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## Archaeological Investigations on Little Folly Island

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# **Archeological Investigations on Little Folly Island**

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**Steven D. Smith  
Principal Investigator**

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## **Management Summary**

This report presents the results of archeological investigations at the Civil War period archeological site 38CH1213 on Little Folly Island, South Carolina, also known as Folly Island North. An analysis of historic period maps, a field effort consisting of hand coring and a metal detector sampling survey, were combined in an attempt to define the extent of a subsurface organic trash deposit originally excavated by The Charleston Museum in 1990. An Action Plan for the site is presented in Chapter 3. The work was funded by Grant Agreement GA-2255-05-010 (2005) from the National Park Service's American Battlefield Protection Program.



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## ACKNOWLEDGMENTS

Our efforts to understand the archeology and erosional processes at Little Folly Island have been assisted in every step by a remarkable group of private citizens, and state and private organizations. Our hearty thanks to everyone. Indeed, so many people have helped that to properly acknowledge all who contributed would require a second volume. Thus, we want to first thank everyone and anyone who is inadvertently missing from the following acknowledgements.

While there are many who have contributed, all will agree that first on the list must be Julie Hensley, RLA, Senior Design Manager, Planning and Development, Charleston County Park and Recreation Commission (CCPRC). Julie continues to support archeological site preservation across Charleston County and her efforts to assist this project are another excellent example of her on-going persistence. The CCPRC also provided comfortable and pleasant accommodations during the fieldwork at a cabin on James Island. The combination of cool South Carolina spring coastal weather and a great vacation cabin made fieldwork tolerable to say the least.

This project was the inspiration of Julie, Chad Long, formerly with the South Carolina State Historic Preservation Office and now with South Carolina Department of Transportation, and Christopher Judge, formerly with the South Carolina Department of Natural Resources and now at the University of South Carolina-Lancaster. These three realized the problem and sought out the Principal Investigator to encourage him to write for an ABPP grant. I hope their trust is justified with this report. Kristen McMasters and Shannon Davis of the National Park Service's, American Battlefield Protection Program were superb. We have worked with Kristen on at least three other ABPP projects and always appreciated her interest, support and patience with delayed reports.

Although archaeologists Martha Zierden and Ron Anthony of The Charleston Museum were unable to visit the site, they generously provided photographs, notes and maps of their excavations, and answered questions via cell phone on more than a few occasions during the course of fieldwork. The geological study for this project was at first on, then off, and then finally, Anton J. DuMars, of Tideline Consulting was contracted with CCPRC. His assistance during our fieldwork and afterward are very greatly appreciated. Sean Taylor replaced Chris Judge at SCDNR and provided liaison with SCDNR and assistance in planning. Specialized metal detecting equipment was provided by Spencer Barker of Carolina Treasures, Inc..

At the South Carolina Institute of Archaeology and Anthropology we thank Dr. Charles Cobb, Director and Dr. Christopher Clement reviewer. Our archeological team consisted of the Principal Investigator, James B. Legg, and Dr. Mark J. Brooks. Dr. Barbara Taylor and Christopher Ziegler volunteered during the project. Mark provided the geoarcheological expertise on site and his field notes are incorporated into this report. James B. Legg analyzed the artifacts and produced the artifact catalog. Tamara Wilson developed the GIS maps. Despite all this expert assistance, remaining errors are the author's responsibility.



## CHAPTER 1: INTRODUCTION

### Introduction

Folly Island, South Carolina, is a six-mile long, narrow barrier island south of Charleston adjacent to James Island (Figure 1.1). Today the town of Folly Beach covers most of the landscape and it is a popular resort and vacation destination. During the Civil War the island was occupied by the Union army and served as a staging ground for the Union army's siege of Charleston and also a line of departure for attacks onto James Island and Morris Island. Throughout the Union occupation, thousands of Union soldiers camped along the beaches during the summer and inland during the winter. By the end of the war, the once forested island was completely denuded of trees with many of the logs used in the construction of fortifications on Morris Island north of Folly Island, across Lighthouse Inlet.

The northern end of Folly Island, called Little Folly Island, was a strategically important part of the Union's siege efforts, first as a location for gun emplacements during the July 1863 attack on Morris Island, and later, Fort Green, the guns of which harassed the Confederates in Charleston from July to the fall of the city in February 1865. After the war, the fort and gun emplacements were abandoned and the processes of erosion worked to cover or disturb the archeological evidence of the Union's occupation. In the 1940s the U.S. Coast Guard constructed a Loran Station on Little Folly's northern tip, which, as far as is known, is the only post-Civil War occupation there. However, this northern tip also has suffered severe disturbances as a result of being at the mouth of Lighthouse Inlet. Severe weather, like hurricanes, exacerbates the erosion problem. For example, Hurricane Hugo in 1989, which deeply scoured the north end of the island revealing archeological deposits from the Union's occupation, including rare faunal remains. In 1990, The Charleston Museum, with a number of volunteers, salvaged the remains, (designated archeological site 38CH1213) as best they could (Zierden et al. 1995). Since then, Civil War artifacts have been uncovered and recovered by natural weather events. As artifacts are uncovered, they are actively collected by Civil War enthusiasts.

In 1995, as a result of the interest of Folly Beach's private residents and a consortium of preservation organizations, the federal government ceded the abandoned 75 acre U.S. Coast Guard Station to The Charleston County Park and Recreation Commission (CCPRC). In 2001 another 25 acres were acquired by the CCPRC. The purposes of this acquisition were to preserve the landscape, to protect the archeological site, and to create a low impact interpretive facility. In 2003, the site was listed in the National Register of Historic Places. It was also named a Heritage Preserve under the Heritage Trust program of the South Carolina Department of Natural Resources.

Late in 2004 another episode of beach erosion exposed Civil War period artifacts and at the request of the CCPRC and the State Historic Preservation Office, the South Carolina Institute of Archaeology and Anthropology (SCIAA) applied for a grant from the American Battlefield Protection Program (ABPP), National Park Service to create an Action Plan for site 38CH1213. The purpose of the Action Plan was to determine the best preservation alternatives

for 38CH1213 in the face of rapid beach erosion. Grant Agreement No. GA-2255-05-010, was awarded in August 2005. This report presents the results of the archeological investigation at 38CH1213, which was undertaken to determine the current environmental status of the site. The resulting Action Plan is presented as Chapter 3.

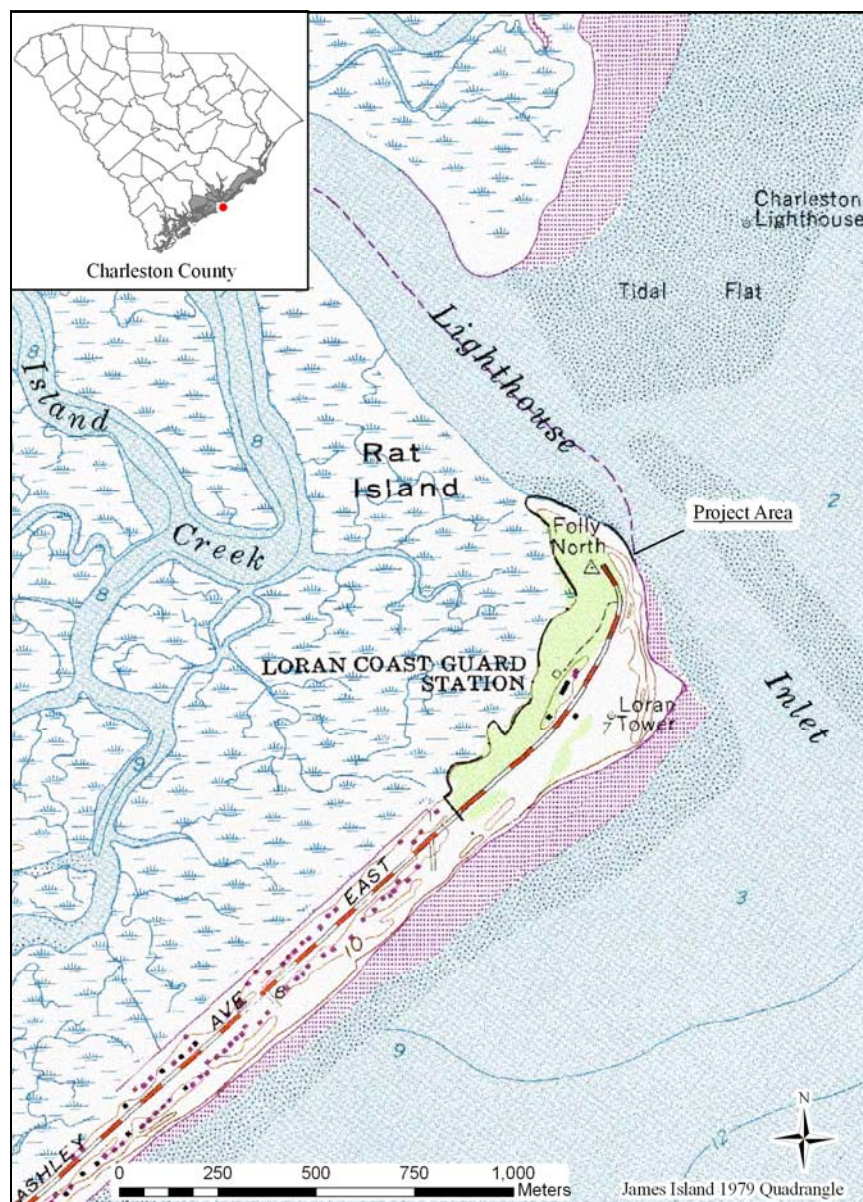
### Project Goals

To develop an Action Plan for 38CH1213, three general project goals were needed:

- 1). Conduct a limited testing and metal detecting survey to determine extent of subsurface, preserved cultural deposits within an organic soil horizon (within the pluff mud) along the Folly North beach shoreline, which made up 38CH1213,
- 2). Integrate the results of the archeological survey with a separate shoreline erosion study (but see below),
- 3). Complete the Action Plan to include recommendations as to the best alternatives for site preservation along the eroding shoreline.

The following specific tasks were required by the ABPP.

- 1). Hire a consultant with geoarcheological experience to assist during the field work in the interpretation of the site limits and on-going erosion processes.
- 2). Submit a work plan to ABPP for review.
- 3). Develop an archeological research design and submit to ABPP for review.



**Figure 1.1 General Location of Project on Little Folly Island, South Carolina (SCIAA).**

- 4). Complete a field survey of the beach portion of site 38CH213.
- 5). Complete the lab analysis of the any artifacts recovered.
- 6). Coordinate a public planning process.
- 7). Develop the Action Plan for shoreline preservation.
- 8). Draft a technical report.
- 9). Coordinate compliance and review of entire project.
- 10). Report to the ABPP.

The methods for completing these tasks are discussed below.

## Methods

- 1). Hire a consultant with geoarcheological experience to assist during the field work in the interpretation of the site limits and the erosion process affecting the site.*

During the application process for the grant, the CCPRC had planned to have a separate engineering erosion study of the northern end of Folly Island coordinated and completed while the fieldwork portion of our work was undertaken. The engineering study was to form the basis of our expertise on the speed and direction of the erosion processes occurring there. Although the study was not funded in time for the archeological fieldwork, the CCPRC was able to contract with Mr. Anton DuMars of Tideline Consulting, LLC, in 2006. Dr. Mark Brooks, geoarchaeologist with the Savannah River Site Archaeological Research Program, SCIAA, provided expertise on site during our fieldwork. Our knowledge of the erosional processes occurring at the north end has been greatly enhanced by both Mr. DuMars and Dr. Brooks.

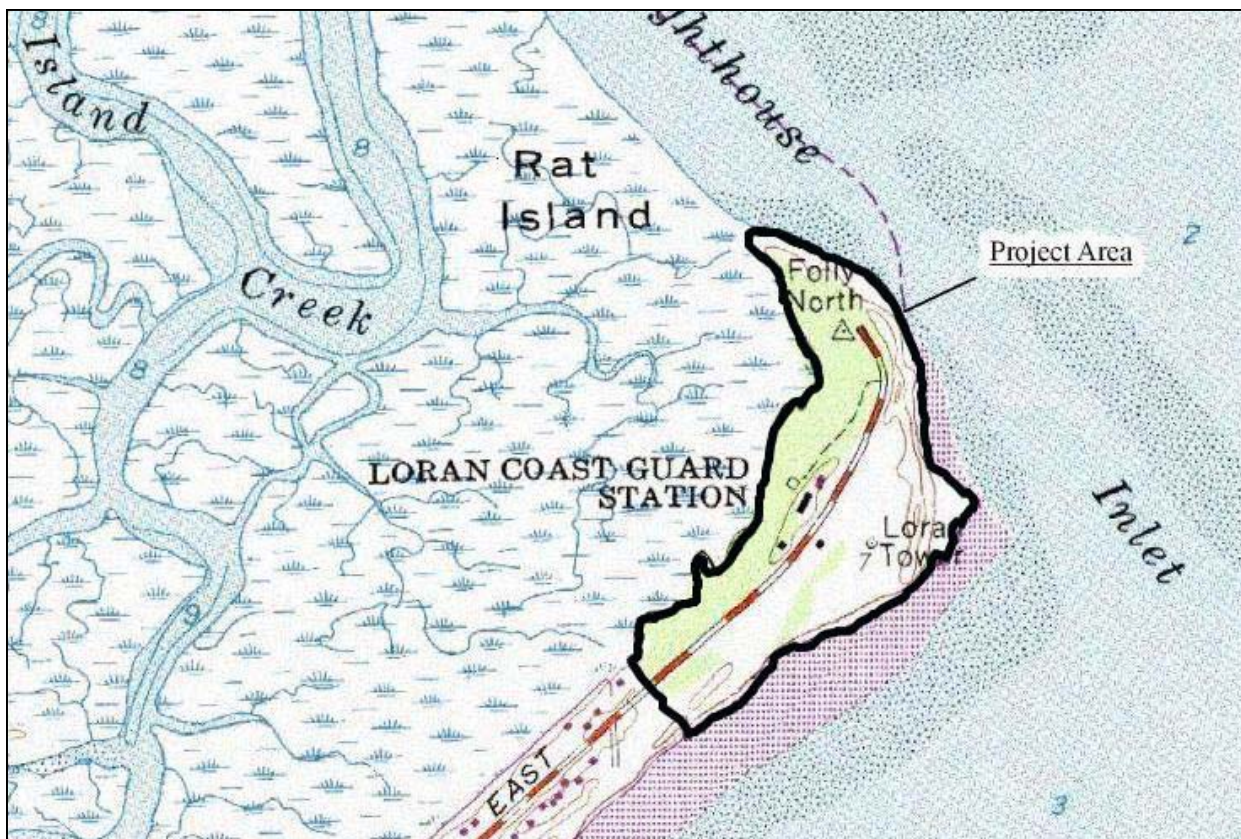
- 2, 3). Submit a workplan and Research Design to ABPP for review.*

The SCIAA submitted a detailed work-plan and research design to the ABPP at the beginning of February, 2006.

