included in canopy cover. For nearly complete grass cover use "C" factor for an established hay crop.

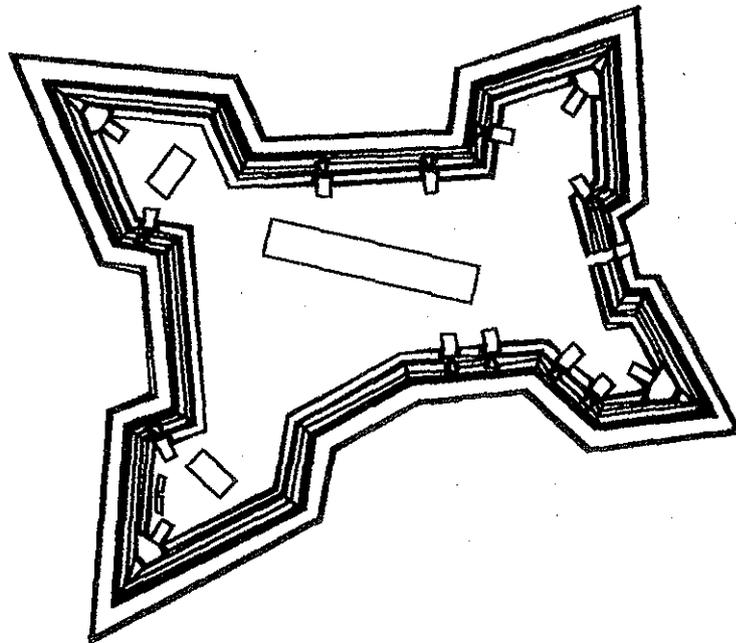
APPENDIX C
PRESERVE EARTHEN FORTS REPORT 21 JULY 1998



PRESERVE EARTHEN FORTS REPORT

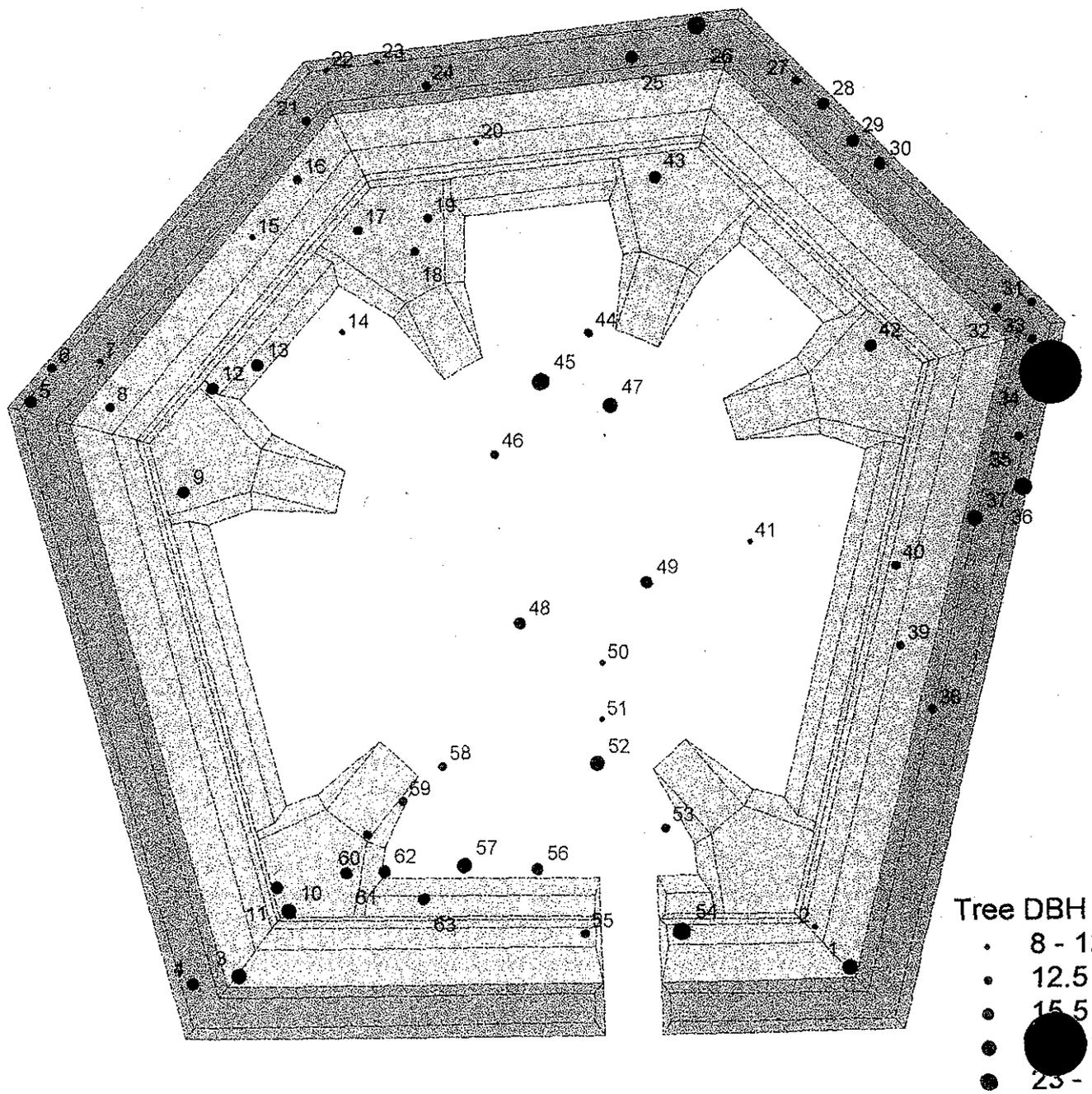
Package #: PETE 163
July 21, 1998

NATIONAL PARK SERVICE
NORTH EAST REGION
PETERSBURG NATIONAL BATTLEFIELD



Petersburg National Battlefield
1539 Hickory Hill Road
Petersburg, Virginia 23803

