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Savannah, Georgia

Fort Pulaski National Monument
Cockspur Island Historic District
Cultural Landscape Report



Cultural Resources
Southeast Region

Cockspur Island Historic District

Fort Pulaski National Monument

Cultural Landscape Report

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About the cover: Southwest corner, Fort Pulaski, 1863.

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Cockspur Island Historic District
Cultural Landscape Report

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Foreword

We are pleased to make available this cultural landscape report, part of our ongoing effort to provide comprehensive documentation for the landscapes and historic structures of National Park Service units in the Southeast Region. A number of individuals and institutions contributed to the successful completion of this work. We would particularly like to thank the staff at Fort Pulaski National Monument for their assistance throughout the process. We hope this study will be a useful tool for park management in continuing efforts to preserve the cultural landscape and to others interested in the significance of the park's many cultural resources.

Dan Scheidt, Chief
Cultural Resources Division
Southeast Regional Office
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Introduction

Management Summary

Fort Pulaski National Monument is located in Chatham County, Georgia, approximately 15 miles east of Savannah. The National Monument boundary encompasses approximately 5,623 acres on Cockspur and McQueens Islands. Cockspur Island, the location of Fort Pulaski and other significant cultural resources, divides the Savannah River into northern and southern channels. McQueens Island is south of Cockspur and connected to it by the South Channel Bridge. Tybee Island, the location of the Federal batteries during the Battle of Fort Pulaski, is southeast of Cockspur.

President Calvin Coolidge declared Fort Pulaski and its defining earthworks a national monument on October 24, 1924. Its transfer from the War Department to the National Park Service occurred in 1933. By 1939, its boundary had been extended to include all of Cockspur Island and 5,000 acres of marshland on McQueens Island. In 1959, the Cockspur Island Lighthouse Reservation was added to the monument, bringing the total acreage to 5,623. Within this setting, the monument contains a broad range of significant historic and natural resources.

Fort Pulaski National Monument was listed in the National Register of Historic Places in 1975 under Criterion A (Associated with events that have made a significant contribution to the broad patterns of our history) and Criterion C (Embodies distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic values). The contributing resources listed in the nomination include archeological, structural, and landscape features dating to several periods and themes. In addition to the contributing resources listed in 1975, a number of significant landscape resources, primarily vegetation, are managed by the park. There is also a significant ethnographic component of the district that has yet to be documented.

This cultural landscape report (CLR) documents the physical development of Cockspur Island from prehistoric times through the beginning of construction of Fort Pulaski in 1829 to the present. A site history is followed by an evaluation of Cockspur Island's historic and contemporary landscape characteristics, such as changes in spatial organization, circulation, and vegetation. A description of the current conditions of the property and an analysis of historical significance and integrity follow. With an understanding of the historic fabric, character-defining features of the cultural landscape are identified. The report then describes treatment issues and makes recommendations to direct the active management of the cultural landscape. This study provides the documentation needed to return portions of the Cockspur Island cultural landscape to a more historically accurate setting.

In 1998, the NPS Southeast Regional Office (SERO) and park management began Fort Pulaski's first General Management Plan (GMP), designed to address long-range resource management and visitor services needs, as well as park development goals. The project was put on hold when NPS planning staff were diverted to the Cumberland Island National Seashore wilderness designation controversy. The GMP process resumed in 2003 but was suspended again in 2005 when Superintendent

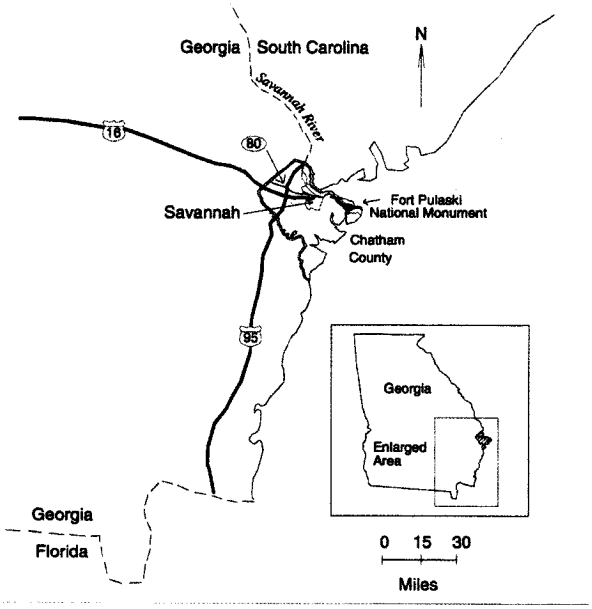


FIGURE 1. Location map, Fort Pulaski National Monument.

John Breen retired. In 2006, the GMP process resumed, and a preferred alternative has been chosen that focuses on the April 1862 period of significance in terms of both the landscape and interpretive programs. The CLR treatment recommendations have been coordinated with the proposed preferred alternative.

Historical Summary

There is sparse documentation about the human occupation and use at Cockspur Island during the prehistoric era. On nearby Whitemarsh and Wilmington Islands, archeological investigations have shown that humans resided in the area during the Middle Woodland (c. 500 B.C. to A.D. 500) and Late Woodland (c. A.D. 500 to A.D. 1150) periods. The Euchee (Yuchi) Indians lived on Tybee Island, just east of Cockspur Island, when Spain colonized the Georgia coast in the early 1500s.[1]

Priests often accompanied these early explorers to convert any American Indians to the Catholic faith. Jesuit and later Franciscan missionaries established missions on the Georgia coast. The northernmost mission in 1660 was Mission Santa Catalina de Guale, about thirty miles south of Cockspur Island. The Franciscan missions flourished until around 1670, when the settlement of the Carolina colony led to increasing conflict between the British, the Spanish, and their respective Indian allies. A series of mission raids by English-allied Indians pushed the Spanish farther and farther south. From 1684 to the early 1730s, Spain, France, and England all vied to possess Georgia.[2]

Beginning in 1761, a series of forts was built on Cockspur Island to protect Savannah. The first two forts, named George and Greene, did not survive. The construction of Fort Pulaski began in 1829 as part of the Third System of United States Coastal Defense. Third System fortifications were planned and built to protect the eastern seaboard cities after the British burned the nation's capital during the War of 1812.

The completion of Fort Pulaski was officially announced in 1847. Early in its construction era, Robert E. Lee, newly graduated from West Point, was sent to Fort Pulaski for his first assignment. Lee began the system of drainage ditches and dikes that surround the fort, made numerous surveys, and located the permanent site for the fort. It is Lieutenant Joseph K. F. Mansfield, however, who deserves the credit for the construction of the fort and the drainage system. He served on Cockspur Island from 1831 to 1845. The completion of the dike system encircling the fort occurred from 1846 to 1851, under the direction of Lieutenant, later Captain, Jeremy Gilmer, who was in command of Fort Pulaski from 1848-1858.

Fort Pulaski was an impressive accomplishment for its time. The masonry walls, thought to be invincible, were 7 to 11 feet thick and 32 feet high. 25,000,000 bricks were used in the fort's construction.[3] The best military engineering principles and the finest joinery and masonry techniques of the day were used in its construction. Slave labor, rented from nearby plantations, was used for most of the hardest work, such as excavating the ditches.

Yet the siege and rapid reduction of Fort Pulaski in April 1862 by heavy rifled artillery of the Federal Army, which had never before been attempted, proved that masonry forts were now vulnerable to these new weapons. As a result, masonry forts were becoming obsolete.

In 1889, a quarantine station was established on the northwestern portion of Cockspur Island, operated by the U.S. Public Health Service. Battery Horace Hambright was constructed north of Fort Pulaski in 1898 for the protection of the North Channel of the Savannah River.

During the first quarter of the twentieth century, the fort fell into disrepair. Fort Pulaski's neglect continued until 1933 when President Franklin D. Roosevelt's Executive Order 6166 transferred all federally managed historic sites, monuments, and battlefields to the National Park Service (NPS).

1. J. Faith Meador, *Fort Pulaski National Monument Administrative History* (Atlanta: Southeast Regional Office, 2003), 3.
2. Louis Torres, *Historic Resource Study Cumberland Island National Seashore* (Denver: Denver Service Center, 1977), 16; Meador, 3; www.cr.nps.gov/seac/pulaski/0-introduction/index.htm.
3. Historic American Building Survey (HABS), *History of Fort Pulaski and Cockspur Island. Addendum to Fort Pulaski* (Washington, D. C., HABS No. GA-2158, 1998, photocopy), 10.

President Roosevelt's New Deal programs launched several new federal agencies and programs that put thousands of unemployed men and women to work in the midst of the Great Depression. In May 1934, the NPS was authorized to establish Civilian Conservation Corps (CCC) Camp 460 on the northwest shore of Cockspur Island directly east of the Public Health Service Quarantine Station. Major projects included the rebuilding of the dike and ditch system, restoration of the parade ground, and trail construction.[4]

During the same time, Public Works Administration (PWA) personnel were working on fort restoration, which was completed in 1936. Another significant project was the construction of the South Channel Bridge and entrance road from McQueens Island to Cockspur. Up until this time, access to Cockspur Island was by boat.

Closed during World War II and its aftermath, by 1956, Fort Pulaski National Monument had suffered from years of neglect. To address these problems service-wide, the NPS created the Mission 66 program in 1956. In 1959, the Park determined the need for a separate facility for visitor accommodations. Fort Pulaski's visitor center opened to the public on October 25, 1964.

In 1994, an interagency agreement between the NPS and the Army Corps of Engineers allowed Fort Pulaski's historic dike system to be returned to its original height and configuration, an important feature of the historic landscape.

Study Boundary

Cockspur Island is a mile-long by half-mile-wide and a combination of mud flats and tidal marshes. To the north and south, the island is bordered by the two channels of the Savannah River and to the east, by the Atlantic Ocean. Although the accretion of dredge materials and other sediments joined the western side of Cockspur with neighboring Long Island at the beginning of the twentieth century, a breach occurred in 2007 that separated the two islands once again. In addition, the construction of a system of dikes and ditches on the island and the deposition of sand and mud dredged from the Savannah River has significantly altered the island's topography. Whereas Cockspur was originally a salt marsh interspersed with hammocks, today it is more than forty percent dry land.[5]

The Cockspur Island Historic District National Register boundary encompasses all of Cockspur Island. This cultural landscape report is limited to a study of the Cockspur Island Historic District.

Project Methodology

The Southeast Regional Office (SERO) cultural landscapes branch of the Cultural Resources Division completed the study. SERO staff performed archival research, prepared the site history, documented existing conditions, and prepared comparative analyses, integrity evaluations, and treatment recommendations. The site history, existing conditions, and analysis and evaluation sections identify the historical values associated with the landscape, document extant landscape characteristics and features, and define the significance and integrity of the landscape. Treatment recommendations will enable the park to better manage its cultural landscape.

Archival and existing conditions research was conducted during three site visits: one in July 2005, one in March 2006, and one in May 2007 at Fort Pulaski National Monument. During these site visits, SERO staff met with key park staff to discuss management issues and treatment concerns regarding the cultural landscape. During both site visits, SERO staff ground truthed and annotated base maps and completed digital photography as part of the existing conditions survey.

SERO staff completed comparative analyses and integrity evaluations by comparing historical information—taken from the written site history and historic maps and photographs—to existing conditions data in order to understand how the landscape changed over time. The landscape characteristics and associated features, values, and associations that make a landscape historically significant were identified. Integrity evaluations used the seven aspects of historic integrity as described in A Guide to Cultural Landscape Reports and standards set by the National Register of Historic Places.

4. Superintendent's Annual Report, 1936, FPNM archives.

5. HABS, 2.

Appropriate treatment recommendations were developed from the condition assessments and the results of the comparative analyses and integrity evaluations. Recommendations responded to existing issues and offered suggestions that would preserve and enhance the park's historic landscape character, as well as improve interpretation efforts.

The best documentation and evaluation of the landscape resources is the cultural landscape inventory (CLI) completed in 1997. Other park planning documents consulted include the Fort Pulaski National Monument administrative history, the National Register nomination, and several reports done by the Southeast Archeological Center (SEAC). Additional archival research for the CLR was undertaken at the FOPU archives.

In addition to park planning documents, *Siege and Reduction of Fort Pulaski* by Brig. Gen. Quincy O. Gillmore and *Sumter is Avenged: the Siege and Reduction of Fort Pulaski* by Herbert M. Schiller, as well as numerous NPS reports were consulted.

Summary of Findings

The cultural landscape of the Cockspur Island Historic District is dominated by Fort Pulaski— the location of the April 1862 battle— and the surrounding historic dike and ditch system. Today, the historic landscape of Cockspur Island is almost impossible to visualize. The setting of Fort Pulaski has changed considerably since 1862 when the island was devoid of trees and shrubs. In a mild coastal climate such as Cockspur Island's, plants grow, mature, and die at an accelerated rate. The opportunistic encroachment of native plants and the spread of exotic species are all factors that have changed the setting, obscuring the dominance of the fort in the landscape and blocking important vistas to both the North and South Channels of the Savannah River. The open character of the landscape at the time of the April 1862 battle is a character-defining feature.

The period of significance for the Cockspur Island Historic District cultural landscape is 1829-1895, beginning with the construction of Fort Pulaski in 1829 and ending with the last significant change to the demilune in 1895. Fort Pulaski is the best preserved and most original of a system of eastern coastal forts designed by the French military engineer Simon Bernard while in the employ of the U. S. Army Corps of Engineers. The dike and ditch system was begun in 1830, under the direction of Lieutenant Robert E. Lee, later commander in chief of the Confederate Army. Captain Jeremy Gilmer, later Chief Engineer of the Confederate Army, was in command of Fort Pulaski from 1848-1858.

Its massive brick walls, backed by heavy piers, and vaulted casemates reflect the continuing search for security against increasingly large-caliber smoothbore cannon of the period. The best military engineering principles and the finest joinery and masonry techniques of the day were used in its construction. Yet the siege and rapid reduction of Fort Pulaski in April 1862 by heavy rifled artillery of the Federal Army, which had never before been attempted, proved that masonry forts could no longer provide an effective coastal deterrent to a seacoast assault.

A secondary period of significance, from 1933-1942, includes the construction associated with the New Deal programs at Fort Pulaski. CCC and WPA workers carried out an extensive program of repair, restoration, and reconstruction on Cockspur Island. Significant projects included the restoration of Fort Pulaski, the repair and reconstruction of the historic dike and ditch system, and the construction of the South Channel Bridge, entrance road, parking area, and a system of trails north of the fort.

The overarching treatment recommended for the historic landscape is preservation of all identified resources. Restoration has been applied to a select number of features, primarily the restoration of the open character of the landscape by selective removal of vegetation to more accurately reflect the conditions at the time of the April 1862 battle and provide visitors a greater understanding of the Siege and Reduction of Fort Pulaski. Mitigation for tree loss would occur on a 2 for 1 basis.

Site History

Early History of Fort Pulaski

There is sparse documentation about the human occupation and use at Cockspur Island during the prehistoric era. There is no direct evidence putting people in the area of coastal Georgia before 10,500 B.C. This Paleo-Indian Period (10,500 to 8,000 B.C.) is characterized mainly through the identification of various stone tools, with the most emphasis placed on the different types of projectile points. These Paleo-Indian people lived a highly mobile existence, moving from place to place in search of food, water, and sources of rock to make their tools. Cockspur Island would have been entirely landlocked during Paleo-Indian times, but archeological surveys in nearby locales have yielded no evidence of habitation during this period.

Although there were few initial changes between the Paleo-Indian Period and the Archaic Period (8,000 to 1,000 B.C.), by the end of the period, Archaic people were building mounds, conducting long-distance trade, practicing small-scale farming, and creating ceramic and stone vessels for cooking and storage. The presence of shell middens on and around the Georgia Sea Islands indicates areas where late Archaic people were living and threw their trash. Although investigations of shell mounds on the north shore of McQueens Island did not yield any artifacts, the probability of finding Late Archaic sites at Fort Pulaski is much greater than that of any previous period.

The Woodland Period (1,000 B.C. to A.D. 1150) is generally thought to be a time when many of the innovations of the Late Archaic were refined or expanded. Mound building increased, groups began to settle down in specific areas, more durable pottery was made, and dependence on farmed foods rose. Projectile point size decreased, and by the Late Woodland, people were using bow and arrow to hunt. There is a good possibility that there are Woodland Period sites within Fort Pulaski National Monument, but no archeological testing has been performed.

During the Mississippian Period (A.D. 1150 to European Contact), Native American culture reached a new level of complexity in the southeastern United States. Large mounds were built in many places, acting as a central location around which increasing populations could settle. Most sites related to this time were located along large river drainages such as the Savannah River, and many sites such as Irene, Oemler, and Walthour were located in the general vicinity of Cockspur Island. There is a good possibility that similar materials could be found within the monument boundaries if archeological investigations were carried out.[1]

The Euchee Indians lived on Tybee Island, just east of Cockspur Island, when Spain colonized the Georgia coast in the early 1500s.[2] Priests often accompanied these early explorers to convert American Indians to the Catholic faith. This task was initially attempted by Jesuit missionaries, but after numerous setbacks and massacres, the Jesuits abandoned their missions.

