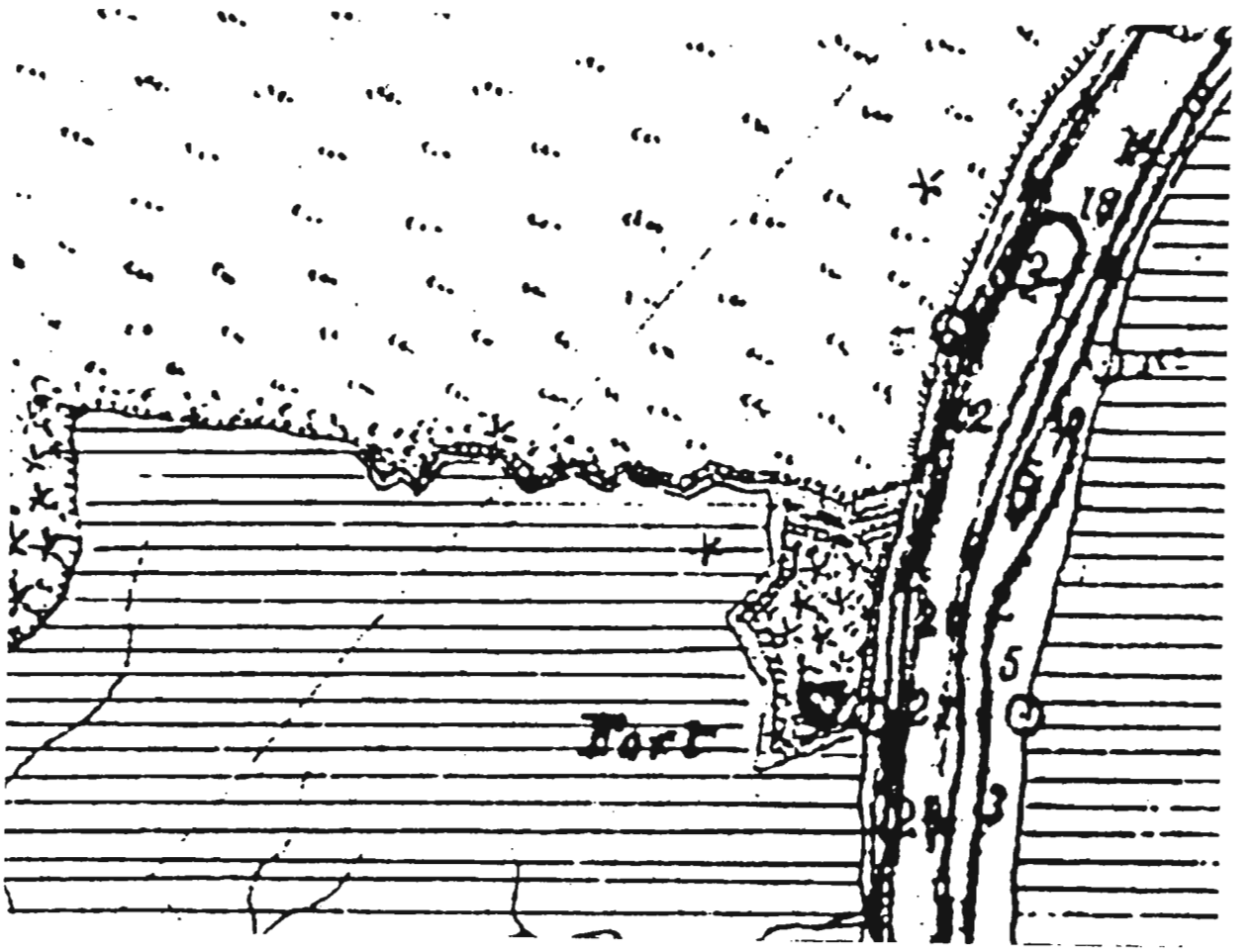
A SURVEY OF CIVIL WAR FORTIFICATIONS IN CHARLESTON, BEAUFORT, BERKELEY, HAMPTON, AND JASPER COUNTIES, SOUTH CAROLINA



CHICORA FOUNDATION RESEARCH SERIES 59

A SURVEY OF CIVIL WAR FORTIFICATIONS IN CHARLESTON, BEAUFORT, BERKELEY, HAMPTON, AND JASPER COUNTIES, SOUTH CAROLINA

Research Series 59

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Prepared For:
S.C. Department of Archives and History
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South Carolina Sea Grant Consortium
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The past is not dead. It isn't even past.

-- William Faulkner

ABSTRACT

This study reports on a survey of Civil War fortifications in Beaufort, Berkeley, Charleston, Hampton, and Jasper counties, South Carolina. The research was funded by a National Park Service Survey and Planning grant administered by the S.C. Department of Archives and History, the Office of Ocean and Coastal Resources Management, the Terence L. Mills Preservation Services Fund of the National Trust for Historic Preservation administered by the Southern Office, the S.C. Sea Grant Consortium, the Town of Mount Pleasant, the City of Charleston, Beaufort County, and the Town of Hilton Head Island.

The research has resulted in the identification of 161 resources, several of which were combined, resulting in a total of 154 sites. Of these 106 were located and assigned S.C. Institute of Archaeology and Anthropology site numbers. The remaining 48 sites could not be identified in the field, either because the available information was insufficient or because the site had been destroyed.

For the identified sites this research provides detailed locational information, including where appropriate and possible tax map parcel numbers and UTM coordinates based on DGPS (differentially corrected global positioning system). Sketch maps were prepared showing site features. Historical documentation, primarily from the *War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies* (known as the OR), is included where available, as are historic maps showing the site location.

For those sites not identified, the research compiled the available historic information and maps, documents the search area, and offers our best explanation why the site was not identified.

Our research not only documents the sites which are still extant in the search area, but also offers some observations and recommendations.

One of greatest needs is continuing survey. We make no pretense that the current work is exhaustive or final. In addition to the 48 searched for, but not found, sites, there are additional references which were too ambiguous to allow field investigations. Additional documentary research may help identify these resources. Additional field survey may help locate more sites.

In addition, previous work funded by the Office of Ocean and Coastal Resources Management identified sites on James and Johns islands which were not included in this study — and which have not been incorporated into the SCIAA site files. This should be done.

Likewise, no survey specifically intended to identify and record Civil War fortifications has been conducted in Georgetown, Colleton, and Horry counties. While county-wide surveys have been conducted for Colleton and Horry counties, these tend to focus on standing architecture. This failure to specifically seek out and identify Civil War fortifications in these areas places them at risk of damage or destruction.

Our survey also revealed that simply because an earthwork is "green spaced" or "avoided" does not mean that it is preserved. We found many such sites — some actually on the National Register — which evidence continuing damage. Preservation requires proactive planning — a practice which receives regrettably little attention or funding.

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ACKNOWLEDGMENTS

This work was funded by a variety of organizations and individuals. The major sources of funding were a National Park Service Survey and Planning Grant administered by the S.C. Department of Archives and History and a grant from the Terence L. Mills Preservation Services Fund of the National Trust for Historic Preservation, administered by the Southern Office. Additional funding was provided by the Office of Ocean and Coastal Resources Management, the S.C. Sea Grant Consortium, the Town of Mount Pleasant, the City of Charleston, Beaufort County, and the Town of Hilton Head Island. We appreciate all of the agencies, organizations, and individuals who found the goals of this project worthy of their support. In particular we appreciate the assistance of Mr. Brad Sauls, Grants Manager at the S.C. Department of Archives and History; Mr. James Hackett, Office of Ocean and Coastal Resources Management; Ms. Sierra Neal, Southern Office, National Trust for Historic Preservation; Ms. Jill Foster, Town of Hilton Head Island; Ms. Yvonne Fortenberry, City of Charleston; and Mr. Ian Hill, Beaufort County.

We also need to thank a host of landowners, property managers, and caretakers who supported our work and spent time and energy helping us. There are also others who provided logistical support. And still others who assisted in providing research. Many colleagues were also supportive of the research and we thank them for their efforts and interest. In particular Mr. Steve Smith and Dr. Chris Clement, both at the S.C. Institute of Archaeology and Anthropology, kindly shared information on their proposed research on Civil War sites in the Beaufort and Jasper areas, as well as provided us with a copy of their report. Ms. Martha Zierden at The Charleston Museum helped us make contact with landowners. Mr. Wayne Roberts with the S.C. Department of Transportation kindly provided us copies of maps his agency had prepared for several Confederate batteries in the low country. Mr. Robert Morgan of the U.S. Forest Service revisited several recorded sites within and nearby the Francis Marion National Forest with us. We also appreciate the assistance of Mr. Keith Derting at the SC Institute of Archaeology and Anthropology in recording the large number of sites generated by this study.

Finally, we want to thank Mr. Tom Covington, Ms. Autumn Perkins, Ms. Suzanne Coyle, and Ms. Janice Schweikert of the Chicora staff for their assistance in various aspects of this research. Ms. Debi Hacker, also of Chicora, was responsible for the production of the numerous maps which are an integral aspect of this work. In each case we appreciate their dedication, attention to detail, and enthusiasm.

INTRODUCTION

The Project

"Civil War Fort to Be Destroyed by Road," "Fort Damaged by Developer," "History Lost in Construction" — these are all too frequent headlines in South Carolina low country newspapers. They speak not only to the loss of our heritage, but also to our failure to adequately plan for the impact of development. It's clearly impossible to "manage" our cultural resources if we have no idea exactly what these resources are, or where they are located. Moreover, decisions made in the heat of media coverage and public emotion are not the decisions which would be made with more reflection and more forethought.

With this in mind, we devised a project which would begin to identify, catalog, visit, and record Civil War fortifications in the low country. We intended the work to build from a previous study, funded by the Office of Ocean and Coastal Resources in 1995 (and referenced in this study as OCRM 1995, but also known as the "Charleston Earthwork Survey"). That study was conducted by the South Carolina Battleground Trust for the Charleston Harbor Project and recorded 105 fortifications, primarily on James and Johns islands. A few sites beyond these islands were identified, although most were not field verified.

The current project covers Charleston County (excluding James, Johns, Sullivans, Folly, and associated islands), Berkeley County, Jasper County, Beaufort County, and a very small portion of Hampton County (Figure 1). All of Georgetown, Horry, and Colleton (except Edisto Beach, part of Charleston County until 1975) counties were excluded from the study. We, along with the project sponsors, hope recordation in these areas will be undertaken.

Funding was provided by a National Park Service Survey and Planning Grant administered by the S.C. Department of Archives and History, with additional funding provided by the Office of Ocean and Coastal Resource Management, the Sea Grant Consortium, the City of Charleston, the Town of Mount Pleasant, Beaufort County, the Town of Hilton Head Island, the National Trust for Historic Preservation, and other private donors. Background research began in mid-1999. The field investigations began intermittently in December 1999, with the more intensive field work being conducted in February through May 2000. The methodology of our background research and field investigations is provided in a following section.

The Historical Setting

The election of Abraham Lincoln in 1860 precipitated the long-brewing crisis between the North and the South. Seven Southern states, led by South Carolina, seceded before Lincoln's inauguration; four more plus the Indian Territory joined them in early 1861, with elements in Missouri, Kentucky, Maryland, and Arizona also finding representation in the resulting Confederate States of America. Irresolution marked the initial Northern response to secession, but this was quickly changed after the morning of April 12, 1861 when Confederate forces fired on Fort Sumter (see, Rosen 1994:63-68 for an overview of the events leading up to the attack on Sumter and the disagreements among historians of how these events transpired).

Federal response was galvanized by the South's first hostile action and in less than a month the Union blockade on Charleston and other Southern ports was established. By November 1861 what Burton called "the most formidable armada ever assembled under the American flag" sailed into Port Royal and began to methodically destroy the Confederate forts guarding the entrance and protecting both Hilton Head and the town of Beaufort (Burton 1970:68). The Confederate forces retreated after only a few hours, leaving the area to the Federal troops.

The fall of Port Royal sent shock waves

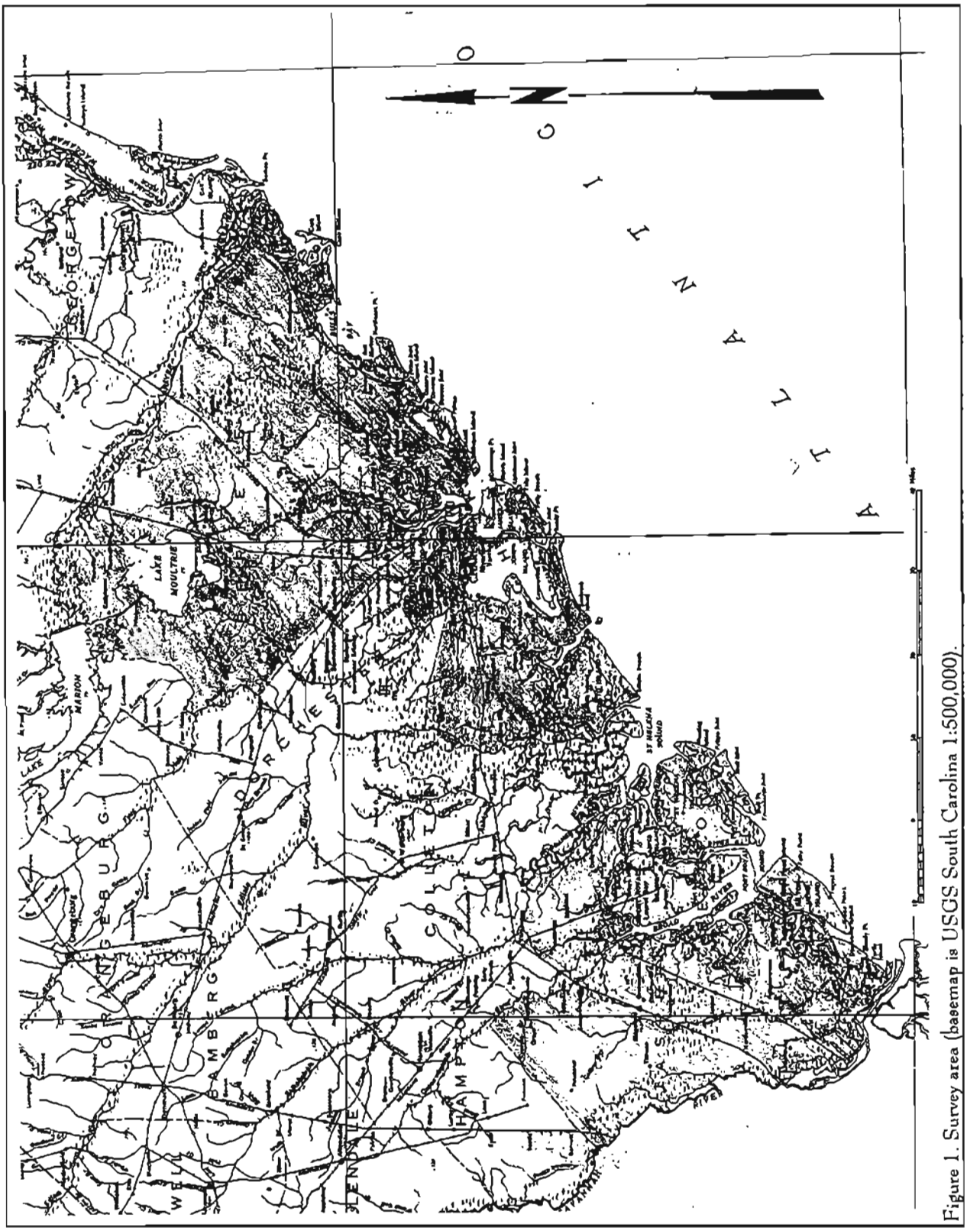


Figure 1. Survey area (basemap is USGS South Carolina 1:500,000).

through the Confederacy and shortly afterward the little-known General Robert E. Lee arrived in Charleston to assume command of the new military department of South Carolina, Georgia, and East Florida. Lee established his command at Coosawhatchie, on the line of the Charleston and Savannah Railroad. His strategy, in the words of Rosen was:

> to concede the immediate coast (a move that did not sit well with the planters of the area) except for the forts guarding Charleston and Savannah, which he greatly improved; to obstruct all the waterways between the two cities not already occupied by the Union navy; and to protect the railroad (Rosen 1994:83).

The defenses around Charleston were clearly explained by General Robert E. Lee in his December 16, 1861 report, "regarding the mustering of State regiments into the Confederate service and the condition of Southern defenses,"

> The land defenses around the city, commencing on the coast side of James Island, extending to Wappoo Creek, thence to Ashley River, across the neck between Ashley and Cooper, and from the branch through Christ's Parish to the sound, are in good state of progress and will now give steadiness and security to our troops in any advance of the enemy from any of those quarters and afford time to move troops to meet them. The works have been mostly constructed by labor furnished by the planters. I hope they will be completed this week. The batteries in the harbor are in good condition, and if properly served should arrest the approach by the channel. Wappoo Creek is also provided with batteries in addition to those previously constructed at the mouth of the Stono, which should stop vessels by that direction. They form part of the lines of land defense and points of support where they touch the creek (OR 6, pages 345-346).[1]

In early 1862 Jefferson Davis wrote Governor Francis Pickens in South Carolina that both he and General Lee "concur with you in opinion as to the importance of the preservation of the Charleston and Savannah Railroad" (OR 6, page 594).

As the war continued this focus on Charleston and the critical land link to Savannah never wavered. In October 1863, as Union troops became more noticeable creeping up the coast, opinions were sought on how the Union forces might attack from the Edisto area, with this response:

> The enemy's object in selecting this line would be to obtain a point d'appui from which a sap could be pushed with decisive results against the body of the place, and at the same time to effect a practical investment of the town. Charleston Neck would be the point aimed at. In reaching this point, he would probably adopt the plan of pushing a strong column of light troops at once for a point above Bee's Ferry, on the Ashley, where the river may be pontooned or is fordable, and effecting the investment of the town, while he would, for the purpose of securing his communications, primarily direct his main operations against our defenses in Saint Andrew's Parish. Under the difficulties he would have to

[1] As explained in the following section on methodology, we have abbreviated our citations to *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies* (usually known as the *Official Records* or OR) as simply "OR," followed by the volume number, and the page number.

encounter in field transportation, I take it that water transportation to a point on the main in Saint Andrew's east of Rantowles would be of the highest consequence with him.

Unless he came in overwhelming force, the safety of his communications from this point to the Neck, would require a reduction of our works in Saint Andrew's--an operation resulting in delay, but which would be attended with the advantage of giving him positions for shelling the city across the Ashley, and, further, of seriously jeopardizing the safety of our troops on James Island.

Should his force, however, be sufficiently large to cover his lines of communication with sufficient force, he might neglect the Saint Andrew's works, and proceed at once to siege operations on the Neck.

The enemy's points of debarkation would be Seabrook Island, at the mouth of the North Edisto, and White Point, at the head of the inlet on the main. The disposition of our troops to meet him should be an advanced cavalry force of, say, 1,500 men, with six or eight pieces of horse artillery, to dispute his march across John's Island, falling back to Church Flats in retreat, while the main body of our forces should be stationed along the line of the Wadmalaw and Stono Rivers, from White Point to Church Flats; the reserve at Adams Run. The right flank should be secured by a company of cavalry pushed well forward on Edisto Island, to give due notice of the advance of a column from that direction to turn our position by crossing the Dawho at Pinebury, and field batteries ought to be able to prevent the passage of transports up the Dawho for the same purpose. King's corn-field, between Church Flats and Rantowles, should be watched, with a gun or two in position, and a small infantry support, to prevent a crossing of the Stono there, and John's Island Ferry should be held at all hazards with an independent force from the garrison of Charleston; for the cardinal idea in our defense should be to compel the enemy, in his efforts get on the Neck, to swing round with as long a radius as possible, Charleston being the center. White Point, Simmons' Landing, and Church Flats are landings on the Stono and Wadmalaw. Church Flats is a crossing by bridge and causeway; John's Island Ferry is a difficult crossing by ferry; King's corn-field is a place where a military bridge may be thrown across. All these places are more or less strengthened by works. Togodo Creek, between White Point and Simmons Landing, has never been obstructed; is navigable for vessels of light draught, and should be closely watched. There are no works here. White Point is the key to the position. The works carried here give the enemy access to the Willstown and Rantowles road, running parallel to and in rear of our defenses, all of which are open works.

If the enemy effect a crossing east of Rantowles, our troops should rapidly take position behind the Ashley crossing at Bacon's and Slann's Bridges, but keeping a strong advanced guard on the west side. If, however, he is compelled to cross west of Rantowles, our second line is the Caw Caw Swamp. The left is at Rantowles, a very strong position if approached by the road in front, but

liable to be turned by a passage across rice-fields from Peronneau's to Rutledge Island, which should be strengthened and closely watched. The center is the crossing at Caw Caw Causeway. This is where the New road crosses the swamp; also a very strong position. Thence our line follows the northwest branch of the swamp toward Parker's Ferry. From Rutledge Island to a point one-half mile west of Caw Caw Causeway the swamp is impracticable for troops. The rest of our second line is weak. The swamp having been all cleared and drained in former years, it is now nothing more than a succession of wet meadows, intersected with old rice-field ditches. The points at which roads cross these meadows have slight field works. When the enemy has carried our first line, he will either move down the Willstown and Parker's Ferry roads to Rantowles and endeavor to carry the left of our second line, or he will operate against our right, with a view to turning it. We must, if practicable, compel him to the last, swinging him off as far as possible from Charleston. This line should be held, too, until any troops ordered from the Third District should have joined us by way of the crossings of the Edisto River above Parker's Ferry.

Our disposition of troops here should be with the cavalry and some light pieces in front of our right, along the west branch of the swamp, subserving the purpose of an advanced guard to the weak portion of our lines, and to operate on the enemy's flank and rear. The reserve at the intersection of the Parker's Ferry and Beech Hill (or New) road. In abandoning this line, our troops from Caw Caw Causeway to the right, inclusive, should go back direct upon Slann's and Bacon's Bridges, on the Ashley. Those of our left should cross Rantowles Creek at Rantowles Bridge or at Lowndes', if the military bridge here has been completed. Thence, either by Bee's Ferry or through the city, to the eastern bank of the Ashley, and take position for the defense of that river. The Ashley River takes its rise in an impassable swamp, known as the Great Cypress, which runs from near Ridgeville, on the South Carolina Railroad, in a southwesterly direction for 10 or 15 miles. From where the river leaves this swamp (say a mile above Slann's Bridge) to a mile below Bacon's Bridge, the river runs through a limestone bed, is on an average not 30 yards wide, is fordable anywhere, and has a comparatively dry and narrow swamp, lying chiefly on the west side. The eastern side is quite precipitous for the low country, and is strengthened by field works. The distance between Slann's and Bacon's Bridges is about 3 miles. From where the river ceases to be fordable down to Bee's Ferry, it may at different points readily be crossed by pontoon bridges.

Our third and last line of defense, therefore, in the field is from Bee's Ferry to Slann's Bridge. We should fight a l'outrance on this line. A disaster here would be ruin to our adversary, and if we were unfortunate, our lines of retreat, are open down the Neck into the city, and any portion of our forces cut off from this route by the enemy's forcing a passage low down the Ashley, can make its way into the city by crossing the headwaters of Cooper River and going down its east

bank (*OR*, vol. 47, pages 393-395).