Fort Urmston



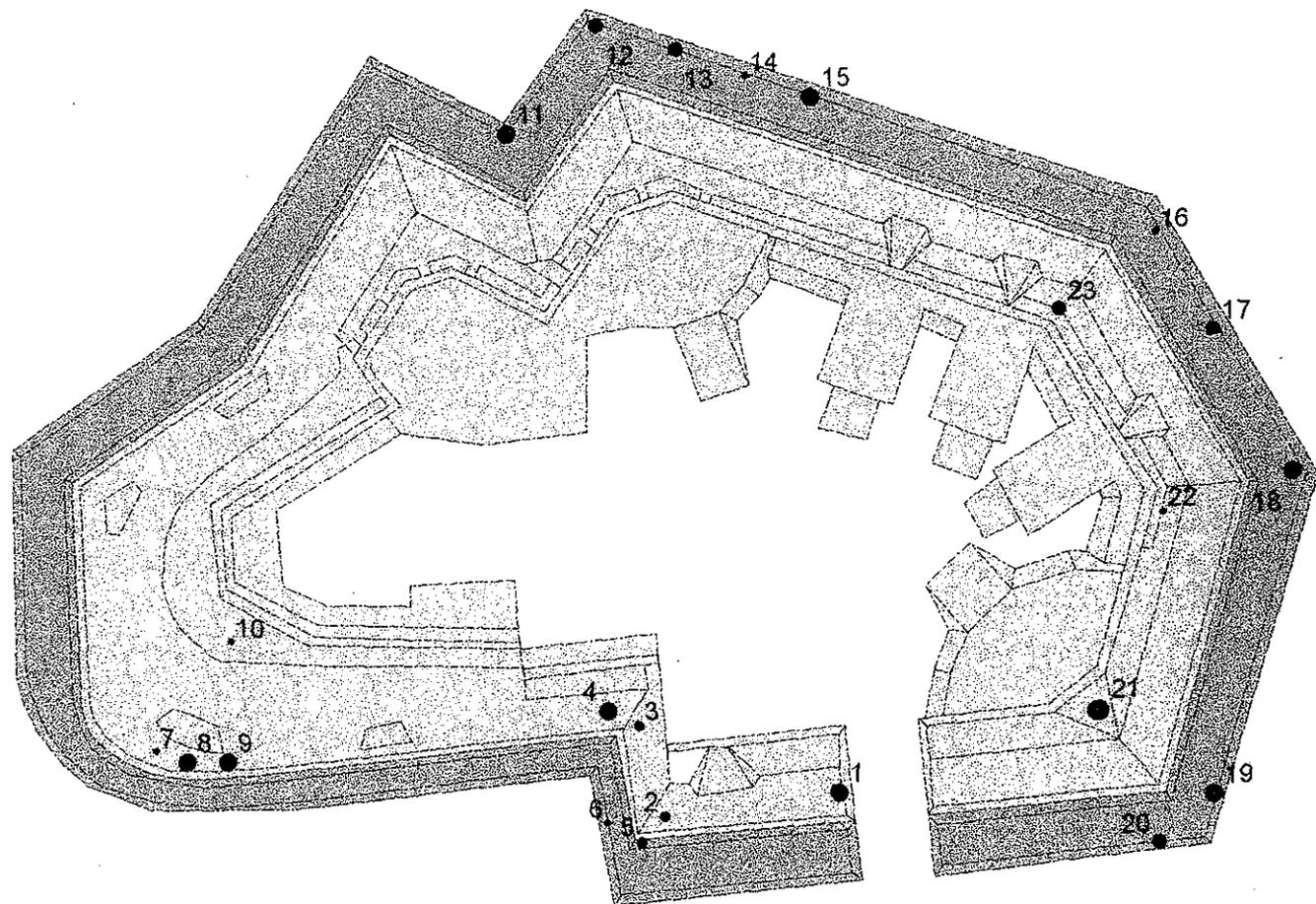
Fort Urmston

Number	Location	Species	Dbh	Hazard	Comments	Cost	Adjusted Cost
1	Wall	Pine	20.5			600	450
2	Wall	Snag	8	Yes		150	150
3	Wall	Maple	20		Butt rot	550	550
4	Moat	Hickory	17			425	425
5	Moat	Pine	16			300	225
6	Moat	Pine	13			200	150
7	Moat	Pine	12			200	150
8	Wall	Oak	14			200	200
9	Wall	Oak	16			300	300
10	Wall	Oak	19.5			550	550
11	Wall	Oak	18			425	425
12	Wall	Oak	16			300	300
13	Wall/Floor	Oak	17.5			425	425
14	Floor	Pine	12			200	150
15	Wall	Pine	12.5			200	150
16	Wall	Pine	14			200	150
17	Floor	Pine	13			200	150
18	Floor	Oak	13			200	200
19	Floor	Pine	14.5			300	225
20	Wall	Tulip Poplar	12.5			200	200
21	Moat	Hickory	14			200	200
22	Moat	Snag	8	Yes		150	150
23	Moat	Maple	12.5			200	200
24	Moat	Pine	14			200	150
25	Moat	Maple	17			425	425
26	Moat	Oak	26			700	700
27	Moat	Pine	13			200	150
28	Moat	Pine	17			425	318.75
29	Moat	Pine	18			425	318.75
30	Moat	Pine	19			550	412.5
31	Moat	Maple	15		Double stem	300	300
32	Moat	Maple	15		Double stem	300	300
33	Moat	Sweet Gur	14			200	200
34	Moat	Sweet Gur	12			200	200
35	Moat	Sweet Gur	13			200	200
36	Moat	Pine	26			700	525
37	Moat	Sweet Gur	21			600	600
38	Moat	Sweet Gur	15.5			300	300
39	Wall	Snag	13.5			200	200
40	Wall	Sweet Gur	15			300	300
41	Floor	Pine	12.5			200	150
42	Wall	Snag	18			425	425
43	Wall	Oak	16			300	300
44	Floor	Pine	15			300	225
45	Floor	Oak	26			700	700
46	Floor	Oak	13			200	200
47	Floor	Oak	22			600	600
48	Floor	Pine	16			300	225

49	Floor	Sweet Gur	17.5	425	425	
50	Floor	Pine	12	200	150	
51	Floor	Pine	12	200	150	
52	Floor	Pine	22.5	650	487.5	
53	Floor	Pine	13.5	200	150	
54	Floor	Pine	25	700	525	
55	Floor	Pine	14.5	300	225	
56	Floor	Pine	18	425	318.75	
57	Floor	Pine	23	650	487.5	
58	Floor	Pine	13	200	150	
59	Floor	Pine	15	300	225	
60	Floor	Pine	14	200	150	
61	Floor	Pine	18	425	318.75	
62	Floor	Pine	17.5	425	318.75	
63	Floor	Pine	17	425	318.75	
				Total Price	\$21,650	\$18,900