The Spaniards felt that it was of prime importance to control the Indians, as many of them were friendly with the French. Beginning in the 1580s, Spanish friars of the Franciscan Order were more successful in establishing missions on the Georgia coast, and assimilation of coastal indigenous chiefdoms into greater Spanish Florida occurred. The northernmost mission in 1660 was Mission Santa Catalina de Guale, about thirty miles south of Cockspur Island. The Franciscan missions flourished until around 1670, when the settlement of Carolina led to increasing conflict between the British and Spanish and their respective Indian allies. A series of mission raids by English-allied Indians pushed the Spanish farther and farther south. By 1686, the Spanish governor Cabrera ordered all missions north of Amelia Island to be removed.[3]

1. www.cr.nps.gov/seac/pulaski/0-introduction/index.htm.
2. Meador, 3.
3. Torres, 16.

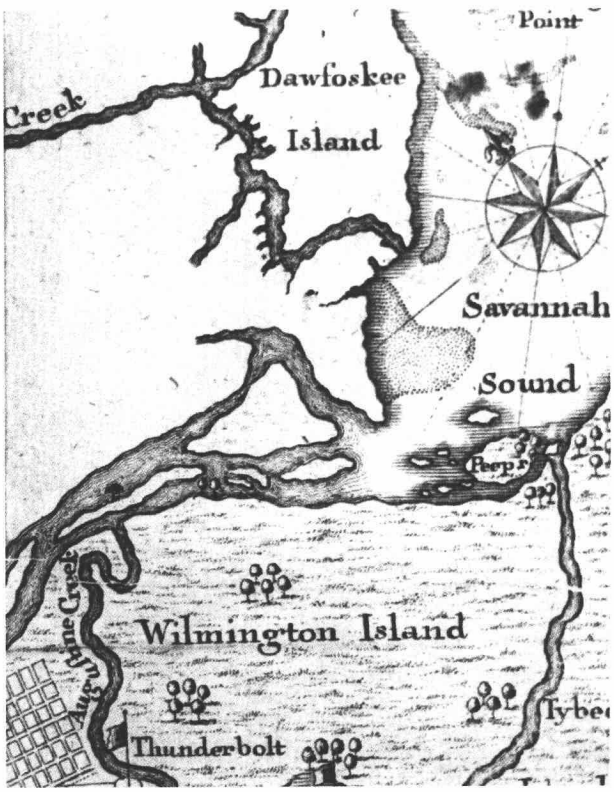


FIGURE 2. Detail of Peeper Island. (Hargrett Rare Book Room, University of Georgia)

On January 30, 1733, six British ships ferrying General James Oglethorpe and a group of settlers sailed up the Savannah River, past Cockspur Island, anchoring at Yamacraw Bluff, where they established Savannah. One of Oglethorpe's passengers on a later voyage in 1736 was John Wesley, founder of American Methodism. The party stopped at Cockspur Island, then called Peeper Island. According to Wesley's journal:

> We cast anchor near Tybee Island, which gave us a specimen of America. The pines, palms, and cedars running in rows along the shore, made an exceeding beautiful prospect, especially to us who did not expect to see the bloom of spring in the depth of winter. The clearness of the sky, the setting sun, the smoothness of the water, conspired to recommend this new world and prevent our regretting the loss of our native country.[4]

Wesley did not remain on the island but instead continued upstream to the town of Savannah. He remained in Savannah until December 1737, serving as the rector of Christ Church.

In 1754, King George commissioned William De Brahm and Henry Yonge as joint surveyors-general for the Georgia colony. They surveyed Cockspur Island in 1758 when Charleston planter Jonathan Bryan purchased 150 acres. At that time, a twenty-acre tract on the eastern portion of the island was reserved for public use.[5]

Fearing attack by the Spanish from Saint Augustine, Colonial leaders wanted King George to construct a fort on Cockspur Island to protect the growing port of Savannah. Construction of Fort George on the eastern end of Cockspur Island began in 1761 under the direction of William De Brahm. The fort, a small wooden palisade with a blockhouse in the center, provided some protection for the Savannah harbor, but, more frequently, activites related to customs and quarantine enforcement.[6]

In 1768, William Lyford established a pilot house approximately eighty yards northwest of Fort George.[7] By 1771, the fort was in poor condition and was abandoned in 1776 at the beginning of the Revolutionary War. The pilot house burned in 1774.

During the Revolutionary War, the British established a safe haven on Cockspur Island, and Savannah loyalists, including the Royal Governor of Georgia, James Wright, fled to the island for protection. Wright brought the great seal of the

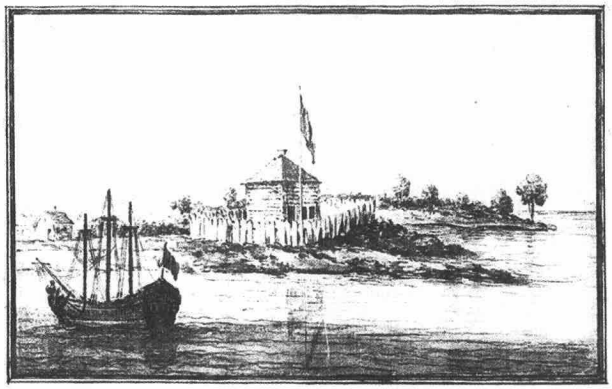


FIGURE 3. 1764 sketch of Fort George. (FOPU archives)

4. Ralston Lattimore, "Report on the Landing of John Wesley in America" (Savannah, GA: FPNM, 1949), 1.
5. Guy Prentice, "Trip Report on Site Condition Assessments, Fort Pulaski National Monument, GA, November 28-December 2, 2005" (Tallahassee, FL: SEAC, 2006), 49.
6. National Park Service, "Cultural Landscape Inventory (CLI) Fort Pulaski National Monument" (Atlanta, GA: Southeast Regional Office, 2000), 5.
7. Groh, Lou, *Fort Pulaski National Monument Archeological Overview and Assessment* (Tallahassee, FL: SEAC, 2000), 153.

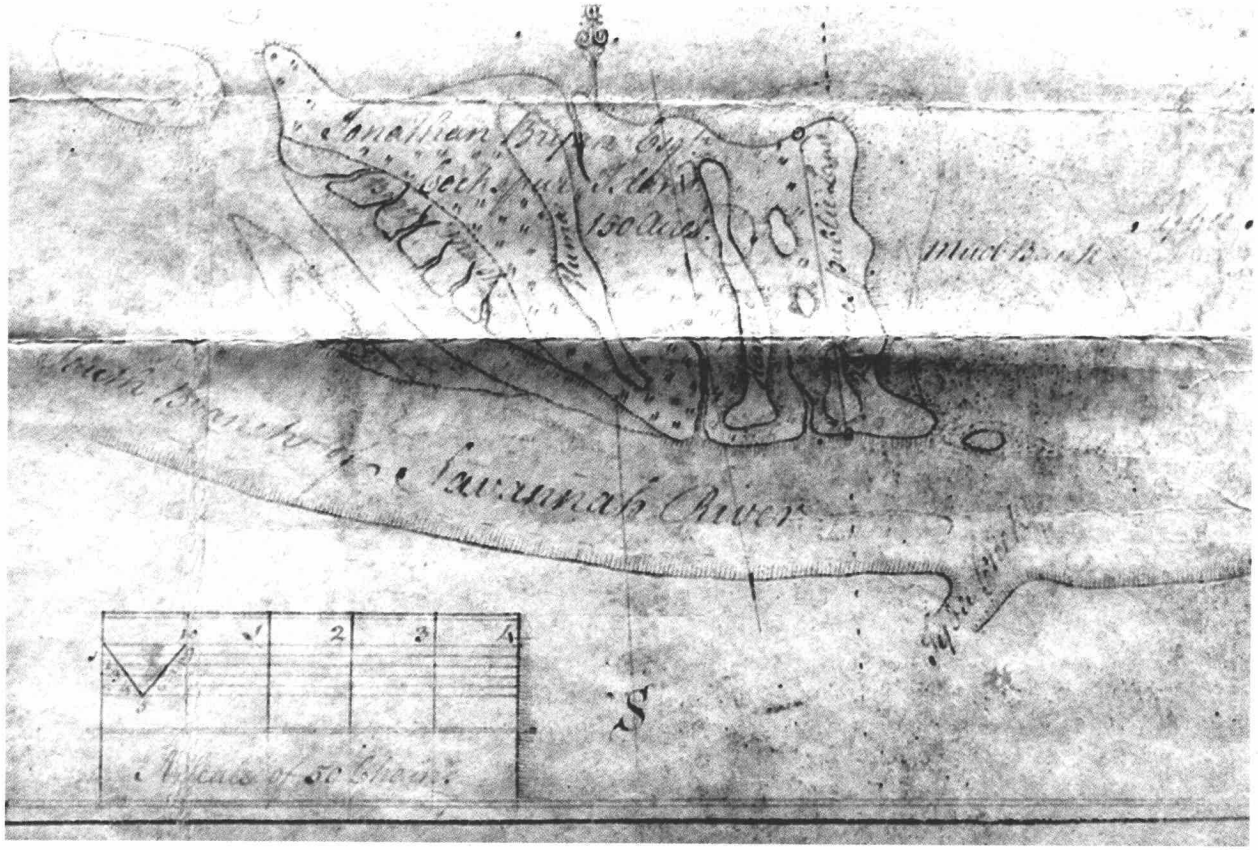


FIGURE 4. 1758 De Brahm and Yonge map showing 20-acre tract at east end of Cockspur Island. (National Archives)

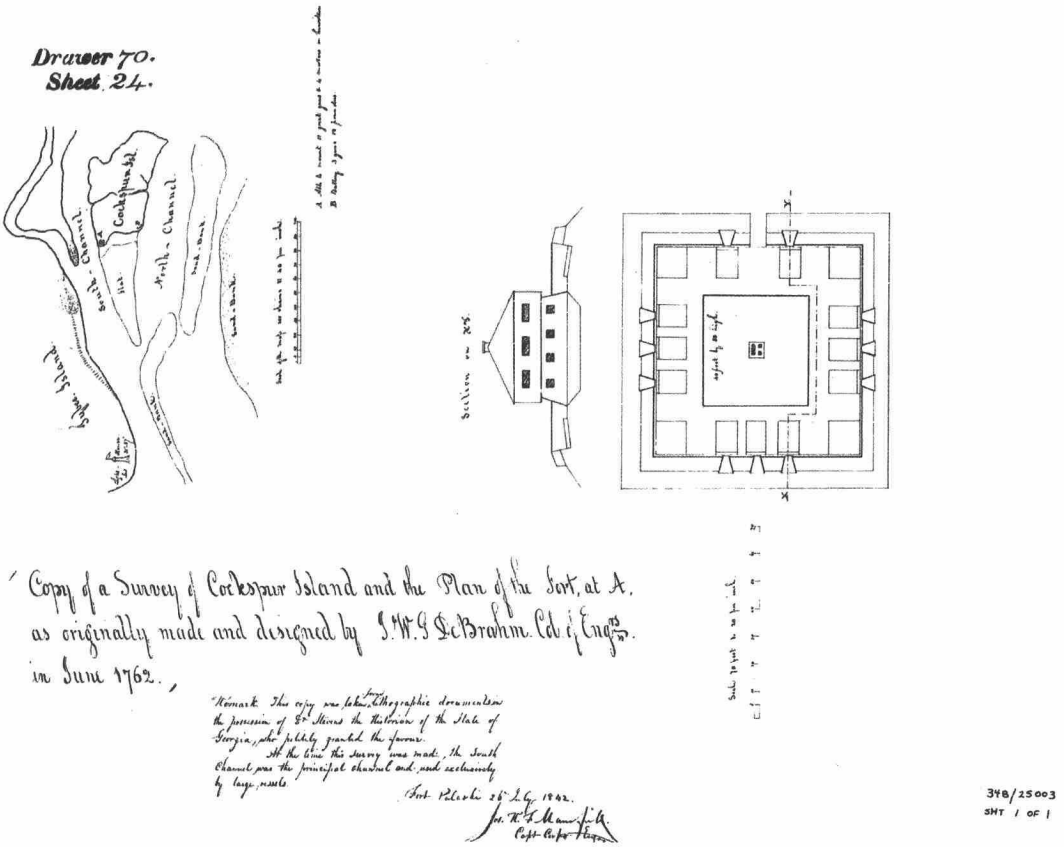


FIGURE 5. 1842 Mansfield map from 1762 De Brahm survey and plan of Fort George. R677, Drawer 70, Sheet 24 (National Archives)

Province with him, and Cockspur Island was temporarily made the capitol of the colony. When the British returned in 1778 to reoccupy Savannah, Cockspur Island was deserted.[8]

Early American Period (1777-1815)

With their independence won, the new nation focused its attention on securing the coastal borders. In 1794, Congress authorized the construction of what would later be known as the "First American System of Fortifications." As a result, the Secretary of War ordered new efficiently designed forts to be built to protect major U.S. coastal cities. These forts were impermanent wooden structures that consisted of batteries, magazines, and either barracks or two-story blockhouses containing small cannons on the upper story.

Under the First System, Cockspur Island acquired a new fort to protect Savannah. The six-gun-battery fort, named Fort Greene after Revolutionary War hero Nathanael Greene, was constructed between 1794 and 1795. Although earlier reports claimed that Fort Greene was constructed on or near the site of Fort George, an 1842 letter states that the fort was located on the site of the north wharf.[9]

Sixty-five officers and men inhabited the island in 1800. As with Fort George, Fort Greene served mostly as a quarantine station, particularly in response to the yellow fever epidemic raging in the West Indies at the time. In 1804, a hurricane swept through the area flooding the entire island and completely destroying the fort. Half of the soldiers perished in the storm, and the survivors were swept six miles inland to Wilmington Island.[10]

8. Ralston Lattimore, *Fort Pulaski National Monument* (Washington, D.C.: National Park Service, 1954), 2.
9. Prentice, 52.
10. Lattimore, *Fort Pulaski*, 3; CLI, 7.

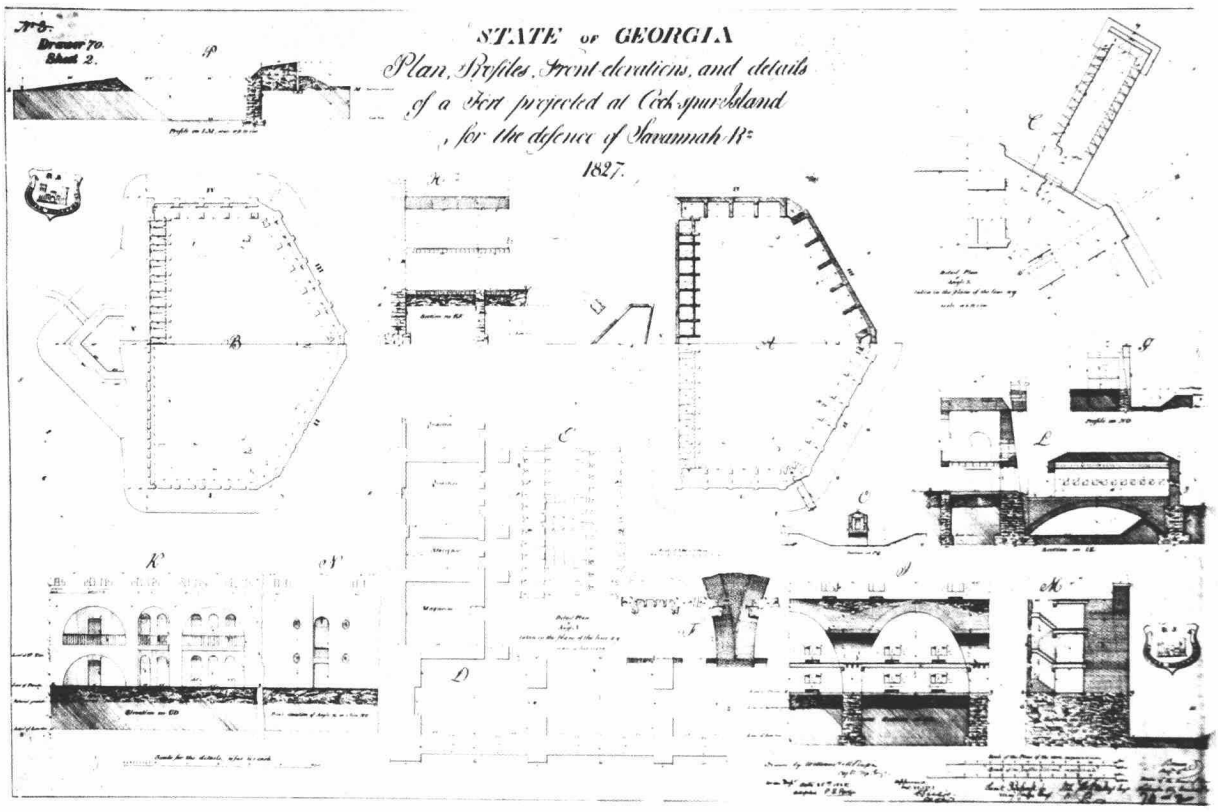


FIGURE 6. 1827 plan of Fort Pulaski. Record Group 77. Drawer 70, Sheet 2. (National Archives)

The Building of Fort Pulaski (1829-1847)

The British siege of Washington, D.C., during the War of 1812, quickly brought home the fact that America's first two coastal defense systems were ineffectual. At the urging of President Madison, Congress commissioned French military engineer Simon Bernard to design and install the Third System of United States Coastal Defense. Bernard proposed that a line of seacoast forts be built, including one at the mouth of the Savannah River. Cockspur Island was chosen as the site for a new fort in 1821 when the river approaches to Savannah were surveyed. Bernard prepared a plan for the fort, which was later revised, and actual construction began in 1829.[11]

Major Samuel Babcock, of the Corps of Engineers, arrived on Cockspur Island in December 1828 to take charge of construction. The first actual operations on the project began in February 1829. In November, Lieutenant Robert E. Lee, a new West Point graduate, came to Cockspur Island for his first military assignment. His official title was Acting Assistant Commissary of Subsistence under the direction of Major Babcock. Babcock was in failing health, and Lieutenant Lee took on more and more responsibilities as time went by. One of Lee's first tasks in January of 1830 was to survey the island. The result of this effort was a drawing titled "Sketch exhibiting the actual state of Cockspur Island and the operations for Jan. 1830." This survey has details of the high water marks; positions of the existing and proposed dikes, sluices, and embankments; and all existing and proposed structures. Lee was also engaged in the supervision of the excavations for the foundation of the fort. Lee returned to his home in Virginia for the summer of 1830 and returned to Cockspur Island the following November to a disheartening scene. An autumn storm destroyed the dike system, and efforts to repair the damage were largely undone by another storm in December and repairs had to be made again.