A very similar account in 1862 to General G.T. Beauregard describes how the fortifications in the lower Jasper County area were intended to thwart Union advances:

> He [Col. W.S. Walker, Commander of the Third Military District of South Carolina] designated the following places as points for concentrating his troops, viz: Pocotaligo, Grahamville, and Hardeeville, at which places he now has his encampments.
>
> Should the enemy attempt to force their way to the railroad at Pocotaligo he calculated to hold them in check in rear of Screven's rice fields, protecting his command behind a small work, ditch and hedge, with rice fields overflowed on each flank. Should they attempt to advance to the bridge across the Combahee River at Salkehatchie by the road parallel to the river and another small road known as Seller's road, he would then hold them in check at the junction of two roads near the bridge, the country at that point being swampy and densely wooded. Both these roads of approach he intends having obstructed and the bridges taken up. In case of a landing being made at Huguenin's, on Broad River, he would hold them in check at the causeway and bridge across Bee's Creek, on the old mail road, at the junction of the Euhaw and Grahamville roads. For the protection of the approaches to Grahamville works have been erected on the different roads, the nearest landing place being on Boyd's Neck. Should they land at Bluffton, he has selected a position at New River Bridge, on the old mail road, where he has an embrasure battery to protect the bridge. If they land at Red Bluff', which he does not think probable, he has selected a position near New River, where he has two small works erected (OR 20, page 640-641).

In other words, the vast majority of the Confederate fortifications in the South Carolina low country were intended to "work together" and be part of a much larger, and often all-consuming, plan. In contrast, the Union largely built fortifications at places where troops were stationed, typically during forays or advances on Charleston or the railroad.

The Place of Fortifications in the Civil War

The fortifications encountered, either in research or during field survey, were overwhelmingly traditional, and were based on the prevailing science of military warfare. As Paddy Griffith explains, even before the Civil War America's army had shown its tendency to "dig in" (Griffith 1989:124). In fact, he comments that, "it was perhaps significant that the Republic's only official military academy had been built as a college of engineering" (Griffith 1989:124). He explains that:

> Their Professor of Engineering and the Art of War, Dennis Hart Mahan, was to all accounts a persuasive teacher — and his favorite theme was the pre-eminence of the spade in combat (Griffith 1989:124).

Griffith realizes that Mahan, and his disciples — especially General Wager Halleck (who immortalized himself for his curious habit of digging in every few miles as he pursued a defeated enemy; he had earlier in 1856 written the text, *Elements of Military Art and Science*) and General P.G.T. Beauregard — based their faith not so much on a careful study of Napoleon's tactics or even American history, but rather on their complete lack of faith in militia armies to hold their own in battle. Any significant war would require the use of militias "and that meant it would have to be fought

Figure 2. African American slaves used to build the James Island defenses (from *Leslie's Illustrated Newspaper*).

by primitive tactics which sacrificed mobility and flexibility in order to give a minimum standard of confidence and security to the troops" (Griffith 1989:125). It was only behind earthworks that Mahan felt America's militia would be capable of fighting successfully. The most powerful of all Mahan's writings, *A Treatise on Field Fortifications*, was so significant that it was published during the Civil War by Confederate printers and was the standard work (Mahan 1862).

Griffith deals at length with the psychological power of fortifications — noting that throughout the war both sides dug in and both sides were loath to attack fortified entrenchments. The conventional wisdom was that fortifications could multiply the soldier's combat value by no less than six times — allowing, for example, 10,000 men to beat off 60,000 (Griffith 1989:130). In spite of the almost mythical attributes of earthworks, all that most fortifications could provide the defender, according to Griffith, was extra time to pour fire on the attacker from relative security with the hope that this directed fire would demoralize the opposing forces before they reached the objective. He goes on to point out that:

> Actually the main physical strength of a trench position was usually to be found neither in the extra protection it offered the defender nor in the obstacles it put in the way of an attacker. Paradoxically, it was the cleared field of fire in front of the trench that made it most dangerous. . . . It gave them [the defenders] a killing ground in which an attacker could be brought face to face with the full dangers of his enterprise (Griffith 1989:129).

Griffith notes that regardless, the vast majority of earthworks actually taken fell to flanking action (perfected by General Sherman) not to frontal assaults. He notes that:

> the longer the war went on, the more soldiers could be found who had experienced a "slaughter pen" at first hand. Such men had searing visions of the human cost of such enterprises, and quite naturally found it difficult to balance this against the highly abstract benefits to be gained by even a successful assault (Griffith 1989:131).

By late in the war this resulted in numerous cases of

combat refusal. Even when mutiny was avoided, there were increasing numbers of abortive charges which, in Griffith's words, "went to ground" almost before they began (Griffith 1989:131). Drury and Embleton also note that more and more ditches were dug as the war continued (Drury and Embleton 1993:21).

In spite of this, Griffith points out that the ditches of the Civil War soldier were no more necessary in the mid-nineteenth century than they had been a hundred or more years earlier.[2] He suggests the dependence on earthworks such as those seen along the South Carolina coast grew out of the combatants themselves:

> A more educated American population was less ready to risk death without at least a semblance of personal protection, and a high command imbued with the flannelling of the Vauban and Mahan schools was blinded to the inner character of mobile warfare. Once this curious brew had been mixed together and shaken up thoroughly in a few pitched battles, it settled out as the 1864 elixir. Lots of digging, lots of skirmishing, noise and smoke, lots of respect for the enemy's line and an acute awareness of the claims he had staked. But not often very much real fighting. It was a far cry indeed from the methods of Napoleon! (Griffith 1989:135).

Although Mahan's *A Treatise on Field Fortifications* (Mahan 1862) is undoubtedly the authority on the topic, David Wright (1982) has provided an excellent overview which often helps to explain some of the more obscure comments found in Mahan. Figures 3 and 4 provide an overview of the terms most commonly used to describe earthworks.

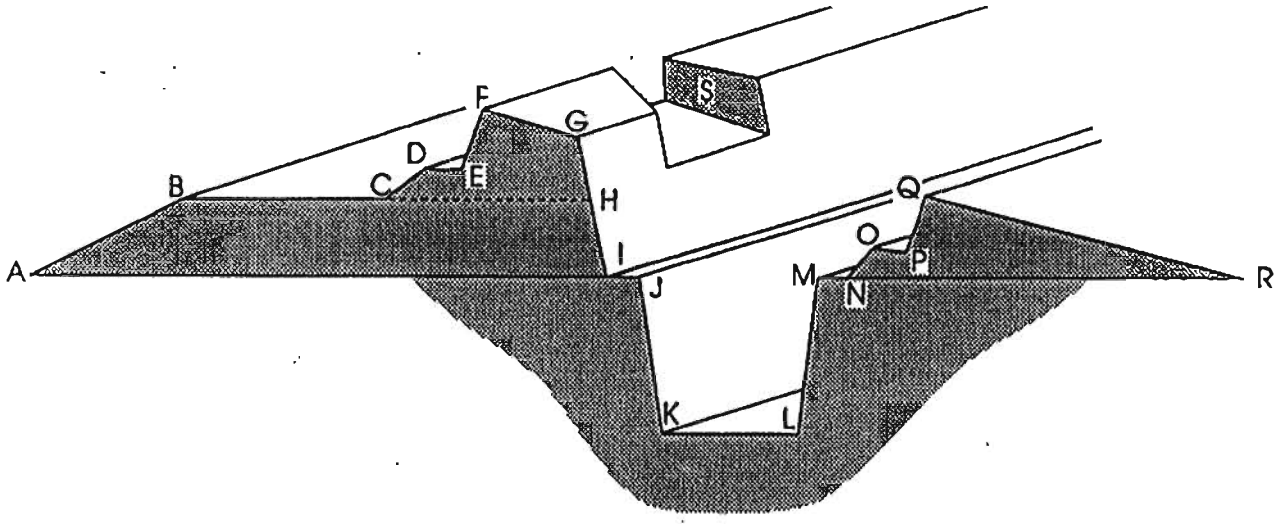
Mahan began his discourse by explaining that the purpose of the earthwork is both to provide security to its defenders and also to hinder the attack of those attempting to take it. Consequently, every earthwork had a *parapet*, "to intercept the enemy's missiles, to enable the assailed to use their weapons with effect, and to present an obstacle to the enemy's progress," as well as a *ditch*, which "serves the double purpose of increasing the obstacles which the enemy must surmount before reaching the assailed, and of furnishing the earth to form the parapet" (Mahan 1862:2). Mahan then went on to define the different features of an earthwork, such as the exterior and interior slopes, the banquette, crest, and berm (see Figure 2).

Mahan also offered principles upon which all earthworks should be constructed. For example, he insisted that flanked positions were essential, since "flanks sweep with their fire the ground in front of the faces; remove sectors without fire and dead angles; cross their fire in front of the salients; and take the enemy's column in flank" (Mahan 1862:6). Drawing from this, he went on to emphasize the importance of all angles being acute, since they provide flanking fire, while an obtuse angle "leaves a portion of the ground in front of the face undefended" (Mahan 1862:6). Salients should never be at angles of less than 60°, since smaller angles provide interior spaces that are too confining and leaves too large an area in the front without fire.

Moreover, no line should be longer than 160 yards. This is based on Mahan's belief that it would be the close fire of musketry, not artillery, that would blunt the trust of the attacker. Since the musket was thought to be most accurate at distances of 160 yards or less, Mahan insisted that no line should be longer than could be covered by musket fire.

Mahan also emphasized the need for a "strong profile," explaining that deep ditches cause delays on the part of the attacker, "during which the column is exposed to a warm fire within short range" (Mahan 1862:7). Clawing up the parapet wall not only continued this exposure, but "the enemy presents

[2]Griffith disputes those, such as Drury and Embleton (1993:21), who still suggest that entrenchments were the result of improved weapons. He observes that the threats from snipers and rifled artillery, while perhaps psychologically terrifying, were tactically marginal. Further, the new weapons, in his words, "were less different from their predecessors than had been claimed" (Griffith 1989:134).



ABHI	Rampart or Bulwark
CDEFGH	Parapet
JKLM	Ditch
NOPQR	Glacis
AB	Parade of Slope
BC	Terreplein
CD	Banquette Slope
DE	Banquette or Tread of Banquette
EF	Interior Slope
FG	Superior Slope
GI	Exterior Slope
GH	Exterior Slope,If no rampart
IJ	Berm
JK	Scarp Wall
LM	Counterscarp Wall
MN	Covered Way
NO	Glacis Banquette Slope
OP	Banquette
PQ	Interior Slope
QR	Glacis Slope
S	Embrasure

High Points or Crest:

F	Interior Crest
G	Exterior Crest
J	Scarp Crest
M	Counterscarp
Q	Glacis Crest

Low Points or Foot:

C	Foot of Banquette Slope
I	Foot of Exterior Slope
H	Foot of Exterior Slope, If no rampart
K	Foot of Scarp
L	Foot of Counterscarp
R	Foot of Glacis

Figure 3. Terminology of earthworks (adapted from Mahan 1862).

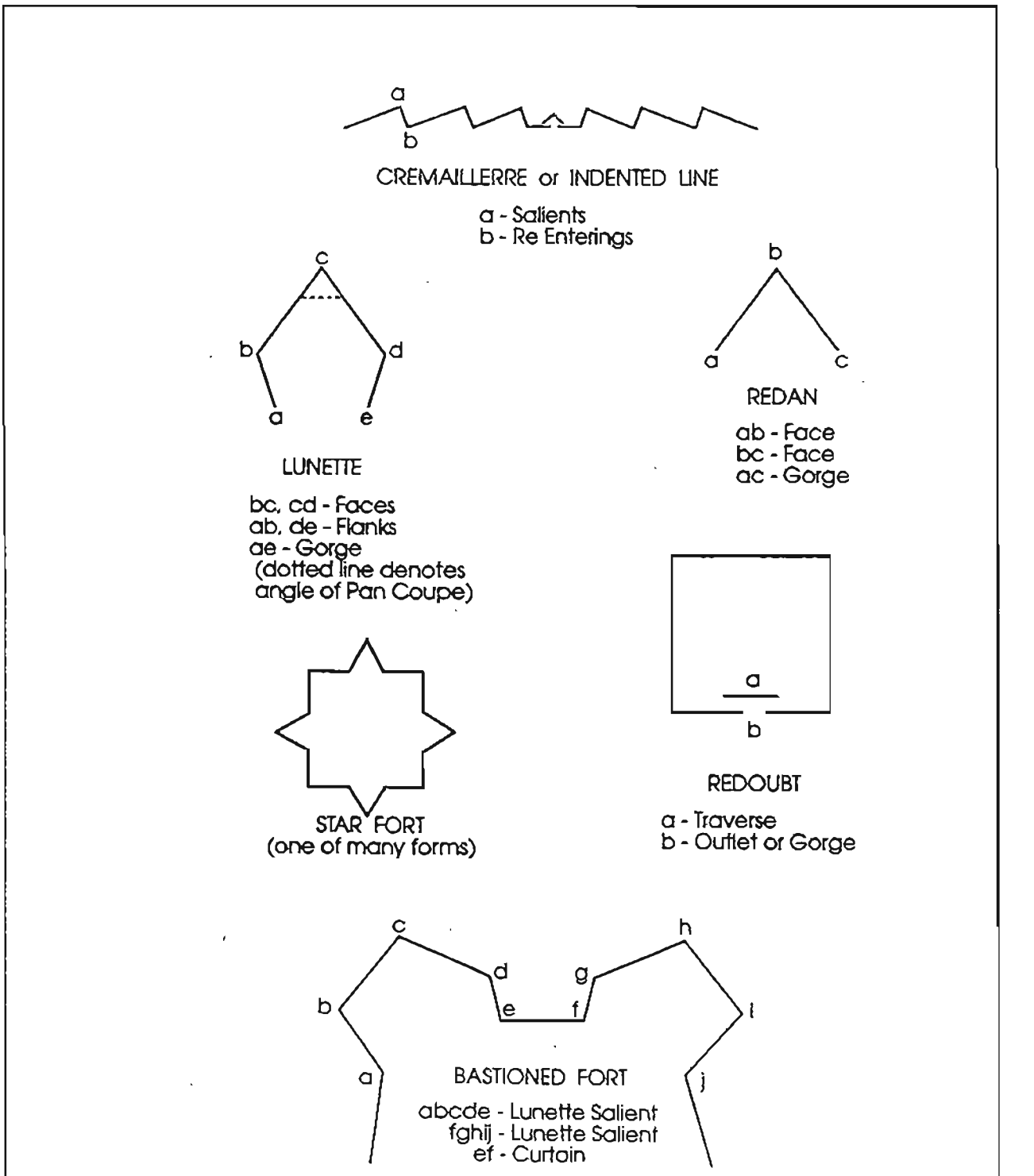


Figure 4. Fortification forms (adapted from Mahan 1862).

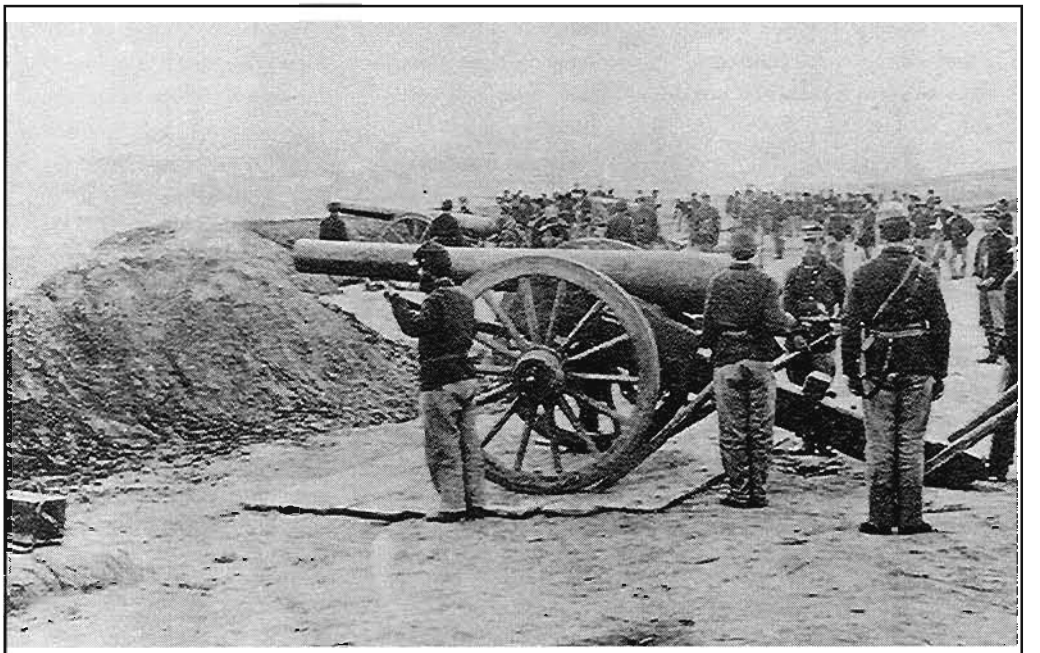


Figure 5. Battery of siege and garrison rifles on siege and garrison carriages firing "en barbette" over a quickly erected indented line (US Army Military History Institute).

them make this determination. For example, the shell from an 18-pounder at 110 yards would penetrate 6½ feet into the parapet, while a 24-pounder at the same distance would penetrate only 3½ feet (Mahan 1862:18). The ditch must be at least 6 feet in depth, with a width of less than 20 feet.

The priest-cap was "seldom used"

himself in a fatigued and exhausted state to the bayonets of the assailed, who have mounted on the top of their parapet to meet and drive him back into the ditch" (Mahan 1862:7).

Mahan specified that parapets might range from 8 to 12 feet in height, with their width (at the interior to exterior crests) dependent on the nature of the attack anticipated. Period engineers had a variety of tables at their disposal to help

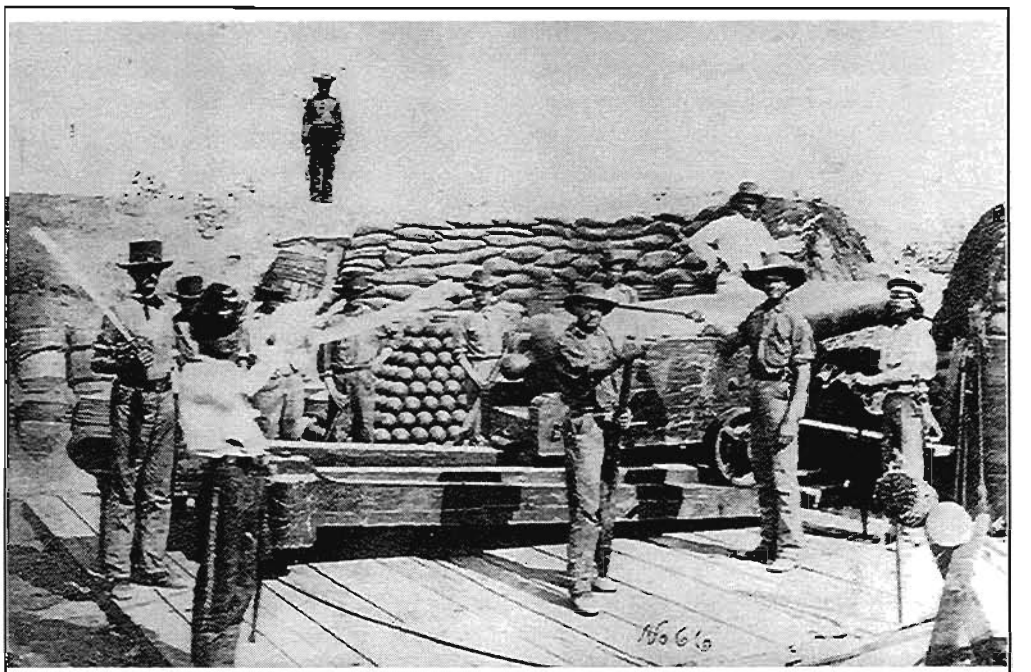


Figure 6. Confederate battery using a Navy seacoast gun, probably a 32-pounder on a seacoast carriage, firing embrasure. Note the sandbags and barrels forming the interior slope of the parapet and the wood gun platform (U.S. Army Military History Institute).

according to Mahan (1862:12). This configuration resembles the letter "M," consisting of an indented capital that formed a 90° angle and was flanked by two small redans or salients of 60° angles.

A device which Mahon does not discuss in any detail are rifle pits. These entrenchments were typically just deep and wide enough to afford cover. Associated with batteries they were intended to provide cover for infantry troops.[3] In one account it is simply explained, "I have caused rifle-pits to be made to protect the men" (OR 4, page 680) while in another it is recommended, "If no guns can be procured, then rifle-pits should be dug, where good marksmen could drive off working parties of the enemy" (OR 6, page 385). The effectiveness of this field entrenchment is suggested by the comment, "On arriving at the field of battle we found certain zigzag rifle pits sheltering crowds of men" (OR 12, page 838). While many rifle pits were hastily excavated and offered only limited protection, others approach what might be described as breast-works. One account specifies:

> Rifle pits should also be provided (not enfiladed from the river) for the infantry support to the batteries. The thickness of the parapets . . . of the rifle pits 12 or 15 feet (OR 20, page 673).

Other terms occasionally found in the OR records include a tete-de-pont, which was simply a fortification guarding the head of a bridge. A revelin, sometimes also called a half-moon, was an outwork, or work constructed beyond the main ditch, that consisted of two parapets forming a salient angle. A variation of the parapet was the epaulement. This was simply a parapet which lacked a banquette or tread. The occasional references to "battery" typically mean a collection of several guns behind a parapet, epaulement, or revelin, usually firing over it (barbette).

While in the field soldiers on both sides would be involved in erecting fortifications, it was primarily African Americans who were responsible for building the vast majority of the larger, more permanent fortifications. For the Confederates this proved a constant problem.

As early as March 1862 South Carolinians were concerned that General Pemberton was impressing slaves to construct the fortifications in the southern part of the state intended to protect the railroad from Savannah to Charleston. In reply to the governor's complaints, Pemberton pointed out that "lines of defence which I consider important had been suspended . . . for want of hands; the engineer in charge . . . informing me that all but nine negroes had been withdrawn by their owners. As to voluntary labor being furnished, experience has taught me that it is not to be relied on at all, each owner of slaves judging apparently of the value of the work by what amount of protection his individual interest may seem to derive from it" (OR 6, page 416).

South Carolina, however, was not the only state where the acquisition of labor was problematic. In 1863 Georgia the legislature adjourned, "leaving the question of slave labor for the defense of the State still undecided" (OR 20, page 904). Moreover, there were some who felt that the Confederate soldier would "cheerfully and promptly" build fortifications, if they were paid the $30 a month that was routinely being provided to slave owners (OR 20, page 915).

Nevertheless, problems continued and, in 1863 General Beauregard complained to the state that for the first six months of 1863 he had received from South Carolina on average 330 slaves a month, when he "ought to have received 2,500" in spite of his "constant appeals . . . to the Governor and Legislature of South Carolina, and to eminent citizens" (OR 46, page 70).

In late June 1864 the commander of the Confederate forces in Charleston again appealed to the South Carolina Governor, pointing out that "the chief engineer of this district reports that he absolutely needs 2,000 negro men, and has but 9 furnished by the State agent; he finds it impossible to hire . . . . Under these circumstances, as I cannot order the impressment of

[3] A variation was the "covered way," a form of pit or trench with segments set at angles to each other, the zigzags providing cover to the troops moving along them.