Cruised by Brian McCleaf 9/10/97

Fort Conahey



Tree DBH

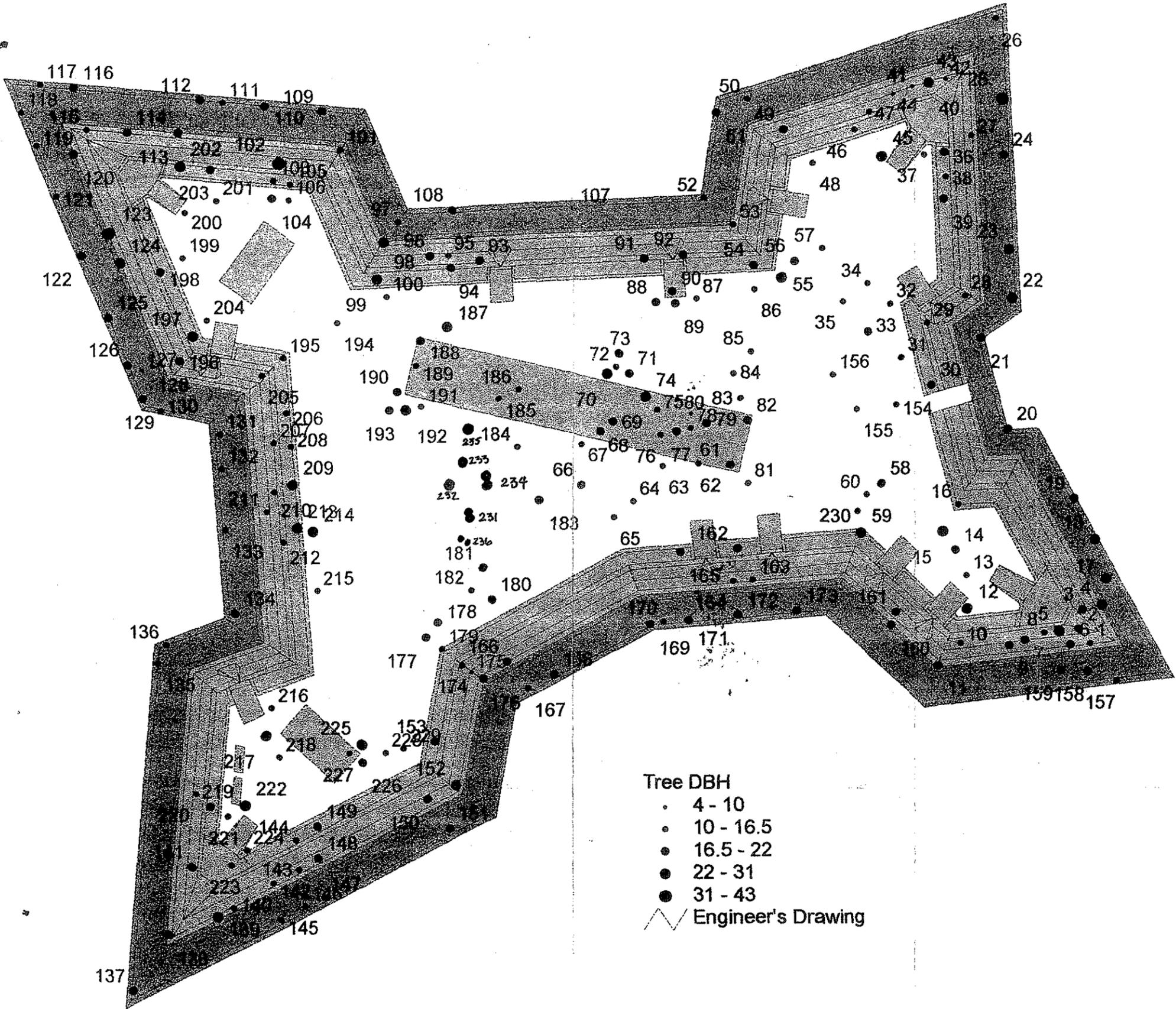
- 13.5 - 16
- 16 - 18.5
- 18.5 - 24
- 24 - 29
- 29 - 35

Fort Conahey

Number	Location	Species	Dbh	Hazard	Comment	Cost	Adjusted Cost
1	Wall	Oak	25.5			700	700
2	Wall	Hickory	18			425	425
3	Wall	Oak	17		Double Stem	425	425
4	Wall	Oak	26		Double Stem	700	700
5	Wall/Moat	Sweet Gur	18.5			550	550
6	Moat	Pine	15.5			300	225
7	Wall	Pine	16			300	225
8	Wall	Oak	26		Double Stem	700	700
9	Wall	Oak	26		Double Stem	700	700
10	Wall	Hickory	13.5			200	200
11	Moat	Oak	28			750	750
12	Moat	Oak	20.5			600	600
13	Moat	Oak	23			650	650
14	Moat	Oak	16			300	300
15	Moat	Oak	29			800	800
16	Moat	Oak	14.5			300	300
17	Moat	Oak	21			600	600
18	Moat	Oak	29			800	800
19	Moat	Oak	26			700	700
20	Moat	Oak	24			650	650
21	Wall	Sweet Gur	35			950	950
23	Wall	Oak	22			600	600
22	Wall	Sweet Gur	15			300	300
Total Price						\$13,000	\$12,850

Cruised by Brian McCleaf 9/10/97

Fort Fisher



- Tree DBH
- 4 - 10
 - 10 - 16.5
 - 16.5 - 22
 - 22 - 31
 - 31 - 43
 - ▬ Engineer's Drawing

Fort Fisher

Number	Location	Species	Dbh	Hazard	Comment	Cost	Adjusted Cost
1	Wall	Maple	16			300	300
2	Wall	Pine	20			550	412.5
3	Wall	Pine	17			425	318.75
4	Moat	Pine	27			750	562.5
5	Wall	Pine	23			650	487.5
6	Wall	Pine	19			550	412.5
7	Wall	Pine	21			600	450
8	Wall	Maple	12			200	200
9	Wall	Pine	22			600	450
10	Wall	Oak	15			300	300
11	Wall	Pine	19			550	412.5
12	Floor	Pine	23			650	487.5
13	Floor	Hickory	13			200	200
14	Floor	Oak	18.5			550	550
15	Floor	Oak	26			700	700
16	Floor	Oak	16			300	300
17	Moat	Pine	26			700	525
18	Moat	Pine	25			700	525
19	Moat	Pine	21			600	450
20	Moat	Hickory	22		Double Stem	600	600
21	Moat	Oak	19			550	550
22	Moat	Hickory	23.5			650	650
23	Moat	Maple	24			650	650
24	Moat	Pine	22			600	450
25	Moat	Oak	35	Yes	Flux Disease	950	950
26	Moat	Maple	16			300	300
27	Moat	Maple	13.5			200	200
28	Wall	Maple	16			300	300
29	Wall	Pine	14.5			300	225
30	Wall	Oak	21			600	600
31	Floor	Oak	14			200	200
32	Floor	Hickory	16			300	300
33	Floor	Tulip Poplar	19			550	550
34	Floor	Snag	13	Yes		200	200
35	Floor	Tulip Poplar	13			200	200
36	Wall	Oak	19.5		Double Stem	550	550
37	Wall	Oak	15.5		Double Stem	300	300
38	Wall	Oak	12		Double Stem	200	200
39	Wall	Oak	18		Double Stem	425	425
40	Wall	Snag	24	Yes		650	650
41	Wall	Snag	4	Yes		25	25
42	Wall	Snag	7	Yes		150	150
43	Wall	Snag	4	Yes		25	25
44	Wall	Snag	7	Yes		150	150
45	Floor	Oak	31	No	Dead Limbs	850	850
46	Floor/Wall	Oak	14			200	200
47	Floor/Wall	Oak	13			200	200
48	Floor	Oak	15			300	300