On December 18, 1830, the ailing Major Babcock was replaced by First Lieutenant Joseph K. F. Mansfield, who instructed Lee to conduct another survey of the island including the additions made by

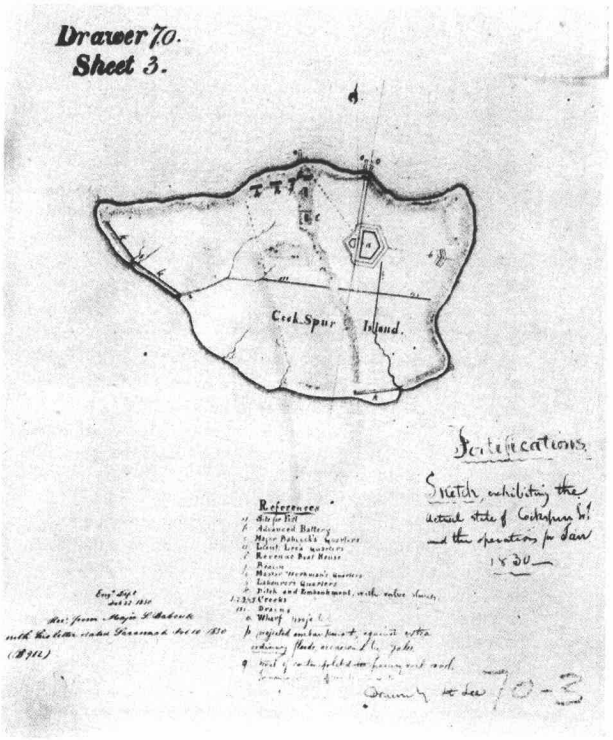


FIGURE 7. Map of Cockspur Island drawn by Lieutenant Robert E. Lee in 1830. Record Group 77, Drawer 70, Sheet 3. (National Archives)



FIGURE 8. Robert E. Lee, 1831. (National Archives)

Major Babcock. Mansfield was not certain that the island's soil would support such a large structure and, during this same time period, testing began for bearing capacity. By February, through Lee's survey

11. Lattimore, 6; Rogers Young, *A Connecticut Yankee on the Georgia Coast: The Engineering Epic of Fort Pulaski, 1821-1861* (Savannah, GA: FPNM, 1938), 5-16.

and Mansfield's soil observations, Colonel Joseph G. Totten, Chief of Engineers, agreed that the plan for the fort would indeed need to be changed. Lee's next task was to supervise the new excavation for the fort's foundation. Lee's stay at Cockspur Island ended on April 21, 1831, when he was ordered to return to Virginia.[12]

In 1833, the fort was named Pulaski in honor of the Revolutionary War hero, Polish Count Casimir Pulaski, who was killed at the Battle of Savannah on October 9, 1779. Progress at Fort Pulaski came to a halt in 1835, as Congress chose not to appropriate additional funds for construction. Relations with France had deteriorated, hostilities appeared imminent, and the government decided to use its resources to repair existing fortifications. Work resumed two years later. By the end of 1837, the masonry had been completed for the fort's north and northeast embrasures, as well as for seven embrasures on the fort's southeast face. By March 1838, the masonry of the casemate arches on the fort's north and northeast fronts had been "turned," and all of the fort's embrasures fully constructed.

The greatest mass of masonry to be laid occurred in 1839, with the exterior walls and the casemates almost complete. By late 1839, the central edifice of the five-sided fort neared completion.

A seventeen-months' suspension of construction work due to a lack of funds began in May 1840. By the end of 1841, wooden floors in the casemates had been laid and the casemate roofs finished. The interior walls were nearly finished, the main gate hung, and twenty, 32-pounder cannons were mounted in the battery casemates.

Construction activities continued on the island well into the 1840s. Work concentrated on finishing the interior and preparing the fort for its armament. Stairways within the fort were constructed, and the roofs over the casemates arches were leaded to keep rain out of the quarters. Two shot furnaces were built, and pintle blocks and stone segments for the fort's 56 barbette guns were laid.[13]

A severe nor'easter struck the island on October 5, 1842, while Mansfield was there with an overseer and just a few other people. In this journal, Mansfield wrote that it was the worst storm he had witnessed there in eleven years, with the tides sweeping over all but one of the dikes and breaching them in several areas. Lieutenant Barton S. Alexander reported to Fort Pulaski as Mansfield's assistant engineer at the height of the storm on October 6.[14]

The completion of the fort occurred between 1843 and 1847. Much of this work pertained to the fort's counterscarp walls and demilune. In 1844, the masonry of the demilune's north scarp and counterscarp walls was completed, and similar work had begun on the south face. In failing health, Mansfield returned to Connecticut in 1845. He had directed the construction of the fort's foundation, the erection of its walls, the building of the demilune (the large projecting outwork behind the main fortification), the excavation of the moat and the revetment of its sides with masonry, and laying out a dike and ditch system on the island. Lieutenant Alexander assumed supervision of the work after Mansfield's departure in July 1845. By 1846, the demilune's breast-high wall was finished, as were the demilune drawbridge and the drawbridge into the fort.

The completion of Fort Pulaski was officially announced in April 1847. All interior details had been completed, as well as the hanging of the massive sally-port and main drawbridge doors. The completion of the dike system encircling the fort occurred from 1846 to 1851, from plans made by Lieutenant Alexander in 1845. Lieutenant, later Captain, Jeremy Gilmer was in command of Fort Pulaski from 1848 to1858.[15]

Fort Pulaski was an impressive accomplishment for its time. The masonry walls, thought to be invincible, were 7 to 11 feet thick and 32 feet high. 25,000,000 bricks were used in the fort's construction. The bricks came from as close as Savannah to as far away as Baltimore. The granite came from New York and the sandstone from the Connecticut River Valley.[16] A moat, 7 feet deep and 30 feet wide, surrounded the fort and was crossed by two drawbridges.

12. Ibid., 4-17.
13. Ibid., 202-212.
14. Ibid., 209-215.
15. Ibid., 226-302.
16. HABS, 10; CLI, 13.

Slave labor, rented from nearby plantations, was used for most of the hardest work, such as excavating the ditches. Other workers included military servicemen, skilled masons, and carpenters, some of whom were recruited and brought down each fall from northern states.[17] Some of the slaves were also skilled masons and carpenters. A construction village housed and fed the officers and workers.

Cockspur Island Lighthouse Complex. As early as 1826, a recommendation was made to Congress to establish a beacon at the mouth of the Savannah River. The lighthouse, located on an islet just off the southeast shore of Cockspur Island, had been constructed by 1839 but was not outfitted with lamps and reflectors until 1849. A house for the lighthouse keeper was also constructed at this time. The Cockspur Island Lighthouse guided sailors through the river's South Channel. A hurricane destroyed the structure in 1854, but another lighthouse was built on the foundation in 1856.[18]

17. Meador, 7.

The Civil War Years (1860-1865)

In November 1860, Abraham Lincoln was narrowly elected to the presidency of the United States. A month later, South Carolina seceded from the Union. Georgians, taken with the idea of secession, were outraged when U.S. Army Major Robert Anderson reinforced Union forces stationed at Fort Sumter in Charleston harbor without notification to South Carolina. Georgia decided to defend its own maritime port of entry. Thus, on January 2, 1861, Governor Joseph E. Brown ordered the Georgia Volunteer Militia to take possession of the still ungarrisoned Fort Pulaski. Over the next few months, Confederate troops and slaves from nearby plantations worked to prepare the fort against Federal attack. In November 1861, Robert E. Lee returned to Fort Pulaski as a brigadier general and military advisor to Confederate President Jefferson Davis. In command of forces in South Carolina, Georgia, and Florida, Lee's strategy of defense involved relocating seacoast island forces to the

18. CLI, 13.

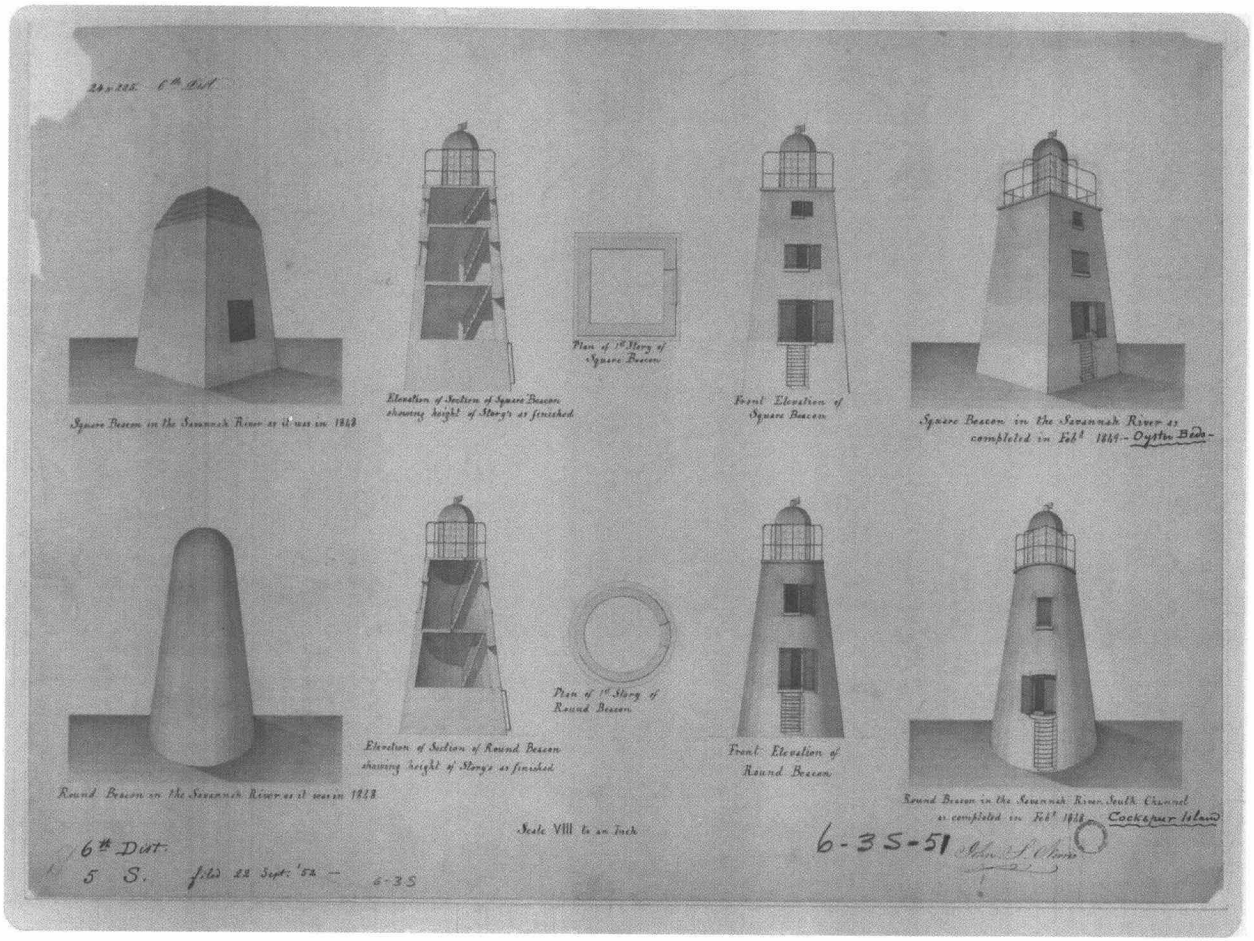


FIGURE 9. Cockspur Island Lighthouse drawing, 1848. Record Group 26, Plan 2. (National Archives)

mainland. As a result, a battery of artillery at Tybee Island was dismantled and its heavy guns were moved to Fort Pulaski.[19]

Union forces quickly occupied undefended Tybee Island and established a permanent garrison in December 1861. In January and February 1862, Federal troops constructed various batteries around the perimeter of Fort Pulaski, the most significant of which were eleven batteries along the north shore of Tybee Island. Since Cockspur's neighboring islands were beyond the range of traditional smoothbore cannon, Confederate troops were not overly concerned by the northern advances.

On the morning of April 10, 1862, Union artillery attacked Fort Pulaski after Colonel Charles H. Olmstead, the fort's commander, refused a formal demand to surrender. The Confederates were unaware that the Union troops had a new weapon—the rifled cannon—in their arsenal. The inside of the barrel of the cannon was spiraled or rifled in a manner that would make the mortar shell spin, travel further, and meet its target with more accuracy and deeper penetration. Projectiles from the rifled guns honeycombed the southeast wall of the fort by the end of the first day. Surprisingly, the Cockspur Island Lighthouse, located directly between these two forces, was unscathed and although it ceased operation during the war, it resumed operation at the war's end. By the second day, holes were opening up in the wall, with one being over eight feet in width. Projectiles from the rifled guns were passing through and coming dangerously close to the magazine at the far side of the fort, which held 40,000 pounds of black powder. Realizing the futility of his situation, Olmstead surrendered on April 11 at 2 p.m.[20]

Fort Pulaski's role in the Civil War did not end with the surrender of the Confederates to the Union forces after the bombardment. By the end of the summer, Union forces had repaired the damaged walls of the fort. With control of Fort Pulaski in Federal hands, the port of Savannah was effectively strangled, damaging the economy of the Confederacy and contributing to the Union's victory. On a broader scale, the success of the rifled canon, combined with other technological advances, helped to make masonry forts like Fort Pulaski obsolete.