- 4, 5). Complete a field survey of the beach portion of site 38CH1213 and complete laboratory analysis of materials recovered.*

The overall surface boundaries of 38CH1213 had been determined by Butler et al. (1992) (Figure 1.2). However, the subsurface extent of the archeological deposits within the pluff mud beneath the beach sand along Lighthouse Inlet was unknown. A limited beach survey was proposed using hand cores on grid at 20 meter intervals along the beach. The corings were to be excavated into the beach sands to and, if possible, through the pluff mud, to determine average subsurface depth and deposit thickness. The southwest border of this grid was the interface between the beach and the dunes. The northeast boundary was low tide. The question to be determined was how far did the archeological deposits extend up and down (NW to NE) the beach. With the assistance of The Charleston Museum archaeologists Martha Zierden and Ron Anthony, an attempt was made to find and reestablish the museum's grid in order to assist in determining the extent of change between 1991 and 2006. Also the location of their excavations serve as our initial site boundaries. SCIAA personnel could then conduct the coring regime beyond their units to establish the limits of the deposits in the pluff mud.





### 1.2 Archeological Site 38CH1213 (SCIAA).

In addition to the coring, metal detectors were used to determine the site's extent both on the beach and within the dunes behind (west of) the beach. Butler et al. (1992:31) did not have success with a metal detector on the beach, however, SCIAA used a metal detector built for underwater use and had better results. The beach area, at and beyond The Charleston Museum excavations was systematically surveyed with a metal detector, the operator walking transects up and down the beach at approximately twenty meter intervals. Transects were 1.5 meters in width. Within the dunes, the survey was a more random, search-to-find method, whereby the operators walk loose transects across the entire dune lines wherever possible. The tops of some dunes were hand cleared to assist in the searching.

The metal detector operator investigated any find immediately. When battle related artifacts or artifacts associated in some manner with the Civil War were found, they were bagged at that time. Each bag was labeled with the area, date, operator, and a unique provenience number. The location was flagged using a pin-flag with the same provenience number. The artifact was collected immediately--no artifacts were left on overnight. Artifacts not associated with the Civil War were returned to the soil where they were found. At least two different metal detectors were used. The first was a Fisher 1270®. It has excellent depth and discrimination. The other was a Garrett Seahunter® for use underwater and on wet beaches.

Once subsurface deposit extent was determined, we planned to map the mud based on

the established grid, using a transit or total station, backed up by GPS instruments. The locations of all Civil War period artifacts recovered also were mapped. A Trimble, Inc., model Geoexplorer 3 was used for GPS readings. The instrument was set to the following defaults: 1) PDOP mask, 6; 2) SNR mask, 6; 3) Elevation mask 15 degrees; and 4) Satellites, 4. As a rule, 120 “position” (readings) were taken for each artifact and averaged to arrive at a point provenience. This usually provides sub-meter accuracy. Pathfinder Office software was used for post-processing. The GIS software used was ArcGIS, version 9.

Only artifacts related to the Civil War occupation were collected. All other artifacts discovered as a result of metal detecting or hand coring were returned to the beach soils. After the completion of fieldwork all cultural material recovered was cleaned, stabilized when necessary, or treated as appropriate for the kind of material collected. The SCIAA conducted artifact analysis to identify the artifact as to material type, function, and a description. An artifact catalog was developed (Appendix A) containing descriptive information and provenience for each artifact recovered.

The SCIAA curation standards and the standards of the National Park Service were followed. All boxes in which artifacts are packaged were medium sized (ca. 1 cubic foot) and are acid free. A box inventory was inserted in each box and affixed to the outside for easier relocation of artifacts within the site collection. All associated record data (field notes, analysis sheets, artifact catalogs, etc.) were provided in original form. The materials will be curated at The Charleston Museum. The Charleston Museum has the collections from previous archeological work at Folly Island and thus it is proper that any materials recovered during this project eventually be incorporated into that collection. The Charleston Museum meets the NPS standards for a curatorial facility and has professional staff.

Metadata from the GPS and GIS work will be provided under a separate cover to the ABPP upon completion of this project.

*6) Coordinate a public planning process.*

The Charleston County Park and Recreation Commission, with the assistance of SCIAA, sought active participation by stakeholders and citizens in the planning process. A community meeting was planned during the field work to solicit the community’s vision for the site and to receive feedback and recommendations for the Action Plan. Throughout the project, the SCIAA provided any interested party with the opportunity to participate in the planning process and to review and comment on the draft preservation plan. Volunteers were welcomed and used in the field and to assist in map research.

*7). Develop a shoreline preservation plan.*

Based on the fieldwork and analysis of erosional processes at the beach, a detailed shoreline Action Plan was completed. The Action Plan discusses planning considerations and preservation opportunities for the site. Chapter 3 of this document constitutes the Action Plan.

8). *Draft a technical report.*

This report serves as the technical report for the fieldwork and the analysis conducted during this project.

9). *and, 10). Coordinate compliance and review of entire project.*

All work followed the Secretary of Interior Standards and Guidelines for Archeology and Preservation (Federal Register, September 29, 1983) (48FR44716) see, [www.cr.nps.gov/local-law/acrh\\_stnds\\_0.htm](http://www.cr.nps.gov/local-law/acrh_stnds_0.htm). All work complies with the Secretary of Interior's *Standards for Treatment of Historic Properties*. Furthermore, all work followed the South Carolina Standards and Guidelines for archeological investigations.

Minimal impact to the site occurred as a result of this work and because of the dynamic nature of the site, both as water and wind erosion, no visible impacts from our work remain. No human remains have been recorded at this site and none were found during our work. As this site is a tiny portion of a larger battlefield and campaign (siege of Charleston), and the study of the battlefield is not the goal, the ABPP battlefield analysis procedures (analysis using the KO-COA system) were not used.

## Historic Context

A detailed history of the Civil War occupation of Little Folly Island was written by the author and published as part of The Charleston Museum's publication detailing their 1990 archeological investigations (Zierden et al. 1995). This brief history is extracted from that report.

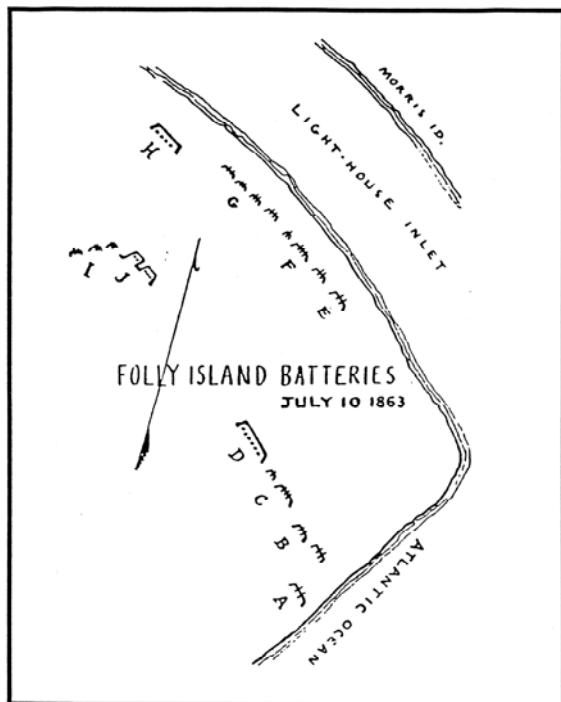
Folly Island was first occupied by the Union army on April 6<sup>th</sup>, 1863 as part of a two-pronged attack on the Confederate forces in and around Charleston. A naval attack against Fort Sumter was conducted as the main attack, with supporting army forces landing on the south end of Folly Island. Overnight, elements of Colonel Joshua B. Howell's Brigade marched from the south end of Folly Island to the north. From that point until the end of the siege of Charleston in February 1865 Little Folly Island, was occupied by the Union army (Figure 1.3).

Build up of forces on Folly Island continued after the April landing, until at one time there were as many as 9,000 troops on the island. Little Folly Island was strategically important because Lighthouse Creek flowed into the Atlantic at that point and across Lighthouse Inlet was Morris Island, occupied by the Confederates. In preparation for attacking Morris Island, some 47 heavy artillery guns were placed on Little Folly Island by the Union army in batteries labeled A through I (Figure 1.3, 1.4, 1.5) (Zierden et. al 1995:16). On July 9<sup>th</sup>, 1863, the Union army conducted an amphibious assault on Morris Island, and the batteries from Little Folly supported that successful landing, firing as many as 2,500 rounds. The Union army immediately marched up the Morris Island beach and attacked Confederate Battery Wagner in a battle famous because the African American 54<sup>th</sup> Massachusetts participated in the assault.

After the successful landing of Union forces on Morris Island, Little Folly Island was used as a supply depot and wharf for ferrying supplies across the inlet to Morris Island. In the







**Figure 1.4 Sketch of Folly Island batteries (Eldredge 1893). Note position of batteries.**

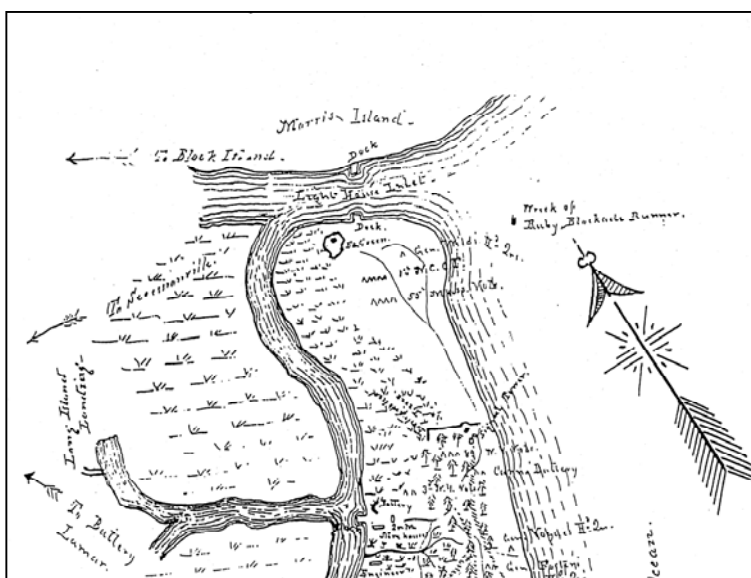
Post Civil War occupation of Little Folly Island was not intense. In fact, archeological survey of the site found no post-Civil War structures until the U.S. Coast Guard built a Loran Station there in the 1940s (Butler et al. 1992).

## Environmental Context

Folly Island is one of a number of Holocene age barrier islands located along the South Carolina coast (U.S. Army Corps of Engineers, 1979:8). These islands typically have gently sloped sand beaches on the ocean side (east) with salt marsh behind them toward the landward side (west). Tidal rivers separate the islands, with tidal creeks draining the salt marshes. Folly Island is separated from James Island by a back-barrier salt marsh. Its Atlantic facing shoreline is a dynamic sand beach with sediment transport shaped by wind-generated waves. “Dominant easterly and northeasterly wave approach tends to produce a net southerly sediment transport direction” (DuMars 2007:1). Fine silty sand reach

depths of 20 feet below mean water, and silt content increases as one moves landward. The sands along the beaches are fine clean with high shell content (U.S.A.C.E. 1979:9).

Climate around Folly Island is annual temperature is 66° F, with high averages of 81° in July and lows around 49° F in February. Humidity is high at 75%, off-set by ocean breezes, and rainfall averages 50 inches per year (U.S.A.C.E. 1979:9). The island is highly attractive as a tourism and recreation area for sun-bathing, surfing and beach activities. Most of the island is now encompassed by the town of Folly Beach, including beach housing the entire extent of the island, except for the north and south ends. Both of these are now county parks; the south end being a beach and camping ground, the north end being the subject of this report.