49	Wall	Oak	22		600	600
50	Moat	Pine	15.5		300	225
51	Moat	Pine	21.5		600	450
52	Moat	Oak	15		300	300
53	Moat	Pine	14		200	150
54	Wall	Pine	18	Yes	425	318.75
55	Floor	Pine	27		750	562.5
56	Floor	Oak	20		550	550
57	Floor	Hickory	12		200	200
58	Floor	Pine	19		550	412.5
59	Floor/Wall	Oak	25		700	700
60	Floor	Hickory	13		200	200
61	Traverse	Pine	17.5		425	318.75
62	Traverse	Hickory	15		300	300
63	Floor	Snag	14	Yes	200	200
64	Floor	Oak	16.5		425	425
65	Floor	Pine	14	Double Stem	200	150
66	Floor	Oak	18		425	425
67	Floor	Maple	13		200	200
68	Traverse	Pine	19		550	412.5
69	Traverse	Pine	19		550	412.5
70	Floor	Pine	29		800	600
71	Floor	Oak	17		425	425
72	FloorFloor	Oak	12	Double Stem	200	200
73	Floor	Oak	18	Double Stem	425	425
74	Traverse	Oak	24		650	650
75	Traverse	Oak	12		200	200
76	Traverse	Oak	13.5		200	200
77	Traverse	Oak	18.5		550	550
78	Traverse	Oak	12		200	200
79	Traverse	Oak	21		600	600
80	Traverse	Snag	4.5	Yes	25	25
81	Traverse	American	13		200	200
82	Traverse	Pine	18		425	318.75
83	Traverse	Oak	12.5		200	200
84	Floor	Hickory	14		200	200
85	Floor	Hickory	14		200	200
86	Floor	Hickory	14		200	200
87	Floor	Pine	16		300	225
88	Floor	Pine	18		425	318.75
89	Floor	Oak	21	Double Stem	600	600
90	Floor	Oak	17	Double Stem	425	425
91	Wall	Oak	21		600	600
92	Wall	Pine	21		600	450
93	Wall	Pine	21		600	450
94	Wall	Oak	21	Double Stem	600	600
95	Wall	Oak	16.5	Double Stem	425	425
96	Wall	Pine	17		425	318.75
97	Moat	Pine	16		300	225
98	Wall	Pine	23		650	487.5
99	Floor/Wall	Oak	23		650	650

100	Floor	Pine	16			300	225
101	Wall	Oak	16			300	300
102	Wall	Oak	43			1150	1150
103	Floor	Maple	12			200	200
104	Floor	Maple	17			425	425
105	Floor	Oak	12.5			200	200
106	Floor	Maple	12			200	200
107	Moat	Pine	16			300	225
108	Moat	Oak	21	No	Dead Limbs	600	600
109	Moat	Pine	19			550	412.5
110	Moat	Pine	19			550	412.5
111	Moat	Pine	13.5			200	150
112	Moat	Pine	22			600	450
113	Wall	Maple	18			425	425
114	Wall	Pine	17.5			425	318.75
115	Moat	Oak	12			200	200
116	Moat	Pine	20.5			600	450
117	Moat	Pine	13.5			200	150
118	Moat	Oak	14			200	200
119	Moat	Oak	14	No	Dead Limbs	200	200
120	Moat	Pine	19			550	412.5
121	Moat	Oak	12			200	200
122	Moat	Oak	22			600	600
123	Moat	Oak	43		Double Stem	1150	1150
124	Moat	Pine	26			700	525
125	Moat	Oak	17			425	425
126	Moat	Oak	20.5			600	600
127	Moat	Snag	7	Yes		150	150
128	Moat	Snag	6	Yes		25	25
129	Moat	Oak	20			550	550
130	Moat	Oak	13.5			200	200
131	Moat	Snag	12	Yes		200	200
132	Moat	Oak	12			200	200
133	Moat	Oak	14			200	200
134	Moat	Pine	20			550	412.5
135	Moat	Oak	15			300	300
136	Moat	Oak	14.5			300	300
137	Moat	Oak	22			600	600
138	Moat	Pine	20			550	412.5
139	Wall	Oak	24.5			700	700
140	Wall	Snag	11.5	Yes		200	200
141	Wall	Pine	20			550	412.5
142	Wall	Oak	16.5			425	425
143	Wall	Oak	14.5			300	300
144	Wall	Pine	14			200	150
145	Moat	Pine	13			200	150
146	Moat	Pine	16			300	225
147	Moat	Oak	16			300	300
148	Wall	Oak	17			425	425
149	Wall	Pine	20			550	412.5
150	Moat	Pine	20			550	412.5

151	Moat	Pine	19			550	412.5
152	Wall	Snag	28	Yes		750	750
153	Wall	Pine	20			550	412.5
154	Wall	Sweet Gur	15			300	300
155	Floor	Sweet Gur	12			200	200
156	Floor	Sweet Gur	13			200	200
157	Floor	Pine	16			300	225
158	Moat	Pine	18			425	318.75
159	Moat	Pine	20			550	412.5
160	Moat	Pine	18.5			550	412.5
161	Wall	Hickory	17.5			425	425
162	Wall	Pine	19			550	412.5
163	Wall	Hickory	12			200	200
164	Moat/Wall	Maple	13			200	200
165	Wall	Pine	19.5			550	412.5
166	Moat/Wall	Pine	20			550	412.5
167	Moat	Sweet Gur	16			300	300
168	Moat	Sweet Gur	17			425	425
169	Moat	Oak	21.5			600	600
170	Moat	Maple	16			300	300
171	Moat	Pine	19			550	412.5
172	Moat	Oak	19			550	550
173	Moat	Oak	21			600	600
174	Wall	Oak	13.5		Triple Stem	200	200
175	Wall	Oak	10	Yes	Triple Stem	175	175
176	Wall	Oak	17		Triple Stem	425	425
177	Floor	Pine	20			550	412.5
178	Floor	Oak	18			425	425
179	Floor/Wall	Pine	14			200	150
180	Floor	Sweet Gur	17			425	425
181	Floor	Oak	17		Double Stem	425	425
182	Floor	Oak	15		Double Stem	300	300
183	Floor	Oak	18			425	425
184	Floor	Sweet Gur	13			200	200
185	Traverse	Hickory	12.5			200	200
186	Traverse	Sweet Gur	13			200	200
187	Floor	Snag	29	Yes		800	800
188	Traverse	Oak	21			600	600
189	Traverse	Pine	14.5			300	225
190	Floor	Pine	18			425	318.75
191	Floor	Pine	15			300	225
192	Floor	Oak	27.5		Double Stem	750	750
193	Floor	Pine	18			425	318.75
194	Floor	Pine	16			300	225
195	Wall	Oak	14			200	200
196	Wall	Pine	17			425	318.75
197	Wall	Oak	30			800	800
198	Wall	Oak	22			600	600
199	Floor	Pine	16			300	225
200	Floor	Pine	16			300	225
201	Floor	Oak	12			200	200