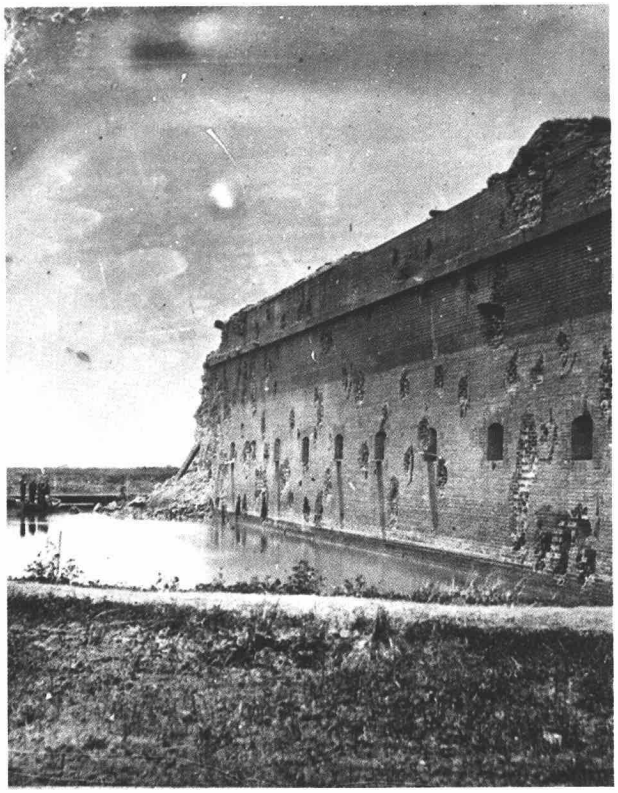


FIGURE 10. Image of breach following the battle, 1863. (FOPU archives)



FIGURE 11. Image of parade ground, 1863. (FOPU archives)

With the surrender of Fort Pulaski, Major General David Hunter, known as "Lincoln's Abolitionist General," ordered that local slaves be freed. As a result, many freed slaves fled to Fort Pulaski from throughout coastal Georgia. Hunter quickly recruited them into the Federal Army, but his orders were rescinded by President Lincoln. Later, on January 1, 1863, Lincoln issued his Emancipation Proclamation. Many ex-slaves formed the core of the 1st, 2nd, and 3rd South Carolina Volunteers. These soldiers comprised some of the earliest

19. Meador, 8; Lattimore, *Fort Pulaski*, 12-20.
20. Lattimore, *Fort Pulaski*, 34-35.



FIGURE 12. African Americans at Fort Pulaski, 1863. (FOPU archives)

African-American units to serve in the Union Army.[21]

With Union General William Tecumseh Sherman's impending arrival at various ports throughout coastal Georgia and South Carolina at the close of 1864, Confederate leaders began to devise new ways to prevent the shelling of the cities in these areas. General Samuel Jones reluctantly housed two separate groups of Federal prisoners within the city limits of Charleston, South Carolina, in hopes of discouraging Union shelling. Union General J.G. Foster requested equal amounts of Confederate prisoners from Fort Delaware to be placed on the beach in front of Union batteries on Morris Island, South Carolina. The second group consisted of 600 Confederate officers, who eventually came to be known as "The Immortal 600".

With the arrival of yellow fever in Charleston, General Jones finally sent the Union prisoners out of the city in October of 1864. Union General Foster responded in kind, and sent the remaining 520 of the original 600 Confederate prisoners to Fort Pulaski. The prisoners were now under the supervision of Union Colonel Philip P. Brown, who promised better conditions at their new prison. Brown's requests for blankets, clothes, and food for the prisoners were ignored, however, due to a Federal policy of retaliation enforced by General Foster. By the end of February 1865, conditions for the Confederate prisoners at Fort Pulaski improved somewhat, but by this time nine of their members were dead. On March 5, 1865, the remaining members of the Immortal 600 were sent to Fort Delaware, the prison in which they originally began their ordeal. Four of the group were left behind because they were too sick to be moved, and all four eventually died. [22]

Cockspur Island Lighthouse Complex. The Cockspur Lighthouse ceased its operation during the Civil War, withstood artillery fire, and resumed operation at the end of the war.

Post-Civil War (1866-1880)

Fort Pulaski continued to serve as a prison for former Confederate officials and Union troop deserters after the Civil War. An effort to strengthen and modernize the fort began in 1869 when troops stationed at Fort Pulaski began a project to remodel the demilune, constructing a network of heavy gun emplacements and underground magazines, connected by tunnels. Other repairs were made to the drawbridge, wharf, sea walls, roads, and the original construction village buildings. Construction ended in 1872, the same year that the Army Corps of Engineers drew plans for a new fort on Tybee Island. On October 8, 1873, the last Army units stationed at Fort Pulaski were withdrawn, and the fort officially closed on October 25. The work of remodeling the demilune by the Corps of Engineers continued in intervals from 1872 to 1876. By 1880, Fort Pulaski stood vacant, except for a caretaker, and was set aside as a military reservation for potential military use.[23]

Fort Pulaski Military Reservation (1881-1923)

The island was largely uninhabited during the 1880s, during which time the Army Corps of Engineers maintained Fort Pulaski. A lighthouse keeper for Tybee Knoll Cut Range Lighthouse, which was constructed at the west end of the island in 1878, another keeper for the Cockspur Island Lighthouse, and the fort's caretaker comprised the total island population. A severe hurricane in 1881 washed away the construction village, destroyed the Cockspur Island lightkeeper's house, and damaged the dike and ditch system.[24]

21. Meador, 10.

22. Lattimore, *Fort Pulaski*, 38-40; http://www.nps.gov/history/seac/pulaski/0-introduction/index.htm.
23. Meador, 14; HABS, 13; 1886 Annual Report.
24. Meador, 14.

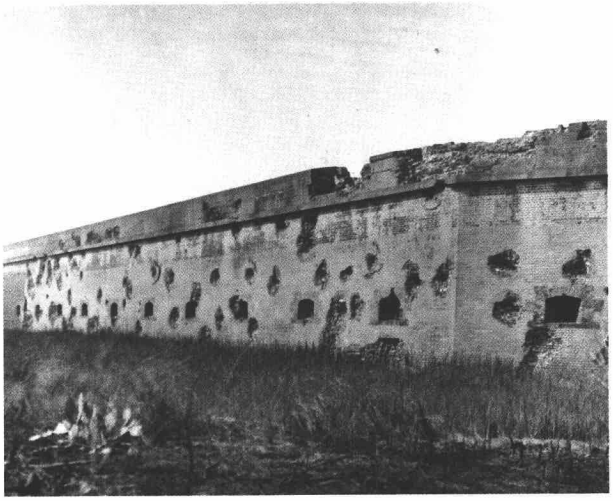


FIGURE 13. Fort Pulaski, c.1900. (FOPU archives 3451)



FIGURE 14. Lightkeeper's house on terreplein. (FOPU archives 3449)

A house for the Cockspur Island Lighthouse keeper was constructed on the fort terreplein between 1893 and 1906.[25] The lighthouse keeper also served as caretaker of the fort, but only to prevent vandalism, and for many years no funds were appropriated for fort repair and upkeep.

The strategic importance of Cockspur Island was rediscovered during the Endicott program of coastal defense, funded by Congress in 1890. The demilune acquired an additional mound over its southeast corner, which housed controls for electric mines placed in the North Channel. Because Savannah needed additional harbor protection, Battery Horace Hambright on Cockspur Island's north shore was constructed. Neither the mines nor Battery Hambright ever saw combat action. No further improvements were planned for Fort Pulaski, funds going instead to construct Fort Screven on Tybee Island.

A 1913 fort inspection revealed that the fort was without a caretaker, and a full-time custodian was found. J. Harry McLendon held the position from 1914-16, with the only benefit being the occupancy of the house atop the terreplein. The condition of the fort and grounds remained poor.[26]

Cockspur Island Lighthouse Complex. A lighthouse inspector recommended that the light be discontinued after the hurricane of 1881 caused a twenty-three-foot storm surge, partially submerging the structure and destroying the light keeper's house. Other storms in 1893 and 1894 further damaged the lighthouse, but it remained in operation until June 1909. At that time, the Secretary of the Pilots Association in Savannah informed the head of the Sixth Lighthouse District of the U.S. Lighthouse Service in Charleston that deepwater vessels were using the more deeply dredged North Channel. The shallow, narrower South Channel came to be used only for travel to Cockspur Island, leading to the decommission of the lighthouse.[27]

Quarantine Station. With the construction of Fort Screven in 1897, Cockspur Island's military use was in decline. Another use was about to take its place, however. In 1889, the War Department issued a revocable license to the City of Savannah to establish a quarantine station on land northwest of the fort. An early quarantine station was located at Lazaretto Creek on Tybee Island but was later moved to Fort Jackson before moving back to Tybee Island in 1870. Apparently the destructive hurricane of 1881 did significant damage to the quarantine station on Tybee, and new buildings had to be erected. By this time, however, dredging of the river's main shipping channel had deposited so much fill that the sound between Cockspur and Tybee was rapidly becoming inaccessible to ocean-going vessels, and the city chose a new site on Long Island in 1888 for construction of four wharves and tramways to handle discharge of ballast by ships in quarantine.

25. HABS, 12.

26. Colonel Dan C. Klingman to Adjutant General, February 18, 1913, National Archives, RG 77, Box 1; Meador, 16.
27. Meador, 7.

By 1889, the City of Savannah began leasing a portion of the northwestern end of Cockspur Island from the War Department for a permanent quarantine station. By the end of 1890, wharves, hospital, store houses, and a residence for the Quarantine Officer had been constructed on top of dredge deposit. The station appears to have been operational in January 1891. With immigration at an all-time high in the United States in the 1890s, reports of a cholera outbreak across central Europe produced near panic in America. The cholera scare prompted city officials to construct a fumigating and disinfecting plant on the northwest side of the quarantine station in 1893, as well as a new residence.[28]

As a better understanding of the true nature of infectious disease became more prevalent, Savannah and many other local governments realized that turning over quarantine operations to the Federal Government was in their best interest. In April 1899, Savannah negotiated an agreement with the U.S. Marine Hospital Service, administered by the Treasury Department, to take possession of the city's quarantine station on Cockspur Island.

The U. S. Marine Hospital Service reorganized in 1901 as the U. S. Public Health and Marine Hospital Service. By 1903, there were nine buildings at the quarantine station at the west end of Cockspur Island. The quarantine station expanded in 1911 to 130 acres. New construction occurred between 1911 and 1918, when decontamination facilities for returning soldiers and prisoners of war were built. The end of World War I in November 1918 left the new facilities mostly unused. By the late 1920s, there were approximately twenty buildings at the quarantine station, but advances in the treatment of contagious diseases and greatly-reduced immigration were rendering the station obsolete.[29]

Fort Pulaski National Monument War Department Administration (1924-1932)

The last resident caretaker of Fort Pulaski was Mrs. E. J. Bergman, who lived on Cockspur Island from 1916 to 1921. In 1915, the War Department selected the fort as a potential National Monument under the Antiquities Act of 1906, but World War I postponed further efforts to preserve the site.

In December 1917, Colonel John Millis, the District Engineer of the Army Corps of Engineers in Savannah, and Thomas Purse, Secretary of the Savannah Board of Trade, obtained limited War Department funding for interior work and vegetation clearance to allow visitors, arriving by boat, a better view of the structure. The process uncovered the gravestone of Lieutenant Robert Rowan, who died in 1800, and that of a baby who died in 1872, along with numerous Civil War artifacts.[30]

President Calvin Coolidge established Fort Pulaski as a national monument by proclamation on October 15, 1924. The site included the entire twenty-acre area "comprising the site of the old fortifications which are clearly defined by ditches and embankments" In January 1925, Army Corps of Engineers Major Dan I. Sultan inspected the fort and estimated that $6,930 was needed to preserve the twenty-acre tract comprising the fort and its dike system and make it accessible to visitors. The fort's condition worsened after a lightning strike in June 1925 caused a fire that destroyed part of the southwestern gorge and the caretaker's house on the terreplein.[31]

Supervision of the site was transferred from the Army Corps to the Quartermaster Department of the Army in August 1925, placing Fort Pulaski National Monument under the Quartermaster at Fort Screvin. In January 1926, Georgia Congressman Charles G. Edwards introduced legislation to transfer the fort to the City of Savannah as a national military memorial in honor of Revolutionary War hero Count Casimir Pulaski. The War Department opposed the bill, arguing that Fort Pulaski did not qualify as a national military park. Although this bill failed, Edwards continued to seek funding for repairs and preservation, without

28. Tommy Jones, *Quarantine Attendants' Quarters Historic Structure Report* (Atlanta, GA: Southeast Regional Office, 2004), 11-12.
29. Ibid., 15; Meador, 15.
30. Colonel John Millis, Corps of Engineers to Chief of Engineers, January 26, 1918, National Archives, RG 77, Box 1; Thomas Purse, Savannah Board of Trade to Henry Sanderson, February 5, 1918; National Archives, RG 77, Box 1.
31. Dan Sultan, District Engineer to Chief of Engineers, April 8, 1925, National Archives, RG 77, Box 1; HABS, 15.

success. Fort Pulaski's neglect continued until 1933 when President Franklin D. Roosevelt's Executive Order 6166 transferred all federally managed historic sites, monuments, and battlefields to the National Park Service (NPS).

National Park Service Development Era (1933-1942)

New Deal Programs. President Franklin D. Roosevelt's New Deal programs launched several new federal agencies and programs that put thousands of unemployed men and women to work in the midst of the Great Depression. In particular, the Civil Works Administration (CWA), the Civilian Conservation Corps (CCC), and the Public Works Administration (PWA) funded projects to revitalize the country's natural and cultural resources, and the NPS greatly benefited from these programs. Consequently, Fort Pulaski was able to achieve many of its development goals from 1933 until the beginning of the country's entry into World War II in 1941.

From December 1933 to late April 1934, the CWA program funded the earliest work at Fort Pulaski National Monument— a general clean-up of Cockspur Island in preparation for the incoming CCC enrollees and PWA projects. Specific tasks included removing dense vegetation from the parade ground and fort walls, completing a general engineering survey, and partially excavating the main drainage ditch.[32]

In May 1934, the NPS was authorized to establish CCC Camp 460 on the northwest shore of Cockspur Island directly east of the U. S. Public Health Service Quarantine Station. Extra buildings at the quarantine station provided quarters for enrollees, but some buildings were moved or demolished to accommodate the camp.[33]

Projects initially undertaken by the CCC involved drainage, landscaping, and mosquito control. The enrollees cleared 100 acres of forest, constructed 2,500 cubic yards of drainage, and built 5 miles of trails through the wooded areas of the island. Major projects included the rebuilding of the dike system to prevent flooding and the excavation of the moat surrounding the fort. In December 1935, salt water from the Savannah River filled the moat for the first time in 60 years.[34]

By June 1936, camp enrollees had filled the swampy areas of the parade ground, built trails in wooded areas of the island using oyster shells, constructed several miles of truck roads, and rebuilt tidal gates. Total CCC expenditures from 1934 to 1936 totaled $99,000.[35]

Meanwhile, the PWA had been working on fort restoration since September 1934. The CCC and the PWA combined forces to excavate the fort's terreplein, repairing the lead roof and installing three water-storage tanks. Other PWA work accomplished during 1935 included restoring the officers' quarters and barracks rooms in the fort gorge, repairing the gorge walk and piazza, and rebuilding the wooden casemate fronts. The fort's northwest stairway was rebuilt and brickwork



FIGURE 15. Moat excavation by CCC workers. (FOPU archives 3366)

32. Annual Narrative, 1936, FPNM archives.
33. Annual Narrative, 1934, FPNM archives.
34. Meador, 26.
35. Annual Narrative, 1936.

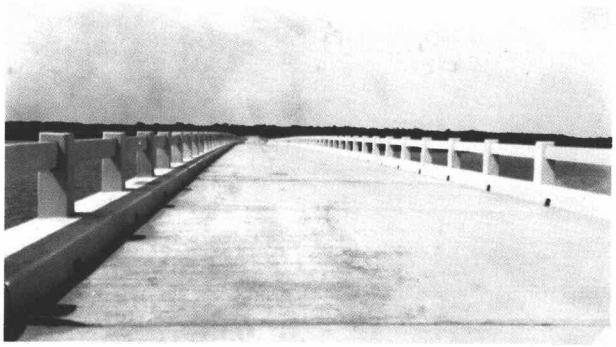


FIGURE 16. South Channel Bridge, 1938. (FOPU archives)

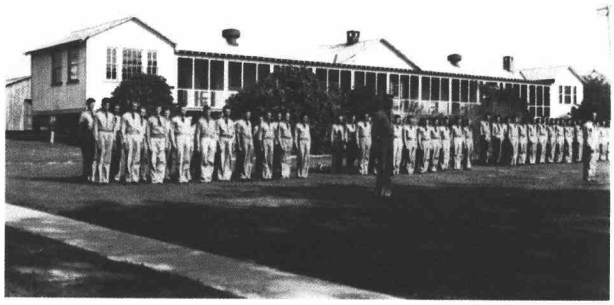


FIGURE 17. CCC at Fort Pulaski, 1938. (FOPU archives)

throughout the fort and the scarp wall of the demilune was repointed. By December 1935, an administrative office, a museum room, and separate restrooms for "white" and "colored" visitors had been completed in the fort's newly restored interior. Finally, the reconstruction of the fort's drawbridges from original plans occurred in June 1936. Program costs for the two-year period were $93,876.[36]

In addition to the fort restoration, the PWA accomplished another major effort on Cockspur Island—the building of the South Channel Bridge, which began in 1937. The NPS had already acquired nearly 278 acres of marshland on McQueens Island in 1935 for a bridge approach. Built at a cost of $101,106, the composite wood and concrete bridge opened to the public in May 1938.