**Figure 1.5 Sketch Fort Green and Union camps on Little Folly Island (Charles Fox 1863-65, Bound Journal, Massachusetts Historical Society).**

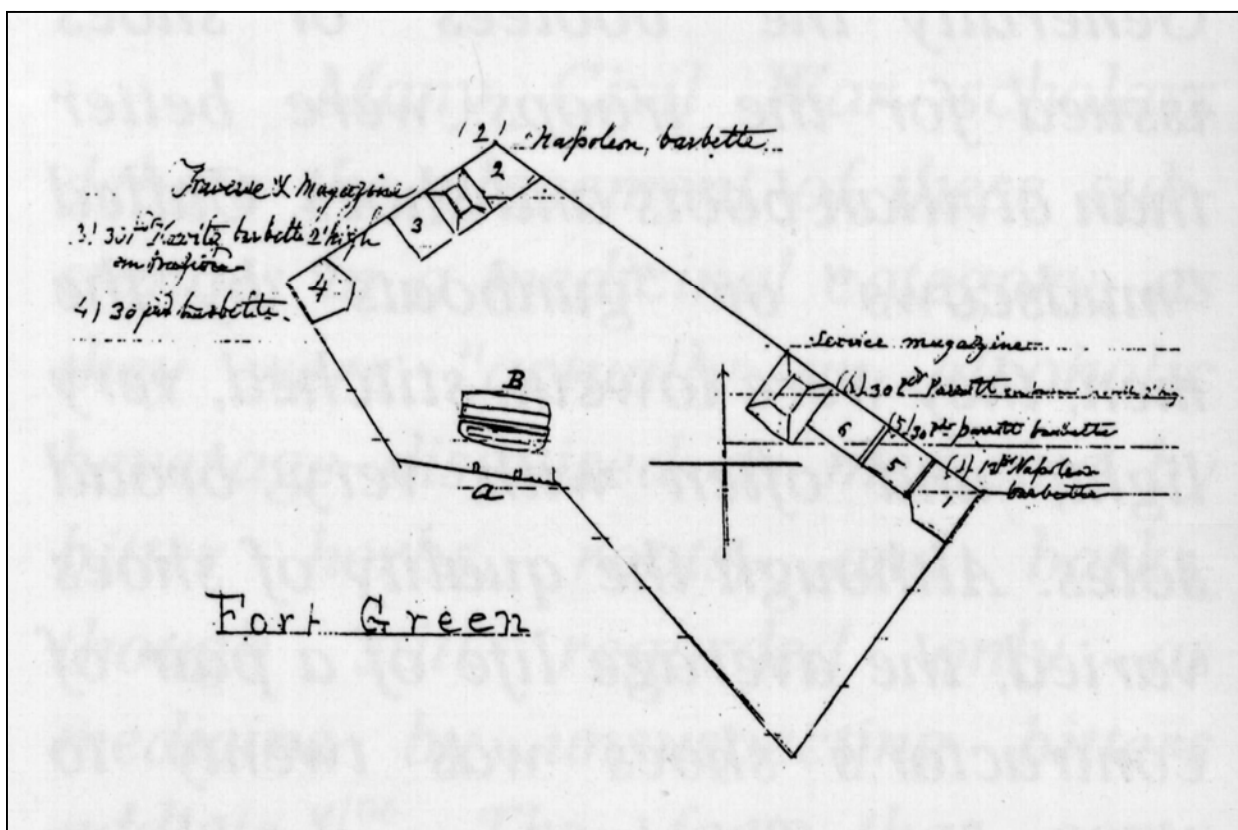


Figure 1.6 Sketch of Fort Green (Charles R. Suter, "Journal of Operations," National Archives).

The intense land modification and occupation of Little Folly during the Civil War created a dense archeological deposit both along and behind the beach. This deposit has undergone continual impacts as a result of dynamic natural forces combined with minor post-war human occupation. Being at the mouth of Lighthouse Creek, emptying into the Atlantic Ocean, the beach in this area is either eroding or in deposition. It would appear from previous studies that mostly there has been erosion. In fact, in 1858 and probably during the Civil War, there was a breach separating Folly Island from Little Folly Island (U.S. Army Corps of Engineers 1968:11). The most significant post Civil War development at the north end of Folly Island was the construction of a U.S. Coast Guard Loran Station.

### Previous Archeological Research

Archeological site 38CH1213 was originally defined as a result of emergency salvage excavations conducted by The Charleston Museum in April 1990. On September 21, 1989, Hurricane Hugo made landfall in the Charleston area and significantly increased the speed of on-going beach erosion of Folly Island, including the beach at Folly North. In February 1990, citizens reported that human remains were being exposed on the Folly North beach. The bones were, in reality, cattle bones. However, it was obvious that not only were bones eroding out of the pluff mud, but also a large number of other Civil War artifacts. The Charleston Museum conducted two weeks of salvage operations sampling the eroding deposits on the beach (Zierden et al.





**Figure 1.7** The Charleston Museum's 1990 excavations at 38CH1213, Little Folly Island (courtesy The Charleston Museum).

1995) (Figure 1.7). Because salvage of the exposed artifacts was the goal, the exact extent of the beach portion of the site was not determined. After these excavations, the site was monitored until November 1990 when artifacts were only rarely being discovered and the rate of erosion appeared to have slowed.

In March 1992, the Coast Guard decided to release their Loran Station property to the City of Charleston. Brockington and Associates, Inc. conducted a systematic 30 meter shovel testing and metal detecting survey of the property as part of that process. While the shovel testing did not discover significant remains, the metal detector effort revealed a wide stretch of subsurface materials across the entire 75 acres that made up the station property. As a result of this work, it was clear that the entire 75 acres, including the 15 acre beach area was a Civil War archaeological site (Butler et al. 1992). The Brockington study also concluded that erosion since the Civil War had probably taken away much of the north end already, including all the Union batteries but batteries I and J, and all of Fort Green. The pluff mud deposits still extant probably represented a trash dump from behind the batteries or from Fort Green.

In 2004, as a result of additional hurricanes Karl, Ivan, Gaston, and Francis, beach erosion appeared to be increasing and private citizens again reported artifact eroding out of the pluff mud. Therefore, the State Historic Preservation Office and the Charleston County Park and Recreation Commission decided that long term preservation planning was needed for the site. However, an immediate need was an action plan specifically for the beach area that was undergoing rapid erosion. The two agencies asked the SCIAA to work with them in creating

this plan and the SCIAA sought funding from the ABPP. The results of this effort are discussed in the following chapter.

**Project History**

As noted, the ABPP grant was awarded in August 2005. Fieldwork was conducted during the week of February 12<sup>th</sup>, 2006. The majority of laboratory analysis was conducted during the rest of February and into March 2006. Analysis and writing continued intermittently through September 2007. Fieldwork consisted of three full time employees, a full time volunteer, and a half time volunteer for a total of 180 person hours.





## CHAPTER TWO: RESULTS OF FIELDWORK

### Introduction

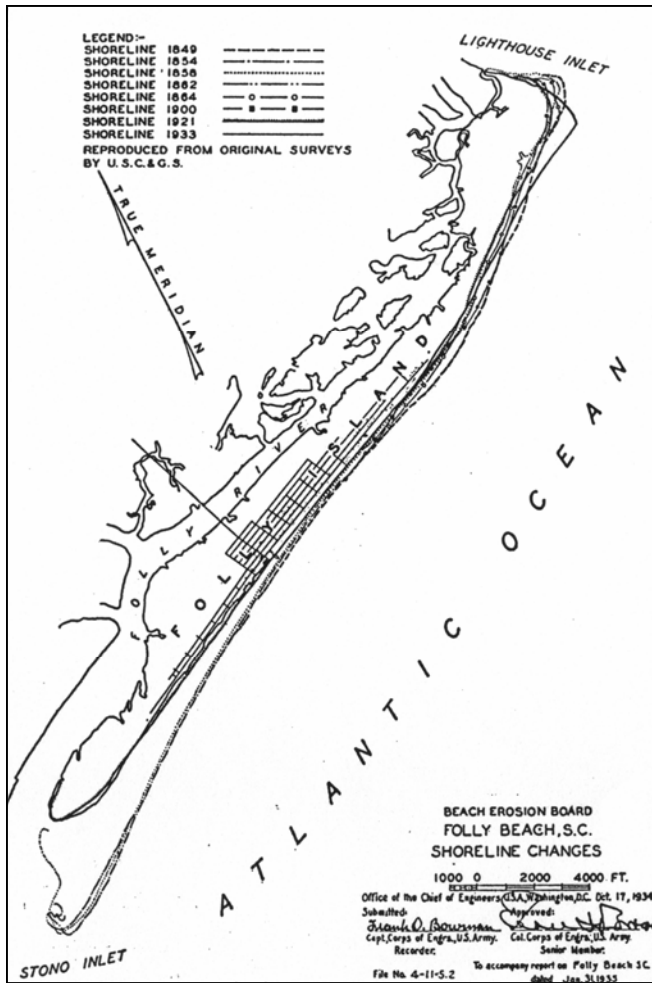
As noted in Chapter 1, the goal of the field effort was to determine the extent of subsurface, preserved cultural deposits within an organic soil horizon and pluff mud along the Folly North beach shoreline at site 38CH1213 (Figure 2.1). This was approached using three methods: 1) a study of the erosional history of Folly Island and Little Folly Island; 2) historic map research; and 3) archeological investigation. This chapter details the results of these three analyses, including the one-week field effort on Folly Island north in which coring, metal detecting, and additional geoarcheological analysis was conducted.

### Erosional History of Folly Island and Little Folly Island

On the eastern “edge of America,” as the native bumper stickers proclaim, Folly Island has been a geomorphological shape-shifter, eroding here and building there throughout its geological history. Prior to the recent dense human occupation, native trees and bushes probably served to hold the island’s interior together, while the beaches have been constantly changing due to wave action, occasional severe storms, and hurricanes. The Civil War Union occupation denuded the island of its trees and probably increased the overall erosion rate, however, Folly



**Figure 2.1** A 2005 aerial photograph of the north end of Little Folly Island, looking north (Courtesy Charleston County Parks and Recreation Commission).



**Figure 2.2** U.S. War Department map of shoreline changes on Folly Island since 1849 (Brown et al. 1935:4)

Island erosion was not an issue until the 1930s and 1940s when the island gradually became a recreational attraction. From that time until the present, the erosion of Folly Island and its northern end, Little Folly Island, has been the subject to numerous government studies (Brown et al. 1935; DuMars 2007; Katuna et al. 1995; Newman et al. 1980; U.S. Corps of Engineers 1968 and 1979). Some of these studies have made recommendations as to the means by which erosion may be retarded. It does not appear that those implemented have been successful, especially on the north end of Little Folly Island.

A 1935 erosion study by the U.S. War Department is typical of these studies and provides a snapshot of the problem and solutions continuing to be offered to control erosion on Folly Island since that time. Already in 1935, Folly Island was “one of the most popular resorts along this portion of the coast” and in testimony to its seasonal popularity the summer population at that time was 2,400 while its winter population was only 125 (Brown et al. 1935:v). According to this study, the beach front of the Folly Beach resort at the mid-point of the six mile long island had lost 550 feet over the last 84 years, with an average loss of seven feet per

year. Interestingly, the northern third of the island at the time of the study was prograding, while the rest of the island was eroding. However, the study illustration indicates that while the ocean/beach side of the northern end had prograded, the north end, or Lighthouse Inlet shore line, had been in retreat since 1849 (Figure 2.2). As the report states:

The principal change along this island has been due to erosion. The ocean face of much of the island has cut back from 300 feet to 2,500 feet, the northeast end has receded 600 feet and the southwest end has moved northeastward for 4,000 feet. Between 1921 and 1933 there has been an advance of the shoreline along a length of about 8,500 feet at the northeast end of the island (Brown 1935:6).

The study goes on to state that “erosion has been quite active in the past and still continues along Folly Beach, although to a lesser degree” (Brown 1935:10). A critical conclusion of this study relevant to future planning and preservation efforts at 38CH1213 was the statement

that beach sand was in motion and suspension continually. Further, the beach sand's direction was determined by currents, tides, and winds. This undoubtedly continues to be the case. The study indicated that the sand eroding from Folly Island was not redeposited elsewhere on the island, instead it is carried beyond its ends and settles either into Stono Inlet or off Charleston Harbor. We suspect that this is true today also.

Another important consideration regarding Folly Island's erosion problem is that the influence of Lighthouse Inlet is greatly lessened by the dynamics of Charleston Harbor. That is, the hydrodynamics of Charleston Harbor overpowers whatever affect Lighthouse Inlet outflow might have on the erosion of Folly Island. The net result is sand loss along Folly Island beaches (Brown 1935:12). The study concluded with recommendations for beach renourishment from the Folly River, constructing a system of bulkheads and groins to disrupt the littoral (shore) drift, or a combination of renourishment and groins.

Subsequent studies of the Folly Island erosion problem continued the theme of a dynamic shoreline, with more gradual trends in one direction or the other over extended periods of time. For instance, a Table in a 1968 study indicated that between 1854 and 1858, there was an annual erosion rate of some 204,000 cubic yards of sand along Folly Island's beaches. From 1858 to 1955, this trend was reversed, and the island accreted at various rates (for instance, the annual rate for the period between 1921 and 1933 was 75,000 cubic yards). From 1955 to 1964, the island again eroded at an annual rate of 175,000 cubic yards, and from 1964 to 1966, the island sands accreted at 82,000 cubic yards average per year (U.S. Army Corps of Engineers 1968:B-3). A more recent study provided an erosion rate of 1.2 to 1.4 meters per year (apparently) since the construction of the Charleston Harbor Jetties (Katuna et al. 1995:2). This fact led to the implementation of the Folly Beach Renourishment Project, phase one of which was completed in 1993. The 1995 study was conducted to investigate the progress of the project. The project is slated to last 50 years, with a new infusion of sand every eight years. Interestingly, the extreme ends of the island were not renourished "to allow for longshore sediment transport to naturally replenish these segments" (Katuna et al. 1995:8). As predicted by the study, the northern end of Folly Island had an increase in sand volume. "An increase in sand volume has been realized at station 2890 (+36.2 yd<sup>3</sup>/ft) and station 2895 (+53.8 yd<sup>3</sup>/ft) at the northern end of Folly Island. Both of these stations fell outside the project limits, hence the increase in sediment volume at these locations is evidence for longshore sediment dispersal" (Katuna et al. 1995:9).

The preceding studies were primarily aimed toward the problem of beach erosion along Folly Island's resort and recreational areas. Anton DuMars' (2007) most recent study focused on this project's study area, the Lighthouse Inlet shoreline on the northern end of the island. DuMars, via FitzGerald et al. (1979), notes that the problem of shoreline erosion at Little Folly Island began after the 1895 construction of the Charleston Harbor jetties. Prior to that time, Charleston's ebb tidal delta provided a barrier "for Morris Island and northeastern Folly Island, which greatly reduced wave-induced sediment resuspension and transport on these two barrier islands (DuMars 2007:1). From 1900 to 1955 Morris Island suffered erosion, with accretion on Folly Island. Between then and 1983, Folly Island's north end has eroded 200 meters. Since 1983 "northeast Folly Island's shoreline has experienced alternating accretional and erosional cycles, but has remained seaward of the 1983 shoreline position" (DuMars 2007:iv).