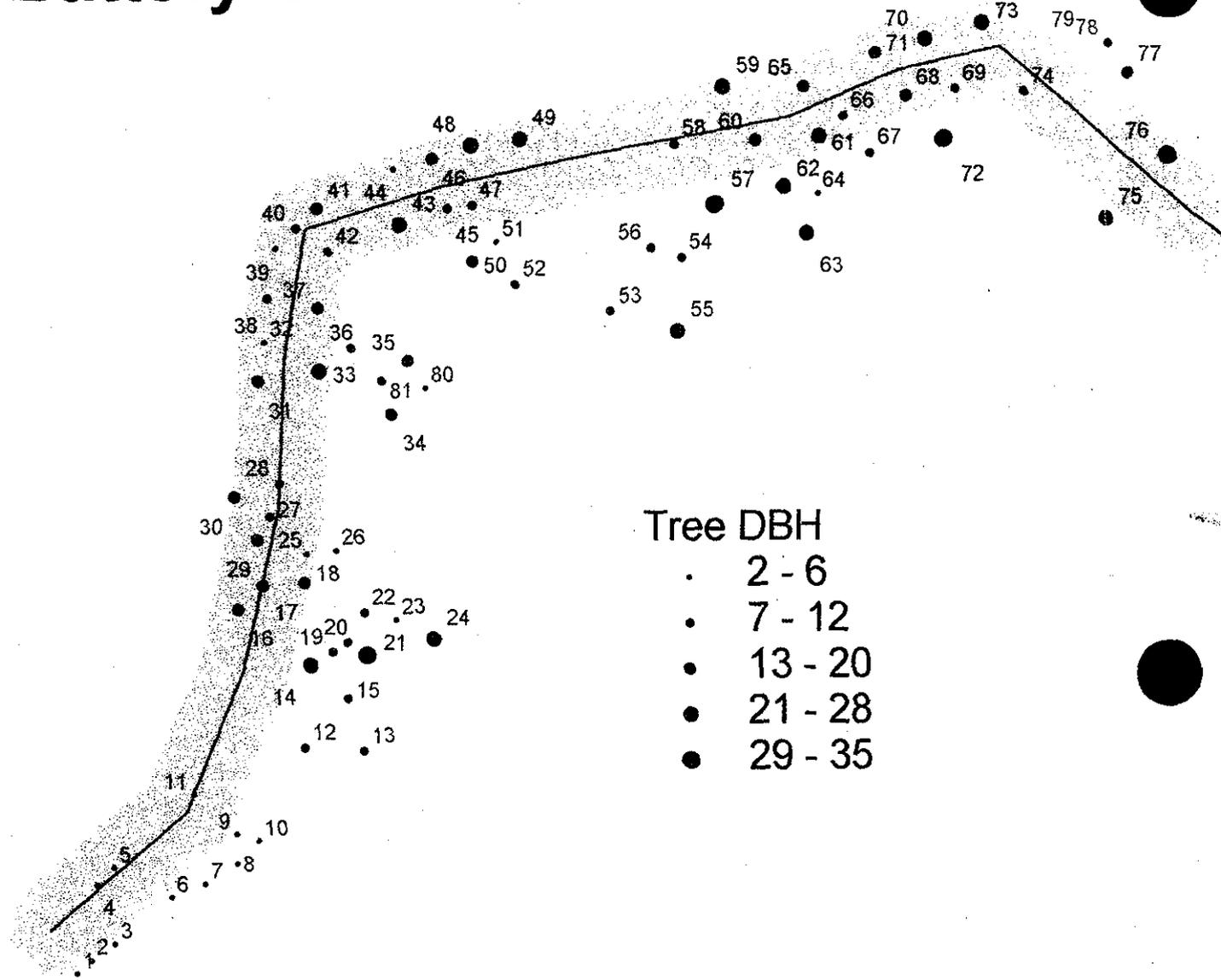
202	Floor/Wall	Oak	26		Double Stem	700	700
203	Floor/Wall	Snag	20.5	Yes	Double Stem	600	600
204	Floor/Wall	Snag	14	Yes		200	200
205	Wall	Maple	16			300	300
206	Floor/Wall	Oak	15			300	300
207	Floor/Wall	Oak	14		Double Stem	200	200
208	Floor/Wall	Oak	14		Double Stem	200	200
209	Floor	Oak	31			850	850
210	Wall	Pine	14			200	150
211	Wall	Pine	16			300	225
212	Wall	Pine	14			200	150
213	Floor	Oak	25			700	700
214	Floor	Oak	24			650	650
215	Floor	Oak	16.5			425	425
216	Floor	Oak	16			300	300
217	Floor	Oak	27			750	750
218	Floor	Oak	15.5			300	300
219	Wall	Oak	17			425	425
220	Wall	Pine	14			200	150
221	Floor	Oak	15			300	300
222	Floor	Oak	29			800	800
223	Floor/Wall	Oak	14		Double Stem	200	200
224	Floor/Wall	Oak	12		Double Stem	200	200
225	Floor	Oak	25			700	700
226	Floor	Oak	20			550	550
227	Magazine	Pine	16			300	225
228	Floor	Pine	15			300	225
229	Floor	Oak	12			200	200
230	Floor	Hickory	13			200	200
Total Price						\$95,175	\$86,206

Cruised by Brian McCleaf 9/4/97

231 FLOOR W. OAK 36" BASE DOUBLE LEADER 24-26" c.
 232 FLOOR W. OAK 18" dbh.
 233 FLOOR W. OAK 14" dbh.
 234 FLOOR W. OAK 36" BASE DOUBLE LEADER 18" c.
 235 FLOOR W. OAK 24" dbh.
 236 FLOOR HOLY TWIN 8" c.

ADDENDUM BY ROVER SHERRY 7/20/99

Battery 27



Tree DBH
• 2 - 6
• 7 - 12
• 13 - 20
• 21 - 28
• 29 - 35

Battery 27

Number	Location	Species	Dbh	Hazard	Comments	Cost	Adjusted Cost
1		Deciduous	3			25	25
2		Deciduous	3			25	25
3		Deciduous	3			25	25
4		Deciduous	3			25	25
5		Deciduous	3			25	25
6		Deciduous	3			25	25
7		Pine	3			25	18.75
8		Deciduous	2			10	10
9		Deciduous	3			25	25
10		Deciduous	4			25	25
11		Deciduous	4	split		25	25
12		Pine	12			200	150
13		Deciduous	9			150	150
14		Deciduous	26			700	700
15		Deciduous	9			150	150
16		Deciduous	20			550	550
17		Cedar	17			425	425
18		Cedar	18			425	425
19		Deciduous	7			150	150
20		Deciduous	8			150	150
21		Pine	30			800	600
22		Deciduous	8			150	150
23		Deciduous	4			25	25
24		Pine	28			750	562.5
25		Cedar	5			25	25
26		Deciduous	5			25	25
27		Deciduous	12			200	200
28		Cedar	10			175	175
29		Deciduous	18			425	425
30		Deciduous	17			425	425
31		Cedar	20			550	550
32		Deciduous	5			25	25
33		Cedar	25			700	700
34		Deciduous	16			300	300
35		Cedar	13			200	200
36		Deciduous	8			150	150
37		Cedar	13			200	200
38		Deciduous	11			175	175
39		Deciduous	4			25	25
40		Deciduous	9			150	150
41		Deciduous	14			200	200
42		Cedar	9			150	150
43		Pine	25			700	525
44		Cedar	6			25	25
45		Deciduous	8			150	150
46		Deciduous	18			425	425
47		Cedar	8			150	150
48		Pine	27	snag		50	37.5