By the end of 1938, a significant portion of the camp's funds and labor was transferred to the CCC camp at Robert Fechner Park southeast of Savannah. These cutbacks foreshadowed the eventual closing of the camp, which occurred in 1941. A year later the CCC program was terminated, as the U. S. geared up for World War II.[37]

Quarantine Station. Although the Public Health Service initiated $75,000 of improvements to the quarantine station at the west end of the island, it was closed in March 1937. This action prompted Superintendent Ralston Lattimore to begin lobbying for NPS acquisition of the abandoned station, noting its usefulness for Park operations. The War Department transferred administration to the Department of the Interior in August 1937.[38]

36. Meador, 28.
37. Ibid., 27.
38. Jones, 17.

Master Plans. NPS planning for the long-term development of the Park resulted in the 1939 Master Plan, a major focus of which was the further development of the entrance road to the Park. The plan also included the development of a parking area north of the fort's demilune, completion of pedestrian circulation paths, and paving the secondary road leading to the former quarantine station on the west end of the island. With the closing of the CCC camp after the United States' entry into World War II in December 1941, the Park began to revise the 1939 Master Plan, which assumed the use of CCC labor.

By 1942, a new Master Plan was ready which proposed an additional parking area near the demilune drawbridge, an overlook at the old North Channel Pier, and reconstructing the hot shot furnace inside the fort. The plan also proposed the construction of new structures on Cockspur Island's west end to accommodate park staff, a utility group, and firefighting needs. Although a pump house and firehouse were built right away, park development was put on hold until after the war.

Land Acquisition. In 1935, the State of Georgia donated 297.39 acres, including the east end of Cockspur Island and portions of the abandoned right-of-way of the Central of Georgia Railroad on McQueens Island. In 1936, Congress authorized a western boundary expansion to the U.S. Public Health Service Quarantine Station and also authorized the Secretary of the Interior to accept donated land on McQueens and Tybee Islands. This legislation permitted the construction of the South Channel Bridge and created a special reservation along the north shore of the island for the deposit of dredging materials by the Army Corps of Engineers. In 1939, the State of Georgia deeded 5,000 acres of

marshland on McQueens Island to the Park, increasing its acreage to 5,623 acres.

Savannah Bar Pilots. In 1940, the Savannah Bar Pilots moved their operations to the west end of Cockspur Island, occupying a dormitory and two small buildings. This arrangement was through a special use permit that was renewed annually.[39]

Fort Pulaski and World War II (1942-1946)

On November 1, 1941, the Department of the Interior issued a special use permit to the Secretary of the Navy to establish Section Base #20 at Cockspur Island. This location was chosen because of its deep water access and docking facilities, the presence of the quarantine station and CCC buildings, and its proximity to a nearby highway. With the United States' entry into World War II in December, the Secretary of the Interior notified the NPS in March 1942 that Cockspur Island would be turned over to the Navy for the duration of the war. The following day, Fort Pulaski was closed to the public and remained closed for five years.[40]

The Navy cordoned off Fort Pulaski itself, finding the western end of the island best suited to its needs. Park Superintendent James Holland quickly arranged for the transfer of museum materials, park files, and various tools and equipment to the storage facilities at Ocmulgee National Monument in Macon. Holland also insisted that a maintenance worker remain at Fort Pulaski as caretaker for the duration of the Navy's occupation of Cockspur Island.[41]

The decommission of the section base occurred in September 1944, but the Navy and then the Coast Guard continued to use the facilities as a receiving/discharge station until June 1946.

Post-World War II (1946-1955)

Upon their return, Fort Pulaski National Monument staff discovered that the Park had suffered under military occupation. Besides a deteriorated water system, Park staff removed "grass and woods by the ton" over the winter of 1946-47. The entire fort had to be cleared of debris and cleaned before artifacts, stored at Ocmulgee National Monument since 1942, could be returned. On August 1, 1947, Fort Pulaski National Monument re-opened to the public. It was another year, however, until the Navy finally abandoned all structures on Cockspur Island.[42]

On October 15, 1947, the area was hit by a hurricane, which breached part of the dike system, damaged roofs on park residences at the former quarantine station, and blew down trees and uprooted shrubbery.[43] During this time, little development occurred at the Park despite its deteriorated condition following Navy administration during WWII. By 1949, the NPS had prepared a "Developed Area Plan" that proposed to remove many of the buildings from the Navy occupation. By 1952, the Park had demolished or sold thirty-six buildings at the western end of Cockspur Island, retaining eight for park purposes.[44] In 1954, the quarantine station property was formally transferred to the National Park Service.

Mission 66 Era (1956-1966)

Like many national parks, Fort Pulaski National Monument was suffering from years of neglect. To address these problems servicewide, the NPS created the Mission 66 program in 1956.

Mission 66 Projects. In January 1956, NPS Director Conrad Wirth outlined Mission 66, a ten-year park development program aimed at upgrading the poor conditions in the parks and meeting the demands of the postwar era. The Mission 66 program would result in the construction of countless roads and trail systems and thousands of residential, maintenance, and administrative facilities.[45]

The program included a new building type that centralized basic visitor services. The "visitor center" became the most significant architectural expression of national park development in this

39. Meador, 64.
40. Jones, 17; Meador, 57.
41. Meador, 58.
42. Annual Narratives, 1947-48, FPNM archives; Jones, 17.
43. Monthly Report, October 1947, FPNM archives.
44. Superintendent Fort Pulaski National Monument to Regional Director, Region One, October 17, 1951; Meador, 51.
45. Sarah Allaback, *Mission 66 Visitor Centers: The History of a Building Type* (Washington, D.C.: National Park Service, 2000), 2.

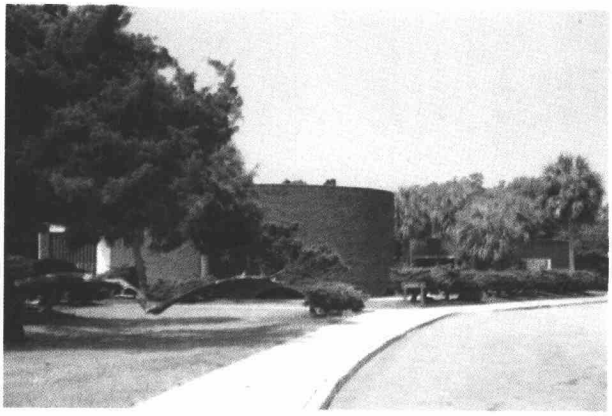


FIGURE 18. Fort Pulaski visitor center, 2007. (NPS image)

period and subsequently became the centerpiece of park planning all over the country. The use of the word "center" indicated the planners' desire to centralize park interpretive presentations, park administrative offices, restrooms, and other services.[46]

Although the original Mission 66 Prospectus for Fort Pulaski did not include the construction of a visitor center, the Park determined the need for a separate facility for visitor accommodations in 1959 and amended the Mission 66 Prospectus to include a visitor center. The Park wanted to present the fort as a period exhibit without modern intrusions and felt that a separate visitor center would help accomplish that aim.

The visitor center was designed by the NPS Eastern Office of Design and Construction (EODC) in Philadelphia. According to Henry Levy of Levy and Kiley, Eero Saarinen's Kresge Chapel (1955) at the Massachusetts Institute of Technology was the inspiration for the building's circular plan, base arches, rusticated brick, and surrounding gravel moat. The height of the building was kept low to prevent a visual intrusion upon the fort. The visitor center opened to the public on October 25, 1964, at a final cost of $139,320.

Another Mission 66 project focused on fort and demilune repairs. The repointing and relining of all gorge casemates, repairing rifle loopholes on the gorge wall and sally port opening, the waterproofing of the broken parapet and gorge wall, repairing brickwork and stonework in gun positions, and fixing stones and stucco along the underground passageways occurred in 1958.

46. Ibid., 24.



FIGURE 19. Parapet before repairs, 1958. (NPS image)

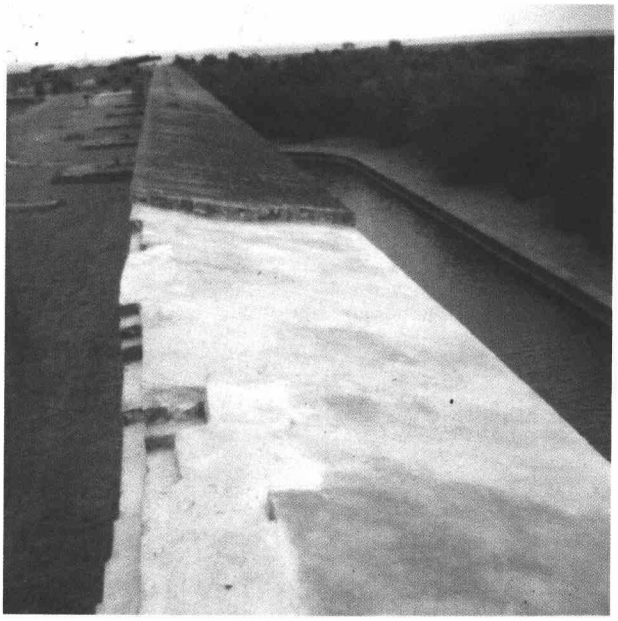


FIGURE 20. Parapet after repairs, 1958. (NPS image)

Other Mission 66 projects included improvements to the dike system, repairs to Battery Hambright and the South Channel Bridge, and road and parking area improvements. The development of the picnic area at the west end of Cockspur Island took place in June 1965. The final Mission 66 project was a series of signs and markers posted along U.S. Highway 80.[47]

Mission 66 improvements generated new concerns in visitor services, resource management, and security. The 1965 Master Plan outlined such concerns as vegetation management, vandalism control, and the repair of historic structures, utilities, signs, and markers. A fee collection station operated on a seasonal basis was proposed at the entrance to the Park to help with congestion caused by visitors going to the visitor center to pay the entrance fee.[48]

Transfer of Cockspur Island Lighthouse. The Cockspur Island Lighthouse was not part of Fort Pulaski National Monument when the NPS acquired the site in 1933. At that time it was still employed as a daymark by the U.S. Lighthouse Service, which merged with the U.S. Coast Guard in 1939. By 1949, the Coast Guard had determined that the light was no longer of navigational use and had no objection to its transfer to the NPS. However, because the small lighthouse islet had never been under the jurisdiction of the Secretary of War, new legislation was needed to incorporate the light within the Park.

In January 1956, the Coast Guard notified NPS Director Conrad Wirth of the disposition of the Cockspur Island Lighthouse. Even with a presidential proclamation in 1958, government bureaucracy hampered the transfer of the lighthouse to the NPS, and the final transfer did not occur until 1960.[49]

Post Mission 66 (1966-Present)

1970s. Following enactment of the National Environmental Policy Act (NEPA) in January 1970, a new Master Plan was drafted that reflected a new emphasis on the protection of natural and cultural resources. As such, writing management documents and preparing an interpretive prospectus were priorities. The plan also called for vegetation removal around the fort, additional employee residences, expanding the picnic facilities, acquiring adjacent land, and working with the Army Corps of Engineers to resolve issues related to dredging practices, as well as shore erosion on Cockspur Island.[50]



FIGURE 21. Cockspur Island Lighthouse. (FOPU archives)

In addition to vegetation removal around the fort, several construction projects occurred in the 1970s. The maintenance facilities were expanded, a handicap ramp was added to the east entrance of the visitor center, a replica of the historic flagpole was erected, and signs were replaced throughout the Park.

By the 1970s, the buildings occupied by the Bar Pilots had deteriorated to the point that the 1971 Master Plan recommended that the Bar pilots build new NPS-approved quarters and a dock. In 1973, the NPS issued a twenty-year special use permit that paved the way for this new construction. The old buildings were demolished, and the Bar Pilots built a new dormitory and dock at the same location.[51]

1980s. During the 1980s, the aging South Channel Bridge required extensive repairs, culminating in 1987 when a $40,000 contract was awarded to repair bridge expansion joints and spalls and to paint the structure. A prefabricated restroom building was added to the picnic area in 1985. An important interior modification occurred in 1985 when a prefabricated "Bally" building for museum and archival storage was installed in one of the fort's casemates. Plumbing fixtures in all restrooms were replaced in 1989.

47. Meador, 31-32; Superintendent, Fort Pulaski to Regional Director, SE Region, September 10, 1963, FPNM archives.
48. Meador, 52.
49. Meador, 63.
50. *Fort Pulaski National Monument Master Plan* (Denver: National Park Service, 1971), 13-23.
51. Superintendent's Annual Narrative, 1973, FPNM archives.

In 1983, the U. S. Coast Guard opened a Search and Rescue Station at the west end of Cockspur Island under an interagency agreement.[52]

1990s. The construction of a pole shed to house the Park boat, tractor, and truck occurred in 1993. In 1994, an interagency agreement between the NPS and the Army Corps of Engineers allowed Fort Pulaski's historic dike system to be returned to its original height and configuration. This work was completed in 1997. Between 1994 and 1995, the Park resurfaced the visitor center roof and partitioned off a section of the lobby to create an auditorium for showing films about the fort's history. The installation of handicapped-accessible restrooms at the east entrance to the visitor center occurred in 1997 and a handicapped-accessible ramp at the west entrance was constructed in 1999. Also in 1999, a Federal Highway project replaced all damaged parts of the South Channel Bridge and resurfaced the asphalt decking. The Savannah Bar Pilots' special use permit was renewed in 1993 and again in 1998.[53]

2000s. In 2001, the fee collection station was completely remodeled. Metal roofs were added to the gas house, garage building, and pole shed in 2003 and 2005. In 2004, a picnic shelter was added to the picnic area and a metal roof was added to the restroom building. In 2006, handicap ramps were constructed inside the fort and four Volunteers-in-Parks Program (VIP) pads were added. In 2007, the Cockspur Island Lighthouse was relit. Since 2007, historic preservation students from the Savannah College of Art and Design (SCAD) tuck-pointed deteriorated mortar joints throughout the fort and the Cockspur Island Lighthouse. Based on research and a recent Office of Inspector General report, the legality of continuing to authorize a special use permit to the Savannah Bar Pilots for a dock and dormitory is now subject to question. In April 2009, the congressman representing the Savannah and Tybee Island area requested NPS assistance in drafting legislation to authorize Fort Pulaski to issue a non-competitive lease to the Bar Pilots in order to continue the longstanding relationship.[54]

General Management Plan. In 1998, the NPS Southeast Regional Office (SERO) and park management began FOPU's first General Management Plan (GMP), designed to address long-range resource management and visitor services needs, as well as park development goals. The project was put on hold when NPS planning staff were diverted to the Cumberland Island National Seashore wilderness designation controversy. The GMP process resumed in 2003 but was suspended again in 2005 when Superintendent John Breen retired. In 2006, the GMP process resumed, and a preferred alternative has been chosen that focuses on the April 1862 period of significance in terms of both the landscape and interpretive programs. The CLR treatment recommendations have been coordinated with the proposed preferred alternative, although a Record of Decision is not expected before the CLR is completed.

52. Superintendent's Annual Narrative, 1983-1989, FPNM archives.
53. Superintendent's Annual Narrative, 1993-1999, FPNM archives.
54. Superintendent's Annual Narrative, 2001-2005, FPNM archives; National Park Service, *Draft General Management Plan/Environmental Impact Statement* (Atlanta, GA: Southeast Regional Office, 2010), 2.

Landscape Characteristics and Features

Landscape characteristics and features include tangible and intangible aspects of the cultural landscape. These aspects individually and collectively give a landscape its historic character. Landscape characteristics range from large-scale patterns to site details and materials. The following chapter discusses the cultural landscape of the Cockspur Island Historic District by landscape characteristics and features.