Critically, Lighthouse Inlet has experienced net southwestern migration since 1857. The result of this continual migration means continuous cutting into the Civil War cultural occupation on the north end. The channel at Lighthouse Inlet, according to DuMars (2007) has migrated a total of 175 meters (574 feet) to the southwest from 1857 to 1999 (Figure 2.3, 2.4). As Morris Island eroded, the northern end of Folly Island became increasingly exposed to ocean wave attack, increasing the rate of erosion there. As wave attack occurs, so does channel incisement, which causes bank collapse at the project site. This bank collapse, as will be seen, cuts into and essentially destroys the archeological deposits. Meanwhile there is an accretion occurring on the ocean side of Little Folly Island. DuMars' study concludes that:

The inlet has migrated nearly linearly to the southwest since at least 1857 at a rate of between 1.0 meter per year near the mouth of the inlet (zone 2) and 1.2 meters per year 300 meters inside the inlet mouth (zone 1). Differential migration rates are the result of erosion-resistant beach ridges closer to the mouth of the inlet. Channel bank incisement, resulting from Morris Island spit-induced channel deflection and channel current acceleration, is one process contributing to channel migration. Increased wave attack from the east and northeast, as a result of a retreating Morris Island shoreline, also contributes to Folly Island inlet-side bank erosion. Based on past trends, it is expected that channel migration will continue at the post 1900 rate of 1.75 meters per year in zone 1 and post 1933 rate of 1.2 meters per year in zone 2 (DuMars 2007:n.p.).

DuMars' excellent study of the erosion along the north end projects an average loss



based on normal weather patterns. While winds, tides, and currents effect everyday sand drift, major erosional events like hurricanes can and do cause major impacts to the overall sand loss problem on Folly Island. A 1967 Corps of Engineers study indicated that since the 1933 and 1934 storms mentioned in the 1935 report, two major hurricanes struck the island, one in 1940, and one in 1959 (U.S. Corps of Engineers 1968:7). Folly Beach suffered 75 feet of erosion in 1940, Hurricane Gracie, in 1959 caused more damage to homes and cot-

**Figure 2.3** 1862 shoreline trace (in gray) of Little Folly Island, overlaid onto a 2006 orthophoto (From Figure 4, DuMars 2007:4).



**Figure 2.4 1994 Historic shoreline trace of Little Folly Island, overlaid onto a 2006 orthophoto (From Figure 4, DuMars 2007:5).**

shorelines. DuMars's study combined historic map shoreline traces, using Geographical Information System technology, with a Laser-GPS shoreline mapping system in which elevations were recorded along transects spaced 100 meters or less (DuMars 2007:3). We feel his research is a highly accurate measure of the erosion at this location. Using his results, Figures 2.5 and 2.6 project a red line 175 meters or 191 yards from the historic shoreline, across two historic maps in which the Civil War fortifications on Little Folly Island are depicted. While we understand that the erosion at this location would not have been a straight line, the results provide a general indication of the loss of the Civil War fortifications. Figure 2.6 is especially interesting in that it provides the greatest topographic detail of that portion of the island and it is therefore assumed the greatest accuracy concerning the actual placement of the Union batteries. The line indicates that most of batteries A through D (on dune at point A) are gone, as are all of Fort Green and batteries E through H (along dune line below point B). Likewise, most of I and J (under line at C) are also gone (see also Figure 1.4 for battery positions).

A similar effort was conducted by Butler et al. 1992:41 (Figure 2.7). They overlaid the 1863 military map onto a 1990 aerial photo. The results indicated that the Union batteries A through A and E through H had all eroded into the inlet, except outlying Batteries I and J. This conclusion appeared to be supported by their archeological survey. During that survey, they excavated a 1 x 2 meter unit at what they believed to be a remnant sand dune of these batteries. Artifacts from the unit associated with Union activity were inconclusive, consisting of four cut nails, charcoal and shell. However, they discovered and interpreted a humus layer within the unit as being an old surface. Furthermore, they found that the southeastern side of the remnant dune appeared to have been engineered (Butler et al. 1992:35). Their conclusion was that the dune was part of Battery I or J.

tages. The primary reason for the current project was the result of the exposure of archeological site 38CH1213 due to Hurricane Hugo, which struck Charleston on September 21, 1989, and subsequent storms. These catastrophic events exacerbated the natural and man-induced erosion on Folly Island and exposed the significant remains on the north end of Little Folly Island.

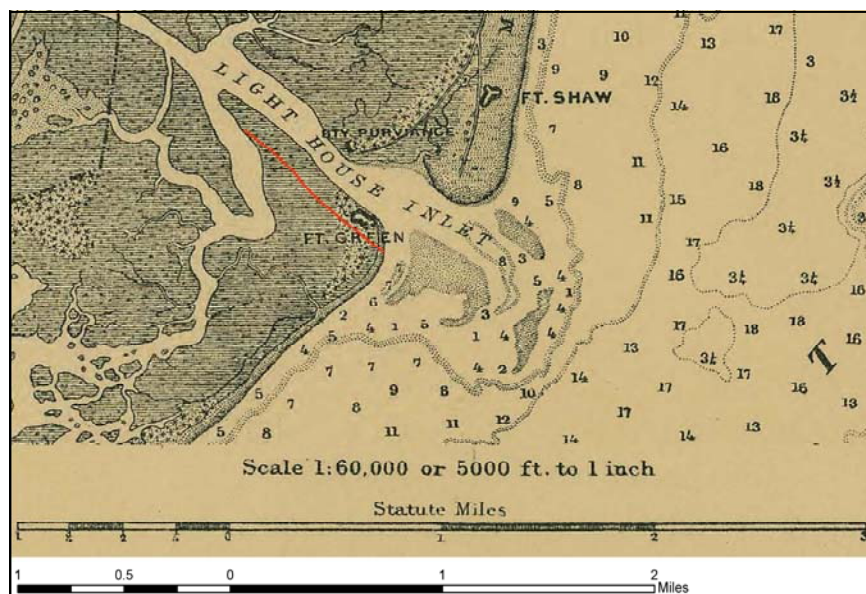
### **Historic Map Analysis**

Most of the previous studies consisted of the analysis of historic maps tracing the historic

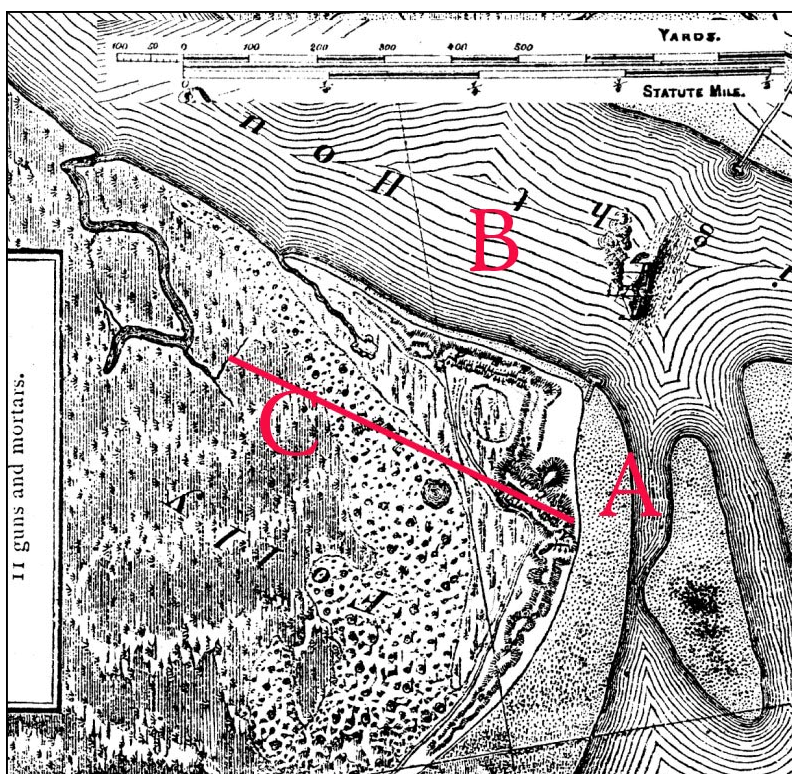


## Results of Field Effort: Coring and Metal Detecting

The goal of the archeological field effort on Little Folly Island at Lighthouse Inlet was very modest. We wanted to conduct testing and metal detecting survey to determine extent of subsurface, preserved cultural deposits within a organic soil horizon (within the natural pluff mud) along the Folly North beach shoreline, which made up 38CH1213. It was this component of the site that was considered of great significance because it contained rare organic materials including a



**Figure 2.5** Close-up of Little Folly Island, *Map of The Defenses of Charleston Harbor, 1863-1864, to Accompany the Report of Major General Q.A. Gilmore*, with 175 meters of erosion projected in red (O.R.A. Atlas Plate IV).



**Figure 2.6** Close-up of Little Folly Island from *Map of Siege Operations on Morris Island, Charleston Harbor, July 10th-Sept 6th, 1863*, depicting 175 meters of erosion (Eldredge 1893 inset). Batteries A through D (A), batteries E through H (B), and batteries I and J (C).

wooden drum stick and a cattle skull with brain tissue. The rarity of such finds made the site significant at the national level. We also decided to metal detect in the dunes behind (west) the beach-dune interface in order to establish additional survey data concerning dune formation processes there (Figure 2.8, 2.9).

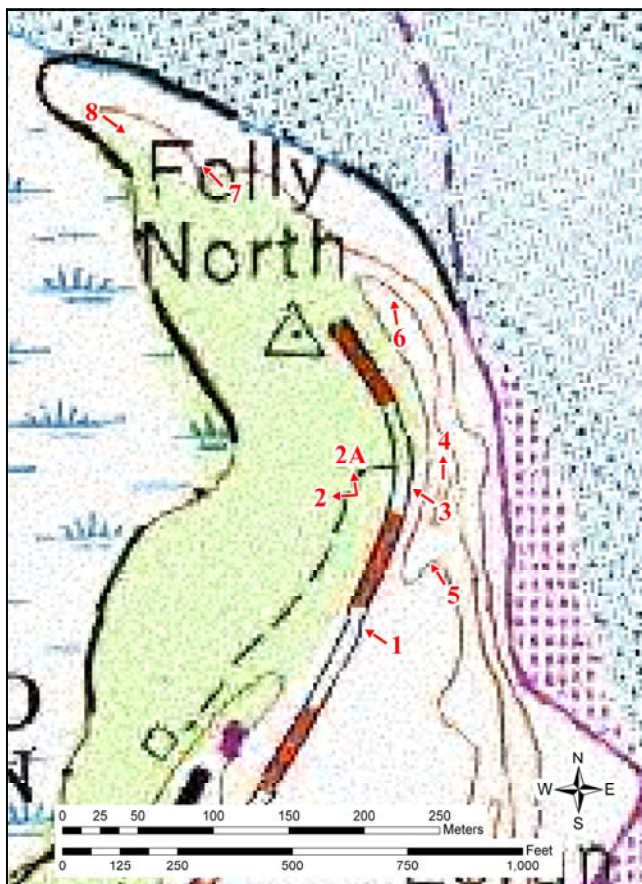
To accomplish this task, two methods were proposed, hand coring within a 20 meter interval grid and metal detecting. As proposed, the southwest border of this grid was planned as the interface between the beach and the dunes, along the dune line. The northeast boundary was low tide. The concept was to reestablish the location of The Charleston Museum's 1991 excavations and then work up and down the beach from that point. The location of their





Figure 2.7 Brockington and Associates, Inc., overlay of Major General Gilmore's map on a 1990 aerial photograph, from a map compiled by Willis J. Keith (Butler et al. 1992).





**Figure 2.8 Project area at Little Folly North. Location of views 1 through 8 (SCIAA).**



**View 1 above, asphalt road buried by dune.**



**View 2 above, inner-dunal pond/marsh.**



**Left, View 2a, above, looking north at high tide toward back dunes. View 3, above, looking north along coast line at low tide, showing exposed pluff mud. U.S.G.S. Folly North datum to right of picture at concrete platform (SCIAA).**



Left, View 4, looking north along beach at low tide, approximately parallel to Charleston Museum excavation site. Right, View 5, looking northwest along beach at high tide, USGS Folly North datum to right of picture at large concrete platform (SCIAA).