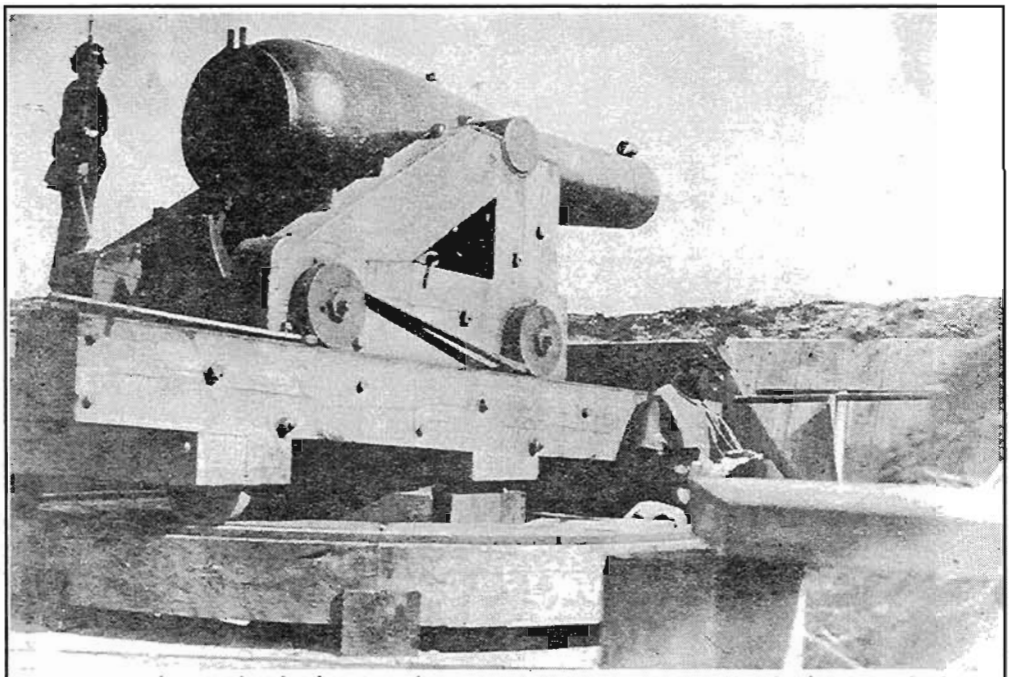


Figure 7. Rodman columbiad mounted on a seacoast carriage, center pintle, firing "en barbette" located at Fort Wells (previously Fort Walker, 38BU80/1154) (U.S. Army Military History Institute).

negroes in those States which have taken action on this subject, I must urge that the necessary steps be at once taken to supply Major Echols, the chief engineer, with 2,000 men" (OR 66, page 542-543).[4]

Understanding the Armament of Batteries

There are several excellent books on the artillery used during the Civil War. One is the booklet, *Artillery Through the Ages* by Albert Manucy (1949), while another is the much longer and more detailed, *Artillery and Ammunition of the Civil War* by Warren Ripley (1984). While these should be explored for detailed explanations, a brief overview is provided here to help readers better understand the often cryptic OR references.

Weapons were categorized by one of several attributes. One is the size of the bore, which might be described in two ways: as inches (such as a "10-inch columbiad") or in pounds (such as a 24-pounder). The latter was a reference to the weight of the solid iron spherical projectile the weapon fired.

Another attribute was the type of weapon. Smoothbore (i.e., not rifled) cannon might be classified as guns, howitzers, mortars, or columbiads. Guns were simply long-barreled weapons designed to throw solid shot with a heavy charge at long range using a low elevation. These weapons were designed to batter heavy construction with solid shot at long or short ranges, destroy fort parapets, and dismount other weapons. When they fired grape, canister, or exploding shells they were particularly effective against massed troops. Howitzers had shorter barrels than guns and fired ammunition with lower chargers and at a higher elevation than guns. They were lighter in weight than guns of the same caliber. They were easier to move than mortars but were still able to reach targets behind obstructions using high angle fire. Mortars were very short barreled weapons intended to fire large shells at high trajectories, reaching behind obstructions and within the protected walls of fortifications. Columbiads were relatively long barreled weapons capable of firing large shells with heavy charges at high elevations,

[4] One of the interesting political issues was that the Confederate Congress determined it was a "state's right" to determine the conditions under which slave labor would be provided. Military commanders could impress slave labor only absent any state law on the subject. South Carolina initially established a State Agent responsible for acquiring slave labor. This seems to have been a failure and it wasn't until the end of December 1864 that South Carolina enacted a new law requiring slave labor on fortifications similar to the one providing for labor on road duty (OR 92, page 981-982).

essentially combining characteristics of all three types of weapons.

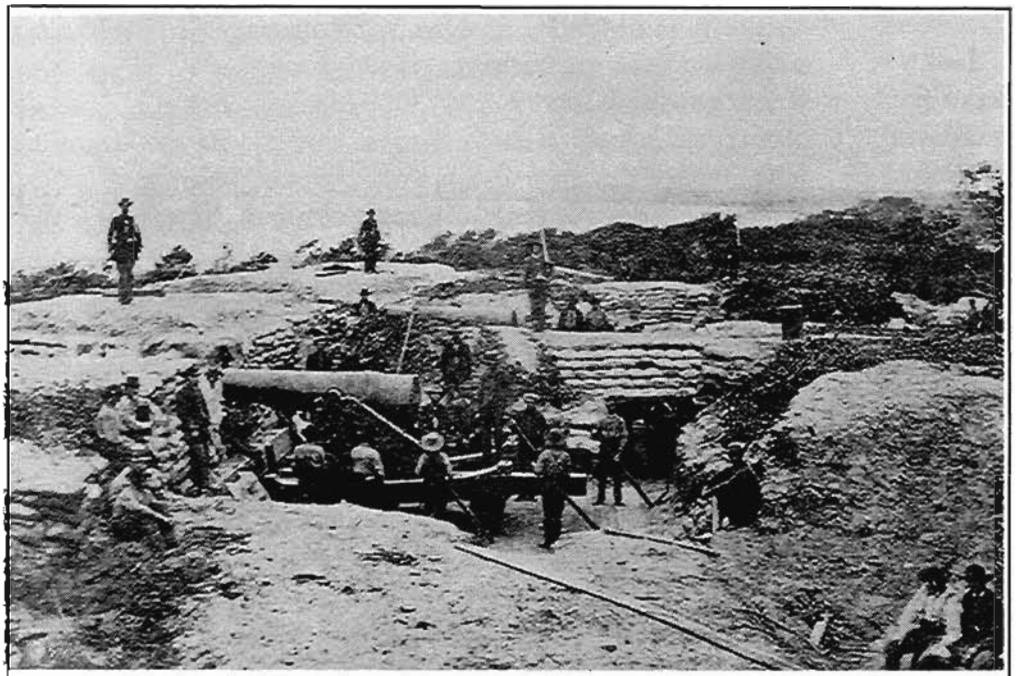


Figure 8. Unidentified coastal "sand battery" with seacoast columbiad mounted on seacoast carriage firing embrasure. To the right is a "bomb proof" (U.S. Army Military History Institute).

Artillery was also characterized as field, siege or garrison, and seacoast. Field artillery included light weapons which were maneuverable and able to keep up with the movements of troops in the field. Field batteries typically accompanied the infantry and were often set up with no protective earthworks. They might, however, be placed behind an earthen battery. In theory the Union light battery had four 6-pounder guns and two 12-pounder howitzers. A heavy battery consisted of four 12-pounder guns and two 24-pounder howitzers (Ripley 1984:195). Siege and garrison pieces were heavier and more difficult to move. A weapon mounted in a fortification would be considered a garrison piece, while one used against a fortification would be considered a siege weapon. Seacoast artillery was the heaviest used by the army. As Ripley comments, "these were weapons of position, mounted with considerable time and effort in the forts along the coast" (Ripley 1984:15). Carriages were either wood or wrought iron and designed to allow the weapon to swing in a 180 or even 360° arc on traverse wheels that ran on an iron track. Although sometimes used against land targets, they were more commonly used in defense against naval attack.

Of course, these terms were usually used in combination, for example there might be a reference to a 10-inch seacoast howitzer. This would tell us that the bore diameter was 10-inches, that it was a short cannon, and that it was well mounted, probably at a coastal fortification.

Previous Research

While Civil War earthworks are briefly mentioned in a variety of architectural and archaeological documents (e.g., Butler 1994; Harvey et al. 1998; Roberts 1998), relatively few studies have focused on these features in any detail.

One of the earliest efforts to document the Civil War earthworks of the Charleston area is the 1982 multiple resources National Register nomination "Civil War Defenses of Charleston Thematic Resources." This document was written in a manner that left unaddressed many questions concerning location and condition of the earthworks. While perhaps intended to help protect the batteries from looting, the approach has also caused considerable uncertainty regarding management issues.

In 1995 the Office of Ocean and Coastal Resource Management through the Charleston Harbor

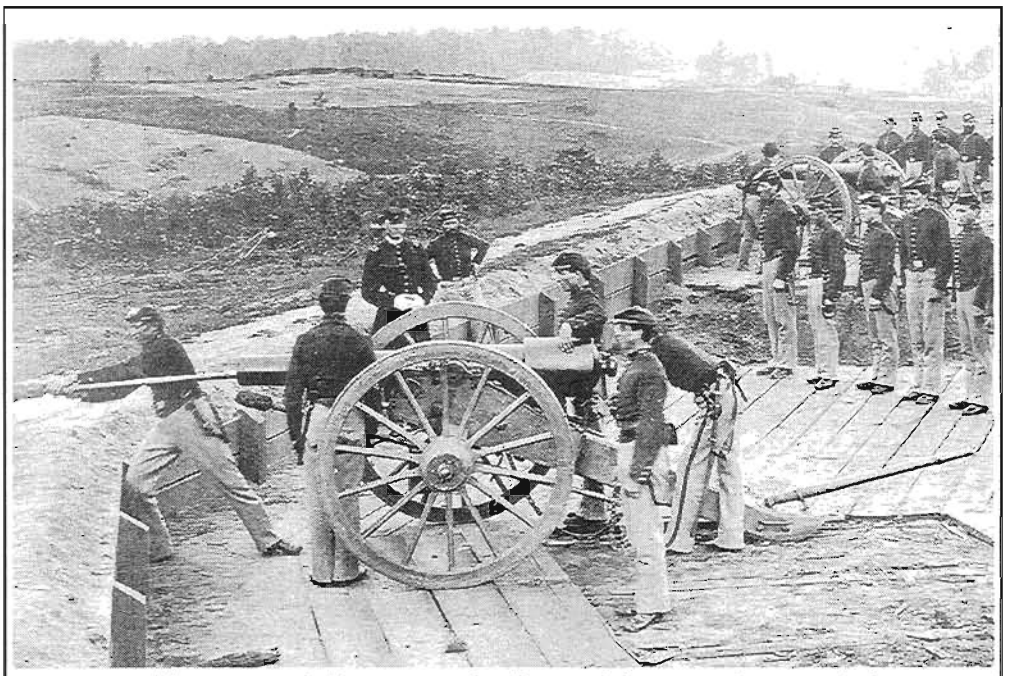


Figure 9. Field Parrott, probably a 3.67-inch rifle on a field carriage firing "en barbette." Note the temporary wood gun platform (Library of Congress).

Project, and the S.C. Department of Archives and History through a Survey and Planning Grant, funded a survey of Civil War fortifications primarily on James and Johns islands. Undertaken by Ted Banta and Willis J. (Skipper) Keith, this work identified 105 sites (including a small handful outside the primary survey area). Most of the sites on James and Johns islands were field checked, although an effort to use GPS to plot the locations was not successful. Nevertheless, these sites have recently been added to the S.C. Department of Archives and History GIS database as the "Charleston Earthwork Survey" layer.

In 1996 Chicora Foundation conducted a conservation assessment and prepared a preservation plan for the Fort Howell earthworks on Hilton Head Island (Trinkley et al. 1996). Funded by a state preservation planning grant administered by the S.C. Department of Archives and History, this is the only formal conservation assessment and preservation plan available for an earthwork in South Carolina. As such it provides important information on preservation techniques which may be applicable to other sites.

The S.C. Institute of Archaeology and Anthropology, funded through the American Battlefield Protection Program of the National Park Service in 1998, conducted a survey of a number of the Confederate fortifications built for the defense of the Charleston to Savannah Railroad in Beaufort and Jasper counties. This project ultimately investigated 21 sites (17 separate batteries or line complexes) and included GPS mapping (Clement et al. 2000).

Most of the archaeological studies available (e.g., Legg et al. 1991; Legg and Smith 1989; Trinkley and Hacker 1997) have focused on camp life. While these studies were conducted in the shadow of earthworks, the engineering, architectural, and industrial components of the fortifications were not the focus of the research. The 1994 National Park Service excavations at Battery Halleck at the Fort Pulaski National Monument, Savannah, Georgia, stand as a notable exception (Anderson 1995).

METHODOLOGY

The methodology developed for this project was determined by its primary objective: to survey and record Civil War fortifications in order to provide planners with accurate locational information. The immediate purpose is to ensure that such sites will be considered in the early phases of development planning - if not during acquisition, then certainly during the initial stages of compliance with local, state and federal guidelines for projects with impact on historic resources. Information about site types, locations, surroundings, and present condition will allow agencies charged with protecting historic cultural resources to assess significance and the potential impact of proposed activities appropriately. These site-by-site decisions, at least in the area covered by this project, can now be based on a general context for evaluation.

A secondary goal was to compile and cross-reference existing information on file with State Historic Preservation Office (SHPO), S.C. Institute of Archaeology and Anthropology (SCIAA), and Office of Coastal Resources and Management (OCRM). A number of cultural resource surveys and other field projects have generated data about Civil War fortifications in a variety of formats. Tables and forms for this project are arranged by project site number, but also include site numbers assigned during previous recordation projects. Locations are shown on county maps and USGS topographical quad sheets, and where possible site forms and tables also provide street addresses and the assessor's tax parcel numbers used by local planning departments.

The peninsular city of Charleston and Sullivan's Island, although both in Charleston County, were not surveyed for this project. Obviously, both played important roles during the Civil War and both were heavily fortified. However, urban and suburban growth, and continuing military construction on Sullivan's Island (through the World War II era), have either destroyed or dramatically altered any above-ground elements of Civil War earthworks. The fortifications that existed in the city and on the island are depicted on the maps shown as Figures 22 and 23, and discussed below in Findings.

Research

The research goal throughout this survey project was to learn the historic locations of Civil War earthworks and place them as closely as possible on the modern maps — county highway maps and topographic quad sheets - used in the field. Unlike the methodology of traditional archaeological and above-ground resource surveys, we were preparing to search for particular sites rather than examining a prescribed geographic area for its full spectrum of cultural resources.

The first step in determining earthwork locations was to review site files at SCIAA and SHPO for those already recorded. Because SCIAA site forms are not arranged by archaeological resource type, we examined every site form for each county in the project area. Research at SHPO included reviewing site forms for all earthworks previously recorded during above-ground cultural resource surveys, a task that was simplified by the practice of discussing sites by historic type in survey reports. We also obtained copies of the site forms prepared for OCRM during the 1995 project to identify earthworks on James and Johns islands in Charleston County. These forms are different from SCIAA or SHPO forms, but each includes site locations on topographic quad sheets as required by OCRM.

Timely information about earthworks in part of our survey area was also provided through a more recent project. From the summer of 1998 to the winter of 1999-2000, Christopher Olm Clement, Steven D. Smith, and Ramona M. Grunden, all with the Cultural Resources Consulting Division of SCIAA, investigated seventeen known batteries or line complexes, mapping them with GPS equipment. That project's site forms and report, *Mapping the Defense of the Charleston to*

Savannah Railroad: Civil War Earthworks in Beaufort and Jasper Counties, South Carolina were helpful in identifying sites and providing context about earthworks in Beaufort and Jasper counties.

The work done by OCRM and SCIAA proved a valuable resource, and we found the respective project personnel (Skipper Keith and Steve Smith) helpful and interested in our progress. Another separate project was being carried out on behalf of the Historic Beaufort Foundation during the time we were working. As we understand it, this survey was intended to record Union defenses in the city of Beaufort. Unfortunately it was late in our work that we became aware of that project, and both teams filed SCIAA forms for several sites.

We marked site numbers on topographic quad sheets for all earthworks previously recorded with SCIAA, SHPO and OCRM, including sites that were suspected but not definitely known to be fortifications. Next, we consulted Civil War-era and early twentieth century maps (Tables 1 and 2), and marked the named fortifications and apparent earthworks on the quad sheets.

With many earthworks now named and mapped, we began filling in the gaps. The source we used most intensively for this project was The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies (usually referred to as the Official Records or OR). Researchers have long found it difficult to use the OR effectively, because of their sheer volume - 127 books - and also their abysmal indexing (described by Civil War historians Bruce Caton and Allen Nevins as "wretched" (Civil War Centennial Commission 1966: v). While the National Archives and Records Administration guide was a tremendous improvement, the OR didn't become truly "user-friendly" until it was commercially converted to CD-ROM in the 1990s.

These searchable CD-ROMs proved an invaluable tool. Using the known fortification and place names as key words led us to armament indexes, construction reports, and travelers' narratives that also discussed nearby earthworks. Such descriptions and locational information were added to our search files and maps. As the project proceeded, we continued to consult the OR for references to sites located in the field. Brief historical information with citations was added to site forms.

In an effort to circumvent the errors that might have been introduced in the process of text conversion and indexing, we used two different CD-ROM versions of the OR, one from Guild Press of Indiana and one from Broadfoot Publishing Company. Although the formatting was different, and each contains typographical errors (some, especially proper names, are accurate transcriptions of the original documents), we found no substantive omissions in either version. We also examined The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Navies, which consists of thirty text volumes. Again we relied on a CD-ROM, using the Guild Press version.

We have sought to simplify citations to these sources. All OR-Army citations are listed as "OR" and the OR-Navy citations as "ORN." Further, this report and accompanying site forms list only the OR volume and page number, following the Guild Press citation method. Thus, OR-Army Series I, Volume XLVIII, Part 1, page 411 is cited as OR 48, page 411. This saves space, and also simplifies the citation to make it more readily understandable to the non-specialist.

A very important aspect of the research was the guidance of local informants. We routinely requested assistance from people we encountered in the field when they expressed interest in our work. When most research and the preliminary fieldwork were complete, we also invited information from affinity groups such as the Charleston Civil War Roundtable, asking primarily for help with those sites we knew had once existed but which were unmapped or physically inaccessible. The responses we received allowed us to field-verify several earthworks that had been considered destroyed or unlocatable.

A surprising finding was the number of sites that were documented on maps or in the OR, and therefore in our search files, that turned out to have related components not identified in the sources. For example, Caw Caw Swamp (38CH1806 & 1807, Sites 42 and 43), Pineberry (38CH1785, 1786 & 1791;

Table 1.
Maps for the Charleston County Area

Map Name	Date	Source
Bulls Island, SC, War Department	1943	Thomas Cooper Map Repository
Capers Island, War Department	1919	Thomas Cooper Map Repository
Charleston, SC, Showing the Approaches by Land and Water, the Rebel Batteries and Lines of Fire	1863	Harper's Weekly, March 23, 1863, pg. 198
Charleston, SC, USGS	1919	South Caroliniana Library
Coast of South Carolina from Charleston to Hilton Head	1862	NOAA, Office of Coast Survey, Library
Defences of Charleston, South Carolina, Sheet 7, Bache	1865	NOAA, Office of Coast Survey, Library
Edisto Island, War Department	1919	Thomas Cooper Map Repository
Fort Moultrie, War Department	1919	Thomas Cooper Map Repository
General Map of Charleston Harbor, South Carolina Showing Rebel Defences and Obstructions	1865	NOAA, Office of Coast Survey, Library
James Island, War Department	1919	Thomas Cooper Map Repository
Johns Island, War Department	1919	Thomas Cooper Map Repository
Kiawah Island, War Department	1918	Thomas Cooper Map Repository
Ladson, War Department	1919	Thomas Cooper Map Repository
Legareville, War Department	1919	Thomas Cooper Map Repository
Map of Charleston and its Defences, Compiled from Surveys of Portions of St. Andrews and Christ Church Parishes, Johnson	1863	South Carolina Historical Society
Map of Portions of Sea Coast of South Carolina and Georgia in Possession of The United States of America, Dec. 12^{h}, 1861	1861	NOAA, Office of Coast Survey, Library
Map of the Defenses of Charleston City and Harbor Showing also the Works Erected by the US	n.d.	NA, RG 77, Map I 58-1
Map of the Defenses of Charleston Harbor, 1863-65, Johnson	1890	Thomas Cooper Library
Melgrove, War Department	1919	Thomas Cooper Map Repository
Plans & Sections of Rebel Works at and About Charleston City, Plate VI, Gillmore	1868	Thomas Cooper Library
Ravenels, War Department	1920	Thomas Cooper Map Repository
Rebel battery in Cape Romain area [Charleston Co.]	n.d.	NOAA, Office of Coast Survey, Library
Sewee Bay, War Department	1919	Thomas Cooper Map Repository
Sketch of Fort Johnson and its Vicinity	n.d.	NA, RG 92, P&R File # 270-1
Wadmalaw Island, SC, War Department	1919	Thomas Cooper Map Repository
Wando, War Department	1919	Thomas Cooper Map Repository

Table 2.
Maps for Beaufort, Hampton and Jasper Counties

Map Name	Date	Source
Bluffton, SC-GA, War Department	1945	Thomas Cooper Map Repository
Fort Fremont, Corps of Engineers	1918	Thomas Cooper Map Repository
Fort Howell (Hilton Head Island)	1864	NA, RG 77, Drawer 146, Sheet 18
Hardeeville, USGS	1946	Thomas Cooper Map Repository
Hilton Head	1864	NA, RG 77, Map I 33-1
Hilton Head, Corps of Engineers	1918	Thomas Cooper Map Repository
Map of a part of Beaufort and Colleton Districts, between Broad River and South Edisto River	n.d.	NA, RG 77, Map I 47
Map of Beaufort and its Defences	n.d.	NA, RG 77, Map I 55
Map of Portions of Sea Coast South Carolina and Georgia in Possession of The United States, Dec, 12th, 1861	1861	NOAA, Office of Coast Survey, Library
Map of the Country Surrounding Port Royal Compiled for Brigt. Genl. T.W. Sherman	1861	NA, RG 77, Map 28-1
Map of the Entrenchments of Hilton Head Island, S.C.	n.d.	NA, RG 77, Drawer 146, Sheet 16
Map of the Rebel Lines of the Pocotaligo, Combahee & Ashepoo, South Carolina	1866	NA, RG 77, Map I 53
Okatie, Corps of Engineers	1918	Thomas Cooper Map Repository
Plan of Fort Walker (Hilton Head Island)	1861	Frank Leslie's Illustrated Newspaper, Nov.30, 1861, pg. 22
Plan of Intrenchments & Vicinity west of & near Beaufort, S.C.	1863	NA, RG 77, Map I 44
Plan of Surveys for a Naval Coal Depot, Bay Point, Port Royal Bay	1862	NOAA, Office of Coast Survey, Library
Plan of Works at Combahee Ferry	n.d.	NA, RG 109, Map SC 7
Plans & Views of Rebel Defences, Coast of South Carolina, Bache	1863	NOAA, Office of Coast Survey, Library, Map No. 2979
Reconnaissance of Upper Part of Broad River and its Tributaries and of Whale Branch	1865	NA, RG 77, Map I-50
Route of the Expedition, Oct. 22nd, 1862 with the Battlegrounds of Pocotaligo & Coosawhatchie	1862	NA, RG 77, Map I 40
Sketch of the Sea Coast of South Carolina and Georgia from Bull's Bay to Ossabaw Sound	1863	NA, RG 23, Special CW Charts, Bulls Island to Ossabaw Is.
Smiths Plantation, 160 acres reserved to the US (Beaufort Co.)	1864	NA, RG 77, Map I 33-3
St. Helena Sound, Corps of Engineers	1918	Thomas Cooper Map Repository

Sites 145 and 146), and Delta (38JA182, 252, 263 & 264; Sites 137, 138, 153 & 154) all proved to have notable features in addition to those we were aware of. It is clear that although this was a comprehensive survey, we must not assume that all Civil War earthworks in the surveyed counties have been located. The written and cartographic records do not yet provide complete information.