Spatial Organization

Early History

The spatial organization of Cockspur Island in the eighteenth century was dominated by the building of two forts, Fort George in 1761 and Fort Greene in 1794. Fort George was built on the southeastern corner of the island near the South Channel of the Savannah River. De Brahm's plan of Fort George included a small redoubt, 100 feet square with a blockhouse 40 feet square in the center.[1]

Vessels entering the Savannah River often required a river pilot to help navigate the sand bars. The river pilot in 1768, William Lyford, leased one acre of land on Cockspur Island and built a pilot house diagonally from the northwest corner of Fort George at a distance of approximately 80 yards. The pilot house was burned in 1774 by slaves.[2]

By 1773, Fort George was nearly in ruins. It was dismantled and abandoned by the Patriots shortly after the Revolutionary War began. In 1794, a second fort was built. Fort Greene was constructed of timbers and earth that were enclosed behind pickets. The fort consisted of a battery designed for six guns and a guardhouse for the fifty man garrison. Fort Greene was destroyed by a hurricane in 1804 that inundated Cockspur Island. Although it has always been thought that Fort Greene's location was very near that of Fort George, newly uncovered documentation indicates that its likely location was on the north shore of Cockspur Island near the North Channel Pier.[3]

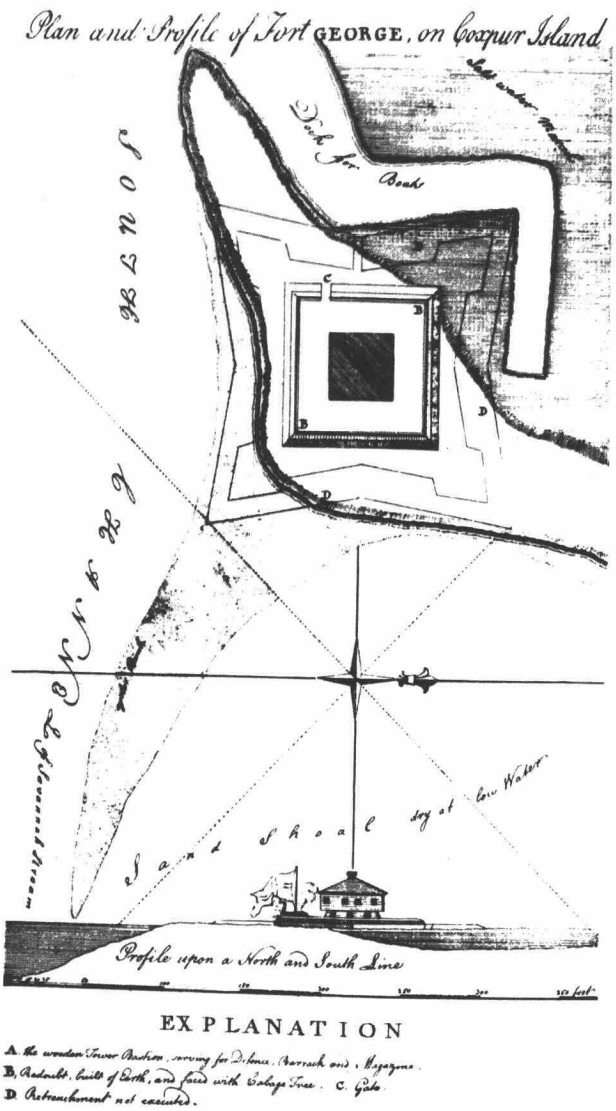


FIGURE 22. 1761 plan of Fort George. (FOPU archives)

1. Groh, 52.
2. Ibid., 53.
3. Ibid., 54; Guy Prentice, RASP Manager to Director, SEAC, September 21, 2006.

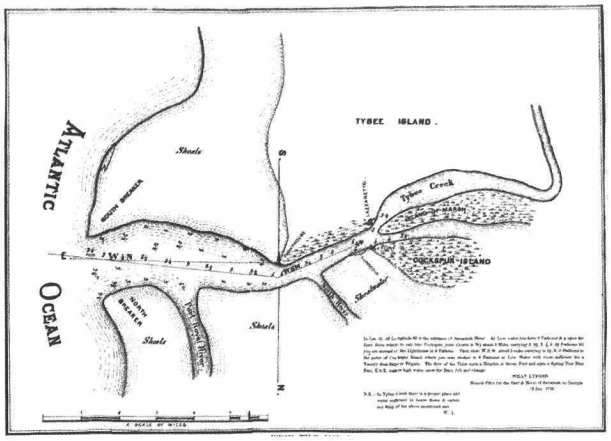


FIGURE 23. 1773 map showing location of Fort George. (FOPU archives)

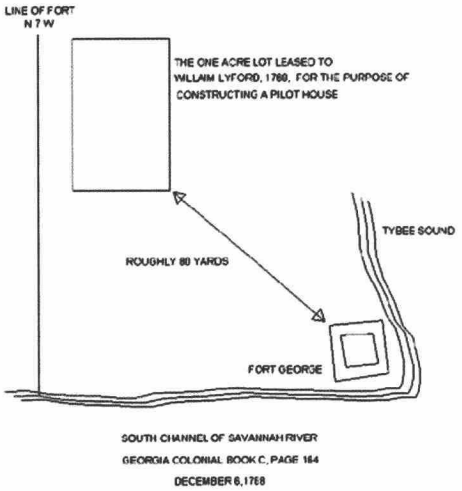


FIGURE 24. Lyford Pilot House, 1768. (Georgia Colonial Book)

The Building of Fort Pulaski (1829-1856)

The Fort and Demilune. The actual construction of Fort Pulaski began in February 1829 under the direction of Major Samuel Babcock. Lieutenant Robert E. Lee arrived in November to assist him. Due to Babcock's ill health, Lee took on much of the responsibility until the arrival of Lieutenant Joseph K. F. Mansfield in 1831. Lee's survey map of 1830 (completed March 1831) shows Babcock's quarters, Lee's quarters, workers' quarters, the boathouse, the beacon, the proposed wharf on the North Channel, the proposed site of the fort as laid out by Major Babcock, and the dike and ditch system as built in 1830. The original dikes are positioned parallel to the South Channel of the Savannah River. In another map, dated March 1831, he showed work completed and the revised location of the fort, adjusted toward the north and rotated to face due east.

In May 1842, Assistant Engineer Edward Watts completed a survey map showing the location of the buildings in the construction village (see Figure 30).

Lieutenant Mansfield's map of 1843 shows the location of all the dikes and ditches, including the main feeder canal. The completed structures of the construction village are clustered south of the wharf on the North Channel, northwest of the demilune, and north of the wharf on the South Channel. Missing from the 1843 map is the boathouse, which was washed away by the October 1842 storm.[4]

The fort was surrounded by a wide moat, with two drawbridges, and a rear fortification known as a demilune. The outer drawbridge crossed the demilune moat. The demilune was a flat, triangular-shaped outwork constructed west of the main ditch or moat, consisting of two ramparts forming a salient angle. The interior wall of the moat served as the exterior wall of the demilune and was revetted in brick masonry. The demilune functioned as a physical barrier to the fort entry. The southeast flank of the demilune had to be crossed to reach the sally port, where another drawbridge restricted entry to the fort.

The western or rear section of Fort Pulaski, known as the gorge (throat), contained the sally port or entrance to the fort. The barracks rooms or casemates were located on either side of the sally port, surrounding the two-and-one-half-acre parade ground on which the troops drilled. The casemates were closed in with wooden fronts to provide shelter from rain and cold. A colonnade ran the length of the gorge.

Fort Pulaski had two demibastions (northwest and southwest), extending out in only one direction and able to protect only one wall. Embrasures were angled to bring a crossfire on the main drawbridge and on the point of the demilune. The slot under each embrasure was to receive the tongue of a gun carriage. The circular grooves in the floor held iron tracks on which the wheels of the gun carriages turned.

4. Groh, 57, 119; Prentice, 8.

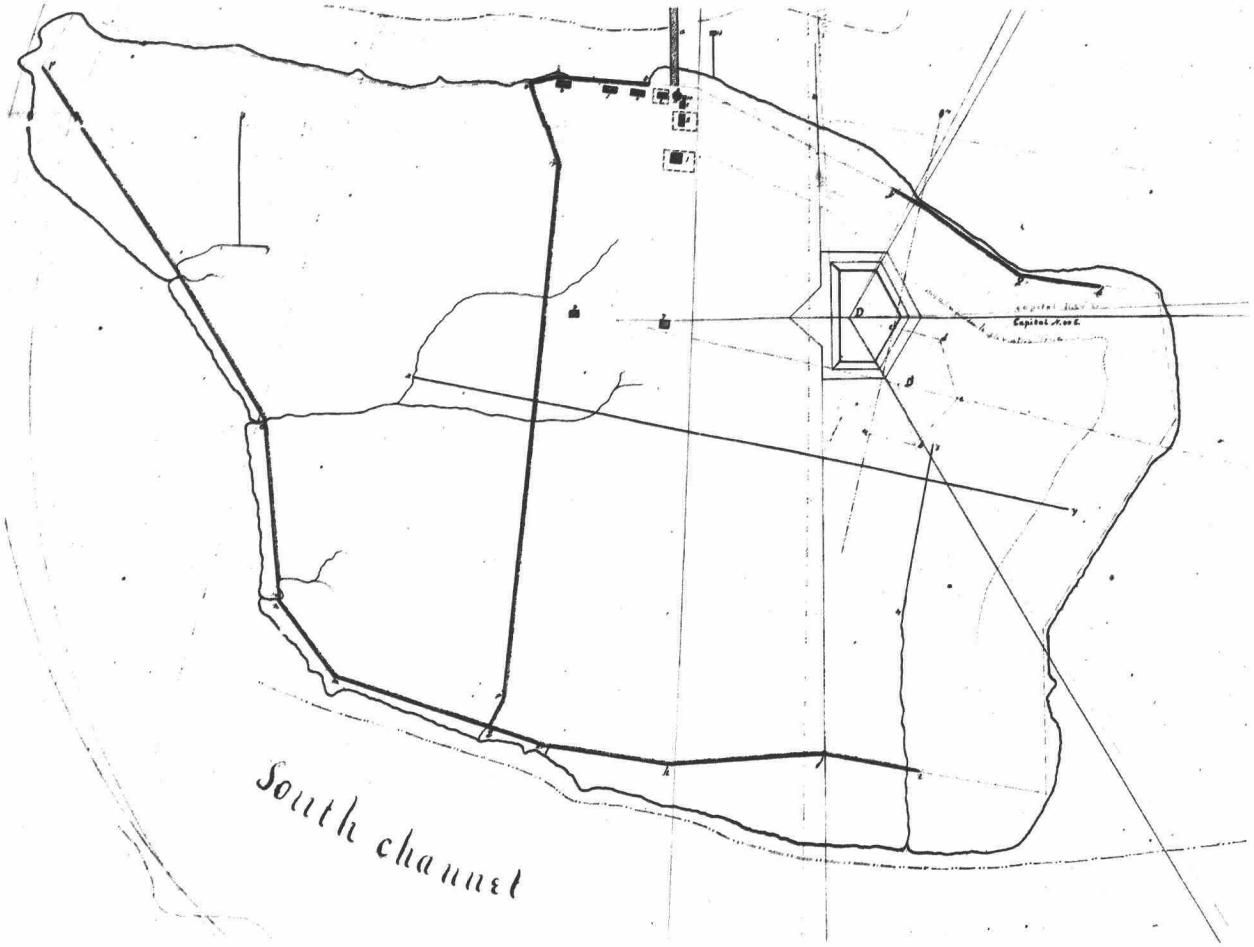


FIGURE 25. Mansfield's 1831 survey map. Record Group 77, Drawer 70, Sheet 4. (National Archives)

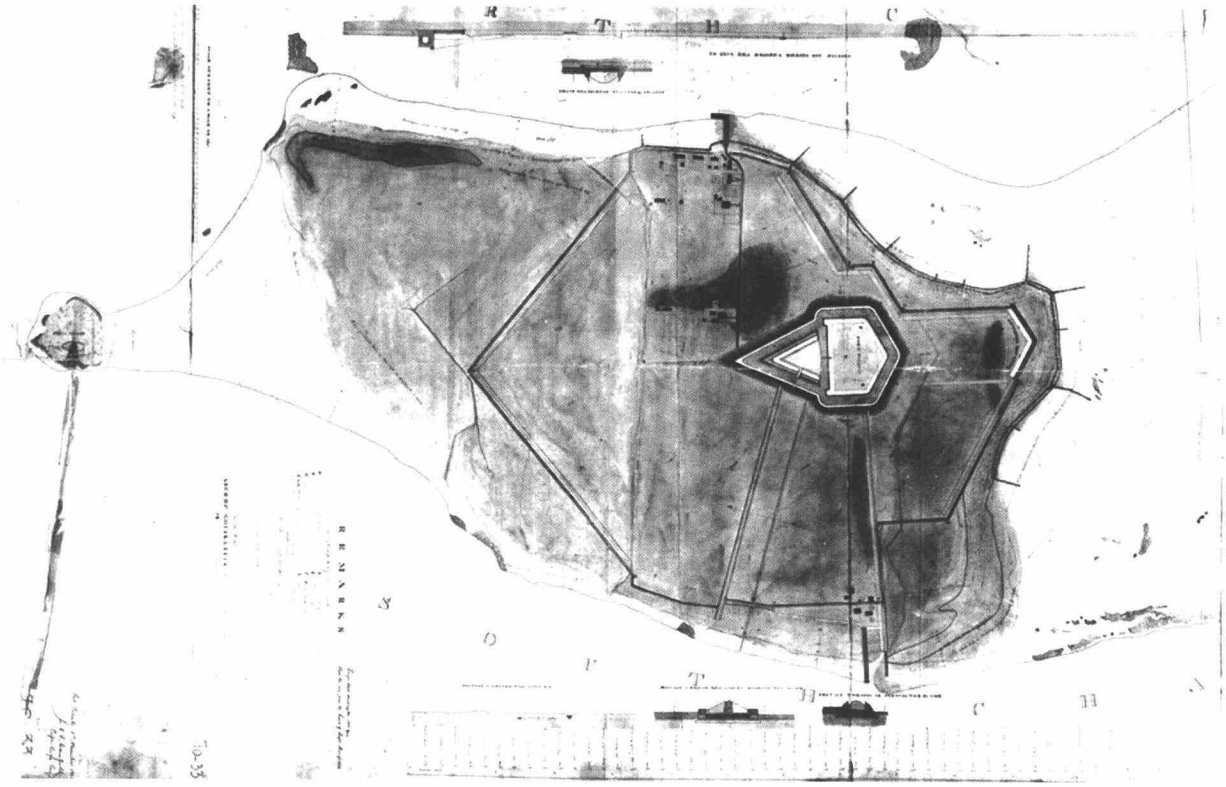


FIGURE 26. Mansfield's 1843 survey map. Record Group 77, Drawer 70, Sheet 33. (National Archives)

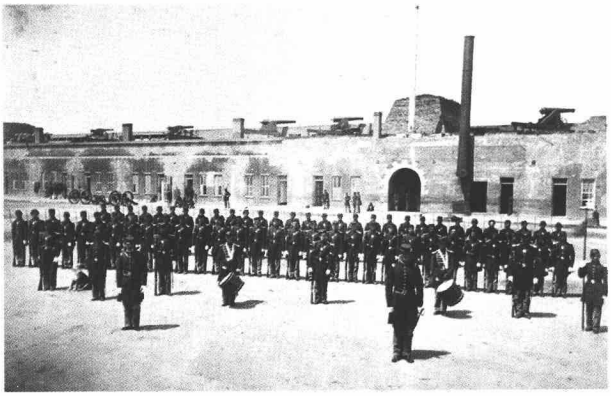


FIGURE 27. Fort Pulaski gorge wall, 1863. (FOPU archives)

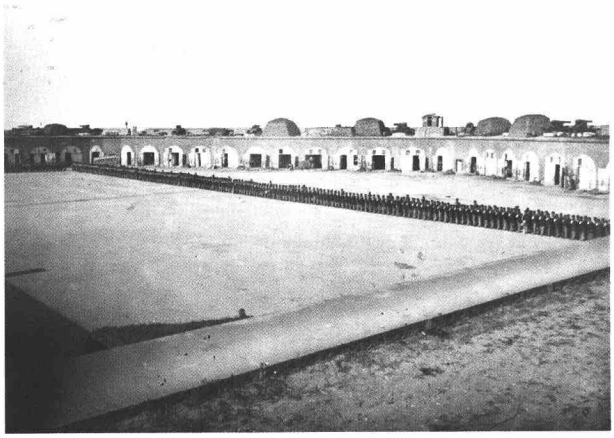


FIGURE 28. Parade ground, 1863. (FOPU archives)

The casemated gun galleries surrounded the parade ground on four sides. The arches were constructed over wooden forms, each brick being hand cut to fit. The joints were mortared from above, and the wooden forms later removed.

The terreplein was the flat surface on top of the rampart of the fort. It contained brick and granite platforms for mounting guns. From this high level, guns had a range of fire greater than those mounted in the casemates below. The breast-high parapet on the outer edge of the terreplein was for the protection of both guns and gun crews. The recesses in the parapet walls were to allow gun carriages to swing freely.[5]

Ditch and Dike System. The ditch and dike system was an integral part of the spatial organization of Cockspur Island. Robert E. Lee is credited with the development of an approximate two-mile system of dikes around the perimeter of the driest portions of

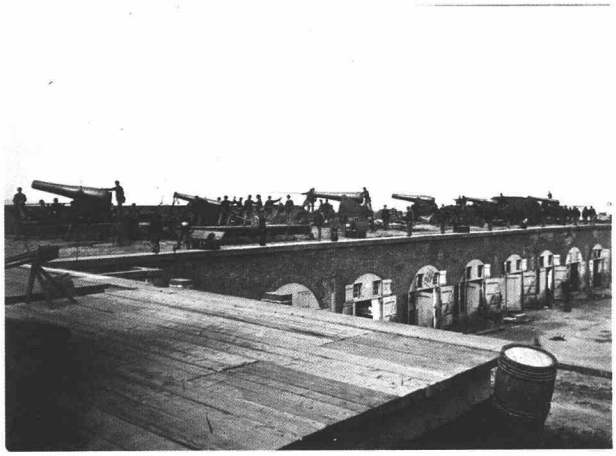


FIGURE 29. Terreplein of the fort, 1863. (FOPU archives)

the island, linked together to form a continuous barrier. In addition to the dike system, ditches were dug from the south shore of Cockspur Island toward the fort site. Tide gates were installed in the ditches to control tide flow to the center of the island and eventually to the moat that surrounded the fort.