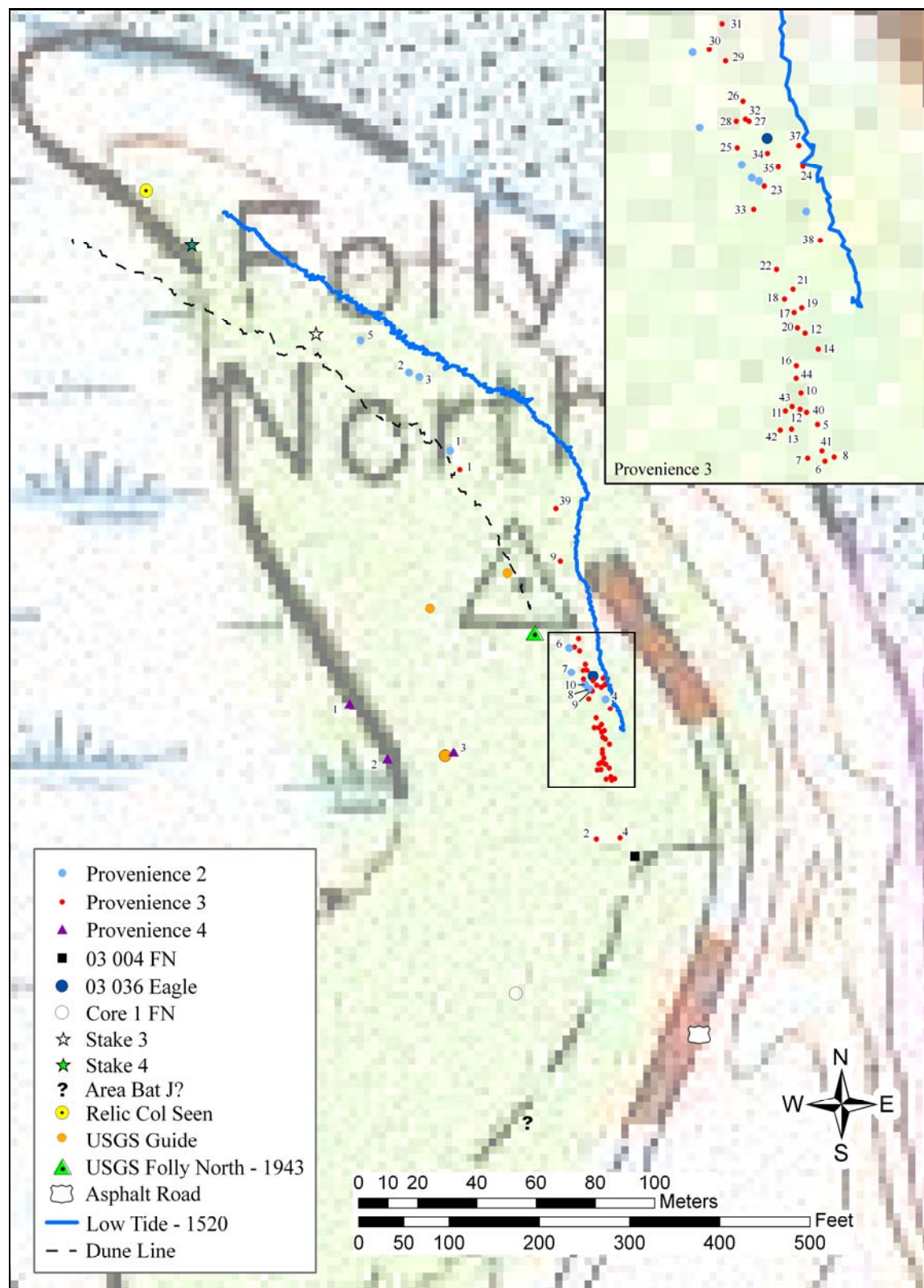


Left, View 6, looking north along beach at low tide and at U.S.G.S. datum. Right, View 7, looking northwest along beach at low tide, approximately 100 meters upstream from archeological deposits (SCIAA).



Right, View 8, looking southeast along beach at high tide, depicting loss of beach and proximity of dune beach interface (SCIAA). No evidence of Civil War period artifacts at this, or north of this location. However, relic collectors were seen at low tide just north of this location, intently searching a 10 x 10 meter area.





**Figure 2.9** Map of archeological investigations at 38CH1213, Little Folly North (SCIAA). Blue line, GPS mapped location of low tide. Black line, GPS mapped interface of beach and dune.

salvage excavation units could serve as the initial boundaries of the site from which SCIAA's effort could work outward. This would not only define the subsurface extent of the site, but also provide data on the extent of change between 1991 and the present.

Table 2.1 describes the proveniences used to record artifact locations in the following discussions of results:

**Table 2.1 Folly North Artifact Provenience**

**01:** General surface, lost provenience, etc. This provenience was abandoned after 01 001 in favor of piece-plotting any artifacts of interest.

**02:** Surface collection, mostly from the active inlet beach – all artifacts were individually mapped by GPS.

**03:** Metal detector collection from the active inlet beach – all artifacts were individually mapped by GPS.

**04:** Metal detector collections from the wooded dunes inland from the active inlet beach – all artifacts were individually mapped by GPS.

**05:** Designated for the metal detector search of the suspected “Batteries J and I” area in the woods near the Coast Guard structure complex – no artifacts were collected.

**06:** A sample of the numerous cut spikes (eroded from dry environments) that co-occurred with the concentration of unfired U.S. ammunition and etc. on the inlet beach, south of the concrete tower foundation – not individually mapped.

### ***Re-establishing The Charleston Museum's Excavation Grid***

The Charleston Museum archaeologists Martha Zierden and Ron Anthony assisted the survey team as SCIAA attempted to find and re-establish the museum's grid. Zierden and Anthony began their excavations in 1990 by imposing a grid across the visual concentrations of Civil War period artifacts eroding out of the beach sands and pluff mud. To anchor their excavations in space they established a 100/100 grid point (the southwestern point of their grid) at a location 133 feet from the U.S.G.S. Folly North datum on magnetic angle of 50.4° degrees west of magnetic north (from their 100/100 point to the U.S.G.S. datum). Their E100 line ran north south 17.75° (or 342.25°) west of magnetic north.

To find the museum's 100/100 point we first had to find the U.S.G.S. Folly North datum. Then striking a back azimuth of 129.6° magnetic angle to a point 133 feet from the datum, we would relocate The Charleston's Museum's 100/100 point. While searching for this datum we located total of three witness posts within the modern dunes, all of them pointing to the beach, indicating that the actual 1943 USGS datum (the datum on the modern topographic map)



**Figure 2.10** Location of The Charleston Museum's N100/E100 point marked by volunteer Chris Ziegler (in black holding tape to left of lighthouse) looking north-northeast (SCIAA).



**Figure 2.11** Location of The Charleston Museum's N100/E100 point marked by volunteer Chris Ziegler looking seaward, southeast (SCIAA).

was now somewhere along beach. Eventually the team located the Folly North datum on the beach, turned over on its side and partially buried. Beach erosion had undermined the post, causing it to fall onto the beach. This was the team's first indication that significant and dynamic changes had occurred since The Charleston Museum's excavations. Nevertheless, assuming that the datum had fallen with minimal lateral transport (the datum was still encased in a concrete post), we measured the proper distance and angle seaward, demonstrating that The Charleston Museum's component of site

38CH1213 was now completely inundated anywhere from approximately one to four feet daily depending on tides (Figure 2.10, 2.11). In other words, The Charleston Museum site is entirely underwater and subject to constant tidal erosion and channel incisement. Given the nature of the beach erosion farther up the beach, it is quite possible that most of the site has been incised and no longer exists. Exactly how much could not be safely determined as the channel currents were swift and dangerous.

### *Coring*

Although it appeared that the area defined and excavated by The Charleston Museum was gone, the question still remained if archeological deposits were eroding out of the current

beach and if the archeological deposits extended up the beach, inland, along Lighthouse Inlet. The proposed method of determining this was a program of coring on a 20 meter grid up (inland) the beach. At the time of survey however, there was not 20 meters of beach to work with. Instead, a total of seven cores were hand drilled along the beach, the farthest inland being approximately 228 meters from the U.S.G.S. monument, while south of the monument, the pluff mud was already exposed to the modern rip rap (Figure 2.8, view 3). One core was placed between two sets of stone and concrete riprap south of The Charleston Museum's excavation site and another in an interdunal wetland south of those excavations that opened to the backswamp behind (west) of the present dunes (Figure 2.8, 2.9). In front (seaward) of this wetland was an active inlet beach, the intersection of which with the water was exposed, actively eroding, pluff mud.

Overall, the results of this effort were consistent with the general impressions gained from simply walking the beach. The beach consists of a layer of wave and wind deposited fine

**Table 2.2 Results of Coring along beach at Little Folly Island.**

| Core-Location                  | B. Sand Depth | Comments                     |
|--------------------------------|---------------|------------------------------|
| 1— innerdunal march            | 1.1 m         | .5 m water table, back-marsh |
| 2— groins                      | 1.35 m        | Pluff mud below sand         |
| 3— 150° SE, 60 m from Stake 3  | .92 m         | Pluff mud below sand         |
| 4—45° NE, 13.5 m from Core 3   | No sand       | Pluff mud on surface         |
| 5— Stake 3                     | .85 m         | Pluff mud below sand         |
| 6—40° NE, 12.2 m, from Stake 3 | No sand       | Pluff mud on surface         |
| 7—Stake 4                      | 1.9 m         | Pluff mud below sand         |

grained sand from .85 meter to two meters in depth, with pluff mud below that (Table 2.2). The depth of the pluff mud could not be determined with a hand auger. This pluff mud appears to extend underneath the dunes to the rear (west) marsh lands. Generally, at the low tide mark, the mud is being calved or scoured by the outflow of Lighthouse Creek. At the interface between the pluff mud and sand there are pockets of peat from low marsh vegetation in the form of cord grass (*Spartina alterniflora*) that can survive in an anoxic sediment. No evidence of cultural materials were found within the cores. Evidence from the coring was not conclusive, but it appears that the archeological component in the pluff mud sampled by The Charleston Museum in 1990 did not extend much beyond their original excavation units, which were within an area 300 x 200 feet (91.44 x 60.96 meters). By re-establishing their grid, coring, and examining their excavation map it is clear that the dune/beach interface at the time of their excavations is now the low tide mark today.

### *Surface Finds*

Most of the surface finds came from the active inlet beach leading to the backswamp marsh, behind the current dune line. These artifacts consisted of mammal teeth and bone, and bottle fragments (Appendix A). A few (N=4) artifacts were scattered as much as 120 meters up (inland) the beach (Figure 2.9). Seven other artifacts were a sample of numerous cut spikes eroding out of the beach. All of these artifacts were consistent with the kinds of materials found during The Charleston Museum's excavations in 1990.

### ***Metal Detecting Survey: Beach Finds***

Both the beach and the dunes behind the beach were surveyed using metal detectors. Systematic transect survey proved impossible within the dunes, and was difficult along the beach. Because time was limited by tides, no systematic transects were laid out on the beach, however, the operator followed transects by using a visual point of reference ahead of the operator to keep on line, such as pin flags and surface features. Thus, loose transects approximately 1.5 meters in width and running along the beach line were possible for limited sections. When Civil War period artifacts were discovered, the immediate area around the artifact was thoroughly covered with repeated transect sweeps, both along the beach and perpendicular to the beach.

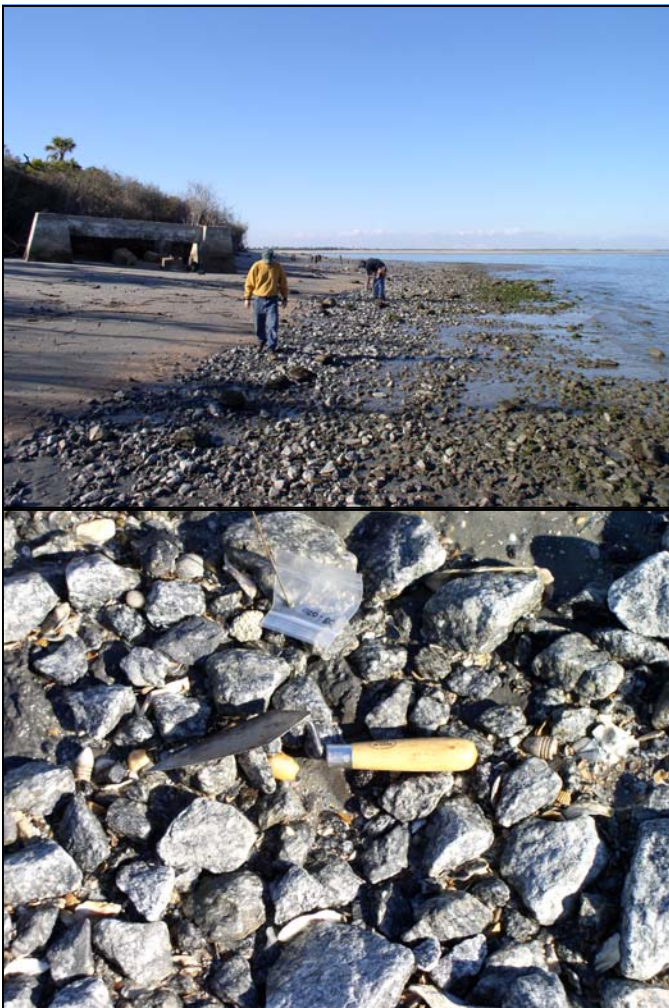
Artifacts recovered along the beach were clearly associated with the Civil War occupation of Little Folly Island (Appendix A). Again, most artifacts were concentrated within a 40 meter long beach/pluff mud interface just north of the 'mouth' of the active beach inlet leading to the back marsh (Figures 2.8, 2.9). Only three metal artifacts, an axe head, a rifle-musket bullet, and a grommet (possibly Civil War) associated with this occupation were found beyond the inlet mouth and north of the U.S.G.S. Folly North Monument. There were also two ammunition artifacts located 20 meters south of the concentration.

Within the 40 meter artifact scatter, metal detecting survey recovered 103 metal artifacts associated with the Civil War occupation of Little Folly Island inlet. Ninety-one of these artifacts were ammunition, the vast majority being U. S. .577/.58 caliber rifle-musket bullets, but also included were three .69 caliber musket balls, and two .69 caliber rifle musket bullets. In addition, melted lead, a Union enlisted man's 'eagle' button, a cartridge box rivet, a pole tip, and a trigger plate make up a small assortment of unique items. These artifacts would seem to offer conclusive proof that at least a remnant of the Civil War component of 38CH1213 excavated by The Charleston Museum still exists, however, their condition indicates a more complex explanation.

Only 10 of the 91 ammunition artifacts were badly corroded, indicating that their in situ provenience was situated in a wet environment, or the pluff mud. The remaining artifacts were in either excellent condition, or at least uncorroded, indicating that their in situ provenience was a dry environment. The only explanation for this is that most of the artifacts were eroding out of the beach sands and washing seaward as a result of tidal action. These artifacts could have been originally buried in the dunes or at the interface between the dune and the pluff mud, but not buried in the pluff mud.

Another interesting phenomena concerning the ammunition artifacts was a concentration of 60 ammunition artifacts within an approximate 1 x 1 meter area (Figure 2.12, 2.13). The exact dimensions of this 'cache' of ammunition could not be determined because they were located at the water edge of the low tide mark. The cache was never completely out of water, and the artifacts had to be collected and GPS location recorded within about one hour's time. Most of the artifacts were located by straining the beach sand through the hands in combination with metal detecting.





**Figures 2.12 and 2.13.** Top, area of artifact concentration at low tide. Note concrete foundation, 1943 U.S.G.S. datum was found on beach within this feature. Bottom, close-up of minie balls eroding out of beach at concentration site. (photos courtesy of Christopher Ziegler).