This project was carried out for the purpose of locating Civil War earthworks, Confederate or Union, that retain above-ground components. Although camp sites and picket posts can be significant archaeological resources, we did not attempt to locate them. We did, however, find some interesting references that suggest the contexts that such sites can illustrate. For example, [December 5, 1863]:

> In my division I have three camps, two on the Mount Pleasant side, in which are encamped all the hands working in Christ Church Parish... At one of these camps there are fifty-five batteries. The camp-ground is high and dry, convenient to wood and the best water in the neighborhood. The other camp in said parish is near Kinloch's Landing. It is a very good one, and I have no hesitation in saying that these two will compare favorably with the camp of any regiment in the Confederacy (OR 47, page 535).

Picket posts are more ephemeral sites occasionally mentioned in the OR. In Christ Church Parish (Charleston County), in January 1863:

> To patrol and guard the coast there are three cavalry companies... and two infantry companies from the Twenty-sixth Regt. . . . Pickets are stationed at Porcher's, Toomer's, Whiteside's, at Palmetto Point, Andersonville (38CH9, Site 49), The Grove, Graham's Creek, at Buck Hall (38CH194, Site 21), Doe Hall, Colbrun's, Dupre's, Blake's and McClellanville . . . . A picket should be stationed at Benning's place (Venning's Landing, 38CH1802, Site 26), a few miles from Mount Pleasant. I recommend that a company from Col. Wilson's regiment of reserves be sent there. . . (OR 20, page 744).

Underwater sites were also excluded. Fortifications overlooking navigable waterways were enhanced by obstructions designed to stop ships and boats. Works such as those at Wiltown (38CH482b; Site 148) and Church Flats (38CH432, Site 41) were thus made more effective:

> Obstructions on Church Flats Ridge, consisting of three schooners, scuttled with ballast, and a barricade of the heaviest live oaks to the rear of them. These obstructions are topped at the highest tide by but 3 feet of water (OR 47, page 550).

Field Work

Field recordation for each site that we were able to inspect involved measurements (a combination of pacing ground dimensions and measuring or estimating heights and depths), compass-based orientation, and narrative descriptions that incorporate topography, plant growth, surroundings, and land-use conditions that affect site integrity. Most fortifications have lost features over time; therefore, each site is described with respect to its present state, with missing components discussed as known or conjectural.

Photography can be useful in documenting earthwork features when the setting allows a clear line of sight. Surviving fortifications in the Lowcountry are typically set in thick growth, and even in color photographs appear as undifferentiated ground features (Figure 10). Photos were taken in the field when it was possible to capture a meaningful image (Figure 11).

Site Locations

We used road maps as well as topographic

Figure 10. Photograph of the Causeway rifle pits (38BU1880, Site 88) showing that often earthworks tend to disappear into the backdrop of thick coastal vegetation.

quads as base maps in the field, and found it helpful to attach photocopied sections of historic maps to each quad. When the exact location of a site was difficult to pinpoint archivally, which was common, topographic maps were more useful than road maps in guiding the intuitive process of deciding where to look.

We carried copies of the forms for previously-recorded sites but found that many were difficult to locate. Sites in rural or waterfront areas are often mapped only vaguely, and even precise mapping can be rendered useless when roads are rerouted or new subdivisions constructed. Eventually we revisited nearly all the sites that had been recorded, and wrote up-to-date directions for finding them.

Site locations were determined using a combination of techniques. Where accurate, reliable locations could be obtained using roads and other cultural or natural topographic features, UTMs[1] were calculated based on the map location.[2] At times it was not possible to accurately or reliably locate a site on the available USGS topographic maps. This could result from maps being outdated due to cultural or natural changes in an area; or a site might be located in an area where there were no distinctive features to allow a clear location to be plotted. Whatever the reason, in those cases the site location was determined using a global positioning system (GPS).

The GPS positions were taken with a Garmin GPS 12XL rover and a Garmin GBR 21 Beacon Receiver. The Garmin 12XL tracks up to twelve satellites, each with a separate channel that is continuously being read. The benefit of parallel channel receivers is their improved sensitivity and ability to obtain and hold a satellite lock in difficult situations, such as in forests or urban environments where signal obstruction is a frequent problem. This was a vital consideration for the study area.

[1] The UTM reference is a set of coordinates (easting and northing) that indicates a unique location according to the Universal Transmercator Grid appearing on maps of the United States Geological Survey. All UTM references in South Carolina are in Zone 17.

[2] All USGS maps use the NAD 27 datum and all UTMs included in this study are based on the NAD 27 datum.

Figure 11. Battery Middleton (38BU1881, Site 91) reveals that even when an earthwork was relatively free of vegetation, the photograph may provide only limited information.

GPS accuracy is generally affected by a number of sources of potential error, including errors with satellite clocks, multipathing, and selective availability. Satellite clock errors can occur when the satellite's clock is off by as little as a millisecond, or when a slightly-askew orbit results in a distance error. Multipathing occurs when the signal bounces off trees, chainlink fences, or bodies of water. Multipathing probably occurred occasionally during this survey, but we attempted to reduce the problem by taking readings in areas of minimal vegetation. The source of most extreme GPS errors is selective availability (SA), the deliberate mistiming of satellite signals by the Department of Defense. This degradation results in horizontal errors of up to 100 m 95% of the time, although the error may be as much as 300 m.

GPS reading taken with SA active can be corrected by comparing them to data collected simultaneously at a known location or base station, a process known as differential correction (DGPS). The Garmin GBR 21 Beacon Receiver made differential corrections using Coast Guard beacon stations and recording the corrected GPS UTM coordinates on the Garmin rover. Two Coast Guard beacons were used: Charleston, South Carolina (298.0 kHz) with a minimal range of 200 miles (providing complete coverage for Charleston, Berkeley, and Hampton, and most of Beaufort and Jasper counties) and Cape Canaveral, Florida (289.0 kHz) with a minimal range of 200 miles (providing coverage for sections of Beaufort and Jasper counties). With this differential correction, SA was eliminated and our expected potential horizontal error was reduced to 6 m or less.

Toward the end of the field work, the Department of Defense turned off selective availability. We discovered that 3D[3] and DGPS were identical. Therefore, over the last few weeks of the field work we relied on 3D navigation mode, again with expected potential horizontal errors of 6 m or less.

Products and Reporting

We assigned a project site number for each identified site that we searched for, but not those for which we had a reference without a clear geographic search zone. Those that were not locatable, or that were certainly destroyed, are described on one-page sheets

[3] A basic requirement for GPS position accuracy is having a lock on at least four satellites, which places the receiver in 3D mode. This is critical — as an example, positions calculated with less than four satellites can have horizontal errors in excess of a mile, or over 1,600 m.

indicating the nature of the historical reference, where we searched, what we found, and our assessment concerning the likelihood that the site still exists. For extant above-ground sites we completed new or revisit SCIAA site forms as appropriate. These forms are provided with Volume Two of this report, filed with the SHPO, SCIAA, OCRM, and appropriate local planning agencies.

Most of the site forms include attachments in the form of sections of historic maps, county maps, and USGS topographic maps. These topo quad sections are marked to show the site location and UTM coordinates of their center points.

Site locations include UTM coordinates. UTM (Universal Transverse Mercator) is a metric coordinate system found on all USGS topographic maps which has become the standard for archaeological and National Register applications. All our coordinates are based on the NAD 27 datum, which is also the datum to which USGS topographic maps are tied. The UTM coordinates in this study are within Zone 17, Band S, so technically all coordinates begin with 17S, although this is not written on the forms or site tables.

We prepared county-wide road maps marked with site numbers to show the approximate area of each site. Locations are marked with their SCIAA number where one was assigned, and with a project site number otherwise. We transferred the site numbers assigned to the OCRM project for fortifications on James and Johns Island to the Charleston County maps. These county-wide maps are not intended to provide specific locational information but will enable the user to identify the site number and review the relevant site form if necessary.

A list of all sites was prepared in a database format using Microsoft Excel. Data fields include project site number, SCIAA site number, county, municipality (where applicable), topo quad, name and/or type of site, UTM numbers, and Tax Parcel numbers where available. The list of OCRM sites is incorporated in the database. Those on James or Johns island carry their OCRM number but we did not number them in sequence with the sites recorded during this project.

FINDINGS

The Survey

The field survey assigned a total of 160 field numbers, each representing what was thought to be a discrete Civil War site. One (Site 145) received a/b designations, bringing the total of investigated site areas to 161. Table 3 shows how these are broken down by county. Two of these sites were determined, during the field investigation, not to be Civil War earthworks (one, 38CH1649, Site 5 was identified as phosphate mining, the function of the other, Site 99, is uncertain). As a result, the number of investigated Civil War sites is actually 159.

Table 3.
Number of Civil War Earthworks by County

County	Identified	Not Identified	Total
Beaufort	38	16	54
Berkeley	4	1	5
Charleston	42	20	62
Hampton	0	1	1
Jasper	22	10	32

Of these 159 sites, 106 (68.8%) were located and assigned a SCIAA site number. These represent archaeological sites with above ground remains. The remaining 48 sites (31.2%) could not be identified in the field. All of the sites are shown in Table 4 (arranged by site number) and Table 5 (arranged by county).

Some of these sites which were not identified are clearly destroyed. An example is the small earthwork situated near the Bull's Island Lighthouse (Site 152). Because of severe erosion this site is now over a mile in the ocean. Another example is Fort Duane, Site 100, within the Beaufort City Limits. Here the fort has been destroyed by development — likely within the past 10 years or so.

Other sites, while exhibiting no above ground evidence, are in areas where development has been less

Figure 12. View of Battery Taylor (38BU1870, Site 123) looking south.

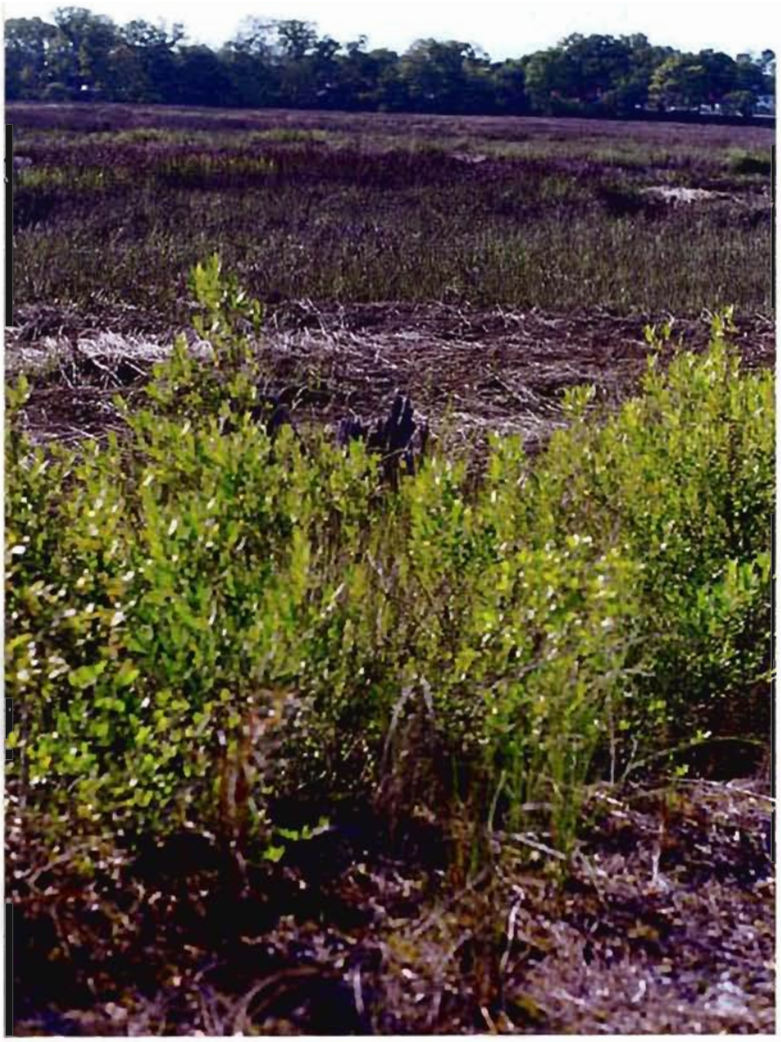


Figure 13. View of Battery Creek to the west from the eroding parapet of an unnamed battery in the City of Beaufort (38BU1871, Site 108).

aggressive and there may still be below-ground archaeological remains. Examples include Fort Stevens, Site 106, which may still remain just west of the Beaufort National Historic Landmark District and Site 50, the Hog Island Battery, off Mount Pleasant, which may be buried under dredge spoil.

It is likely that there are a few sites which are still extant, but which we were unable to find with the information available to us. One example may be Battery Bulow, Site 38. Although we were unable to find this earthwork in the area initially suspected, we suspect that additional future work may be able to resolve the issue and perhaps locate some remains for this fortification.

We were also able to document some site which are not only well documented in the OR, but for which there are period photographs. One such site are the fortifications at Bay Point (38BU1118, Site 157), where a major Navy yard was also situated. Figures 14 and 15 offer an interesting comparison.

Finally, there are a few areas where we were unable to obtain permission to search for the suspected batteries; further research in these areas is likely to yield well preserved sites. Examples are the batteries identified at Sites 76 and 77.

One of the major accomplishments of this study is the identification of a variety of new sites. For example, in the City of Beaufort we were able to identify three major Union earthworks which were not known to still exist — Battery Burnside (38BU1872, Site 103), Battery Taylor (38BU1870, Site 123; Figure 12), and an unnamed marsh battery (38BU1871, Site 108; Figure 13). That these sites are still so well preserved in an urban setting was unexpected and they well illustrate how critical it is that these resources be identified and recorded. There are numerous other examples of earthworks mentioned in historical accounts, but which had never been field identified — such as the line in St. Andrews Parish (38CH1787, Site 32) or the Haddrell Point Battery in Mount Pleasant (38CH1788, Site 33).

Table 4.
Civil War Fortifications by Project Site Number

Survey No.	SCIAA County	SCIAA Site No.	Historic Site Name	Other ID	ca. Date	USGS Quad	UTM Easting	UTM Northing	Municipality	Tax Parcel No.
1	38CH	1797	Seabrook Island Earthwork	OCRM #74	1864	Rockville	578457	3604300	Seabrook Island	147-11-0-16,17,33,34,35; 147-12-0-1
2	38CH	1798	Seabrook Island Field Battery		1862	Rockville	576549	3603655	Seabrook Island	147-0-0-3
3	38CH	1799	Battery Palmer	OCRM #91; Battery Barker	1863	Johns Island	583875	3628085		285-00-00-146
4	38CH	429	Battery Wilkes; Line of Innundation	OCRM #98		Johns Island	588505	3628581		310-01-00-068
5	38CH	1649	Phosphate Trenches		N/A	Johns Island	583417	3628180		285-14-00-0008
6	Charleston		Battery Wilkes; Five Mile Fort		1862	Johns Island	588370	3628363		310-01-00-103
7	38CH	1800	Battery Haig			Johns Island	592378	3627162		310-0-04,14
8	38CH	430	Battery Wilkes	"Battery Hague" on 1979 site form, SHPO #2490068	1862	Johns Island	589070	3627165		310-00-0072,73,74
9	38CH	1272	Long Branch Creek Overflow Battery	OCRM #99		Johns Island	588559	3629623		309-12-00-089
10	38CH	1678	Battery Magwood			Johns Island	589185	3630386	Charleston	309-0-0-3
11	Charleston		Battery Geddes			Johns Island	591740	3628665	Charleston	350-14-0-
12	Charleston		Battery Gaillard			Johns Island	588261	3632184		355-13-0-1
13	38CH	1801	Fort Bull	OCRM #100		Johns Island	586297	3633433	Charleston	356-00-31; 358-16-0
14	38CH	206	Ashley Ferry Site		N/A	Johns Island	588850	3634455	Charleston	358-16-0-315
15	Charleston		Battery Banks		1862	Johns Island	586589	3632627		
16	Charleston		Earthworks at Cohen Hill			Johns Island	586712	3635475	North Charleston	
17-19	38CH	953	Christ Church Lines	SHPO #1750035		Fort Moultrie	611644	3630422	Mount Pleasant	580-0-0-59
20	38CH	1707	Church Creek Battery			Johns Island	589300	3633200	Charleston	355-7-0-5
21	38CH	194	Buck Hall Earthwork			Awendaw	634900	3656638		7112-0-0-14,15,163
22	38CH	919	Unnamed Battery			Sewee Bay	620503	3647088		
23	38CH	1491	Unnamed Battery			Sewee Bay	624987	3643857		
24	38BK	473	Battery Warren	SHPO #0850001	1862	Honey Hill	636343	3670694		
25	38BK	483	Santee River Battery	German Battery	1862	Blakely	609957	3694245		
26	38CH	1802	Venning's Landing Battery			Fort Moultrie	610159	3630418	Mount Pleasant	561-0-0-3
27	38CH	1803	Battery Kinloch	Kinloch's Landing Battery		Fort Moultrie	608602	3628817	Mount Pleasant	560-0-0-1
28	Charleston		Battery Gary			Fort Moultrie	606242	3628820	Mount Pleasant	
29	Charleston		Hobcaw Point Battery		1862	Charleston	602297	3630955	Mount Pleasant	
30	38CH	1804				Charleston	594481	3627132	Charleston	349-08-0-01
31	38CH	1805				Charleston	594323	3626810	Charleston	349-12-0-11
32	38CH	1787	Brown Line			Charleston	594631	3629000	Charleston	418-7-0-116,130
33	38CH	1788	Haddrell's Point Battery			Charleston	604929	3628067	Mount Pleasant	532-1-0-10
34	38CH	1789	Gibbes Earthworks/ Albermarle Point			Charleston	597260	3628180	Charleston	421-16-0-7
35	38CH	1790				Charleston	594209	3627614	Hollywood	418-13-0-252
36	38CH	1792	Rantowles Stat.	ORCM #93	1862	Ravenel	579742	3627166	Hollywood	245-0-0-62
37	38CH	1793	Battery William Washington	ORCM #94; Rantowles	1862	Ravenel	580170	3628759		244-0-0-101
38	Charleston		Battery Bulow	ORCM #95		Ravenel	580532	3631602		287-0-0
39	Charleston			Alfred's 2 Small Forts		Ravenel	579772	3629958		
40	Charleston		Stono Bridge Tete-De-Pont			Wadmalaw Island	578240	3623424		248-0-0-10
41	38CH	432	Church Flats Battery	OCRM #92		Wadmalaw Island	575165	3623082	Hollywood	248-0-0-9
42	38CH	1806	Works at Caw Caw Swamp			Osborn	568350	3630532		175-00-00-0009
43	38CH	1807	Battery at Caw Caw Swamp			Osborn	568142	3629565		175-0-0-9
44	38CH	1808	Parker's Ferry Battery	OCRM #90	1865	Jacksonboro	556037	3635500		175-00-00-0001
45	38CH	1809	Yonge's Island Causeway Defenses			Wadmalaw Island	571158	3619249	Meggett	159-0-0-73 159-00-76
46	Charleston		King's Creek Causeway Battery			Adams Run	561768	3613888		
47-48	38CH	117	Edisto South Fort		1862	Edisto Beach	562145	3594049	Edisto Beach	
49	38CH	9	Andersonville Mound			Sewee Bay	626472	3646595		
50	Charleston		Hog Island Battery		1864	Charleston	603035	3627871	Mount Pleasant	
51	Charleston		Fort Barnes	ORCM #97	1862	Charleston	598418	3627042	Charleston	
52	Charleston		Fort Gladden	ORCM #98	1862	Charleston	598418	3627042	Charleston	
53	38CH	227	Kiawah Old Fort			Legareville	591900	3611080	Kiawah	207-0-0-15
54	Charleston		Kiawah Beach Fort	ORCM #72		Kiawah Island	591302	3608421	Kiawah	
55	38JA	259	Boyd's Neck Naval Battery		1864	Ridgeland	511080	3592440		84-01-0-3
56	38JA	253	Boyds Neck Lines			Ridgeland	510950	3593465		85-01-0-4
57	38JA	251	Boyds Landing Battery			Laurel Bay	513150	3593220		85-01-0-1
58	38JA	1006	Honey Hill	SHPO #4250419	1864	Ridgeland	506040	3594400		85-01-0-4
59	38JA	248	Euhaw Church Lines			Coosawhatchie	510478	3596417		85-01-0-8, 85-01-0-9