During his tour of duty at Fort Pulaski from 1829-1831, Lee made numerous surveys and helped locate the permanent site for the fort. Lieutenant Joseph K. F. Mansfield, who served on Cockspur from 1831-1845, however, deserves the credit for the actual construction of the ditch and dike system, along with Lieutenant Barton S. Alexander, Mansfield's assistant engineer. Mansfield also designed modifications to the ditch and dike system, which were completed in 1851, under the direction of Captain Jeremy F. Gilmer, later Chief Engineer of the Confederate Army.[6]

Construction Village. Fort Pulaski required a support village, which was begun in 1829 with a few buildings near the temporary wharf on the North Channel. The completed village of more than twenty buildings was clustered in three areas: south of the wharf on the North Channel, on a mud flat inside the dike about 100 to 200 yards northwest of the fort's demilune, and around the wharf on the South Channel. Mansfield's 1831 maps located the completed structures, including quarters for the Superintending Engineer, Assistant Engineer, mechanics, and laborers. A boat house, office, stormhouse, carpenter shop, bakehouse, limehouse, kitchens, blacksmith shop, cisterns, and stable provided additional support. In 1836, Mansfield began construction of a breakwater and seawall

5. Lattimore, *Fort Pulaski*, 49-54.

6. Young, 302.

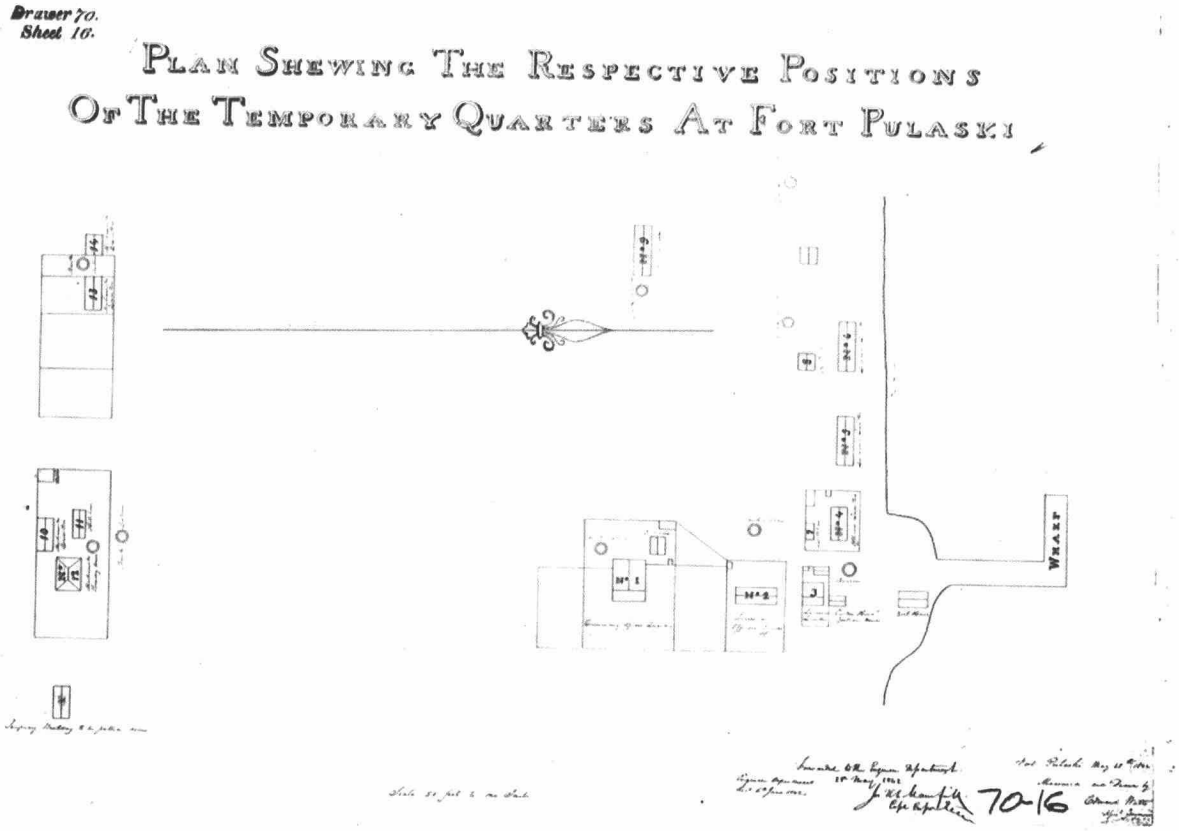


FIGURE 30. 1842 map of construction village. Record Group 77, Drawer 70, Sheet 16. (National Archives)

around the northern and northeast perimeter of the island, designed to protect the shoreline and the temporary quarters in that section. It was completed in 1842.[7]

Roadways. At least two roadways were present during the fort's construction. A roadway connected the fort, the construction village, and the wharf on the North Channel and was probably laid out early in the construction process. Another roadway was constructed in 1843 using excavated earth that was placed west of the feeder canal. Mansfield planned on building a new wharf at the southern terminus of the roadway, explaining to Washington that the old wharf on the South Channel, located 600 feet east of the new roadway, was rotten and should be abandoned. Prior to 1843, goods were transported on a temporary canal and on a narrow-gauge railway from the South Channel to the fort. During the late summer of 1845, Lieutenant Alexander cut away part of the 1843 roadway to provide sufficient fill to grade the parade ground.

North Channel Wharf. Temporary wharves on the North Channel of the Savannah River were built in 1829 under the direction of Major Babcock. A short canal, upon which building materials were to be transported, was dug from the wharf on the North Channel to the northwestern edge of the fort site. The permanent wharf on the North Channel was completed in 1830. A severe gale that struck the Georgia coast in the summer of 1830 damaged the wharf, but repairs were made.

Upon his arrival on Cockspur Island in 1831, Lieutenant Mansfield decided that the wharf on the North Channel was in such bad condition that it should be abandoned. In 1837, a breakwater was begun to protect the north and northeast shores of the island. Up to this point, the wharf had been in such a state of disrepair that supplies came in on the more active South Channel. Enlargement of the wharf continued through the spring of 1839.

In 1843, workers began to lay a dry stone wall on the east side of the north wharf, completing the work in 1844. Mansfield's 1842 map identified the wharf. At this time Mansfield stated that "the wharf site on the North Channel is now believed to be permanent as there is little change in the shore line there." In 1854, a severe storm struck Cockspur Island and destroyed the wharf. Repairs to the wharf occurred

7. Groh, 129; HABS, 9; Young, 134, 213.

in 1857, when the wooden portion of the wharf was replaced where necessary with masonry and new timbers put down "as protecting piles" and additional timbers introduced "to give greater strength to the structure." [8]

South Channel Wharf. Mansfield felt that the wharf on the North Channel was poorly constructed and not worth repairing after damage by storms in 1830. In addition, the South Channel was the more prominent shipping route at the time. The building of a new landing on pilings opposite the southeast angle of the fort occurred in 1831. A temporary canal, dug twenty-five feet wide and three feet deep, and connected the new wharf on the South Channel with the fort site. Workers could float supplies on lighters down the canal and around the perimeter of the fort foundation. In 1837, a narrow-gauge railway was constructed from the South Pier to the fort. Mules were used to haul brick down the track.

Repairs were needed in 1841 after the project was suspended for a year. By September 1841, the south wharf had been thoroughly repaired and enlarged. The South Channel Pier and canal appear on the 1843 Mansfield map. At this time, Mansfield stated that the South Channel wharf should be abandoned, as a portion was rotten and erosion would destroy it completely in five years time. A severe storm that struck the Georgia coast in 1854 destroyed the wharf.[9]

Cockspur Island Lighthouse Complex. Located southeast of Cockspur Island on its own islet, the Cockspur Island Lighthouse was originally constructed in 1848. It was destroyed in an 1854 hurricane and rebuilt in 1856. A frame lightkeeper's house was also constructed in 1848. Although its exact location is unclear, it seems likely that it was somewhere on the eastern end of Cockspur Island.[10]

Civil War Era (1860-1865)

In 1862, Fort Pulaski was considered invincible. Its seven-and-one-half-foot solid brick walls were backed with massive masonry piers. The broad waters of the Savannah River and wide swampy marshes that could not support the weight of a man surrounded the fort on all sides. Navy boats could not safely come within effective range of the fort, and there was no firm ground on which land batteries could be erected nearer than Tybee Island. All previous military experience had shown that smoothbore guns and mortars would have little chance to break through masonry walls beyond a distance of 700 yards, and beyond 1,000 yards no chance at all.

Confederate Brigadier General Robert E. Lee arrived in Savannah in November, 1861, to take command of the forces in South Carolina, Georgia, and east Florida. He realized that it would be impossible to defend the small batteries and forts on seacoast islands that were all within range of the Federal Navy. He ordered the abandonment of the Georgia Sea Islands, the removal of guns from the batteries, and the withdrawal of troops to the inner lines of defenses on the mainland. On November 10, 1861, Confederate forces left Tybee Island.

Federal Brigadier General Quincy A. Gillmore believed that it would be possible to reduce Fort Pulaski with a new weapon, the rifled gun. On the northwest shore of Tybee Island facing Fort Pulaski, Federal troops erected eleven batteries for guns and mortars. Their job was made particularly difficult because the last mile of the shore, on which seven of the major batteries had to be established, was an open marsh in full view of the fort and within effective range of its guns. All work had to be performed at night, and the men were not allowed to speak above a whisper. Camouflage was used each morning to conceal the previous night's work. Two batteries on Goat Point contained the rifled guns, two 84-pounder and one 64-pounder James rifles.[11]

Forty-eight guns protected Fort Pulaski, placed to command all approaches. Consequently, only part of Fort Pulaski's artillery could fire on Tybee Island,

8. Young, 21-269, Prentice, 18; J. F. Gilmer to J. G. Totten, March 16, 1857 and "Monthly Report of the Operations at Fort Pulaski, Georgia, for the Month of November, 1857," National Archives Record Group 77.
9. Young, 21-256; Prentice, 17; the South Channel Pier is not mentioned in the 1857 reports that document repairs to the North Channel Pier.
10. Prentice, 45; Groh, 54.
11. Quincy A. Gillmore, *Siege and Reduction of Fort Pulaski* (1862; repr., Gettysburg, PA: Thomas Publications, 1988), 28-29.

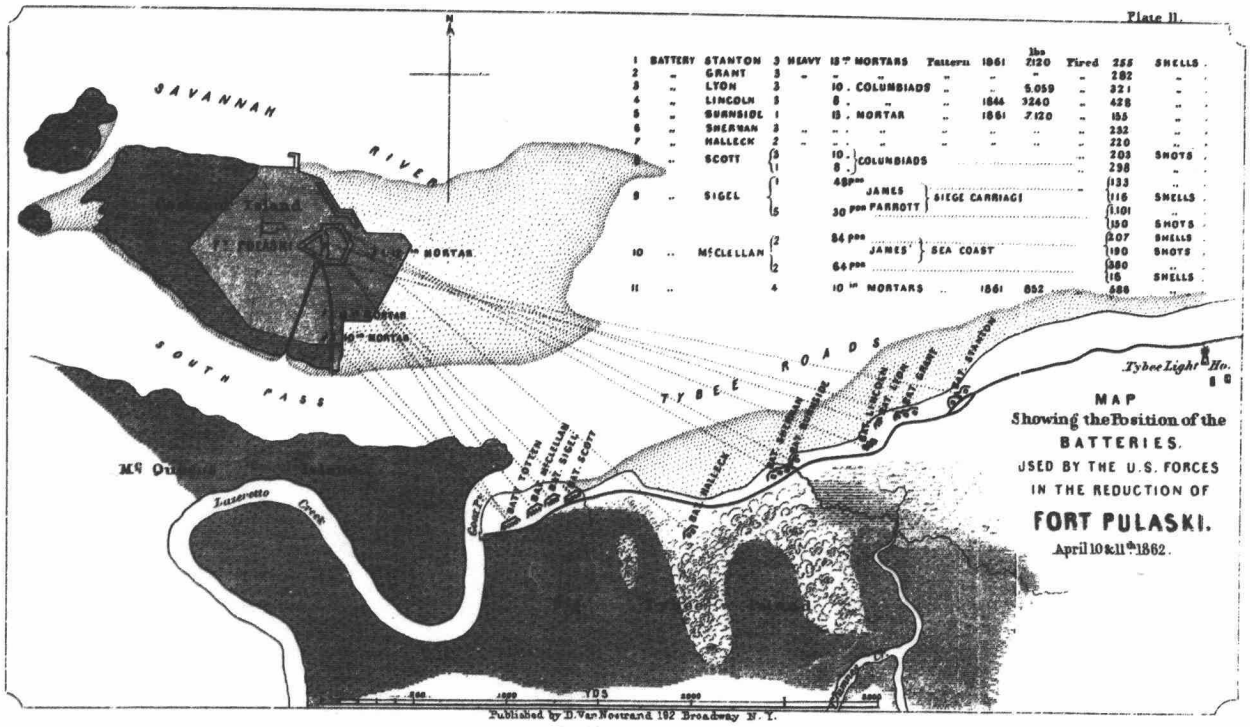


FIGURE 31. 1862 map of Federal batteries. (FOPU archives)

and only four barbette guns and three casemate guns could reach Goat Point, where the rifled artillery guns were set up. The remaining guns were mounted to command the North Channel of the Savannah River and the sweeping marshes to the west. Three mortar batteries were set up outside the fort, one east of the fort and two south of the fort. Confederate commander Charles H. Olmstead later admitted that the Confederates expected a Naval attack and had no idea of an attack from Tybee.

Soon after sunrise on April 10, 1862, Confederate forces on duty at Fort Pulaski noticed suspicious changes to the landscape of the west end of Tybee Island. The top of the ridge had been leveled, brush and trees had been removed, and four batteries were now visible.

At the end of the first day of battle, Federal forces on Tybee Island could not determine the effect of breaching fire on Fort Pulaski. Had they been able to inspect the fort, they would have found that it was in shambles. Nearly all the barbette guns and mortars bearing on Tybee Island had been dismounted, and only two of the five casemate guns were operational. At the southeast angle, the entire wall from the crest of the parapet to the moat was



FIGURE 32. Barbette gun on the terreplein, April 1862. (FOPU archives)

blasted away to a depth of from two to four feet. By noon of the second day, two holes had been opened through the walls and the inside of the fort was now visible from Tybee Island. Federal Brigadier General Henry W. Benham noted as the brick face crumbled that he saw "a portion of the work I may say I had witnessed the building of as an assistant to Lt.



FIGURE 33. Breach of southeast angle, April 1862. (FOPU archives)



FIGURE 34. Buildings on the demilune, 1863. (FOPU archives)

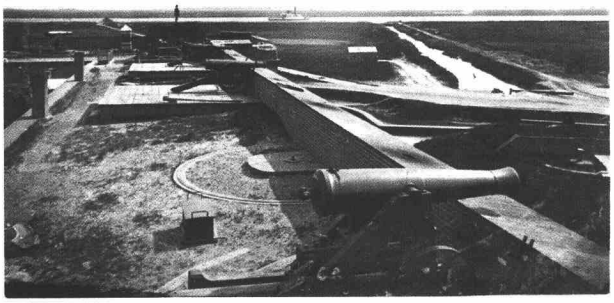


FIGURE 35. Roadways southwest of the fort, 1863. (FOPU archives)

Mansfield, 25 years before." It was clear that the entire east angle would soon be in ruins, and at this point Colonel Olmstead surrendered the fort.[12]

In the two days of battle, 5,275 shot and shell were fired against the fort, but the breach through the walls was largely the result of three James rifles positioned at Goat Point. Shots from the other rifles were erratic in flight and did little damage. When the Confederates left Tybee Island in 1861, they presented Union forces with the only possible location for battery sites from which Fort Pulaski could have been breached. The only Union death during the engagement was caused by Confederate mortar fire.[13]

Construction Village. Federal troops converted buildings in the construction village to new uses appropriate to wartime, such as a hospital. They also built new buildings inside the fort and on the demilune.

Roadways. Civil War photographs taken from the southwestern corner of the fort show the remains of the 1843 roadway paralleling the main feeder canal that was cut away in 1845. One photograph shows another road east of the feeder canal that appears to link the South Channel Pier and the fort.

Another photograph taken from the northwest corner of the fort shows the roadway from the North Channel Pier to the fort (see Figure 176).