Curiously, the ammunition in this cache were not all standard .577/.58 caliber rifle musket bullets. A sizable number (N=39) were manufactured in a stamping Custer machine with 5-spoke marks. There were also two .69 caliber musket balls, a .69 caliber rifled musket ball, and five artifacts were melted lead. All of the identifiable ammunition rounds were unfired. We interpret this cache as the result of intended abandonment either left on the surface in a pile or buried in the dune. Perhaps the cartridges got soaked and were useless.

### *Metal Detecting Survey: Dune Finds*

The project also metal detected above the beach in the dunes. Within the dunes, we were limited to a search-to-find method, whereby the operators walk loose transects across the entire dune lines wherever possible. The tops of three dunes were hand cleared to assist in the searching. This allowed nearly 80% coverage across the tops of those dunes. In other areas, especially near the dune-beach interface, survey was impossible due to thick vegetation and tree uprooting due to dune erosion. Nevertheless, Civil War period artifacts were recovered and provided additional interesting results.

On the inland side of the dunes directly west of the artifact concentration on the beach, the metal detector survey recovered three artillery shell fragments (Figure 2.8, 2.9). One fragment was a portion of an ogive (curved or conical end of a fired projectile) from a rifle projectile. The second was a body fragment from the same type of projectile and the third was a fragment of a Mullane sabot (a metal ring at the base of a projectile that makes the projectile conform to the rifling grooves of a gun) from a 5.87 rifled 24-pounder projectile. These artifacts are interpreted as shell fragments from fired projectiles, fired from Confederate guns located on Morris Island. No other Civil War period artifacts were found during our inland metal detecting.

While the interior, or southern portion of Little Folly Island was not the focus of this project, additional metal detecting was briefly conducted where Butler et al. (1992) believed they had located Battery J (Figure 2.9, question mark). This suspected battery was the only remaining battery of the Union battery group that was placed to support the Union assault on



Morris Island. No artifacts were recovered.

### **Conclusions of Archeological, Geoarcheological, and Erosion data**

Based on the above archeological and geoarcheological effort, we can draw the following conclusions. These conclusions are illustrated in Figure 2.14.

First, since the Civil War, Little Folly Island along Lighthouse Inlet has undergone a cycle of erosion and accretion, but with an overall loss of some 175 meters (5574 feet) of shoreline according to DuMars 2007, and our efforts support this conclusion. “Northeastern Folly Island has been shaped by two distinct sedimentological processes, channel throat migration, and wave-influenced sediment transport” (DuMars 2007:32). This erosion/accretion cycle is extremely dynamic, changing seasonally, and radically during extreme weather. The red line in Figure 2.14 is our projection of the approximate current low tide mark. Man-made efforts to ensure a deep harbor at the mouth of Charleston Harbor have exacerbated the erosion processes on Little Folly Island.

The result of this overall erosion has caused the loss of most of the Union Civil War batteries at 38CH1213, especially Batteries E through H and Fort Green (Figure 2.14, A). Butler et al. (1992) interpret a dune formation near the Coast Guard station foundations as a remnant of the Battery I and J complex (Figure 2.7). The SCIAA’s investigations found no direct evidence to support or refute their conclusion, however we propose a slightly different interpretation. Based on a combination of map research and archeological finds, SCIAA believes that Butler et al.’s dune actually may be a remnant of Batteries A and B (Figure 2.14 to right of D where red line crosses the batteries), and the location where SCIAA found Confederate artillery shells is either just behind or on Batteries I and J (Figure 2.14, C). We support the interpretation of Butler et al. that archeological features exist in the area of the Coast Guard station (see Figure 1.5 for sketch map of Union camps south of Fort Green).

The Charleston Museum’s excavations at 38CH1213 consisted of Union army trash thrown into the depression/marsh behind their batteries and Fort Green (Figure 2.14 B). SCIAA archeological evidence indicates that the museum’s component is largely gone, although there is possibly still a remnant of that component eroding out of the beach (Figure 2.14, B). Most of SCIAA’s artifacts, however, came from the dunes, probably the upland area just south of the depression (B) where the red line crosses the road. At the time of survey these artifacts were being actively eroded due to wave action at the interdunal marsh interface. The active inlet/innerdunal marsh formation today is the pond (Figure 2.14, D). The mud there supports low marsh vegetation like spartina (peat), which was in the process of being exposed at the time of our field effort, especially at this active inlet, and has been eroded or scoured to varying and unknown depths. This is also occurring far up the beach beyond the Folly North Inlet sand dunes. In other areas the spartina does not exist, indicating previous exposure/erosion episodes. Our finds were concentrated between this pond and the red line depicted on Figure 2.14. Essentially, the current dune line runs parallel to the low tide line approximately following the black line on Figure 2.14 indicating the edge of an upland area (between C – D and the red line).

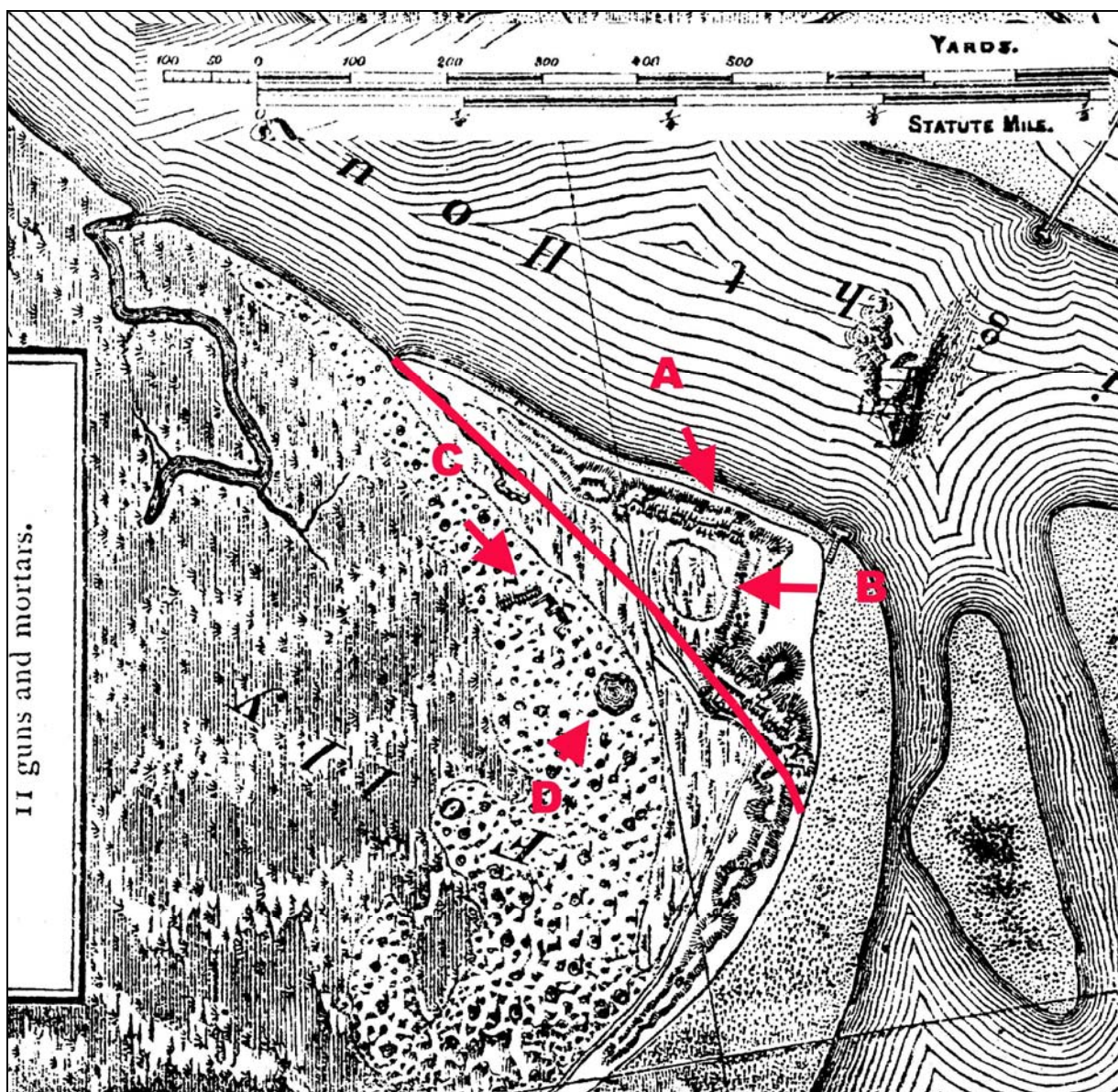


Figure 2.14 Close-up of Major General Gilmore's siege map with SCIAA site interpretations. Red line, projected modern (2005) shoreline at low tide. A = batteries E through H and later site of Fort Green. B = marsh and Union army trash dump behind (south of) batteries excavated by The Charleston Museum. C = batteries I and J, location of modern dunes and Confederate shell fragments recovered by SCIAA. D = historic pond and currently innerdunal pond/marsh. Butler et al. 1992 remnant battery/dune adjacent to pond and back of Batteries A through D (along dune south of B and east of D, see also Figure 1.4).

## Public Meeting

The work plan for the project called for public involvement in all phases of the project. During the field effort, volunteers provided assistance, although only two individuals were able to provide consistent time to the project both in the field and also in conducting historic map research.

The main emphasis of the public involvement effort was a public meeting held at the Folly Beach City Council Chambers, Folly Beach, South Carolina, on the evening of February 16, 2006. The public was made aware of the meeting through a radio announcement and a newspaper article in the *Charleston Post and Courier*. The meeting consisted of a presentation by the CCPRC of their plans for site preservation followed by a presentation by the Principal Investigator on the history and archeology of the site and some preliminary results of the work being conducted at that time. At the conclusion of these presentations, the CCPRC and Principal Investigator solicited comments and questions regarding the future of the site from the attendees. The public was encouraged to ask questions and offer their suggestions about any aspect of the project and future of the site.

A total of ten people attended the public meeting. Comments were diverse and can not be easily categorized. However, there were many comments and suggestions regarding the site as an educational opportunity focused on the Civil War and the natural environment. Interpretive signage was strongly desired. There was a desire to see that the property be maintained as in as natural a state as possible, and improvements be confined to passive measures, such as natural paths rather than asphalt or pavements, reducing parking spaces so as to restrict over use, and allowing only foot paths for beach access. Regarding the latter there was considerable debate concerning meeting these goals in light of modern ADA requirements. There was wide consensus that no new architecture be permitted on the property. The public was also very concerned about the view-shed toward Morris Island and the Lighthouse. Their concerns were that there will be impacts, like cell towers, which will spoil this view-shed. From this one gained the sense that the Coast Guard Station's ruins were of much less important to the public than the Civil War history and maintaining the property's natural beauty. Overall, the public meeting, while not well attended, was attended by a few but vocal local citizens who were very interested in the preservation of the property for passive historic interpretation and passive recreation like beach walking, beachcombing, and fishing.

## CHAPTER 3: ACTION PLAN

### Introduction

The goals of the current project were to rapidly assess the condition of the archeological organic component in the pluff mud of 38CH1213 and offer some realistic solutions to the disastrous erosional processes occurring at the site along Little Lighthouse Inlet. An Action Plan was called for, meaning that a plan for a rapid response was needed to preserve the site. Based on the recent assessment, however, it would appear that we are too late to save that portion of the site.

The Civil War archeological organic component at Little Folly Island has, for the most part, eroded away due to natural and human induced impacts to the shoreline along Lighthouse Inlet. The portion of archeological site 38CH1213 originally sampled by The Charleston Museum, containing the most significant archeological remains including organic materials is largely gone. A small remnant of the battlefield (defined as the attack on Morris Island), no more than an one acre along Lighthouse Inlet, may still remain in the active sand dunes, but this component appears to contain little more than overshots and artillery fragments fired at the Union batteries I and J, or perhaps part of I and J themselves (Figure 2.14). There also may be a remnant of battery D in the upland portion of the site just north of the Coast Guard foundations (Butler et al. 1992). We do not believe the archeological data gathered to date can confirm the existence of any batteries (I, J, or D). It is possible that a small portion of the organic pluff mud component still lies underneath these active sand dunes, however, given the slowing rate of reported finds, and the nature of the finds recovered during this project, it is doubtful that there is much remaining.

Meanwhile, it is possible and probable that Civil War campsite components still exist at 38CH1213 south of the inlet mouth where the Coast Guard Station once stood (see for example Figure 1.5). Practically all of Folly Island was a Union army encampment during the Charleston Campaign. This portion of 38CH1213 still exists for future research and interpretation.

Given the fact that most of the organic component is gone, it behooves preservation planners to concentrate on the preservation of what is left rather than lament what has already occurred. Therefore this planning document, while no longer having the urgency of an Action Plan, provides some suggestions regarding long term preservation of 38CH1213.

### Retrospective

Before looking at long term preservation opportunities at 38CH1213, it might be useful to place in perspective the loss, still on-going to some extent, of the organic component. Assuming our assessment would have found that the organic component was intact, the question would have been; what practical solutions are there to protect and preserve the site? Possible solutions could have ranged from full-scale data recovery to abandoning the site to its natural fate. In fact, the latter has largely happened, but it is important to recognize that the site was on an unstoppable erosive course prior to The Charleston Museum's 1990 excavations, and it con-

tinues through this current 2006-2008 assessment. Full excavation was never a practical solution from an economic perspective. When a large scale excavation could have occurred in 1990, funds were not available, despite clear recognition that the site was an extraordinary find. The Charleston Museum bravely took on the cost and responsibilities for the project and was able to salvage some of the remains. Today, such an excavation for whatever remains would appear to be economically unfeasible. The cost of building the kind of retaining wall to expose the remains and hold back the tide for excavation is unknown, but an estimate in the hundreds of thousands of dollars does not seem unrealistic. In a sense, Hurricane Hugo created an opportunity. It exposed and made economically accessible, a rare, unique exposure of Civil War period organic material, which The Charleston Museum was able to sample. Furthermore, it brought attention to the erosion problem. This attention assisted in bringing the rest of site into the public trust so that at least some portion of the remaining site can be preserved. It is with these considerations in mind that the following preservation recommendations are made below.