49	Deciduous	27	split	Double Stem (14/13)	400	400
50	Deciduous	18			425	425
51	Cedar	5			25	25
52	Cedar	10			175	175
53	Cedar	10			175	175
54	Cedar	12			200	200
55	Pine	24			650	487.5
56	Pine	8	snag		150	112.5
57	Pine	30			800	600
58	Deciduous	11			175	175
59	Pine	24			650	487.5
60	Cedar	13			200	200
61	Pine	22			600	450
62	Deciduous	25			700	700
63	Deciduous	25			700	700
64	Deciduous	4			25	25
65	Cedar	14			200	200
66	Deciduous	8			150	150
67	Holly	7			150	150
68	Cedar	16			300	300
69	Deciduous	7			150	150
70	Deciduous	24			650	650
71	Deciduous	14			200	200
72	Deciduous	31			850	850
73	Pine	24			650	487.5
74	Deciduous	8			150	150
75	Deciduous	25			700	700
76	Deciduous	35			950	950
77	Deciduous	13			200	200
78	Deciduous	9			150	150
79	Deciduous	8			150	150
80	Deciduous	4			25	25
81	Deciduous	11			175	175

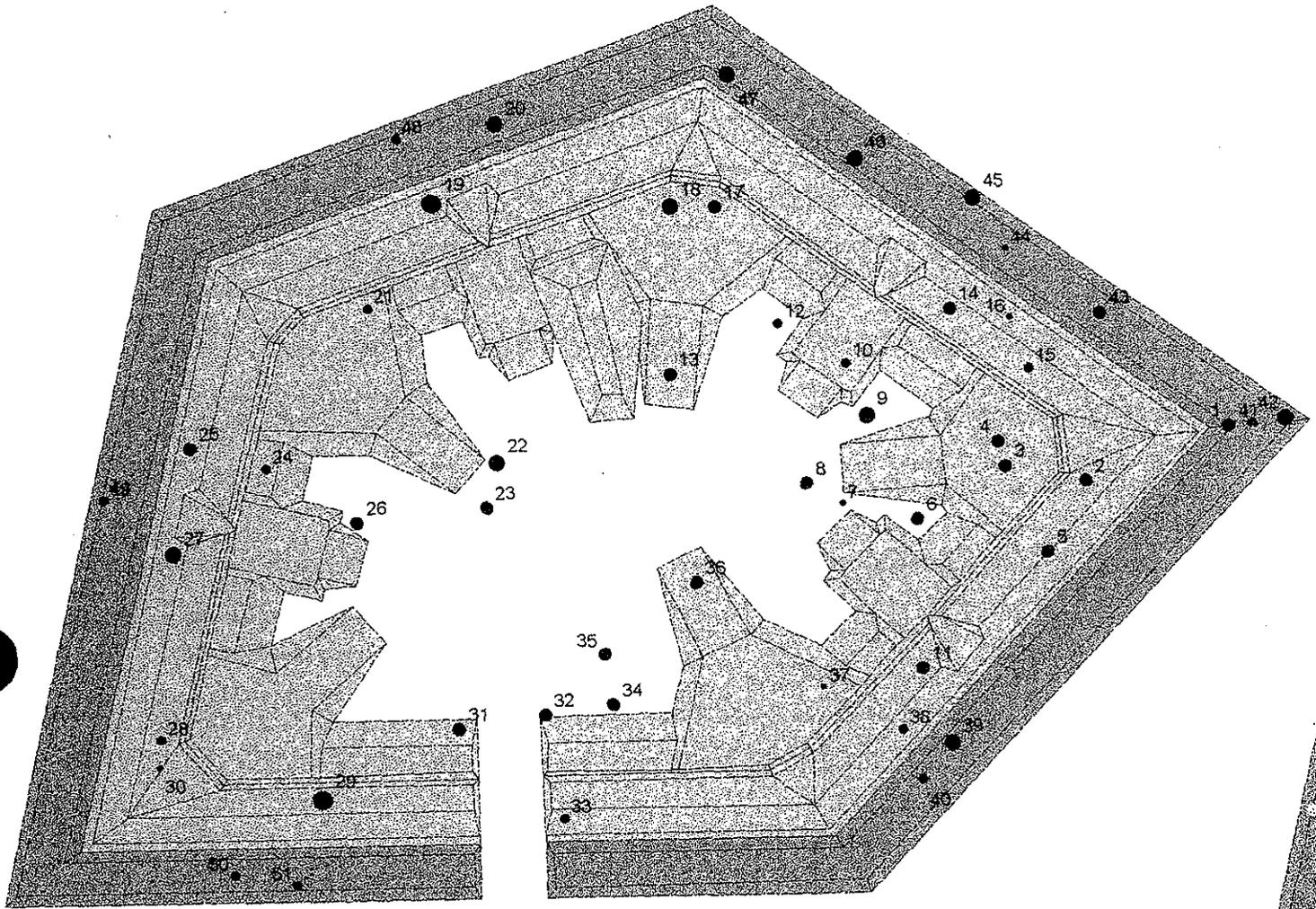
Total Price

\$22,310

\$20,829

Cruised by Brian Hall 6/5/98

Fort Welch



Tree DBH

- 7 - 10
- 11 - 14
- 15 - 18
- 19 - 23
- 24 - 32

→ 13' ←

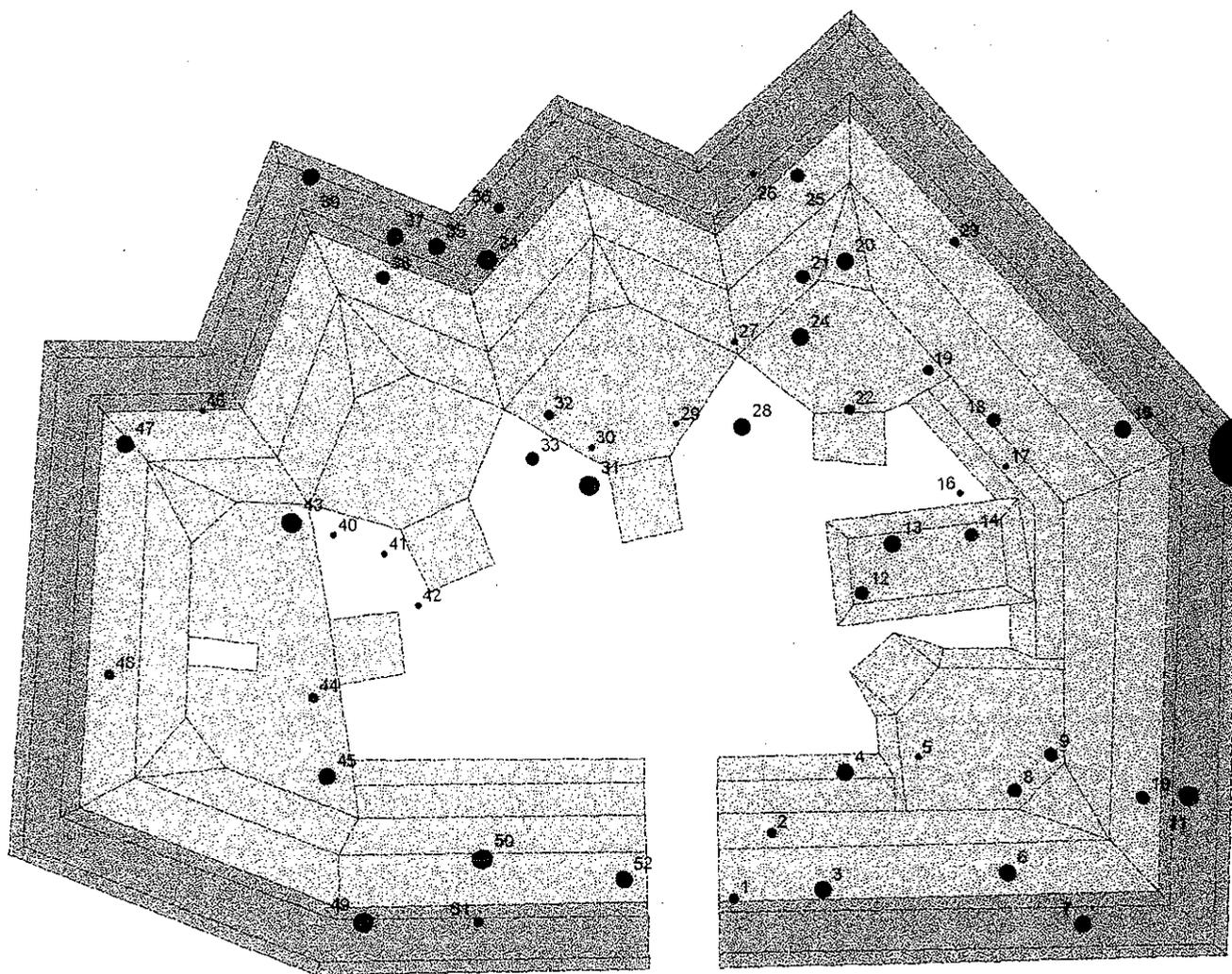
Fort Welch

Number	Location	Species	Dbh	Hazard	Comments	Cost	Adjusted Cost
1	Moat	Pine	18			425	318.75
2	Wall	Pine	16			300	225
3	Wall	Pine	17			425	318.75
4	Wall	Deciduous	16			300	300
5	Wall	Pine	18			425	318.75
6	Floor	Pine	18			425	318.75
7	Floor	Deciduous	10			175	175
8	Floor	Pine	17			425	318.75
9	Floor	Pine	20			550	412.5
10	Wall	Pine	14			200	150
11	Wall	Deciduous	18			425	425
12	Floor	Pine	12			200	150