Table 4, cont.
Civil War Fortifications by Project Site Number

60	38JA	250	Dawson's Bluff Battery			Coosawhatchie	510767	3600139		86-0-07
61	38JA	260	Fort Radcliff			Coosawhatchie	508327	3600153		86-0-047
62	38JA	249	Bees Creek Battery	SHPO #1090418		Coosawhatchie	508130	3601056		86-01-0-02
63	Jasper		Earthworks South of Fort Radcliff			Coosawhatchie	506863	3598832		
64	38JA	261	Battery Colcock			Coosawhatchie	506819	3602258		86-01-0-02
65	Jasper		Battery Buckner			Coosawhatchie	507030	3603251		87-00-0-3
66	Jasper		Coosawhatchie Lines			Coosawhatchie	506444	3603682		61-;86-;87-
67	Jasper		"Rebel Battery"			Coosawhatchie	507400	3605875		
68	Jasper		Union Battery on Deveaux's Neck			Coosawhatchie	508195	3606044		
69	38JA	262	Fort Coosawhatchie			Coosawhatchie	506590	3605544		87-01-0-02
70	Jasper		Rebel Battery on Railroad			Coosawhatchie	507558	3607019		88-
71	38JA	263	Frampton Creek Lines	SHPO #4700415		Sheldon	513210	3609140		91-01-0-17
72	38JA	264	Mackays Point Lines	SHPO #4700416	1862	Sheldon	514290	3605480		92-00-0-01
73	38BU	1878	Rifle Pits			Sheldon	522658	3606842		R700-020-000-0008-0000
74	Beaufort		Battery at Garden's Corner			Sheldon	522526	3606863		
75	38BU	1289	Stoney Creek	SHPO #5690284	1862	Yemassee	516106	3609675		R700-012-000-0001-0000
76	Jasper		Deveaux Neck Union Battery			Coosawhatchie	509106	3603841		87-00-0-22
77	Jasper		Deveaux Neck Union "30 Pounder" Battery			Coosawhatchie	510068	3602496		87-00-0-22
78	Jasper		Mason's Bridge, Tullifinny Battery			Coosawhatchie	509090	3606850		
79	38JA	1017	Frampton House Earthwork			Yemassee	511915	3610273		91-0-01-52
80	38BU	1883	Fort Pocotaligo		1862	Yemassee	513260	3611100		R700-011-000-0002-0000
81	Beaufort		Fort Pocotaligo South	SHPO #5690168		Yemassee	513470	3611100		
82	38BU	1862	Pocotaligo Battery 1			Yemassee	513436	3611642		R700-005-000-0001-0000
83	38BU	1862	Pocotaligo Rifle Pits			Yemassee	513282	3611642		R700-005-000-0002-0000
84	38BU	1859-e	Castle Hill a-e			Yemassee	514450	3612360		R700-008-000-0001-0000
85	Beaufort	1883				Yemassee	514776	3611107		R700-012-000-0000-0000
86	38BU	1860	Earthworks at Mrs. Eustis'	Tomotley Battery		Yemassee	518530	3609650		R700-013-000-0001-0000
87	Beaufort		Causeway Battery			Sheldon	518771	3609284		R700-013-000-0001-0000
88	38BU	1860	Causeway Rifle Pits			Sheldon/ Yemassee	519149	3609548		R700-013-000-0001-0000
89	Beaufort		Gregorie's Line Battery 1			Yemassee	518420	3613924		
90	Beaufort		Gregorie's Line Battery 2			Yemassee	518269	3614323		
91	38BU	1861	Battery Middleton			Yemassee	520002	3615550		R700-002-000-0001-0000
92	38BU	1864	Battery Hanchet			Yemassee	521820	3614590		R700-008-000-0001-0000
93	38BU	1864	Combahee Ferry Rifle Pits			White Hall	529451	3612776		R700-010-000-0001-0000
94	38BU	1865	Combahee Ferry Rifle Pits			White Hall	529253	3612532		R700-010-000-0001-0000
95	Beaufort		Port Royal Ferry Fort		1861	Dale	523902	3600927		
96	38BU	1858	Pages Point East	SHPO #4700413		Sheldon	521085	3599707		R700-036-000-013F-0000
97	38BU	1857	Pages Point Island	SHPO #4700417		Sheldon	520440	3598538		R700-036-000
98	38BU	1877	Union Road Field Work			Sheldon	521880	3606585		R700-070-000-0055-000
99	Beaufort			SHPO #47000001 11	N/A	Sheldon	521298	3596319		
100	Beaufort		Fort Deane		1863	Beaufort	528034	3588477	Beaufort	
101	38BU	1869	Battery Seymour			Beaufort	528514	3588417	Beaufort	TMS-R120-028-000-0122-0000
102	38BU	1865	Battery Saxton	SHPO #0250644		Beaufort	528517	3588144	Beaufort	R120-28A-000-0102-0000
103	38BU	1872	Battery Burnside			Beaufort	528940	3589818	Beaufort	R120-001-000-0274-0000
104	Beaufort		"Old Fort"			Beaufort	529026	3589338	Beaufort	
105	Beaufort		"Old Fort"			Beaufort	529432	3588921	Beaufort	
106	Beaufort		Fort Stevens			Beaufort	530133	3588868	Beaufort	
107	Beaufort		"Old Fort"			Beaufort	530120	3588300	Beaufort	
108	38BU	1871	Unnamed Marsh Battery			Beaufort	528484	3588780	Beaufort	R120-003-000-0748 & 0747
109	38BU	1868	Battery Brayton			Beaufort	528310	3588490	Beaufort	R120-003-000-0392-0000
110	38BU	1861	Brewton Battery			Yemassee	517355	3613094		R700-006-000-0002
111	38CH	1794	North Edisto Fort	OCRM #75		Rockville	575324	3603235		141-0-0-11, -62
112	38CH	14	Horse Island			Rockville	575020	3606473		149-0-0-3
113	38JA	258	Pocotaligo West/Cuthbert			Yemassee	512670	3611606		09-02-0-1
114	Beaufort		Pocotaligo West-2-4			Yemassee	513000	3612700		R700-005-000-0002-0000
115	Beaufort		Castle Hill Locus I			Yemassee	515211	3612768		R700-008-000-0001-0000
116	Hampton		Pocotaligo Earthworks			Yemassee	512736	3614895		

Table 4, cont.
Civil War Fortifications by Project Site Number

117	Beaufort		Pocotaligo Earthworks			Yemassee	512717	3613874		R700-006
118	38BU	1217	Combahee Ferry Fort	Clay Hall Battery, SHPO #5610303		White Hall	529680	3612280		R700-010-000-0001-0000
119	38BU	219	Brickyard Creek Marsh Battery			Beaufort	528875	3594250		
120	38BU	1876	Union Road Rifle Pits			Sheldon	520463	3608634		R700-019-000-0159-0000
121	38BU	1875	Obstruction at Fuller's			Sheldon	521038	3608308		R700-020-000-0101-0000
122	38BU	1874	Obstruction at Fuller's			Sheldon	521115	3608325		R700-014-000-0064-0000
123	38BU	1870	Battery Taylor			Beaufort	528502	3587711	Beaufort	R120-003-000-0668-0000
124	Beaufort		Fort at Sam's Point	Fort Heyward	1861	Frogmore	537482	3594643		R200-005-000-009A-0000
125	38BU	1873	Sam's Point Rifle Pits	Fort Heyward		Frogmore	537359	3594558		R200-005-000-009A-0000
126	38BU	79/1151	Fort Howell		1864	Hilton Head Island	528737	3586098	Hilton Head Island	R510-005-000-0278-0000
127	38BU	80/1154	Fort Walker/Wells		1861	Hilton Head Island	530488	3586127	Hilton Head Island	R510-009-000-?-0000
128	38BU	78/1156	Fort Sherman		1861	Hilton Head Island	530117	3584800	Hilton Head Island	R510-
129	38BU	1167	Fort Mitchell		1862	Hilton Head Island	524090	3567187	Hilton Head Island	R510-003-000-0070-0000
130	38BU	86/1164	Battery Holbrook			Bluffton	520527	3561530	Hilton Head Island	R510-018-000-046F-0000
131	Beaufort		Fort at Braddock's Point			Tybee Island North	517544	3552787	Hilton Head Island	
132	38BU	1879	Battery at Braddock's Point		1861	Tybee Island North	516899	3553888	Hilton Head Island	R510-017-000-1107-0000
133-135	38JA	66	Fort Drayton/New River Battery	Battery at Red Bluff, SHPO #4110082.01	1861	Pritchardville	502832	3555800		72-01-0-61
136	38JA	169	Fort Hardee	SHPO #3010022.03		Limehouse	497643	3557750		37-01-0-02
137	38JA	162	Chaves' Battery 1			Limehouse	498017	3556120		37-01-0-09
138	38JA	252	Turnbridge Battery 1			Limehouse	497800	3556692		37-01-0-09
139	38JA	225	New River Battery			Limehouse	498321	3558128		29-49-00-02, -05
140	38JA	168	Rifle pits south of Purrysburg			Hardeville	488868	3572127		29-00-0-?
141	38BU	323/1149	Seabrook Landing/Coaling Depot		1862	Parris Island	524500	3569000	Hilton Head Island	
142	38CH	33	Bull's Island Old Fort			Bull's Island	532101	3643626		
143	38BK	1826	Dennis' Fort 1	SHPO #4340013	1865	Sandridge	560602	3681618		077-00-00-011
144	Berkeley		Lenaud's Ferry			Jamestown	623012	3685513		
145a	38CH	1785	Pineberry			Adams Run	558770	3613373		40-0-0-
145b	38CH	1788	Pineberry Lunette			Adams Run	558847	3613381		40-0-0-
146	38CH	1791	Pineberry 1- Gun Battery			Fenwick	556089	3613440		40-0-0-
147	Charleston		Small Battery at Pineberry			Fenwick	557800	3613540		40-0-0-
148	38CH	487b	Withrom Battery		1861	Fenwick	554761	3615725		40-0-0,9,10,14,19,21
149	Charleston		Bear's Bluff		1863	Adams Run	569780	3611767		
150	Charleston		Kings Cornfield Battery			Ravenel	580145	3623922		
151	Charleston		Ashley River Battery			Charleston	596989	3626867	Charleston	
152	Charleston		Bull's Island Lighthouse Battery		1862	Bull Island	534060	3643348		
153	38JA	263	Chaves' Battery 2			Limehouse	498330	3556119		
154	38JA	264	Turnbridge Battery 2			Limehouse	497860	3556763		
155	Jasper		Lawrence Canal Battery			Limehouse	497042	3555221		
156	38BK	1827	Dennis' Fort 2		1865	Sandridge	560450	3681248		077-00-00-013
157	38BU	1118	Fort Beauregard also Fort Seward		1861	Parris Island	533686	3559062		
158	Beaufort		Bay Point Bastion Line			Parris Island	534526	3568839		
159	38CH	1810	Andersonville SW Battery			Sewee Bay	626266	3646460		
160	38CH	1811	Andersonville NE Battery			Sewee Bay	626818	3647831		

Table 5.
Civil War Fortifications by County, SCIAA Site Number, and Project Site Number

Survey No.	SCIAA County	SCIAA Site No.	Historic Site Name	Other ID	ca. Date	USGS Quad	UTM Easting	UTM Northing	Municipality	Tax Parcel No.
25	38BK	463	Santee River Battery	German Battery	1862	Blakely	609657	3684245		
24	38BK	473	Battery Warren	SHPO #0850001	1862	Honey Hill	606343	3679694		
143	38BK	1826	Dennis' Fort 1	SHPO #4540013	1865	Sandridge	560602	3681618		077-00-00-011
156	38BK	1827	Dennis' Fort 2		1865	Sandridge	560450	3681240		077-00-00-013
144	Berkeley		Lenoud's Ferry			Jamestown	623012	3685513		
119	38BU	210	Brickyard Creek Marsh Battery			Beaufort	528875	3594250		
167	38BU	1118	Fort Beauregard also Fort Seward		1861	Parris Island	533686	3559062		
129	38BU	1167	Fort Mitchell		1862	Hilton Head Island	524090	3567187	Hilton Head Island	R510-003-000-0070-0000
118	38BU	1217	Combahee Ferry Fort	Clay Hall Battery, SHPO #5510300		White Hall	529080	3612290		R700-010-000-0001-0000
75	38BU	1769	Stoney Creek	SHPO #5690284	1862	Yemassee	516105	3609678		R700-012-000-0001-0000
102	38BU	1855	Battery Saxton	SHPO #0250844		Beaufort	528517	3589144	Beaufort	R120-28A-000-0102-0000
97	38BU	1857	Pages Point Island	SHPO #4700417		Sheldon	520440	3596538		R700-036-000
96	38BU	1858	Pages Point East	SHPO #4700415		Sheldon	521066	3598707		R700-036-000-013F-0000
86	38BU	1860	Earthworks at Mrs. Eustis'	Tomotley Battery		Yemassee	518530	3609850		R700-013-000-0001 0000
82	38BU	1862	Pocotaligo Battery 1			Yemassee	513436	3611842		R700-005-000-0001-0000
80	38BU	1863	Fort Pocotaligo		1862	Yemassee	513340	3611190		R700-011-000-0002-0000
92	38BU	1864	Battery Hanckel			Yemassee	521820	3614590		R700-008-000-0001-0000
109	38BU	1868	Battery Brayton			Beaufort	528310	3588490	Beaufort	R120-003-000-0382-0000
101	38BU	1869	Battery Seymour			Beaufort	528514	3580417	Beaufort	TMS-R120-020-000-0172-0000
123	38BU	1870	Battery Taylor			Beaufort	528502	3587711	Beaufort	R120-000-000-0898-0000
108	38BU	1871	Unnamed Marsh Battery			Beaufort	528484	3588750	Beaufort	R120-000-000-0748 & 0747
103	38BU	1872	Battery Burnside			Beaufort	528940	3589618	Beaufort	R120-001-000-0274-0000
125	38BU	1873	Barn's Point Rifle Pits	Fort Heyward		Frogmore	537359	3594658		R200-006-000-009A-0000
122	38BU	1874	Obstruction at Fuller's			Sheldon	521115	3608325		R700-014-000-0064 0000
121	38BU	1875	Obstruction at Fuller's			Sheldon	521038	3608306		R700-020-000-0101-0000
120	38BU	1876	Union Road Rifle Pits			Sheldon	520463	3608034		R700-018-000-0159-0000
98	38BU	1877	Union Road Field Work			Sheldon	521880	3606685		R700-020-000-0065-000
73	38BU	1878	Rifle Pits			Sheldon	522658	3606642		R700-020-000-0008-0000
132	38BU	1879	Battery at Braddock's Point		1861	Tybee Island North	518899	3553688	Hilton Head Island	R510-017-000-1107-0000
88	38BU	1880	Causeway Rifle Pits			Sheldon/ Yemassee	519149	3609549		R700-013-000-0001-0000
91	38BU	1881	Battery Middleton			Yemassee	520002	3615550		R700-002-000-0001-0000
83	38BU	1882	Pocotaligo Rifle Pits			Yemassee	513282	3611847		R700-006-000-0002-0000
85	38BU	1883				Yemassee	514276	3611107		R700-012-000-0003-0000
90	38BU	1884	Combahee Ferry Rifle Pits			White Hall	529451	3612376		R700-010-000-0001-0000
94	38BU	1885	Combahee Ferry Rifle Pits			White Hall	529253	3612032		R700-010-000-0001-0000
84	38BU	1859a-e	Castle Hill a-e			Yemassee	514450	3612360		R700-006-000-0001-0000
110	38BU	1861	Brewton Battery			Yemassee	617365	3613094		R700-006-000-0002
141	38BU	323/1149	Seabrook Landing/Coaling Depot		1862	Paris Island	624500	3589000	Hilton Head Island	
128	38BU	78/1158	Fort Sherman		1861	Hilton Head Island	530117	3564800	Hilton Head Island	R510-
126	38BU	79/1161	Fort Howell		1864	Hilton Head Island	528737	3566000	Hilton Head Island	R510-006-000-0278-0000
127	38BU	80/1164	Fort Walker/Wells		1861	Hilton Head Island	530488	3566127	Hilton Head Island	R510-009-000-7-0000
130	38BU	89/1164	Battery Holbrook			Bluffton	520527	3561530	Hilton Head Island	R510-010-000-046F-0000
74	Beaufort		Battery at Garden's Corner			Sheldon	522528	3606463		
81	Beaufort		Fort Pocotaligo South	SHPO #5690168		Yemassee	513420	3611100		
87	Beaufort		Causeway Battery			Sheldon	518771	3609764		R700-013-000-0001-0000
89	Beaufort		Gregorie's Line Battery 1			Yemassee	518420	3613924		
90	Beaufort		Gregorie's Line Battery 2			Yemassee	519269	3614323		
95	Beaufort		Port Royal Ferry Fort		1861	Dale	523902	3600927		
99	Beaufort			SHPO #4700001 11	N/A	Sheldon	521298	3598318		
100	Beaufort		Fort Duane		1863	Beaufort	528004	3589177	Beaufort	
104	Beaufort		"Old Fort"			Beaufort	529626	3589358	Beaufort	
105	Beaufort		"Old Fort"			Beaufort	529432	3588921	Beaufort	
106	Beaufort		Fort Stevens			Beaufort	530133	3588866	Beaufort	
107	Beaufort		"Old Fort"			Beaufort	530120	3588300	Beaufort	

Table 5, cont.
Civil War Fortifications by County, SCIAA Site Number, and Project Site Number

114	Beaufort		Pocotaligo West-2-4			Yemassee	513000	3612700		R700-005-000-0002-0000
116	Beaufort		Castle Hill Locus I			Yemassee	515211	3612768		R700-005-000-0001-0000
117	Beaufort		Pocotaligo Earthworks			Yemassee	513717	3613874		R700 005
124	Beaufort		Fort at Sam's Point	Fort Heyward	1861	Frogmore	537452	3594643		R700-005-000-009A-0000
131	Beaufort		Fort at Braddock's Point			Tybee Island North	517044	3552787	Hilton Head Island	
168	Beaufort		Bay Point Bastion Line			Parris Island	534528	3588939		
49	38CH	0	Andersonville Mound			Sewee Bay	626472	3646595		
112	38CH	14	Horse Island			Rockville	575020	3605473		140-0-0-3
142	38CH	33	Bull's Island Old Fort			Bull's Island	632101	3643626		
47-48	38CH	117	Edisto South Fort		1862	Edisto Beach	562165	3594049	Edisto Beach	
21	38CH	194	Buck Hall Earthwork			Awendaw	634900	3656638		7112-0-0-14,15,163
14	38CH	206	Ashley Ferry Site		N/A	Johns Island	588650	3634435	Charleston	358-18-0-315
53	38CH	227	Kiawah Old Fort			Legareville	501900	3611050	Kiawah	207-0-0-15
4	38CH	429	Battery Wilkes; Line of Inundation	OCRM #98		Johns Island	586505	3628581		310-01-00-068
8	38CH	430	Battery Wilkes	"Battery Hague" on 1979 site form. SHPO #2490055	1862	Johns Island	589070	3627155		310-00-0072,73,74
43	38CH	432	Church Flats Battery	OCRM #92		Wadmalaw Island	578155	3623082	Hollywood	248-0-0-9
22	38CH	819	Unnamed Battery			Sewee Bay	620803	3647068		
9	38CH	1272	Long Branch Creek Overflow Battery	OCRM #99		Johns Island	588559	3629623		309-13-00-069
23	38CH	1491	Unnamed Battery			Sewee Bay	624987	3643657		
5	38CH	1649	Phosphate Trenches		N/A	Johns Island	580417	3628180		285-14-00-0008
10	38CH	1678	Battery Magwood			Johns Island	589185	3630386	Charleston	309-0-0-3
20	38CH	1707	Church Creek Battery			Johns Island	589300	3633200	Charleston	355-7-0-5
145a	38CH	1785	Pineberry			Adams Run	558770	3613373		40-0-0-
145b	38CH	1786	Pineberry Lunette			Adams Run	558847	3613381		40-0-0-
32	38CH	1787	Brown Line			Charleston	594831	3629000	Charleston	418-7-0-318,130
33	38CH	1788	Haddrell's Point Battery			Charleston	604829	3626067	Mount Pleasant	532-1-0-10
34	38CH	1789	Gibbes Earthworks/ Albemarle Point			Charleston	597260	3626180	Charleston	421-15-0-7
35	38CH	1790				Charleston	594209	3627614	Hollywood	418-13-0-252
146	38CH	1791	Pineberry I - Gun Battery			Fenwick	558088	3613440		40-0-0-
36	38CH	1792	Ramswes Batt.	ORCM #93	1862	Ravenel	578742	3627166	Hollywood	245-0-0-02
37	38CH	1793	Battery William Washington	ORCM #94; Ramswes	1862	Ravenel	580170	3628759		244-0-0-101
111	38CH	1794	North Edisto Fort	OCRM #75		Rockville	575324	3603225		141-0-0-11, -62
1	38CH	1797	Seabrook Island Earthwork	OCRM #74	1864	Rockville	578457	3604300	Seabrook Island	147-11-0-16,17,33,34,35; 147-12-0-1
2	38CH	1798	Seabrook Island Field Battery		1862	Rockville	578549	3603655	Seabrook Island	147-0-0-3
3	38CH	1799	Battery Palmer	OCRM #91, Battery Barker	1863	Johns Island	585875	3628085		285-00-00-146
7	38CH	1800	Battery Haig			Johns Island	592375	3627182		310-0-04,14
13	38CH	1801	Fort Bull	OCRM #100		Johns Island	588297	3633433	Charleston	358-00-31; 358-15-0
26	38CH	1802	Venning's Landing Battery			Fort Moultrie	610189	3630416	Mount Pleasant	661-0-0-3
27	38CH	1803	Battery Kinloch	Kinloch's Landing Battery		Fort Moultrie	606602	3626817	Mount Pleasant	660-0-0-1
30	38CH	1804				Charleston	594481	3627132	Charleston	349-08-0-01
31	38CH	1805				Charleston	594525	3626810	Charleston	349-12-0-11
42	38CH	1806	Works at Caw Caw Swamp			Dsborn	568360	3630532		175-00-00-0009
40	38CH	1807	Battery at Caw Caw Swamp			Dsborn	568142	3629505		175-0-0-9
44	38CH	1808	Parker's Ferry Battery	OCRM #90	1865	Jacksonboro	568037	3635500		175-00-00-0001
45	38CH	1809	Yonge's Island Causeway Defenses			Wadmalaw Island	571158	3619249	Meggett	159-0-0-73 159-00-76
159	38CH	1810	Andersonville SW Battery			Sewee Bay	626268	3648460		
160	38CH	1811	Andersonville NE Battery			Sewee Bay	626816	3647831		
148	38CH	4026	Wetown Battery		1861	Fenwick	554761	3615725		40-0-0,9,10,14,19,21
17-19	38CH	963	Christ Church Lines	SHPO #1760035		Fort Moultrie	611844	3633422	Mount Pleasant	660-0-0-59
6	Charleston		Battery Wilkes, Five Mile Fort		1862	Johns Island	588370	3628363		310-01-00-100
11	Charleston		Battery Geddes			Johns Island	591740	3626665	Charleston	350-14-0-
12	Charleston		Battery Gaillard			Johns Island	588251	3632194		355-13-0-1
15	Charleston		Battery Banks		1862	Johns Island	586589	3632827		
16	Charleston		Earthworks at Cohen Hill			Johns Island	588712	3635476	North Charleston	
28	Charleston		Battery Gary			Fort Moultrie	606242	3626820	Mount Pleasant	

Table 5, cont.
Civil War Fortifications by County, SCIAA Site Number, and Project Site Number

29	Charleston		Hobcaw Point Battery		1862	Charleston	602297	3630955	Mount Pleasant	
38	Charleston		Battery Bulow	ORCM #95		Ravenel	580532	3631602		287-0-0
39	Charleston			Alfred's 2 Small Forts		Ravenel	578772	3628856		
40	Charleston		Stono Bridge Tete-De-Pont			Wadmalaw Island	578240	3623424		248-0-0-10
48	Charleston		King's Creek Causeway Battery			Adams Run	561756	3613885		
50	Charleston		Hog Island Battery		1864	Charleston	600035	3627871	Mount Pleasant	
51	Charleston		Fort Barnes	ORCM #97	1862	Charleston	596418	3627042	Charleston	
52	Charleston		Fort Gladden	ORCM #98	1862	Charleston	596418	3627042	Charleston	
54	Charleston		Klawah Beach Fort	ORCM #72		Klawah Island	581302	3608421	Klawah	
147	Charleston		Small Battery at Pineberry			Fenwick	557800	3613540		40-0-0-
149	Charleston		Bear's Bluff		1863	Adams Run	569780	3611787		
150	Charleston		Kings Cornfield Battery			Ravenel	580145	3629922		
151	Charleston		Ashley River Battery			Charleston	596989	3626887	Charleston	
152	Charleston		Bull's Island Lighthouse Battery		1862	Bull Island	534060	3643348		
116	Hampton		Pocotaligo Earthworks			Yemassee	512736	3611895		
133-135	38JA	58	Fort Drayton/New River Battery	Battery at Red Bluff, SHPO #4110082.01	1861	Prichardville	502832	3565800		72-01-0-51
140	38JA	158	Rifle pits south of Purrysburg			Hardeville	488508	3572127		29-00-0-7
136	38JA	159	Fort Hardee	SHPO #3010022.03		Limehouse	497643	3557750		37-01-0-02
137	38JA	182	Cheves' Battery 1			Limehouse	498017	3556120		37-01-0-09
139	38JA	225	New River Battery			Limehouse	498321	3556128		29-49-00-02, -05
59	38JA	246	Euhaw Church Lines			Coosawhatchie	510478	3596417		85-01-0-8, 85-01-0-9
62	38JA	249	Bees Creek Battery	SHPO #1090418		Coosawhatchie	508130	3601050		86-01-0-02
60	38JA	250	Dawson's Bluff Battery			Coosawhatchie	510787	3600139		86-0-07
57	38JA	251	Boyds Landing Battery			Laurel Bay	513160	3593720		95-01-0-1
138	38JA	252	Tumbridge Battery 1			Limehouse	497800	3556892		37-01-0-09
56	38JA	253	Boyds Neck Lines			Ridgeland	510950	3592465		85-01-0-4
72	38JA	254	Mackays Point Lines	SHPO #4700416	1862	Sheldon	514290	3605480		92-00-0-01
71	38JA	255	Frampton Creek Lines	SHPO #4700415		Sheldon	513210	3606140		91-01-0-17
113	38JA	256	Pocotaligo West/Cuthbert			Yemassee	512670	3611698		89-02-0-1
55	38JA	259	Boyd's Neck Naval Battery		1864	Ridgeland	511080	3592440		84-01-0-3
61	38JA	260	Fort Radcliff			Coosawhatchie	508327	3600153		86-0-047
64	38JA	261	Battery Colcock			Coosawhatchie	508819	3602258		86-01-0-02
69	38JA	262	Fort Coosawhatchie			Coosawhatchie	508593	3605544		87-01-0-02
153	38JA	263	Cheves' Battery 2			Limehouse	498330	3556119		
154	38JA	264	Tumbridge Battery 2			Limehouse	497860	3556783		
58	38JA	1008	Honey Hill	SHPO #4280419	1864	Ridgeland	508040	3594400		85-01-0-4
79	38JA	1017	Frampton House Earthwork			Yemassee	511916	3610273		91-0-01-52
63	Jasper		Earthworks South of Fort Radcliff			Coosawhatchie	508863	3599832		
65	Jasper		Battery Buckner			Coosawhatchie	507530	3603251		87-00-0-3
66	Jasper		Coosawhatchie Lines			Coosawhatchie	508444	3603682		61-;85-;87-
67	Jasper		"Rebel Battery"			Coosawhatchie	507403	3605875		
68	Jasper		Union Battery on Deveaux's Neck			Coosawhatchie	508195	3606044		
70	Jasper		Rebel Battery on Railroad			Coosawhatchie	507558	3607019		88-
76	Jasper		Deveaux Neck Union Battery			Coosawhatchie	509100	3603841		87-00-0-22
77	Jasper		Deveaux Neck Union '30 Pounder' Battery			Coosawhatchie	510058	3602495		87-00-0-22
78	Jasper		Mason's Bridge, Tullifinny Battery			Coosawhatchie	509390	3606850		
155	Jasper		Lawrence Canal Battery			Limehouse	497042	3555721		

Figure 14. Machine shop at Bay Point, the location 38BU1118, Site 157 (U.S. Army Military History Institute).