### **Planning Considerations**

In determining preservation and interpretive plans for 38CH1213, planners must consider other goals of the landowners, stakeholders, and the public. For instance, at one time during the course of this project, the U.S. Army Corps of Engineers proposed Little Folly Island as a staging area for a project to stabilize the Morris Island Lighthouse. This would have involved using 38CH1213 as a lay down yard for equipment, the construction of a temporary loading platform, and construction of roads for equipment transport. The impact of this kind of intrusion would have had to be measured and adverse impacts mitigated. This would have involved additional archeological investigations to determine impacts or mitigate impacts to the resource, or likely both. While these excavations would have enhanced our knowledge of Civil War history in Charleston, the best alternative for site 38CH1213 is not compliance archeology but rather, preservation, with restrained and carefully thought-out investigations for research, interpretation, and education. Fortunately, as of the Spring of 2008, the plans to use this site as an access point for the Lighthouse stabilization project have been abandoned.

Although 38CH1213 is under the ownership and daily management of CCPRC, Little Folly Island is part of the South Carolina Department of Natural Resources Lighthouse Inlet Heritage Preserve, dedicated in 2003. In fact, while CCPRC is the lead agency in this regard, the agreement to transfer of the property from the U.S. Coast Guard to CCPRC included several stipulations regarding site management, not the least being the development of a cooperative management agreement with the United States Fish and Wildlife Service's Cape Romain National Wildlife Refuge, Charleston Fish and Wildlife Enhancement Office, and SCDNR (Dozier et al. 2003:1). The SCDNR has taken the lead in the development of this management plan and a draft is currently under review (Dozier et al. 2003). The plan includes detailed information regarding the natural and cultural resources, and below are extracted important planning considerations that might impact preservation plans for the archeological component of Little Folly Island.

- 1) Permit Number DTCG-75130-89-RP-021P, [1989] allows access to the site for the installation and maintenance of a Coast Guard Weather Monitoring station.



2) Permit Number DTCG-Z75130-91-RP-026P [1991] allows access to the site for maintaining a navigator responder antenna to the Department of the Navy for mine laying exercises.

3) Permit Number DTCGZ 51281-93-RP-006P [1993] allows access to the site by the U.S. Army Corps of Engineers, to use 5220 square feet of space on an existing concrete pad for housing tide monitoring equipment.

4) Permit Number DTCG-275130-92-RP-056P [1992] allows access to the site to operate a Hyper-Fix Transmitting Station [85 foot tower] to the Department of the Navy.

5) There are federally threatened species on site including an annual plant called sea-beach amaranth (*Amaranthus pumilus*), a shorebird called piping plover (*Charadrius melodus*), and the beach is used by the loggerhead sea turtle for nesting.

6) Overpopulation of undesired fauna species and invasive flora may be controlled by chemical means and while this should not impact cultural resources, its use may increase ground exposure, thereby creating an opportunity for investigations and also for illegal metal detecting.

7) All terrain vehicles and hunting are prohibited on site.

8) A road widening project is planned along with increase of nature trails and interpretive signage and kiosks. See below recommendations concerning these efforts.

9) Archeological research opportunities are to be encouraged under the management plan. All work must meet minimal standards and review by SCDNR Heritage Trust and SC SHPO. Researchers must have a Scientific Collecting Permit issued by the SCDNR Heritage Trust Program.

Other planning considerations at the present time include the planned acquisition of Morris Island by CCPRC. Morris Island has suffered tremendous erosion problems of its own, and a recent study (TRC 2006) indicates that little if any of the Civil War fortifications once there are still on dry land. Relic Collectors still recover Civil War period artillery ammunition from the surrounding marshes.

At the current time, CCPRC is developing recreational and preservation plans for Morris Island. Coordination of management policies between Morris Island and Little Folly Island is a must. At this early stage of planning, it is obvious that Little Folly Island could very well serve as a launching point for recreational and resource management on Morris Island. This will increase human traffic on Little Folly Island. This is not necessarily an adverse impact (see below). However, facilities and infrastructure for such a development must consider the impact to cultural resources.

The public will demand that utilization of Little Folly Island and 38CH1213 include appropriate safe recreational activities such as beach combing, shell collecting, fishing, and hik-

ing. Surfing and swimming probably are not safe activities on the inlet (north) face of Little Folly Island. There is evidence of camping on the back dunes along the inlet, however we do not believe this is legal, and enforcement should be stepped up. Obviously, despite the posted signs, relic collecting continues apace (Figure 3.1).

## **Preservation Opportunities**

Based on the current assessment described in Chapter Two, the SCIAA makes the following recommendations for future preservation and interpretation of archeological site 38CH1213 and Little Folly Island. These options are not mutually exclusive. That is, more than one can and should be adopted. All of these recommendations should be coordinated with the SCDNR.

Preservation Options include:

- 1) Additional Archeology
- 2) Site Monitoring Program—Archeological Sanctuary
- 3) Increase Public Use, Access
- 4) Create Interpretive Program and Maintain Interpretive Signage
- 5) Maintain Viewshed
- 6) Reduce Coast Guard Presence
- 7) Alter Current Trail System and Maintain
- 8) Link Preservation Efforts With Morris Island

### ***1) Additional Archeology***

Test pit excavations in the Coast Guard portion of 38CH1213 is a viable and useful option in order to assess if there are (and the condition thereof) significant Civil War campsite components, along with test units at the possible remnant battery. Test units in the rear dunes behind (southwest) of the current shoreline along Lighthouse Inlet, where SCIAA found Confederate artillery shell fragments, would also be useful for additional site evaluation. There is the possibility of some Union trash deposits in that area also.

Metal detecting could accompany these investigations, however, it is probable that the area around the Coast Guard Station contains numerous modern metallic artifacts that would mask the Civil War artifacts. Therefore, in this case, test units offer the best opportunity to demonstrate the existence and condition of archeological components. Metal Detecting is always a viable inexpensive option should areas be cleared of brush.

It should be stressed again that the urgency for additional archeology is not great. There is no longer an immediate threat to 38CH1213, therefore, the CCPRC should develop a program of public archeology at the site, directed by professionals, but with the assistance of interested local avocational archaeologists. This kind of effort can be cost effective and promotes archeological awareness at the local level. All archeological materials should be kept with The Charleston Museum. As noted, a DNR Permit will be required for all investigations.



**Figure 3.1** Relic Collectors (right) searching beach while archaeologists conduct investigations on Little Folly Island, Lighthouse Inlet (courtesy of Christopher Ziegler).

## **2) Site Monitoring Program-Archeological Sanctuary**

As the dunes along Lighthouse Inlet continue to erode, archaeological materials in the dunes will continue to be exposed. The CCPRC should develop a program of regular site visits in order to monitor the erosional processes there. It is obvious that there is considerable local interest in this site and interest in its archeological component. During the current assessment, there was constant activ-

ity on the beach, and local residents appeared on a daily basis. Since 1990, the Principal Investigator has had calls from local citizens with information about collecting and a frustration that more should be done to protect the site. This citizen interest should be mobilized. The SCIAA recommends as a cost-effective solution to the loss of archeological materials, that the CCPRC develop a volunteer monitoring program to keep an eye on the site and report regularly to CCPRC on the exposure of archeological materials and relic collecting activity. The monitoring program would make periodic visits and special site visits immediately after major weather events like storms, unusual tides, and hurricanes.

Not only were there daily visitors, there was fairly consistent metal detecting going on along the beach during our assessment (Figure 3.1). While CCPRC has signage stating that metal detecting is not allowable, the vagueness of current law make effective enforcement difficult at the beach. As is understood, that portion of the beach above mean low tide to the dune line is under the control of the South Carolina State Budget and Control Board. State representatives have made it understood to SCIAA that because of a wide interest in shell collecting, beach scavenging, and 'coin shooting' (metal detecting to recover lost coins), metal detecting and collecting along the beaches will never be prohibited. It is too difficult for the average law enforcement officer to distinguish a collector removing archeological materials versus a private citizen coin shooting and otherwise enjoying the beach in a traditional manner. Also, it is too popular. Therefore, some alternative measures need to be taken. Step one, is to organize the volunteer monitoring program. When concentrations of materials are seen, the organization could simply recover the finds before the collector community is mobilized. The volunteers should include metal detector operators who are willing to work under the supervision of the



CCPRC. These materials could be transferred to The Charleston Museum for curation. Step two, would be to publicize the monitoring program, which SCIAA believes would reduce relic collecting along that portion of the beach.

In the long term, it may be possible to create local legislation that would declare this portion of Folly Island an archeological sanctuary, thereby giving local law enforcement the ability to enforce a clearly defined law. Arguing that the CCPRC is only restricting collecting on a well marked portion of the beach might resonate positively with local officials and law enforcement. Metal detecting is prohibited on South Carolina Heritage Preserves, therefore, the only vague area of enforcement is the beach, which unfortunately is where most of the artifacts are currently being exposed.

The volunteer monitoring program could easily be broadened into other types of monitoring. For instance, the volunteers could report to the CCPRC on natural resource issues at the site and reduce other illegal activities at the site simply due to a well publicized site monitoring program.

### ***3) Increase Public Access and Use***

While increasing traffic this would seem counter to site preservation goals, we believe increased traffic and proper use of the site would reduce relic collecting. While metal detecting for coins along the beach is a popular hobby, we believe collecting inland has the same notoriety as collecting on public property anywhere else, that is, it is frowned upon by the general public, and its restriction can be legally enforced by CCPRC as a Heritage Preserve. For this reason, most collectors seeking historic artifacts tend to hide their activity, either to keep the site from other collectors, or because they know that the artifacts they find on public property are not theirs. Therefore, the presence of people may reduce relic collecting inland of the beach. Using the site as a nature area, to include educational opportunities for youth and students on site (such as public lectures and nature tours) would reduce illicit activity of all kinds. The presence of park personnel on a regular basis conducting nature walks and historic tours would be most welcome. Sealing off the site from the public is neither desired nor effective. Instead the site should be easily accessible and access and proper public recreational use should be encouraged.

### ***4) Create Interpretive Program and Maintain Interpretive Signage***

This recommendation is related to increased use. The CCPRC should develop an interpretive program and interpretive signage focused on the Civil War. As was mentioned by Folly Island residents at our public meeting, historic tours would be welcome and could be tied to other Charleston historic tours and interpretive programs. Charleston is a focal point for Civil War tourism and this site should be incorporated into such programs, along with the Dill Tract and Secessionville. On the last dune facing Morris Island, a platform with signage and arrows could point to features related to that topic. For instance, a sign and arrow would point to: 1) Fort Sumter, 2) Secessionville, 3) Long Island, 4) location of the Civil War period Lighthouse, 5) the approximate location of the ships *Ruby*, *Keokuk*, and *Weehawken*, and 6) projected location of Battery Wagner. Other signs could interpret Fort Green and African American soldiers

stationed on both Folly Island and Morris Island. These signs could be used in conjunction with historic tours to make Little Folly Island park a heritage tourism destination.

At the same time that we encourage an interpretive program, we would discourage any attempts at site restoration, except the removal of the Coast Guard foundations. There is always a temptation to restore or construct a Civil War period battery at a site like this, and we do not favor that type of program for several reasons. First, the work would inevitably impact the archeological deposits. Second, the area is too dynamic to make such a restoration lasting, except through the use of non-period construction techniques, thereby falsifying the restoration. Third, restoration would increase maintenance, personnel time, and costs at the site. Fourth, restoration would impact the site's natural beauty and be incompatible with natural preservation goals.

### ***5) Maintain Viewshed***

Folly Island residents expressed concern for the viewshed looking toward Morris Island and the Lighthouse. They were concerned with the possibility of cell towers and other intrusions on the island's beauty. While CCPRC does not have oversight on all aspects of the current viewshed, it should be alerted to this concern and be sensitive to the issue and work to preserve this vista. The acquisition of Morris Island by CCPRC should facilitate this maintenance.

### ***6) Reduce Coast Guard Presence***

Currently there are nine concrete foundations and other man-made features on 38CH1213 related to the Coast Guard Station. At the present time, at least one feature is a covered and partially subsurface feature that retains water and attracts litter (and probably vermin). It is probably dangerous. Furthermore, all of the concrete features are covered in graffiti. The National Register Nomination for 38CH1213 states that these structures are not significant (Rust 2003:6-7). It is SCIAA's opinion that the CCPRC should remove these features, returning this area to a more natural setting.

### ***7) Alter Current Trail System and Maintain***

A system of trails already exists within the dunes at Little Folly Island. These trails are numerous and should be mapped. An analysis of these trails should then be conducted so as to determine which provide recreational hiking and beach access versus others that could and should be closed to maintain natural resource integrity and protection of archeological resources. This study should include data regarding any new trails that are being created by pedestrian traffic. After study, a new system of trails should be created that integrate, as best as possible, the natural flow of beach traffic and hiking, while maintaining traffic control. Maintenance of those trails that remain open should be conducted so as to encourage their use, keeping the public on these paths and discouraging wandering off the paths. Perhaps a natural fencing (native shrubs) could be used to discourage the creation of new paths. As mentioned wooden viewing platforms should be built not only for interpretation but also for site preservation. By leading traffic to these platforms while discouraging new trails, dune integrity could be maintained.

### 8) *Link Preservation Efforts With Morris Island*

All efforts to preserve, interpret, and maintain Little Folly Island should be integrated with preservation, interpretation and maintenance efforts at Morris Island. Since the two sites are historically linked, so should future preservation efforts. Creating the Lighthouse Inlet Heritage Preserve was a wise decision in this regard.