13	Wall	Pine	16			300	225
14	Wall	Pine	16			300	225
15	Wall	Deciduous	14			200	200
16	Wall	Pine	10			175	131.25
17	Wall	Pine	15	Dead		300	225
18	Wall	Pine	20			550	412.5
19	Wall	Pine	26			700	525
20	Moat	Deciduous	19			550	550
21	Wall	Pine	13			200	150
22	Floor	Deciduous	19			550	550
23	Floor	Deciduous	17			425	425
24	Wall	Deciduous	14			200	200
25	Wall	Pine	17			425	318.75
26	Floor	Pine	15			300	225
27	Wall	Pine	21			600	450
28	Wall	Pine	13			200	150
29	Wall	Deciduous	32	Hollow		850	850
30	Wall	Deciduous	8			150	150
31	Wall	Pine	18			425	318.75
32	Floor	Pine	16			300	225
33	Wall	Pine	14			200	150
34	Floor	Pine	17			425	318.75
35	Floor	Pine	18			425	318.75
36	Wall	Pine	17			425	318.75
37	Wall	Pine	10			175	131.25
38	Wall	Pine	12			200	150
39	Moat	Deciduous	19			550	550
40	Moat	Pine	13	Dead		200	150
41	Moat	Deciduous	12			200	200
42	Moat	Deciduous	20			550	550
43	Moat	Deciduous	18			425	425
44	Moat	Deciduous	7			150	150
45	Moat	Pine	19			550	412.5
46	Moat	Pine	20			550	412.5
47	Moat	Pine	23			650	487.5
48	Moat	Pine	14			200	150

49	Moat	Pine	12	200	150	
50	Moat	Pine	13	200	150	
51	Moat	Pine	13	200	150	
				Total Price	\$18,450	\$15,263

Cruised by Brian Hall March 1998

Fort Gregg



Tree DBH

- 7 - 9
- 10 - 12
- 13 - 15
- 16 - 19
- 20 - 25

1" = 30' = 0"

48	Wall	Deciduous	12	200	200	
49	Moat	Pine	22	600	450	
50	Wall	Pine	21	600	450	
51	Moat	Deciduous	12	200	200	
52	Wall	Pine	17	425	318.75	
				Total Price	\$15,450	\$12,950