There were also a few sites which had been identified during previous county-wide architectural surveys, but for which the locations were vague or for which the recordation was less than complete. For example, Dennis' Fort in Berkeley County (38BK1826, Site 143) is well known by many avocational historians, who point to Cross' (1985) book on the history of Berkeley County. Yet, prior to this study it had not been fully recorded with SCIAA. In addition, Cross also mentions a second site, which for some reason never attracted local attention. This additional earthwork (38BK 1827, Site 156) was also recorded by this study.

We also found a few examples of Civil War earthworks in areas where they were not expected. For example, there

Figure 15. The Bay Point area (38BU1118, Site 157) today showing extensive resculpting of the topography.

Figure 16. Bull's Island tabby "Old Fort" (38CH33, Site 142) reused by Confederate forces.

of an early tabby fort which was reused by the Confederate forces during the Civil War.

This research also helped resolve a very large number of "problem sites" — archaeological sites for which there were multiple, or questionable, locations. For example, Fort Drayton or the Red Bluff batteries (38JA68, Site 133-135) were

are some vague accounts of an earthwork at the Horse Island shell ring (38CH14, Site 112), a site which has been known for years, but which has only been studied for its Native American component. Our investigation found that a Civil War component probably exists — exhibiting a type of "adaptive reuse" of an earlier site during the Civil War. A similar situation appears to be the case at the Bull's Island "Old Fort," (38CH33, Site 142), an example

Figure 17. Portion of Fort Drayton (38JA68, Site 133)on the New River showing almost total loss of the earthworks.

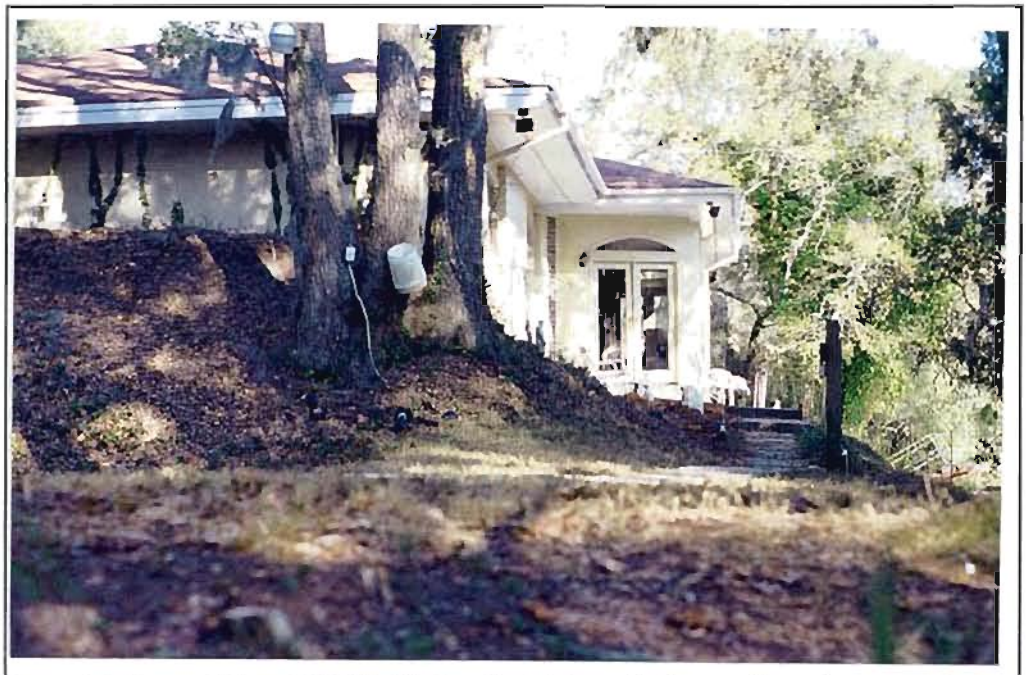


Figure 18. Battery Palmer (38CH1799, Site 3) with house built partially on the parapet (view is to the southeast).

known only from a very old underwater survey site, representing finds of posited Civil War materials at the eroding fort. Our study identified a period map showing the extent of that fortification, documented the extent of the erosion, and recorded the extensive batteries and covered ways which still exist at this site. Another example is Battery Warren (38BK473, Site 24). Although this is a very well documented site — it has even been incorporated into a nature trail on the Francis Marion National Forest — it has been recorded at three distinctly different locations on the SCIAA site maps. This, of course, can cause extensive management problems — potentially leaving unaddressed the affect an undertaking may have on the site. Other examples are found on Hilton Head

Figure 19. Battery Saxton (38BU1855, Site 102) has been largely destroyed by road construction, a fast food resturant, an auto repair shop, and other urban developments.

Island, where sites such as Fort Walker (38BU80/1154, Site 127) and Fort Sherman (38BU78/1156, Site 128) had never been accurately recorded.

While we do not contend that this work is exhaustive, we do believe that it represents an excellent body of planning information for the areas investigated. Not only does it identify, and accurately locate, known sites, but it also suggests areas where additional sites may be found with further research and effort.

Site Conditions and Preservation

This research also begins to document the condition of the Civil War earthworks remaining in the study area. Although we did not attempt to force individual sites into narrowly defined condition assessments (see, for example, Lowe 1999:6), we did make general observations at each site.

Most of the Civil War earthworks extant in the Lowcountry are defensive lines, rifle trenches, and isolated fortifications. Relatively few battlefields are found in the survey area. However, military earthworks, whether they are part of a battlefield landscape or individual constructions, generally have two structural components: the parapet and the ditch.

The parapet is the mound of earth that provided protection from enemy fire, and the ditch is the excavation from which earth for the parapet was taken. Our method of evaluating the integrity of parapets and ditches is equally useful for other types of earthworks, such as covered ways, rifle trenches, magazines, bombproofs, gun platforms, and traverses.

Integrity, the ability of a historic property to convey its significance, is one of the qualities to be defined when nominating properties to the National Register of Historic Places. Integrity is also evaluated when completing the Statewide Survey Site Form used by the SHPO and the Site Inventory Record used by SCIAA. The archaeological site forms filed for this project provide information about the integrity of each site recorded.

National Register guidelines consider seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. A few of the aspects are most important to evaluating military earthworks. We considered integrity of design, setting, materials, and workmanship for each property. While the setting of many fortifications has changed with reforestation overcoming formerly open fields, this natural progression is part of a continuum and not destructive to integrity of setting or feeling. Tree growth is not final — the setting could be restored to the open appearance of the 1860s — and the protective cover provided to the earthwork may be more important than this visual aspect.

An earthwork with good integrity retains deep relief in the distance from the height of the parapet to the bottom of the ditch, sharply defined angles, clarity of surviving details, and little evidence of erosion or damage. These were most often found in mature woodlands, as the tree cover above and leaf litter on the ground have protected them from erosion. A managed pine forest is less protective, because the repeated loss of ground cover during controlled burns speeds erosion.

As an earthwork erodes, soil washes down from top and sides of the parapet, blurring details, obliterating embrasures, and softening the profile. Gradually the ditch is filled. Besides the effects of natural erosion, earthworks are damaged by roads and paths, animal and human digging, and tree falls. Moderately eroded earthworks with a few breaks or intrusions are in fair condition, and may be described as disturbed, affected, or damaged.

Integrity is poor when a parapet and ditch are visible, but advanced erosion is accompanied by evidence of other damage. These sites are discussed as damaged, heavily impacted, illegible, or chaotic. When the parapet is eroded nearly flat beside the shallow trough of the trench, or extant only as discontiguous mounds, the site retains no integrity. Even in ruined condition, such remnant earthworks may be significant for their association with important events or persons.

Erosion is a critical factor affecting the integrity of earthworks. Rarely do earthworks retain good physical condition in open areas without vegetative cover. In fact, our field work identified only one

fortification on open ground that retains fair to good integrity — the fort on Bulls Island (38CH33, Site 142), which is of tabby, not earthen, construction.

Some larger earthwork complexes, such as the Mackey Point Lines (38JA254, Site 72), Fort Sherman and its lines (38BU78/1156, Site 128), Honey Hill (38JA1008, Site 58), or the Seabrook Island Field Battery (38CH1798, Site 2), present a mix of eroded, demolished, and nearly-intact elements. All four have been protected by tree cover and their relative inaccessibility on private islands or plantations. While Mackey Point and Honey Hill have both had some damage in the past from agricultural and timbering activities, they do not show recent increases in erosion, and seem in stable condition. At both the others, bare soil is visible in places, foot traffic is increasing, and the components with good integrity face likely damage in the near future.

Fort Hardee (38JA169, Site 136), is a large (at least 10 acres) enclosure that retains its integrity, with the only intrusion being several roads which bisect the fortifications. Although visible from the public highway, the parapet, ditches, and sally port with protective interior parapet show only moderate erosion and little damage from foot traffic or looting.

There are other, smaller, earthworks that retain good integrity. Typically they are in heavy wooded cover on private land and not well-known. Battery Hanckel (38BU1289, Site 92) is a redan, a parapet in two sections, with ditch-in-front and a gun platform at the corner of the angled flanks. Its width suggests some lowering and erosion over time, but the ditch and the profiles of the details are still clear.

The fort in Caw Caw Swamp (38CH1807, Site 43) is a redan with ditch-in-front and magazine to its rear. The magazine is badly eroded at its center, which may have begun with the collapse of the cavity beneath but has been worsened by relic hunters. The parapet and ditch are in good condition, gun embrasures still visible along the wall. An unnamed lunette (38BU1862, Site 82) is in good condition, with no breaches in its walls and the ditch still contiguous across the front and two sides. The gun embrasures are uneroded and still legible.

Figure 20. The remains of Fort Bull (38CH1801, Site 13), one of the largest and most elaborate fortifications in the Charleston area, has been largely destroyed by apartment complexes and urban sprawl.

Figure 21. Fort Howell (38BU79/1151, Site 126) continues to exhibit pedestrian wear and the viewscape has been dramatically altered by high density housing surrounding the tract.

Pineberry Battery (38CH1785, Site 145a) is one of the best-documented of the smaller fortifications, the plantation owner, John Berkely Grimball, having followed its construction in his diary. Pineberry is also well-preserved by its location in heavy tree cover on private land. It remains a long parapet wall with traverses, and a wide ditch. A lunette associated with Pineberry (38CH1786, Site 145b), on the other hand, has been flattened. A curving driveway cuts through the lunette twice and it is apparent only as remnant mounds around the large oak trees that stand in the yard.

What became more noticeable to us as the survey progressed is how many of these earthworks had been impacted by local development pressures — often with the full knowledge of the local community.

For example, Battery Burnside (38BU1872, Site 103), inside the city limits of Beaufort, South Carolina,) had been damaged by the construction of Ribaut Plaza, as well as by a housing development. The remaining portion of it is currently being advertised for sale. Battery Wilkes or the Line of Inundation (38CH429, Site 3), within the City of Charleston, has been placed on the National Register of Historic Places. In spite of that the battery is being used as a construction dump and a retaining wall along the Savannah Highway is beginning to crack. Should this wall fail it is likely that a significant portion of the site would be lost outright, with additional portions lost in an effort to "stabilize" the resulting slumped bank. Battery Magwood (38CH1678, Site 10), also in the Charleston city limits, is being used as a community dump, with stoves and refrigerators littering the ditch. The magazine is being used by local individuals as a dirt bike ramp, causing extensive erosion and loss of detail.

In other areas the damage is not as directly attributable to human actions. For example, we found extensive erosion of the ditch into Battery Creek at Battery Taylor (38BU1870, Site 123). While this damage may be classified as "natural," it is likely exacerbated by the wakes created by increased boat traffic on the creek. Similar damage was found at Fort Drayton (38JA68, Sites 133-135) where an entire large earthwork has nearly completely eroded away, even with minimal boat traffic.

Perhaps the most startling discovery is that site protection is not only difficult, it is often illusionary. Simply put, green spacing is not a guarantee that a site will be preserved. For example, Fort Howell (38BU79/1151, Site 126), while owned by a land trust and having received a preservation assessment (Trinkley et al. 1996), evidences more wear and erosion than

during the initial assessment. Site use, coupled with a failure to aggressively ensure long-term preservation, is taking a calculable toll on the earthwork.

Even when public actions are altered to "ensure" the preservation of a site, that preservation is by no means certain. For example, the S.C. Department of Transportation has taken special pains to avoid the New River Batteries (38JA225, Site 139). Yet the sites remain in private ownership with no long-term guarantee of preservation. This begs the question of whether it is good public policy to "avoid" and "preserve" a site by reengineering undertakings, but leaving the site vulnerable to other development pressures. While it may satisfy the letter of the law that a federally funded undertaking did not destroy the site, what of the secondary impacts — the gas stations and strip malls — which result from the road widening and improved access?

We have no desire to single out any one agency. The fact is that South Carolina exhibits no cohesive, rational policy for the preservation of its Civil War sites. We hope that this survey will be a first step in developing such a program.

Sites in Non-Survey Areas

City of Charleston

These were not included in the field survey since urban development has destroyed any above-ground evidence of these batteries. They may, however, exist as archaeological sites and therefore warrant at least some brief attention. We have identified at least 11 batteries or positions in Charleston (Figure 22). Many of these were recorded by the Confederate artist Conrad Wise Chapman, who was retained by General Beauregard to document the defenses of Charleston. At least 35 paintings and far more sketches were produced, many of which are held by such institutions as the Gibbes Art Galley (Charleston, South Carolina) or the Museum of the Confederacy (Richmond, Virginia). The various Charleston batteries are briefly listed below with a few comments concerning their location and history.

City Entrenchments

These were situated above the city across the neck and were under construction by September 24, 1862 when they were examined by General G.T. Beauregard, who commented:

> I inspected this day with Colonel Gonzales the line of works on the Neck to defend the city of Charleston from land attack from the north. It is a continuous bastion line of strong profile and elaborately constructed, but badly located, I believe, not being well adapted to the ground. It is commanded to a certain extent by woods in front, and can be enfiladed and taken in reverse by gunboats on the Cooper and Ashley Rivers, particularly from the last. No traverses have been constructed. They are absolutely required. Even then this line could hardly be held successfully against a fleet of gunboats in each of said rivers (OR 20, page 612).

These works were still about two weeks from completion in early October 1862. While designed for 25 guns, there were only four in position at that time (OR 20, page 627).

Half-Moon Batteries

These batteries were situated in the area of East Bay between Blake and Columbus streets. General Beauregard also reviewed their progress in September 1862, commenting:

> The two batteries at the Half-Moon Battery are not finished. They are intended for five and three guns each, to command the Cooper River and Town Creek. The distance to the former is too great. . . . The profile of the parapet of those batteries is too great, especially of the first one. Adaptation of "means to an end" has

> not always been consulted in the works around this city and Savannah. Much unnecessary work has been bestowed upon many of them (OR 20, page 612).

Still uncompleted by early October 1862, an account at that time indicated they were designed for seven guns, although none were in place (OR 20, page 627). There are two accounts of the naming of these batteries in March 1864. Both agree that "Half-Moon Battery No. 2" is the northern of the two and that it was named Battery James. The other, "Half-Moon Battery No. 1" is directed to be known as "Battery Augustus Smith" in one account (OR 20, page 843), while in the other account it would be known as "Battery Aiken" (OR 111, page 287). We have not identified any additional information that would help resolve this difference. In May 1864, however, a tabulation for "Half-Moon Battery" lists two guns, a 10-inch columbiad and a 32-pounder, rifled (OR 66, page 465). The battery was not listed by Gillmore (1868).

Calhoun Street Battery

This battery was situated at the east end of Calhoun Street. The first mention we have found is in late September 1863 when it was reported that the work, situated at the "foot of Calhoun" was having its platforms prepared, but that the earthwork itself had not been constructed (OR 47, page 382). By May 1864 the work was completed and apparently mounted one rifled 8-inch columbiad (OR 66, page 465), still in place at the end of the war (Gillmore 1868:13).

Laurens Street Battery
(Battery near Vernon Street)

This battery was situated at the end of Laurens Street, east of Concord Street. The first mention of this battery we have identified is in April 1863, when the "battery at foot of Laurens street" was reported to have had its gun mounded and the works were described as "pretty well advanced" (OR 47, page 372). In the fall of 1863 the battery was being "fitted up" with two 10-inch guns, the first evidence we have found that it was completed and armed (OR 47, page 350). In February 1864 a Confederate prisoner reported that the battery "at the foot of Laurens Street" contained two 8-inch columbiads and one 6-inch rifled gun (OR 65, page 467). Union troops in January 1865, based on "intercepted accounts" thought the "Lawrence Street" battery contained a single 10-inch columbiad (OR 99, page 49). Gillmore reports that this gun was in place at the fall of Charleston (Gillmore 1868:13).

Battery at Frazer's Wharf
(Custom House Battery, Blakely Gun Battery)

This battery was apparently situated on Frazer's Wharf, adjacent to the Custom House. We have found it first mentioned in February 1864 when a Confederate prisoner reported that "the 'big gun' is mounted on Frazer's Wharf . . . . it is a 13-inch, is rifled, and the projectile weighs 700 pounds. It was cast in England" (OR 65, page 467). In April 1864 a Union account reported that the "big gun" on Frazer's Wharf fired a solid shot as far as Castle Pinckney, with shells being fired even further (OR 66, page 40). In May 1864 the battery contained a single 13-inch Blakely (OR 66, page 465; see also OR 99, page 49). Gillmore reports that the battery contained a "13 in. Blakely Rifle, burst by the enemy on the morning of the evacuation" (Gillmore 1868:13).

Vanderhorst's Wharf Battery

This battery, on Vanderhorst's Wharf, was situated between Tradd and Longitude, east of East Bay Street. The only account we have found of the battery was when Union authorities identified it from Confederate signal messages in January 1865. At that time it was thought to contain a 42-pounder and a 10-inch columbiad (OR 99, page 49). These were both found at the battery when the city was under Union control. Gillmore also reports that this battery was "never entirely finished" (Gillmore 1868:13).

Battery Ramsay
(South Battery "B")

This battery was situated at the east end of White Point Gardens. On August 29, 1863 the "works at White Point" were officially designated Battery Ramsay (OR 47, page 315). In May 1864 the battery

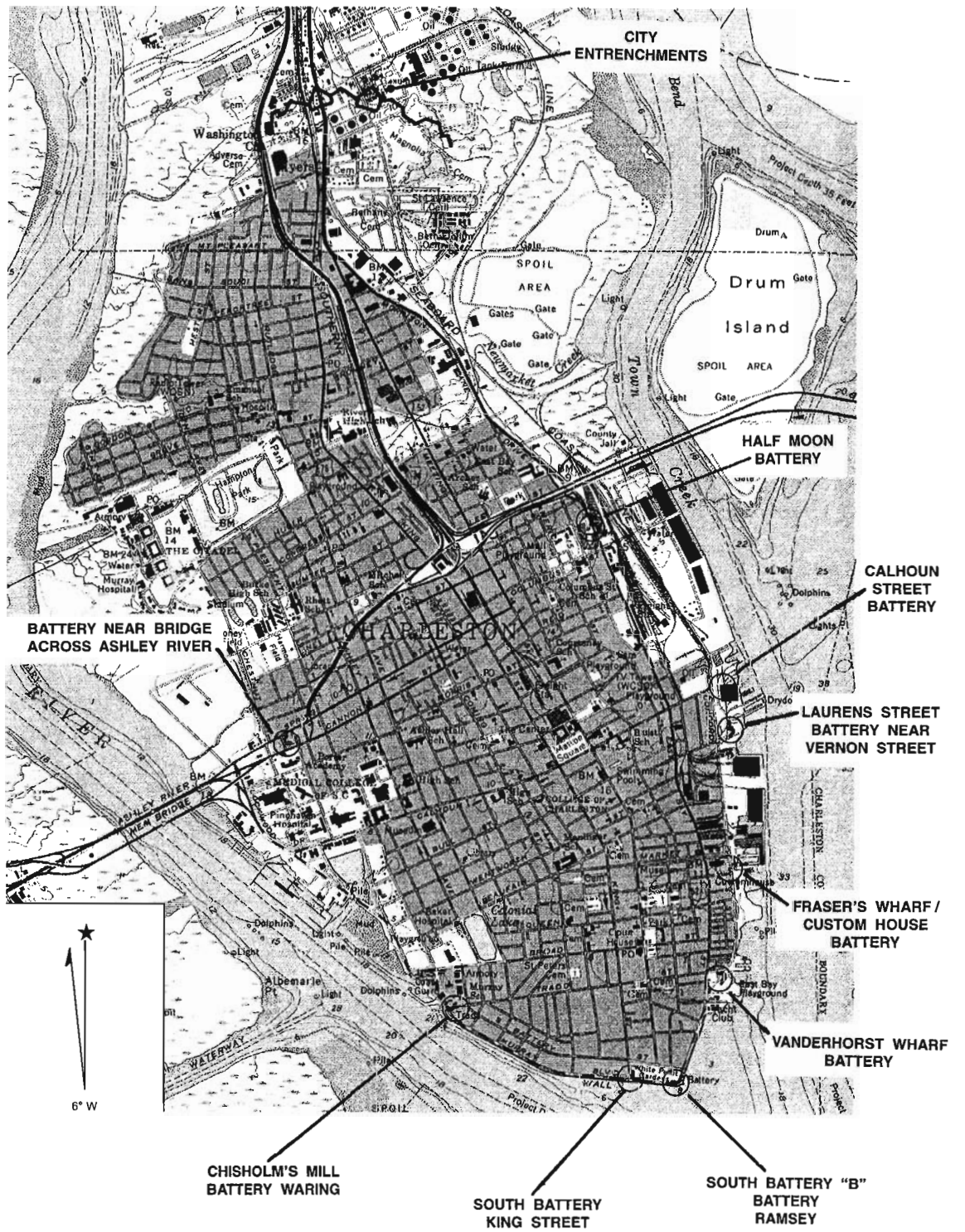


Figure 22. Identified Charleston batteries (basemap is USGS Charleston 7.5').

was reported to include one 11-inch Dahlgren, two 10-inch columbiads, and one rifled and banded 42-pounder (OR 66, page 465). Gillmore divided the battery into two sections, with the "eastern portion" containing one 13-inch Blakely rifle, two 10-inch columbiads, and one 11-inch Navy gun (Gillmore 1868:14). Ripley reproduces a photograph of this battery showing the columbiads and Dahlgren (Ripley 1984:Figure V-15).