### Summary

Little Folly Island at Lighthouse Inlet is a popular recreation area that contains Civil War archeological resources. The site is now under the protection and management of several state and federal agencies. The site should be managed in such a manner that the resources are preserved while the public enjoys the site appropriately. We believe that this can occur without adverse impact to the resources with carefully coordinated planning and management. The following list provides a summary of the recommendations and a time table in order of priority:

|  |             |           |
|--|-------------|-----------|
| 1) Site Monitoring Program                             | CCPRC       | Immediate |
| 2) Alter Current Trail System and Maintain             | CCPRC       | Year 1    |
| 3) Increase Public Use, Access                         | CCPRC       | Year 2    |
| 4) Create Interpretive Program and<br>Maintain Signage | CCPRC       | Year 2    |
| 6) Reduce Coast Guard Presence                         | CCPRC-SCDNR | 5 Years   |
| 7) Additional Archeology                               | CCPRC-SCDNR | 10 Years  |
| 8) Maintain Viewshed                                   | CCPRC-SCDNR | on going  |
| 9) Link Preservation Efforts With Morris Island        | CCPRC-SCDNR | on going  |

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**Folly Island North– Catalog.**  
**James Legg**

| NUMBER     | DESCRIPTION   | QTY. |
|------------|---|------|
|            |   | 1    |
| 01 001 001 | Bottle fragment, aqua, body fragment from figural “cathedral” food bottle.  | 1    |
| 02 001 001 | Large mammal tooth.   | 1    |
| 02 002 001 | Bottle fragment, dark brown, neck of whiskey bottle.  | 1    |
| 02 003 001 | Bottle fragment, olive green, body/basal fragment of whiskey bottle.  | 1    |
| 02 003 002 | Large mammal tooth.   | 1    |
| 02 003 003 | Large mammal tooth.   | 1    |
| 02 004 001 | Bottle fragment, green, neck of “Champagne” style wine bottle, applied lip.   | 1    |
| 02 005 001 | Bottle fragment, dark olive green, body fragment from whiskey(?) bottle.  | 1    |
| 02 006 001 | Mammal bone.  | 1    |
| 02 006 002 | Mammal bone.  | 1    |
| 02 007 001 | Mammal bone.  | 1    |
| 02 008 001 | Mammal hoof core.   | 1    |
| 02 009 001 | Bottle fragment, dark olive green, partial base of a whiskey bottle, embossed “WILMINGTON...” [GLASS WORKS].                              | 1    |
| 02 010 001 | Large mammal tooth.   | 1    |
| 03 001 001 | Axe head, single bit, poll is very battered/crushed, from a dry environment.  | 1    |
| 03 002 001 | U.S.(?).577/.58 cal. rifle-musket bullet, unfired(?), from wet environment and badly corroded, 26.1g.                                     | 1    |
| 03 003 001 | C.S.(?) rifle-musket bullet – from wet environment and massively corroded, but base detail indicates a .54 cal. Gardner bullet; 19.3g.    | 1    |
| 03 004 001 | .69 cal. musket ball, chewed, 22.4g, from wet environment.  | 1    |
| 03 005 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired(?), from wet environment and badly corroded, 27.4g. | 1    |
| 03 006 001 | UID rifle-musket bullet, about .577/.58 cal., from wet environment and massively corroded, 20.6g.   | 1    |
| 03 007 001 | U.S.(?) .577/.58 cal. rifle musket bullet, fired, from wet environment and badly corroded, 26.4g.   | 1    |
| 03 008 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired(?), from wet environment and badly corroded, 26.6g. | 1    |
| 03 009 001 | Grommet, brass, 17.9mm (Civil War?).  | 1    |
| 03 010 001 | Melted lead, 21.0g.   | 1    |
| 03 011 001 | U.S. .577/.58 cal. rifle-musket bullet, fired and mushroomed,   | 1    |



|            |   |   |
|------------|---|---|
|            | 25.6g, from dry environment.  |   |
| 03 012 001 | U.S.(?) .577/.58 cal. rifle musket bullet, fired, 30.3g, from dry environment.  | 1 |
| 03 013 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 6-spoke mark, unfired, dia. .563," 33.8g, from dry environment.                   | 1 |
| 03 014 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .564," 33.2g, from dry environment.                   | 1 |
| 03 015 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, partially melted, dia. .566," 33.8g, from dry environment. | 1 |
| 02 016 001 | UID ferrule or pole tip, tapered sheet brass tube, length 60mm, ends about 26mm and 23mm in dia., preserved wood and iron concretion in interior. | 1 |
| 03 017 001 | Leather rivet, brass, head dias. 12.1mm, 12.5mm, retains leather fragments, type used for cartridge boxes and other accoutrements.                | 1 |
| 03 018 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .568," 31.0g, from dry environment.  | 1 |
| 03 019 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .562," 32.4g, from dry environment.  | 1 |
| 03 020 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .562," 33.2g, from dry environment.                   | 1 |
| 03 020 002 | U.S. .69 cal. rifled musket bullet, standard, truncated cone cavity, unfired, dia. .681," 43.4g, from dry environment.                            | 1 |
| 03 021 001 | UID .577/.58(?) cal. rifle-musket bullet, heavily carved with most of skirt removed, 24.8g, from dry environment.                                 | 1 |
| 03 022 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .560," 31.4g, from dry environment.  | 1 |
| 03 023 001 | Enfield rifle-musket/rifle trigger guard fragment, brass, rear tang only, broken at second screw hole, length 83.3mm.                             | 1 |
| 03 024 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .572," 33.3g, from dry environment.  | 1 |
| 03 024 002 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .571," 32.5g, from dry environment.  | 1 |
| 03 024 003 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .575," 33.1g, from dry environment.  | 1 |
| 03 024 004 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .569," 32.8g, from dry environment.  | 1 |
| 03 024 005 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .570," 31.7g, from dry environment.  | 1 |
| 03 024 006 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .569," 32.9g, from dry environment.  | 1 |
| 03 024 007 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .570," 33.6g, from dry environment.  | 1 |
| 03 024 008 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .568," 32.1g, from dry environment.  | 1 |
| 03 024 009 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .566," 31.1g, from dry environment.  | 1 |

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|            | 32.1g, from dry environment.  |   |
| 03 024 010 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .567," 32.0g, from dry environment.                              | 1 |
| 03 024 011 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .570," 32.7g, from dry environment.                              | 1 |
| 03 024 012 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, partially melted and incomplete, 25.4g, from dry environment.         | 1 |
| 03 024 013 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.8g, from dry environment. | 1 |
| 03 024 014 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .565," 33.8g, from dry environment. | 1 |
| 03 024 015 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .567," 32.7g, from dry environment. | 1 |
| 03 024 016 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.8g, from dry environment. | 1 |
| 03 024 017 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.6g, from dry environment. | 1 |
| 03 024 018 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.3g, from dry environment. | 1 |
| 03 024 019 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 34.0g, from dry environment. | 1 |
| 03 024 020 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .567," 32.8g, from dry environment. | 1 |
| 03 024 021 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.3g, from dry environment. | 1 |
| 03 024 022 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.9g, from dry environment. | 1 |
| 03 024 023 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .567," 32.0g, from dry environment. | 1 |
| 03 024 024 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .565," 32.9g, from dry environment. | 1 |
| 03 024 025 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.2g, from dry environment. | 1 |
| 03 024 026 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .568," 33.5g, from dry environment. | 1 |
| 03 024 027 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .565," 33.7g, from dry environment. | 1 |
| 03 024 028 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .567," 34.2g, from dry environment. | 1 |
| 03 024 029 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 32.6g, from dry environment. | 1 |
| 03 024 030 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.0g, from dry environment. | 1 |
| 03 024 031 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .564," 33.2g, from dry environment. | 1 |
| 03 024 032 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-  | 1 |

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|            | spoke mark, unfired, dia. .566," 33.5g, from dry environment.  |   |
| 03 024 033 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .565," 33.4g, from dry environment.  | 1 |
| 03 024 034 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 35.0g, from dry environment.  | 1 |
| 03 024 035 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .565," 32.1g, from dry environment.  | 1 |
| 03 024 036 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .565," 32.9g, from dry environment.  | 1 |
| 03 024 037 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .566," 33.4g, from dry environment.  | 1 |
| 03 024 038 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .565," 33.3g, from dry environment.  | 1 |
| 03 024 039 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .567," 33.2g, from dry environment.  | 1 |
| 03 024 040 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, overweight - scrap lead adhering to ogive, dia. .564," 33.9g, from dry environment. | 1 |
| 03 024 041 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, skirt battered, dia. .566," 33.1g, from dry environment.                            | 1 |
| 03 024 042 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, skirt battered, dia. .566," 33.3g, from dry environment.                            | 1 |
| 03 024 043 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, skirt mashed nearly flat, dia. .565," 33.3g, from dry environment.                  | 1 |
| 03 024 044 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, partially melted, dia. .566," 32.4g, from dry environment.                          | 1 |
| 03 024 045 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, partially melted, dia. .565," 32.7g, from dry environment.                          | 1 |
| 03 024 046 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, partially melted, 31.7g, from dry environment.                                      | 1 |
| 03 024 047 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, partially melted, 29.3g, from dry environment.                                      | 1 |
| 03 024 048 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, melted remnant, 16.3g, from dry environment.  | 1 |
| 03 024 049 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 6-spoke mark, unfired, dia. .567," 35.1g, from dry environment.  | 1 |
| 03 024 050 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 6-spoke mark, unfired, dia. .565," 34.5g, from dry environment.  | 1 |

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| 03 024 051 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 6-spoke mark, unfired, partially melted, 35.0g, from dry environment.   | 1 |
| 03 024 052 | .69 cal. musket ball, unfired, dia. .646," 25.8g, from dry environment.   | 1 |
| 03 024 053 | .69 cal. musket ball, unfired, dia. .653," 26.1g, from dry environment.   | 1 |
| 03 024 054 | U.S. .69 cal. rifled musket bullet, standard, plug cavity, unfired, dia. .675," 41.0g, from dry environment.                            | 1 |
| 03 024 055 | U.S. .577/.58 cal. rifle-musket bullet, standard, fired, 29.5g, from dry environment.   | 1 |
| 03 024 056 | UID rifle-musket bullet, partially melted, 31.4g, from dry environment.   | 1 |
| 03 024 057 | UID rifle-musket bullet, melted remnant, 19.2g, from dry environment.   | 1 |
| 03 024 058 | Melted lead, 19.2g, from dry environment.   | 1 |
| 03 024 059 | Melted lead, 7.9g, from dry environment.  | 1 |
| 03 024 060 | Melted lead, 9.7g, from dry environment.  | 1 |
| 03 025 001 | Suspenders buckle, brass, embossed "PATENT 1855," width 33mm.   | 1 |
| 03 026 001 | Cast iron cooking vessel leg and remnant of flat-bottomed vessel, triangular cross section, length of leg 60mm, from dry environment.   | 1 |
| 03 027 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .564," 33.3g, from dry environment.         | 1 |
| 03 028 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 6-spoke mark, unfired, dia. .566," 35.0g, from dry environment.         | 1 |
| 03 029 001 | U.S..577/.58 cal. rifle-musket bullet, standard, pointed nose, deep parabolic cavity, unfired, dia. .574," 28.4g, from dry environment. | 1 |
| 03 030 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .565," 33.4g, from dry environment.                                      | 1 |
| 03 031 001 | UID brass trigger plate(?), 22mmx70mm, with two holes for wood screws.  | 1 |
| 03 032 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .563," 32.3g, from dry environment.                                      | 1 |
| 03 033 001 | Grommet, brass, standard for U.S. rubber blanket/shelter half, 14.8mm.  | 1 |
| 03 034 001 | U.S..577/.58 cal. rifle-musket bullet, standard, pointed nose, deep parabolic cavity, unfired, dia. .577," 31.0g, from dry environment. | 1 |
| 03 035 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .560," 31.6g, from dry environment.                                      | 1 |
| 03 036 001 | U.S. enlisted men's coat button ("eagle button"), large size, 19.5mm, no backmark.  | 1 |
| 03 037 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .571," 32.3g, from dry environment.                                      | 1 |
| 03 038 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .566," 31.6g, from dry environment.                                      | 1 |

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|            | 32.0g, from dry environment.   |   |
| 03 039 001 | UID rifle-musket bullet, from wet environment and massively corroded, 19.1g  | 1 |
| 03 040 001 | UID rifle-musket bullet, fired, from wet environment, heavily concreted, 30.4g.  | 1 |
| 03 041 001 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 6(?)-spoke mark, unfired(?), from wet environment and badly corroded, 26.0g.   | 1 |
| 03 042 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .568,” 31.3g, from dry environment.   | 1 |
| 03 043 001 | U.S.(?) .577/.58 cal.(?) rifle-musket bullet, fired, 30.5g, from dry environment.  | 1 |
| 03 044 001 | U.S..577/.58 cal. rifle-musket bullet, standard, unfired, dia. .565,” 32.2g, from dry environment.   | 1 |
| 03 044 002 | U.S..577/.58 cal. rifle-musket bullet, Custer machine mfg. with 5-spoke mark, unfired, dia. .568,” 33.9g, from dry environment.  | 1 |
| 04 001 001 | Artillery shell fragment, iron, fragment of the ogive of a rifle projectile (30 pounder?), with fuse well.   | 1 |
| 04 001 001 | Artillery shell fragment, iron, small body fragment of a rifle projectile (30 pounder?).   | 1 |
| 04 001 001 | Artillery shell fragment, copper, fragment of a Mullane sabot from a 5.87” (rifled 24-pounder) projectile, about 25% of the plate including one stud and part of the central bolt hole, very poor rifling marks. | 1 |
| 05 000 000 | No material collected.   |   |
| 06 001 001 | Cut spike, iron, tip missing, 43mm, from dry environment.  | 1 |
| 06 001 002 | Cut spike, iron, tip missing, 60mm, from dry environment.  | 1 |
| 06 001 003 | Cut spike, iron, 91mm, from dry environment.   | 1 |
| 06 001 004 | Cut spike, iron, tip missing, 85mm, from dry environment.  | 1 |
| 06 001 005 | Cut spike, iron, tip missing, 99mm, from dry environment.  | 1 |
| 06 001 006 | Cut spike, iron, tip missing, bent, 130mm, from dry environment.   | 1 |
| 06 001 007 | Cut spike, iron, tip missing, 157mm, from dry environment.   | 1 |