Cruised by Brian Hall March 1998

Fort Gregg

Number	Location	Species	Dbh	Hazard	Comments	Cost	Adjusted Cost
1	Wall	Deciduous	11			175	175
2	Wall	Pine	12			200	150
3	Wall	Pine	17			425	318.75
4	Wall	Pine	17			425	318.75
5	Wall	Deciduous	9			150	150
6	Wall	Pine	16			300	225
7	Moat	Deciduous	17			425	425
8	Wall	Deciduous	14			200	200
9	Wall	Pine	15			300	225
10	Wall	Pine	14			200	150
11	Moat	Deciduous	22		Triple Stem (9/6/7)	450	450
12	Wall	Pine	14			200	150
13	Wall	Pine	16			300	225
14	Wall	Pine	15			300	225
15	Wall	Pine	18			425	318.75
16	Floor	Deciduous	7			150	150
17	Wall	Deciduous	9			150	150
18	Wall	Pine	14			200	150
19	Wall	Pine	12			200	150
20	Wall	Pine	18			425	318.75
21	Wall	Pine	14			200	150
22	Wall	Deciduous	11			175	175
23	Wall	Pine	11			175	131.25
24	Wall	Pine	17			425	318.75
25	Wall	Pine	13			200	150
26	Moat	Deciduous	9			150	150
27	Wall	Deciduous	8			150	150
28	Floor	Pine	19			550	412.5
29	Wall	Deciduous	7			150	150
30	Wall	Deciduous	9			150	150
31	Floor	Pine	21			600	450
32	Wall	Deciduous	11			175	175
33	Floor	Pine	14			200	150
34	Wall	Deciduous	20		34 & 35 joined	550	550
35	Moat	Deciduous	17			425	425
36	Moat	Deciduous	10			175	175
37	Moat	Deciduous	17			425	425
38	Wall	Deciduous	13			200	200
39	Moat	Pine	17			425	318.75
40	Wall	Deciduous	9			150	150
41	Wall	Deciduous	9			150	150
42	Floor	Deciduous	7			150	150
43	Wall	Pine	25			700	525
44	Wall	Deciduous	11			175	175
45	Wall	Pine	19			550	412.5
46	Wall	Pine	7			150	112.5
47	Wall	Pine	16			300	225

APPENDIX D
LIST OF SPECIES AND CHARACTERISTICS

List of Species and Characteristics:

Indian Grass * *Sorghastrum nutans* grows easily from seed, thrives in shade, 3-8' height, rhizomatous, dry soil, drought tolerant, naturalistic planting

Indian or Wood Grass *Andropogon nutans* grows on barren soils and sandy plains, flowers from July to September, warm season grass

Poverty Grass (Three-awned Grass] *Aristida dichotoma, purpurescens, tuberculosa*

Arrowfeather Threeawn *Aristida purpurescens* cool season, early growth, 4"-12" full sun to shade

Switchgrass *Panicum virgatum* warm season, rhizomatous

Variable Panic Grass* *Dichanthelium commutatum*

Annual Ryegrass *Lolium temulentum* fast growing nurse grass will yield to perennial species within one year

Tall Fescue *Festuca pratensis, F. elatior*: also called "Meadow Fescue" introduced throughout cooler parts of North America, native of Eurasia, sometimes called English Bluegrass [Hitchcock] Grows in dense clumps, drought resistant, excellent erosion control along levees and stream banks, grows well in poor acid soils, or in shady woods [Flint, 1858]

Meadow Fescue *Festuca pratensis* most commonly known as Randall Grass in Va. good forage value

Red Fescue* *Festuca rubra* forms a sod, provides a habitat for wild turkey, shade tolerant, controls erosion, dry woods, roadsides, waste ground and ballast. Range in eastern U.S. and in the western mountains, Native in Europe, Asia and North Africa as well as North America, most occurrences in the eastern states seem to be introductions, long rhizomatous root system, grows to 36"

Hard Fescue *Festuca duriscula*

Blue Fescue *Festuca glauca* var. "Blau Silber" 8" clumping evergreen, summer heat tolerant, dry site, good ground cover, ornamental

Sheep's Fescue *Festuca amethystina* blue-grey, flowers in late spring, 8-12", good ground cover but short-lived to 3 years, good soil holding capability

Purple Top *Tridens flavus* shade loving, grows easily from seed, tufts and clumps, 12"-28" tall, warm season, deep burgundy flowers arrive late in summer, golden tan color in fall and winter, self-sowing, full sun to moderate shade, drought tolerant

Splitbeard Bluestem *Andropogon tenarius* warm season grass

Little Bluestem* *Schizachyrium scoparium* 2-3' height, clump forming, naturalistic planting, warm season

Broomsedge* *Andropogon virginicus* warm season clump grass, 2'-4' tall, full sun

Poverty Oatgrass* *Danthonia spicata*

Weeping Love Grass *Eragrostis curvula* 12-24" mounding habit, drought tolerant, evergreen in mild climates, grows easily from seed, great slope retention not considered to be highly invasive

Purple Love Grass *Eragrostis spectabilis* warm season perennial bunch grass, 1-3' grows easily from seed, dry sites, drought tolerant, natural planting, will increase under controlled annual burning, grows in colonies, some plants produce slender rhizomes, highly compatible with other species, range native to Va and all states east of the Rockies

Autumn Bentgrass* *Agrostis perennans* Clump grass, grows well in light shade to full sun, in hydric to dry conditions, 8" to 30" flowers late summer to autumn

Creeping Bentgrass *Agrostis stolonifera* grows in fresh water marshes and hydric fields, 8" to 20" full to partial sun, stoloniferous roots provide good erosion control

Side Oats Grama *Bouteloua curtipendula* grows easily from seed, full sun, poor soils, drought tolerant, dense, clumping, rhizomes, 1-2 feet tall, birds [sparrows] eat seeds, flowering stalks in early summer, stems persist through winter- first purple with frost then golden yellow, naturalizes with wildflowers and is appealing with gray-leaved artemisias

Wild Virginia Rye* *Elymus virginicus* partial shade /sun, produces best in 20-30% shade and when mixed with other grasses, dormant in summer hot months, grows in late fall, 50-60 degrees cool season bunch grass, 3-4' not a high forage producer, likes moist soil and drainages, seed is eaten by upland game birds

Canadian Wild Rye *Elymus canadensis* similar attributes of Virginia Wild Rye and readily available commercially

Creeping Wild Rye *Elymus tritichoides* 2-4' fast spreading native of American West, considered invasive

Bermuda Grass *Cynodon dactylon* full sun, stoloniferous, considered invasive

Buffalo Grass *Buchloe dactyloides* 4-6" fine textured, spreading, stoloniferous roots, great soil retention, birds love the seeds, full sun drought tolerant, not hydric, does well in poor soil, but slow- spreading [plugs] stolons are invasive, gray-green turf turns brown in cold weather and turns green in late spring, does not need cutting

Orchard Grass *Dactylis glomerata* warm season, calcareous loam and gravel, introduced from North Africa and Europe

Poverty Oatgrass * *Danthonia spicata*

Crabgrass *Digitaria sanguinalis*

Joe Pye Weed *Eupatorium fistulosum* showy pink and purplish flowers attract butterflies, can grow to height of 5-6 feet

Creeping Phlox * *Phlox stolonifera* showy pink and purple flowers attract butterflies

Round headed Bush Clover *Lespedeza capitata*, nitrogen fixing legume fibrous roots, yellowish white flower provides food for wildlife

Partridge Pea* *Chamaecrista fasciculata* full sun, drought tolerant, 8"-16" tall, yellow flowers, grows well in poor soils, self-seeding, nitrogen fixing legume, highly compatible with other species.

*denotes listing with Virginia Native Plant Society