South Battery
(King Street Battery, Battery at White Point)

This battery was situated at the west end of White Point Gardens and was not always clearly separated from Battery Ramsay. A May 1865 account identified "White Point Battery" as distinct from "Battery Ramsay." It contained a single 10-inch columbiad. Gillmore's "southern portion" of "Battery Ramsay" contained one 10-inch columbiad and one rifled and banded 42-pounder.

Chisolm's Mill Battery
(Battery Waring)

This battery was situated just north of the intersection of Tradd Street and Murray Boulevard. Period accounts mention that the battery was at the "foot" of Tradd and "south of Chisolm's Mills." It was at least laid out by late August 1863 when the "battery at Chisolm's Mill" was designated Battery Waring (OR 47, page 315). A September 28, 1863 account reported that the battery was "progressing well" with a 10-inch columbiad "mounted and covered by its parapet" with "the second chamber about one-third done" (OR 47, page 382). By February 1864 the second "chamber" or gun emplacement was apparently complete since the battery contained two 10-inch columbiads (OR 65, page 467). These two guns were still in place when Gillmore surveyed the city's armament (Gillmore 1868:14).

Ashley River Bridge Battery
(Spring Street Battery, Battery Gadberry)

This battery guarded the Ashley River bridge and was situated between Spring and Cannon streets east of Vaughan Street. We have found the first mention of the battery in March 1863 when the "battery on [the] city side of new bridge" was designated "Battery Gadberry" (OR 20, page 843; see also OR 111, page 283). The only other account we have found is a January 1865 report that the "Spring Street battery" contained a 10-inch columbiad mounted *en barbette* (OR 99, page 1024).

Sullivans Island Batteries

Like Charleston, Sullivans Island has seen significant changes since the Civil War. Not only has the island seen erosion and development, but much of the area was dramatically altered by a series of World War II fortifications. As a result we have not attempted to survey any of the Civil War batteries, although their general locations are shown in Figure 23. The island contained a string of 11 batteries and forts. These are briefly itemized below.

Cove Battery
(New Battery)

This battery was situated at the western tip of Sullivans Island, overlooking the water area known as "The Cove." While shown on maps of the island we have found only two references to the battery, both from September 1864. One account indicates that engineers were working on the "West Point Battery at cove," perhaps suggesting that the works were constructed fairly late in the war (OR 65, page 253). Another account specifies that work was still continuing several weeks later (OR 65, page 254). Gillmore reported that the "Cove Battery" contained four guns and that, "two guns command the bridge leading to Mount Pleasant, and two bear on Rebellion Roads and Hog Island Channel; parapet 15 ft. thick, faced on exterior with palmetto logs to resist action of tide; merlons and traverses arranged for musketry defence" (Gillmore 1868:9). He also mentions that nearby was a "signal bomb-proof" which was the location of the engineer's offices on the island. A September 20, 1864 account reported that there were "190 laborers, besides carters and a few others, to keep the camp in order and carry on the business in the department on this island" (OR 65, page 254).

Battery Bee

This fortification was situated south of the Cove Battery and a March 1864 report explained that the earthwork, "on the western extremity" of the island "is not yet quite completed, though a number of laborers are engaged upon it" (OR 66, page 382). The battery was designed for 10 guns, although in April 1864 there were only six in place, an 11-inch Dahlgren, three 10-inch columbiads, one 8-inch columbiad, and one 10-inch rifled columbiad. The battery had one magazine and another was under construction. There were also bomb-proofs at the fortification (OR 66, page 421).

By May another 10-inch columbiad had been moved to this battery (OR66, page 465) and by the end of the war Gillmore reported 11 guns. He described the fortification as "an open work with circular emplacements for ten heavy guns, and platforms for four mortars, all heavily traversed against Morris Island, and provided with five magazines and two bomb-proof shelters. One of the magazines had been blown up and the gun near it dismounted (Gillmore 1868:10). A photograph of this battery reproduced in Ripley (1984:Figure IV-5) shows not only the deteriorated gun positions, but also the Sullivans Island houses to the rear.

Battery Marion

This battery, west of Fort Moultrie, was designated Battery Marion on September 30, 1863 (OR 47, page 385). A March 1864 report describes it as connected to Battery Bee and connected to Fort Moultrie by a sally-port (OR 66, page 383).

A more detailed report the following month reported positions for nine guns, with the fort armed with a 7-inch Brooke, three 10-inch columbiads, an 8-inch columbiad, and two 10-inch sea-coast siege mortars (OR 66, page 420). The battery was reported to be in a mixed condition:

> The 7-inch gun battery is in good condition, well traversed, with serviceable magazine in rear. The parapet thence next to second gun from the east is in fair order. Traverses for columbiads next in position are in proper condition. Parapet extending west beyond large bomb-proof is fair. The bomb-proof, however, wants sodding and finishing badly. It is capacious and serviceable as quarters and siege hospital. A large magazine in rear of fourth gun is in fine order. The parapet thence west to sixth chamber wants sodding and finishing. The work around the chambers next is serviceable. From the seventh chamber the parapet west is in bad order and requires attention. Traverses, parapets, and revetments of the mortar chambers next west all want repair badly. A bomb-proof separating the mortar chambers is in good condition. The mortar chamber next is in the same state as the one last named, and from thence to Battery Bee the parapet is not finished and requires labor and repair (OR 66, page 421).

Gillmore reports that the open work had eight guns at the end of the war. There were two magazines and the one bomb-proof mentioned in the earlier report (Gillmore 1868:10).

Fort Moultrie

This fort, part of the National Park Service system, is preserved and recorded as 38CH50. The fort included a mortar battery on the east, which was reported to be "only the remains of an old outwork" which required attention. There were additional mortar batteries to the west described as "dilapidated" (OR 66, page 420). At the end of the war Gillmore reported that the fort contained nine guns, including four 10-inch columbiads, two 8-inch columbiads, two 24-pounders, and one rifled and banded 32-pounder. He noted that the "scarp wall is banked up with sand on the exterior, and bombproofs and magazines have been built inside the work" (Gillmore 1868:10). He also mentions that the mortar battery to the west had three 10-inch sea-coast mortars and two 6-pounder field pieces. The

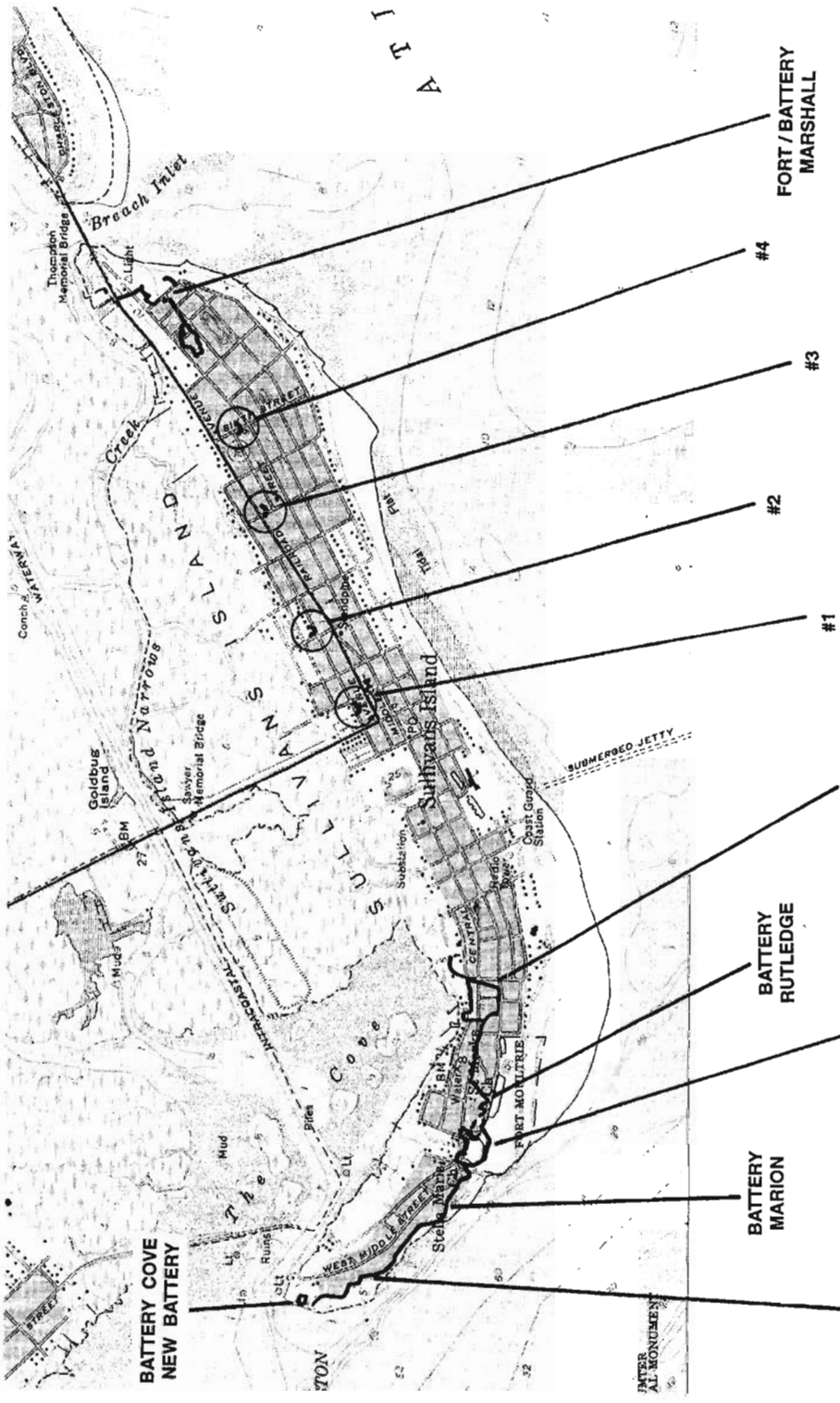


Figure 23. Identified Sullivan's Island batteries (basemap is USGS Fort Moultrie 7.5').

mortar battery to the east mounted two 10-inch sea coast mortars (Gillmore 1868:10). A view from Fort Mountrie shows the sand batteries, probably to the north (Ripley 1984:Figure I-50).

Battery Rutledge

Situated east of Fort Moultrie, just beyond the mortar battery, this fortification was officially designated Battery Rutledge on September 30, 1863 (OR 47, page 385). It was connected to Fort Moultrie with a covered way (OR 47, page 495) and a March 1864 account reveals that all of the batteries from Rutledge west to Bee were connected with a continuous parapet (OR 66, page 383).

An April 1865 report reveals that the battery was designed for seven guns and all of the positions were filled. The armament included four 10-inch columbiads and three 10-inch sea coast siege mortars (OR 66, page 419). The battery included a magazine that included, in the rear, "a strong hospital, bomb-proof, with room for twenty or thirty cots" as well as a second bomb-proof (OR 66, page 419). By the end of the war the battery included six guns and Gillmore observed that, "this work is provided with a bomb-proof and magazine. Battery Rutledge is connected with the next battery to the eastward [Fort Beauregard], mounting heavy guns, by a parapet, behind which is mounted six field pieces provided with one magazine" (Gillmore 1868:11).

Fort Beauregard

Also known as Battery Beauregard, this work was first mentioned in early October 1862, at which time it contained six guns, but still required about 10 days of work (OR 20, page 627). By April 1864 the battery had apparently been enlarged for the mounting of 11 guns — all of which were present. The condition report makes it clear that this was a fairly large and complex work. It is broken into east face (reported to be in poor condition with much wear); redoubt, east face; and southern batteries. While not an enclosed work at this time, it was observed, "it is a question whether it would not be well to make an inclosed work of this battery of less capacity than it is at present, requiring fewer men and being safe against a *coup de main*" (OR 66, page 418).

By the end of the war the proposed change had been made. Gillmore reports 13 guns and notes that the work was enclosed. "The eastern front extends entirely across the island, thus closing the approach from that direction" (Gillmore 1868:11). The fort included inclined palisading (described by the Confederate report as chevaux-de-frise) and wire entanglements along the beach front (Gillmore 1868:11).

Two-Gun Batteries

Situated between Fort Beauregard to the southwest and Fort Marshall to the northeast there were four detached batteries, each mounting two guns. They were numbered 1 through 4, running southwest to northeast. An initial report in March 1864 described the batteries as:

> extending along the south beach at an average distance of about 500 yards apart, covering the space between Forts Beauregard and Marshall and intended seemingly as a protection against boat assaults. . . . There being no magazine in this cordon of works, the ammunition is kept in chests, exposed to the weather . . . . The parapets of No. 1 could be improved, if it had more superior slope, so as to admit of firing closer under the battery. The parapet of No. 4 has, to some extent, been blown away by the winds. These works, being built of sand, should be sodded in order to preserve them (OR 66, page 383).

A month later the parapets for No. 1 and No. 3 were described as "useless for defense" although at least one (No. 2) had a magazine under construction (OR 66, page 417). These batteries included 32 and 24-pounders at the end of the war (Gillmore 1868:11).

Fort Marshall

Another major fortification was constructed at the northeastern tip of Sullivans Island, on Breach Inlet. The March 1864 inspection reports that "Battery

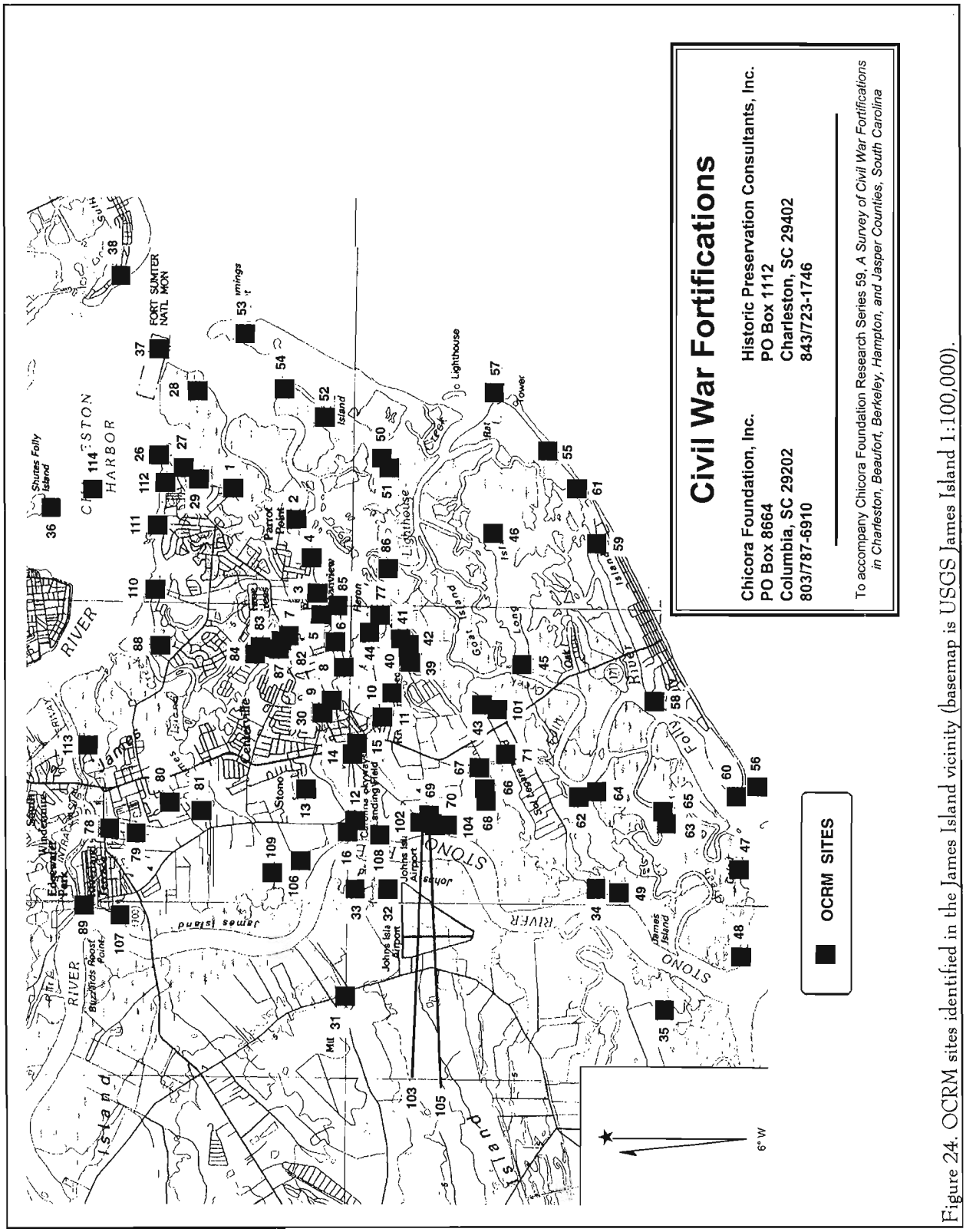


Figure 24. OCRM sites identified in the James Island vicinity (basemap is USGS James Island 1:100,000).

Table 6.
OCRM sites on James and Johns islands.

OCRM No.	Union or Confederate	USGS Quad	UTM Easting	UTM Northing	Site Type	Historic Site Name	Significant Dates	Notes
1	C	James Island	602500	3622550	earthwork	Battery Chevis		2490084
2	C	James Island	601880	3621190	earthwork	Battery Haskell		
3	C	James Island	600210	3620660	earthwork	Battery Ryan		
4	C	James Island	601050	3620660	earthwork	Battery Tatom		
5	C	James Island	599650	3620650	earthwork	Redoubt 1	1862-1865	
6	C	James Island	599560	3620840	earthwork	Redoubt 2	1862-1865	
7	C	James Island	599400	3621320	earthwork	Redoubt 3	1862-1865	
8	C	James Island	598740	3620150	earthwork	Battery Reed	1862-1865	
9	C	James Island	598040	3620400	earthwork		1862-1865	
10	C	James Island	598210	3619120	earthwork	Battery 5 (new lines)		
11	C	James Island	597680	3619320	earthwork	Battery 4 (new lines)		
12	C	James Island	595500	3619875	earthwork	Battery 6 (new lines)		38CH464
13	C	James Island	596130	3620900	earthwork	Battery 1 (new lines)		
14	C	James Island	596800	3619950	earthwork	Battery 2 (new lines)		
15	C	James Island	597120	3619880	earthwork	Battery 3 (new lines)		
16	C	James Island	595260	3620030	earthwork	Battery Pringle		38CH465
26	C	Charleston	603180	3624120	earthwork	Fort Johnson	1861-1865	
27	C	James Island	602920	3623600	earthwork	Rise & Fall Battery	1863-1865	
28	C	James Island	604540	3623320	earthwork	Battery Simkins		
29	C	James Island	602680	3623280	earthwork	rifle pits		protecting south portion of Fort Johnson
30	C	James Island	597740	3620590	earthwork	Artillery Cross-Roads Breast Work		
31	U	Legareville	591780	3620040	earthwork	Burden Creek Lines	July 1864	
32	C	James Island	594050	3618150	earthwork	Fort Trenholm	1864-1866	38CH404
33	C	James Island	594160	3619500	earthwork	Causeway Battery	1864-1865	38CH412
34	C	James Island	594050	3614640	earthwork	Battery Island	1862	
35	C	Legareville	591400	3613160	earthwork	Legareville	1863	three gun emplacements
36	U & C	Charleston	601970	3626540	masonry fort	Castle Pinckney	1861-1865	
37	U & C	Charleston	605400	3624150	masonry fort	Fort Sumter	1861-1865	38CH75
38	U & C	Fort Moultrie	606950	3625000	masonry fort	Fort Moultrie	1861-1865	38CH50
39	C	James Island	599000	3618780	earthwork	Fort Lamar		
40	C	James Island	598860	3618700	earthwork	Secessionville Water Batteries		38CH1462
41	C	James Island	599520	3619200	earthwork	Secessionville Water Batteries - east		
42	C	James Island	599400	3618980	earthwork	Secessionville Bombproof		38CH1271
43	U	James Island	597970	3617190	earthwork			fieldgun emplacement
44	C	James Island	599080	3619820	earthwork	Bridge Battery at Hill Plantation		
45	U	James Island	595800	3616200	earthwork	Fort No. 2		
46	U	James Island	601820	3616980	earthwork	Fort No. 1		
47	C	James Island	594720	3611640	tabby fort	Fort Palmetto - Battery 7		38CH284
48	C	Legareville	592900	3611500	earthwork	Coles (Snake's) Island Batteries 1, 2, 3		circular tabby fort
49	U	James Island	593980	3614120	earthwork	Horse Island Battery		
50	U	James Island	603180	3618400	earthwork	Black Island Redoubt		one gun emplacement
51	U	James Island	602980	3619250	earthwork	Black Island Battery		four gun battery
52	U	James Island	604020	3620625	marsh battery	Swamp Angel		
53	U & C	James Island	605600	3622280	earthwork	Morris Island - Cummings Point		
54	C	James Island	604500	3621480	earthwork	Payne's Wharf		unfinished battery
55	U & C	James Island	596340	3611260	earthwork	Morris Island - Lighthouse Point		
56	U	James Island	592750	3611560	earthwork	Battery Deblefield		
57	U	James Island	596060	3615060	earthwork	Siege Batteries		
58	U	James Island	596120	3613460	earthwork	White House Landing Battery	1863-1865	
59	U	James Island	601440	3614780	earthwork	Pawnee Landing Battery		
60	U	James Island	596140	3611600	earthwork	Battery Mahan		
61	U	James Island	602680	3615150	earthwork	Neck Redoubts & Lines		
62	U	James Island	598060	3615080	earthwork	Dixon Island Battery		
63	U	James Island	600380	3615840	earthwork	Dixon Island Causeway Battery		
64	C	James Island	596340	3611260	fortification	Hatches Pile Fort		wooden gun platform on piles
65	U	James Island	594820	3613340	earthwork	Half-Tide Island Battery		
66	C	James Island	596200	3617110	earthwork	Battery at Grimballs		revetment
67	C	James Island	596850	3617220	earthwork	Rivers Causeway Battery (Grimballs)		
68	C	James Island	595950	3617080	earthwork	Grimballs Causeway Battery		
69	U	James Island	596100	3617830	earthwork	Battery Wright		
70	U	James Island	595880	3618270	earthwork	Revetments at Grimballs Farm		
71	U	James Island	596840	3618530	earthwork	Battery Williams		
77	C	James Island	599650	3619400	fortification	Hatches Pile Fort		Secessionville Creek
78	C	Charleston	595250	3625100	earthwork	Redoubt A (west lines)		
79	C	Charleston	595180	3624500	earthwork	Redoubt B (west lines)		
80	C	James Island	595820	3623800	earthwork	Redoubt C (west lines)		
81	C	James Island	595850	3623130	earthwork	Redoubt D (west lines)		
82	C	James Island	599280	3621480	earthwork	Redoubt 4	1862-1865	
83	C	James Island	599150	3621920	earthwork	Redoubt 5	1862-1865	
84	C	James Island	598980	3622030	earthwork	Redoubt 6 (east lines)	1862-1865	
85	C	James Island	599820	3620330	earthwork	Clark's Point Redoubt		
86	C	James Island	600650	3619240	fortification	Hatches Pile Fort - Lighthouse Creek		wooden fort
87	C	James Island	599100	3621520	earthwork	Redan between Redoubts 4 & 5		
88	C	Charleston	599140	3624030	earthwork	Ellis or Lawtons Bluff Revetment		
89	C	Johns Island	593530	3625640	earthwork	Elliots Cut Battery		
101	U	James Island	597680	3618860	earthwork	Battery Stevens		
102	U	James Island	595480	3618470	earthwork	Field Battery No. 1		
103	U	James Island	595460	3618210	earthwork	Field Battery No. 2		
104	U	James Island	595430	3617900	earthwork	Field Battery No. 3		
105	U	James Island	595410	3618150	earthwork	Union parapet & ditch		infantry parapet with ditch
106	C	James Island	594620	3621000	earthwork	Battery Tynes		2490092
107	C	Johns Island	593420	3624840	earthwork	Fort Pemberton		38CH197, 0890111
108	C?	James Island	595200	3619340	earthwork			
109	C?	James Island	594360	3621600	earthwork			
110	C	Charleston	600340	3624160	earthwork	Battery Glover		
111	C	Charleston	601590	3624120	earthwork	Battery Wampler		
112	C	Charleston	602590	3623980	earthwork	Battery Hanleston		
113	C	Charleston	597000	3625590	earthwork	Battery Means		
114	C	Charleston	602440	3625560	fortification	Fort Ripley		

Marshall . . . is as yet in incomplete condition," although it included at least two bomb-proofs. The report notes that the powder was infested with roaches which were cutting the cartridge bags (OR 66, page 383-384).

A report in April 1864 reported that the battery included 12 guns and contained two principal magazines, one in the eastern battery and one in the western connected to the bomb-proof (OR 66, page 416). By the end of the war the battery included 14 guns and Gillmore observed,

> a portion of this armament is in an enclosed work, of which the parapets are 25 feet in height and 15 feet thick. It is provided with a bomb-proof of great capacity, and is entered through a covered gateway in the rear face. The outworks extend to the extreme north end of the island, to guard against assault from Long Island (Gillmore 1868:12).

OCRM Survey of James and Johns Islands

As previously discussed, this survey did not incorporate James or Johns islands — areas which had been previously examined by Ted Banta and Willis J. Keith (1995). Their study recorded 105 sites, primarily on James Island. While a specially designed survey form was completed for each of these sites, SCIAA site forms were not a part of their project design and, for the most part, these sites will not be found in the SCIAA data base (although they are included in the GIS data base at the S.C. Department of Archives and History). In general locations are accurate, although some sites were not actually identified in the field, so there is some concern over their exact placement on maps.

There is a great deal of historic documentation available for these sites and interested readers should explore such secondary works as Brennan (1996), Burton (1970), and Rosen (1994),as well as such primary works as Gillmore (1865, 1868) and Ripley (1986).

RECOMMENDATIONS

Continuing Survey

Some fortifications on James and Johns islands (Charleston County) have been recorded with SCIAA and/or SHPO, and some of them have been listed in the National Register. However, as previously mentioned, the earthworks surveyed by OCRM in 1995 were not recorded on SCIAA site forms. All the OCRM sites, except those that were field-surveyed for this project, should be revisited, plotted with UTM numbers, reported on SCIAA forms, and assigned SCIAA site numbers. Although the SHPO and OCRM have copies of the OCRM files and may use them in regulatory reviews, most compliance studies begin with a search of SCIAA's files; it is questionable whether firms carrying out such projects will be aware of the OCRM work unless it is made compatible with SCIAA's procedures.

Likewise, there are known or suspected earthworks in areas of the Lowcountry not included in this project: Horry, Georgetown, Colleton, and most of Hampton County. As on James and Johns islands, some have been recorded with SCIAA and/or SHPO, and some are listed in the National Register. There has been no systematic recordation. The goals and methodology of this project should be extended to those areas, with emphasis on comprehensive survey and reporting to SCIAA's standards.

Along with the areas that should be researched and surveyed, there are sites in the project area for which we found references, but could neither access nor locate. Investigation should continue in order to account for them.

In southern Charleston County, Simmons' Landing on Yonges Island and White Point Landing, on the South Edisto River at the tip of Slann's Island, were fortified at least sporadically, but we could find no remaining above-ground components. From the OR [October 5, 1863]:

> White Point, Simmon's Landing, and Church Flats are landings on the Stono and Wadmalaw. . . . All these places are more or less strengthened by works. White Point is the key to the position. The works carried here give the enemy access to the Willstown and Rantowles road, running parallel to and in rear of our defenses, all of which are open works (OR 47, page 394).

There were also some pits or trenches on Slann's Island itself, which we were unable to locate although we had the co-operation of individuals who have known the island for years. An April 12, 1862 comment in the OR explains, "I have deemed it essential to have a force near my entrenchments on Slann's Island Creek" (OR 20, page 471), while on January 12, 1864, "We are also at work at the defile of Slann's Island, fortifying its flanks and connecting them by roads and rifle-pits with Pineberry" (OR 20, page 523).

Additional research may also resolve some elusive references to sites in Beaufort and Jasper counties. "The enemy having landed at Port Royal Ferry, I was moved with my command (Ninth Georgia Cavalry) down toward that point, and placed in the works at Horse Creek, near Garden's Cross-Roads . . . . Skirmishing at long range took place for most of the day [January 14, 1865]" (OR 98, page 1134). The works at Horse Creek do not seem to have been the long rifle pit recorded as 38BU1878 (Site 73) but we have too little information to be certain.

Two more Beaufort County earthworks that await further investigation were described January 17, 1865 (OR 99, page 76): "Seven miles from the [Port Royal] ferry is a mud fort with two guns (apparently same captured by Capt. Gouraud December 5, 1864); cannon broken and lying by road about a mile and a quarter from ferry. From the cannon on a line toward

the creek in open woods, a negro says, there were torpedoes, kind unknown, in August 1864." At the same time, there was also reported a small work with one large iron gun at the near side of the ferry on Williman's Island.

There are also locations in Jasper County that we could not define, such as Izard's. On December 20, 1864, "The enemy [USA] fired upon us at various times today until dark with artillery from works near Izard's"; in response, "I [Taliaferro] am ordered . . . to Hardeeville and to place myself in communication with you. Please indicate the least force of infantry which will be needed near Izard's" (OR 92, page 973).

We also found references to, but did not locate, works on the road from Coosawhatchie to Gillisonville, and further south near Ferebeeville [today's Switzerland] and Grahamville:

> The enemy two miles this side of Gillisonville . . . . he had log breastworks some fifty yards on the left of the road . . . began blockading the road about three-quarters of a mile this side of their breast-works . . . . There is one gun of artillery at Glover's place, four miles below [Honey Hill]. . . . On the road leading from Ferebeeville to the Coosawhatchie and Bluffton road, are two works, one on each side of the road, about three miles from Ferebeeville . . . . The road leading from the cross-roads to Grahamville is disused and partly overgrown . . . five miles from Grahamville is a stout little battery (OR 99, page 76).

National Register of Historic Places

This project did not include review to determine National Register eligibility for sites with above-ground components, nor were investigations carried out to determine eligibility under Criterion D (archaeology). The goal was to record and provide baseline information about a large number of properties across a large geographic area. Although not all the Lowcountry was included, we believe there is now sufficient documentation to allow SHPO staff to consider formulating statements of context, significance, and integrity that will facilitate either a multiple resources nomination or a series of individual listings.

Site Protection

The sites we encountered that were in the best condition were those which had not been recorded and are known only to their owners. This is not to imply that recordation itself encourages foot traffic and vandalism — these are results of the fact that most sites are recorded only when development nearby is contemplated. Yet it is clear that agreements to avoid direct site impact are not fulfilling the goal of preserving earthworks. Some are greenspaced and marked with interpretive signs — to their detriment when visitation causes increased erosion and vandalism. In other cases, while development such as that near Fort Bull (38CH1801; Site 13) may not affect the site, setting it aside as a play area appears to have been as destructive as it would have been to build upon it or pave footpaths like those at Battery Mitchel (38BU1167; Site 129; Figure 25).

Effective site preservation requires an active approach, one that must begin with the most difficult decision: is a given earthwork or remnant worthy of being preserved? If so, greenspacing alone is not sufficient. Site protection demands a preservation plan: a professional evaluation of integrity and the existing conditions that threaten the site, along with a detailed plan for stabilization, maintenance, and the reduction of ongoing damage. Such a plan succeeds when it is a dynamic document that is reconsidered periodically for continuing relevance as well as effectiveness. For very large and complex sites an important component may be GPS mapping using a standardized data dictionary, such as has been developed by the National Park Service (Lowe 1999).

Earthworks are subject to many kinds of damage besides the obvious forces of vandals or development. Recorded sites on private property, even those that are listed in the National Register of Historic

Figure 25. Battery Mitchel (38BU1167, Site 129) showing the effects of "interpretation."

Steps Toward Preservation

It is clear from this study that laws and green spacing alone are inadequate preservation measures. Laws may be circumvented and apply to a relatively narrow range of undertakings. Green spacing only sets a site aside, it does not plan or proactively provide for the site's preservation.

There are many approaches to site preser-vation. A new National Park Service web site (www2.cr.nps.gov/pad/strategies/)

Places, may be considered nuisances by their owners and deliberately leveled; likewise, no regulations prevent complete destruction in the search for "relics" when this is allowed by the landowner. More gradually, erosion, regardless of cause — foot, automobile, bicycle, and boat traffic; the impact of hurricanes or fire; agricultural and forestry practices on nearby tracts — can destroy a site without ever raising questions of permits, licenses or review.

Figure 26. Battery Warren (38BK473, Site 24) showing erosion, tree throw, and looting damage.

offers strategies for the protection of archaeological sites on private lands. This site is particularly valuable since it provides examples of a range of different techniques beyond legal ordinances, including ownership, financial incentives, and development regulation

Several local governments in our survey area, such as Beaufort County and the Town of Hilton Head Island, are attempting to address preservation issues through archaeological ordinances. In addition, the Office of Ocean and Coastal Resource Management (OCRM) assures that projects that require state or federal permits and are within the mandate of the Coastal Zone Management Program comply with the provisions of Section 106 of the National Historic Preservation Act..

One of the most significant problems with historic preservation ordinances is that they *mandate* actions. Preservationists must spend more effort finding ways to *encourage* preservation. Even within the framework of such regulations as preservation ordinances, comprehensive plans, and zoning laws, the local jurisdiction has the option of using a broad range of incentives to encourage preservation, rather than rely exclusively on regulatory requirements. For example, the open-ended program of proffers — conditions between the jurisdiction and the developer which are negotiated and which become binding on both parties — can be used to set a site aside or establish a fund for the site's long-term preservation. Another weapon in the arsenal to slow the loss of Civil War sites is the range of tax benefits which government can offer for site protection. With this approach governments would not be directly paying for site preservation, but would be rewarding individuals and organizations that chose preservation voluntarily. Approaches may include actual use assessment or use-value assessment, assessment freezes, and tax abatements.

These approaches, however, require a change in mind-set, focusing on diverse ways to promote and reward preservation, not require it. They must also be coupled with an educational program that acquaints the public with the value of these sites and enlists the public in efforts to encourage the preservation and protection of the resources. Several organizations, such as the Military Heritage Project of the Palmetto Trust and the South Carolina Battleground Preservation Trust are attempting to encourage more diverse preservation options and are having some success with easement and acquisition programs.

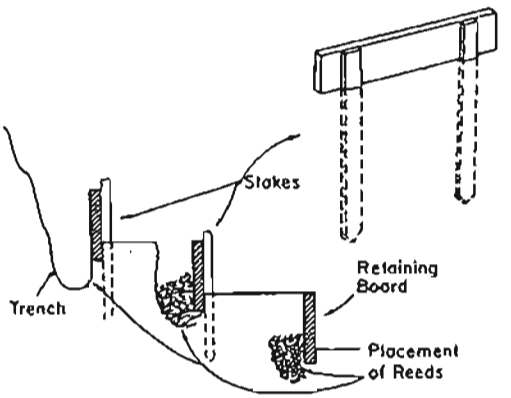


Figure 27. Reed-trench terracing diagram for erosion control, adapted from Gray and Leiser (1982:Figures 7.23 and 7.24)

But once "protected" a Civil War site may actually be most vulnerable to looting, erosion, over-use, and mismanagement. As we have stated before, it is not enough to green space these sites. They require very special evaluation and recommendations in order to ensure that they survive the process of being green spaced. For accessible sites issues such as parking, pathways, and accurate interpretation are critical. All sites must face issues of erosion and proper erosion control, as well as choosing appropriate plantings. Trees are an equally significant issue for green spaced sites. While they may help to hold the soil, they can also result in tremendous damage if blown over. And mature trees, with average canopy diameters of 80 feet, shade out underlying grass and may actually promote, not help control, erosion. All sites require maintenance. Deferred or improper maintenance is the cause of many serious problems ranging from uncontrolled erosion to serious injury of a site visitor. And finally, all green spaced sites require a disaster plan, outlining both preventative and recovery steps for foreseeable concerns such as forest/brush fires, tornadoes, and hurricanes.

Summary

We started this project with the understanding that Civil War fortifications have a constituency that is poorly served when a lack of information allows earthworks to be destroyed by licensed and permitted activities. The past year has proven again the emotional pull the Civil War exerts on many South Carolinians. Issues such as the appropriate place for the battle flag to be memorialized, the wisdom of developing Morris Island as a residential enclave, the effort to raise the Hunley, and the interpretation provided at historic sites have all been debated in public and private forums. Yet there is still little discussion of preserving the physical remnants of the Civil War in South Carolina.

Our strongest recommendation is that preservationists and Civil War historians, avocational as well as professional, should concern themselves with this matter. Which sites should be designated for permanent protection? Is green spacing without long-term oversight an adequate response? If public acquisition is a goal, how will these sites be protected from their visitors? In the financing of the new Confederate Memorial and the Hunley project, is there enough money to divert some toward the places in which individual soldiers prepared their armaments and saw action? We commend these questions to those persons and groups who are capable of mobilizing support for the remaining Civil War earthworks in Lowcountry South Carolina.

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APPENDIX

A copy of the South Carolina Institute of Archaeology and Anthropology (SCIAA) site form is attached to provide readers with an idea of the types of information collected for each recorded site.

New Site___
Revisit____

SOUTH CAROLINA INSTITUTE OF ARCHAEOLOGY AND ANTHROPOLOGY
UNIVERSITY OF SOUTH CAROLINA
SITE INVENTORY RECORD
(68-1 Rev. 85)

STATE: South Carolina COUNTY:_____ SITE NUMBER:_____
Recorded By:_____ Affiliation: Chicora Foundation Date:_____

A. GENERAL INFORMATION
1. Site Name:_____ Project:_____
2. USGS Quadrangle:_____ Date:_____ Scale: 7.5 or 15 minute
3. UTM: Zone: 17 Easting _____ Northing _____
4. Other map reference:_____
5. Descriptive site type:
Prehistoric_____ Historic_____
6. Archaeological Investigation: Survey_____ Testing_____ Excavation_____
7. Property Owner:_____ Phone number:_____
8. Address:_____
9. Other site designation:_____
10. National Register of Historic Places status:
Potentially eligible _____ Probably not eligible _____ Additional work _____
For Office Use Only

Determined eligible _____ Determined not eligible _____ Date _____
On NRHP _____ Date _____

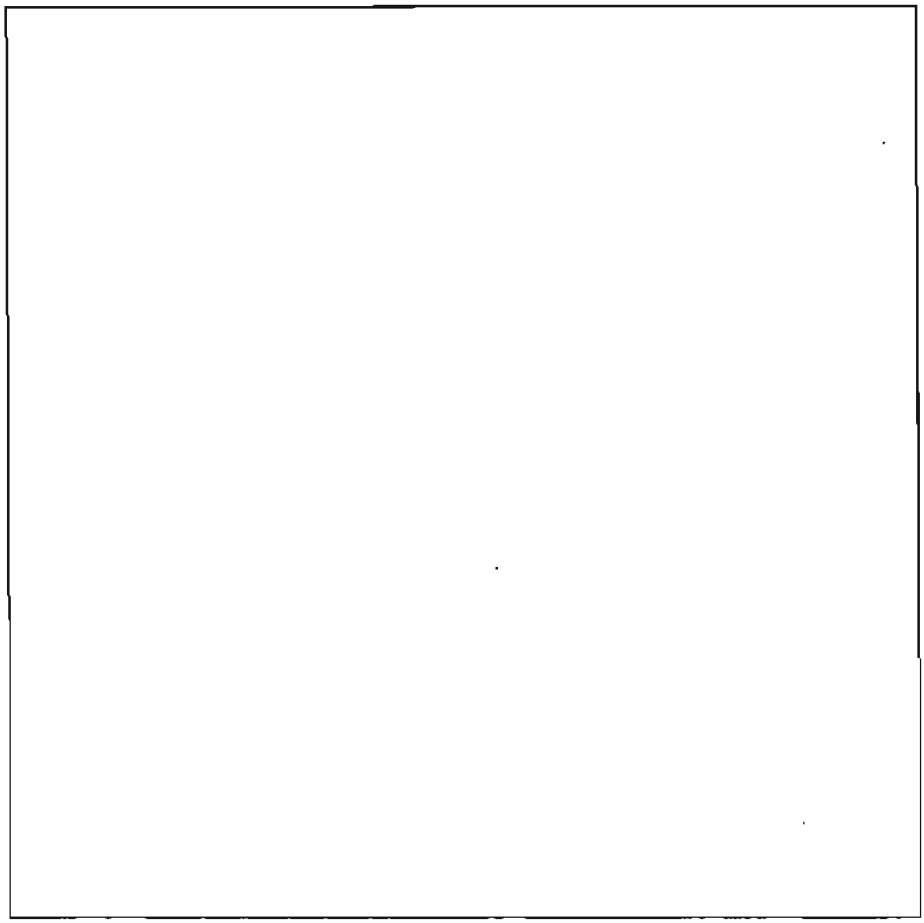
11. Level of Justification: National _____ State _____ Local _____
12. Justification (research questions, data sets, integrity):_____

B. ENVIRONMENT AND LOCATION
1. General physiographic province:
Lower Coastal Plain_____ Middle Coastal Plain_____ Upper Coastal Plain_____
Piedmont_____ Blue Ridge Mountains_____
2. Landform location:_____ Site elevation (above MSL):_____ (in feet)
3. On site soil type:_____ Soil classification:_____
4. Major river system: Pee Dee___ Santee___ Ashley-Combahee-Edisto___ Savannah___
5. Nearest river/stream:_____
6. Current vegetation: Pine/coniferous___ Hardwood___ Mixed pine/hardwood___
Old field___ Grass/pasture___ Agricultural/crops___ Wetlands/freshwater___
Wetlands/saltwater___ Other___ Comments:_____
7. Description of groundcover: Absent___ Light ___ Moderate___ Heavy___

C. SITE CHARACTERISTICS
1. Estimated site dimensions: _____ feet by _____ feet
2. Site depth:_____ feet
3. Cultural features (type and number):_____
4. Presence of: midden__ floral remains__ faunal remains__ shell__ charcoal__
5. Human skeletal remains: present__ preservation: good__
absent__ poor__
6. General site description:_____

(Use in conjunction with handbook

Site Number _____ .
page 2



Site Map

The following information should be provided on the map:

- scale
- north arrow
- site boundaries
- nearby topographic features
- associated streams
- modern cultural features
- collection loci
- test excavation loci
- archaeological features
- means of access
- land use types in site area
- location of control points

Map Key

Verbal description of location_____

Site Number _____
page 3

D. ARCHAEOLOGICAL COMPONENTS

___ Paleo Indian
___ Early Archaic
___ Middle Archaic
___ Late Archaic
___ Early Woodland
___ Middle Woodland
___ Late Woodland
___ Mississippian
___ Unknown prehistoric
___ 16th century
___ 17th century
___ 18th century
___ 19th century
___ 20th century
___ Unknown historic

E. DATA RECOVERED

List materials recovered: _____ Total number of artifacts

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

See catalog sheets: attached___ in SCIAA curatorial files___

F. DATA RECOVERY METHODS

1. Ground surface visibility: 0%___ 1-25%___ 26-50%___ 51-75%___ 76-100%___
2. Number of person hours spent collecting (total hours X total people):_____
3. Description of surface collection methods:
   Type ___ grid collection
   ___ grab collection
   ___ controlled sampling
   ___ other (specify)
   _____
   Extent ___ complete
   ___ selective
   ___ no collection made

4. Description of testing methods:
   Systematic ___ Type _____
   Nonsystematic ___

Test Units		
Number	Size/max. depth (ft.)	
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. Description of excavation units:

Number	Size/max. depth (feet)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Comments: _____
_____
_____
_____
_____
_____
_____

G. MANAGEMENT INFORMATION

1. Present land use:
   ___ Agricultural
   ___ Forest
   ___ Fallow
   ___ Residential, low density
   ___ Residential, high density
   ___ Commercial
   ___ Industrial
   ___ Other (specify)_____
   _____
   _____

Site Number _____
page 4

MANAGEMENT INFORMATION (Cont.)

2. Present condition/integrity of site:
   Intact___ Damaged___ Extent of damage ___ light ___ moderate ___ heavy Nature of damage ___ erosion ___ cultivation ___ logging ___ construction/ development ___ vandalism/looting ___ inundation ___ other (specify) _____

3. Potential impacts and threats to site:
   Potential threat
   ___ none
   ___ low
   ___ moderate
   ___ high
   Nature of threat
   ___ erosion
   ___ cultivation
   ___ logging
   ___ construction/ development
   ___ vandalism/looting
   ___ inundation
   ___ other (specify) _____
   ___ direct impact zone
   ___ indirect impact zone
   ___ outside impact zone
   ___ indeterminate

4. Recommendations for further work:
   ___ survey ___ testing ___ excavation ___ archival ___ none ___ other

5. References: Historic/archival documentation ___ yes ___ no ___ not known
   _____
   _____
   _____
   References: Archaeological documentation ___ yes ___ no ___ not known
   _____
   _____
   _____

6. Additional management information/comments: _____
   _____
   _____
   _____
   _____
   _____
   _____

7. Location of existing collections: ___ Hilton Head Museum ___ Charleston Museum ___ SCIAA Other: _____

8. Location of photographs: ___ Hilton Head Museum ___ Charleston Museum ___ SCIAA Other: _____

9. Location of special samples: ___ Hilton Head Museum ___ Charleston Museum ___ SCIAA Other: _____
   Type of special samples: _____

Signature of observer: _____ Date: _____
Subsequent visits:
Observer: _____ Date: _____
Observer: _____ Date: _____
Observer: _____ Date: _____

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