Cemetery. The most probable location of the cemetery, based on historic records, was along the glacis north of the demilune moat. During the Civil War, a damaged Confederate cannon was partially buried with the muzzle down near the center of the cemetery to commemorate the Confederate officers who died while imprisoned at Fort Pulaski. The cannon can be seen in historic photographs, confirming the presumed location of the cemetery.[14] (See Figure 113)

12. Lattimore, *Fort Pulaski*, 31-34; Herbert M. Schiller, *Sumter is Avenged: The Siege and Reduction of Fort Pulaski* (Shippenburg, PA: White Maine Publishing Company, Inc., 1995), 100-117.
13. Lattimore, *Fort Pulaski*, 19-36; Gillmore, 37.
14. Colonel John Millis to Chief of Engineers, February 25, 1918, National Archives, RG 77, Box 1; Groh, 117.

Cockspur Island Lighthouse Complex. The Cockspur Island Lighthouse was a feature in the landscape at the time of the battle but survived the fort's bombardment.

Post-Civil War (1866-1880)

After the Civil War, a sizeable contingent of Federal troops garrisoned at Fort Pulaski from 1869-1873. In addition to the changes to the demilune (see Topography section), troops repaired the fort drawbridges, reconstructed roads and repaired sea walls around Cockspur. The fort closed on October 25, 1873, the day after the discharge of all enlisted men and the hospital matron.[15]

Cemetery. A July 6, 1874, Savannah Morning News article described the cemetery:

> A few days since, while on excursion with some up-country friends to Fort Pulaski, our attention was attracted by a neat enclosure containing several graves marked with headboards, marking the graves of deceased soldiers. Upon enquiry of Colonel Howard, Commander of the Fort, we learned that the graves were those of Confederate officers, whose remains had been gathered and buried there by this direction.

This quotation implies that U. S. troops stationed at Fort Pulaski after the Civil War moved some of the burials and placed grave markers showing their locations.[16]

Residence and Cistern. After federal troops left Fort Pulaski in 1873, an ordnance sergeant remained as caretaker to the fort. He occupied a residence with a cistern northeast of the fort. The cistern was unlike those of the construction village. It was constructed without a stone covering, and the top course of bricks was tipped to the interior of the opening.[17]

Cockspur Island Lighthouse Complex. In 1868, the construction of a boat landing occurred. In 1874, both the Assistant Engineer and the Inspector of the Sixth Lighthouse District, Charleston discussed plans to construct an elevated walk from the fort to the lighthouse. The Engineer of the Sixth District in Baltimore did not approve of the construction and submitted his own plans. This conflict of opinion led to an impasse on the matter.[18]

Tybee Knoll Cut Lighthouse Complex. A lighthouse was constructed in 1878 along the South Channel of the Savannah River. It was located on the southwest shore of Cockspur Island, near the current southwest boundary of Fort Pulaski National Monument. By 1893, a keeper's house, boathouse, and oil storage shed had been added.

Fort Pulaski Military Reservation (1881-1923)

In August of 1881, the storm surge from a strong hurricane demolished the construction village and the Cockspur Island lightkeeper's house. It is likely that it also destroyed the residence of the ordnance sergeant. The storm also destroyed much of the dike system and returned much of the land back to its original marsh.[19] After another hurricane in 1893, a two-story house for the Cockspur Island Lighthouse keeper was built on top of Fort Pulaski's terreplein, the grassy upper level of the fort. The exact construction date is unclear, but the funds were appropriated in 1902. The house burned in 1925 after being struck by lightening.[20]

The construction of a single-track railroad by the Central of Georgia Railroad Company occurred between 1886 and 1887. The rail ran from Savannah out to Tybee Island along the South Channel, crossing McQueens Island.[21]

Cemetery. During vegetation clearance at Fort Pulaski in 1918, two gravestones were found on the glacis north of the demilune moat. In 1921, it was reported that hogs owned by the caretaker had knocked down the gravestones. The Corps of Engineers instructed John A. Bergman, the caretaker's son, to reset the stones and place a fence around the graves.[22]

15. HABS, 11; E. D. Townsend, Adjutant General, to Major General H. W. Halleck, August 25, 1870 National Archives, RG 77, Box 1.
16. www.cr.nps.gov/seac/pulaski/2-civil_war/index-2.htm
17. Prentice, 23-24.
18. Groh, 147.
19. CLI, 7.
20. HABS, 12.
21. Meador, 14.
22. Colonel John Millis, Corps of Engineers to Chief of Engineers, January 26, 1918; Colonel F. W. Altstaetter, Corps of Engineers to John A. Bergman, March 21, 1921, National Archives, RG 77, Box 1.



FIGURE 36. Cemetery markers. (FOPU archives 3378)

South Channel Wharf. It was reported in 1892 that "the wooden wharf built in 1870 has almost disappeared. The shell road leading from its site to the fort is in fair order."[23]

Battery Horace Hambright. The construction of this rapid-fire gun battery, located south of the North Channel Pier, was completed in 1900, except for the setting of fixed iron work.

Quarantine Station. The City of Savannah established a quarantine station along Cockspur's northwest shore in 1889. It was acquired by the Treasury Department in 1899 and administered by the U.S. Marine Hospital Service, which later became the U.S. Public Health Service.

By 1903, there were nine buildings, including the hospital, laundry, pharmacist and attendants' quarters, kitchen building, medical officers' quarters, disinfecting house, paint house, sailors' quarters, and an attendant's quarters. Along the wharf, which was 312 feet long and 10-17 feet wide, were a boathouse, engine room and sulfur storeroom. A massive water tank was constructed next to the decontamination building.

In 1911, the station was expanded to approximately 130 acres. Between 1911 and 1918, a number of additions were made. A 1914 map depicts a picket fence, approximately 1,000 feet in length, forming the station's southern and western border, as well as a tennis court. By the late 1920s, there were approximately 20 buildings at the quarantine station.[24]

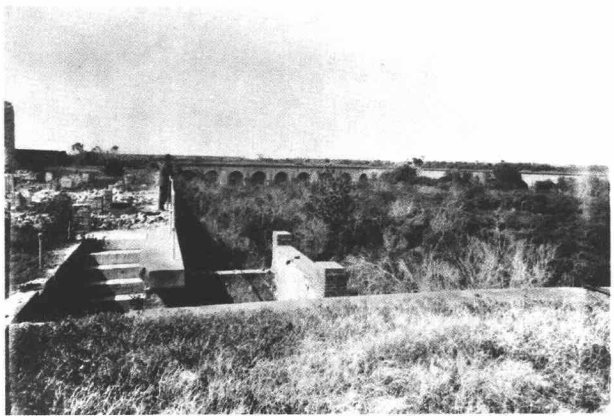


FIGURE 37. Terreplein after 1925 fire. (FOPU archives 3461)

Cockspur Island Lighthouse Complex. Storms damaged the light keeper's house many times over the years, and it finally washed away in the 1881 hurricane that also destroyed the construction village.

In 1899, the superstructure of the boat landing was replaced and in 1901 extended twenty feet into the South Channel of the Savannah River. The landing was damaged in storms that struck between 1902 and 1905, and was repaired in 1905.[25]

The U.S. Lighthouse Service extinguished the light of Cockspur Island Lighthouse in 1909, but the tower continued to act as a navigational aid.

Fort Pulaski National Monument War Department Administration (1924-1932)

Following Fort Pulaski's designation as a national monument in 1924, an estimate was prepared for the work needed to make it easy and convenient for visitors to reach and view Fort Pulaski. This 1925 document did not include restoring the fort but included replacing the South Channel Dock, restoring the causeway from the South Channel Dock to the fort, and construction of a walk around the interior of the fort. These funds were never appropriated, and, despite its newfound status as a National Monument, Fort Pulaski remained in

23. "Fort Pulaski, Mouth of Savannah River, Ga.," transcription of original dated 1892, National Archives, Record Group 77, Box 1.

24. Jones, 14-17; HABS, 13.
25. Groh, 147-48.

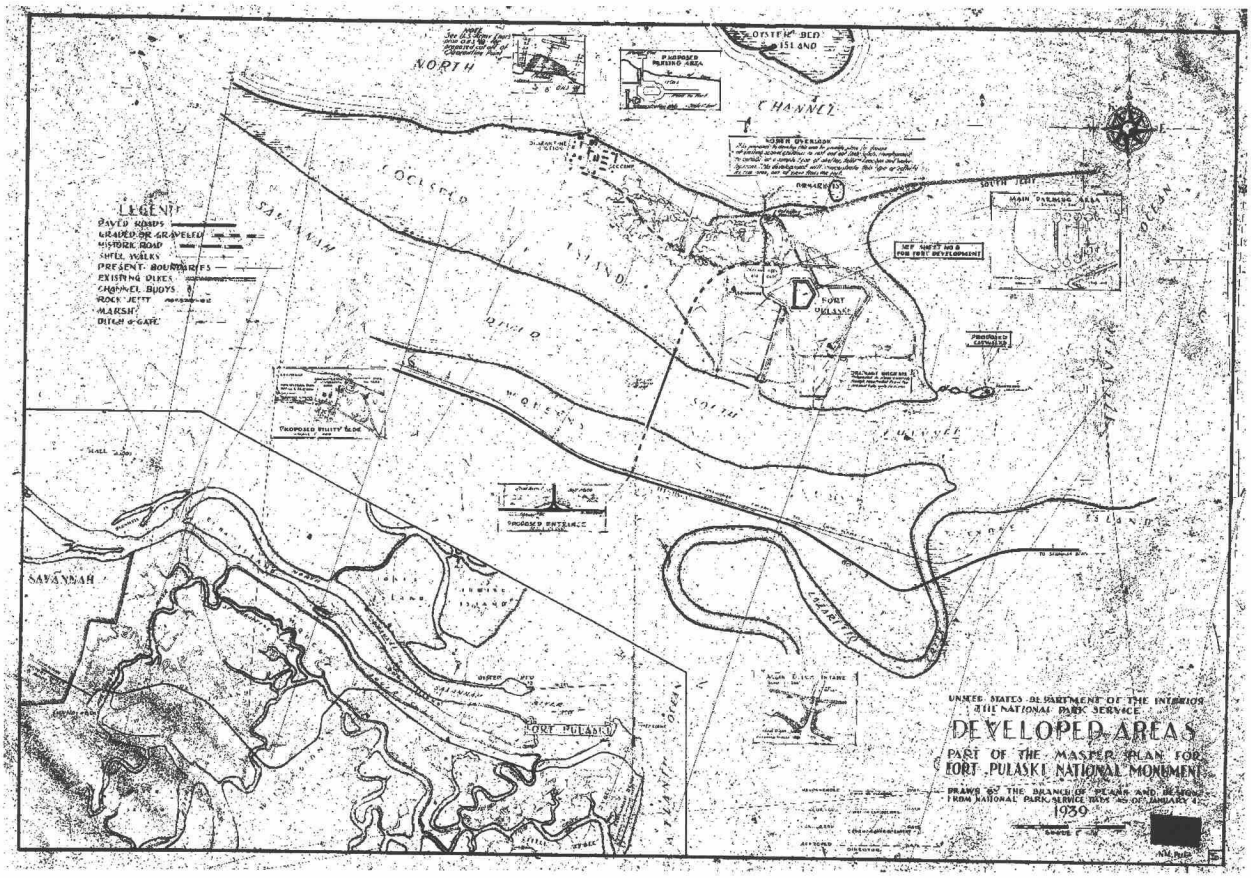


FIGURE 38. Developed Areas map, 1939. (Denver Service Center eTIC 348/2065)

dilapidated condition throughout the 1920s. The Savannah Morning News described the condition of the site: "The only access to the island is by boat, and the visitor must struggle through a swampy and marshy section for nearly half a mile before coming to the fort itself. There is no caretaker at the monument ... [t]he fort is in ruins."[26] Conditions worsened after a 1925 fire that destroyed the caretaker's house on the terreplein.

National Park Service Development Era (1933-1942)

Executive Order 6166 transferred Fort Pulaski's administration to the National Park Service in 1933. Park development plans from 1934 (1051B) show an elaborate system of roads and pedestrian paths proposed through the construction village, Battery Hambright, and ending at the old North Channel Pier, where they connected back to a parking area north of the fort demilune. Later plans (1067A) show a residence and utility group at the west end of the island. These early plans are typical of the Park Development era and were done for other national monuments like Wright Brothers Memorial. An elaborate brick entrance feature and brick utility building were also planned. As was most often the case, there was never enough funding for these kinds of projects, and plans for a more practical kind of development followed.

Acting Superintendent Ralston Lattimore summed up the revised plans:

> The original program included a caretaker's residence, and administrative office building, recreation shelters, and detached comfort stations. It also included an appropriation for the purchase of land on Tybee Island to be used as a parking area, and larger appropriations for wharf and road development.

The caretaker's residence and recreation shelters were not constructed, and rooms within the fort provided for an administrative office and comfort stations.

Soon after work began, the advisability of bridging the South Channel of the Savannah River to make

26. Dan Sultan, District Engineer to Chief of Engineers, April 8, 1925, National Archives, RG 77, Box 1; *Savannah Morning News*, 3 February 1934.

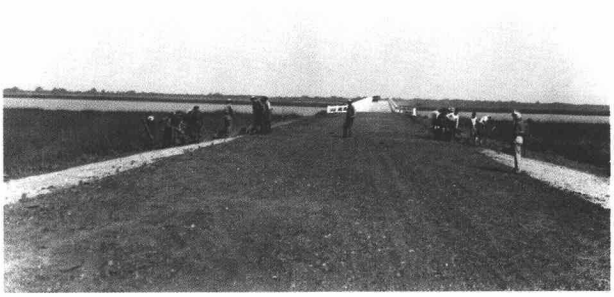


FIGURE 39. Work on South Channel Bridge, 1938. (FOPU archives)

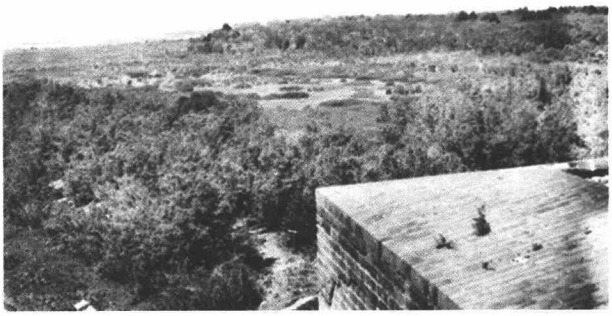


FIGURE 40. Parking area, 1934. (FOPU archives)

the monument accessible was pointed out by civic and patriotic organizations of Savannah and Georgia. Lands on McQueen's Island were ceded to the United States by the State of Georgia, and plans were drawn up for a vehicular bridge to join McQueen's and Cockspur Islands. Funds appropriated for land purchase onTybee were cancelled. Funds appropriated for road development were transferred to the bridge project.[27]

A General Development Plan (2065) proposed a bridge from U. S. Highway 80 on McQueens Island across the South Channel of the Savannah River to Cockspur Island. An entrance road with a contact station leading to a parking area north of the fort demilune was part of this CCC project. Previous to the construction of the South Channel Bridge and entrance road in 1937-38, access was by ferry from Lazaretto Creek to the south shore of Cockspur Island.

The construction of the parking area began in 1938. According to CCC reports, this site was chosen "to take advantage of this location near the fort rather than cut back into the woods for a parking area." This area was filled in with mud from the moat excavation. The parking area's western edge aligned with a historic road trace that was now a pedestrian walk leading up to the fort from the South Channel and to the old North Channel Pier in the other. Interpretive shell walks linking historic features in the landscape were built in 1939.[28]

The Park's first Master Plan was approved in 1939. It proposed an overlook at the North Channel Pier, catwalks out to the Cockspur Island Lighthouse, a



FIGURE 41. Main parking area, 1940. (FOPU archives)

utility building opposite the old quarantine station, and an entrance treatment. The entrance treatment was considered a top priority because the Park thought the entrance was unsafe for visitors. As early as 1935, plans for an elaborate brick entrance feature and contact station had been developed. Several studies were devoted to this feature, which included walls, gates, and a contact station. Prior to the completion of the contact station at the entrance, the Park built a temporary fee collection station in the demilune passageway.

As part of the 1942 Master Plan, a revised General Development Plan was approved that retained the proposed overlook at the North Channel Pier but deleted the catwalks out to the Cockspur Island Lighthouse. It also included a small parking area opposite the main drawbridge entrance, expansion of the existing parking area, plantings on either side of the visitor contact station at the entrance to the Park, a parking area in the residence/administration group (former quarantine station), and reconstruction of the hot shot oven inside the fort. The utility group was located southwest of the service road to the administration/residence group and the abandoned CCC camp on this plan.[29]

27. Annual Narrative, 1936, FPNM Archives.
28. John C. Le Bay, Narrative Report Landscape Work, March 31, 1936, FPNM archives.

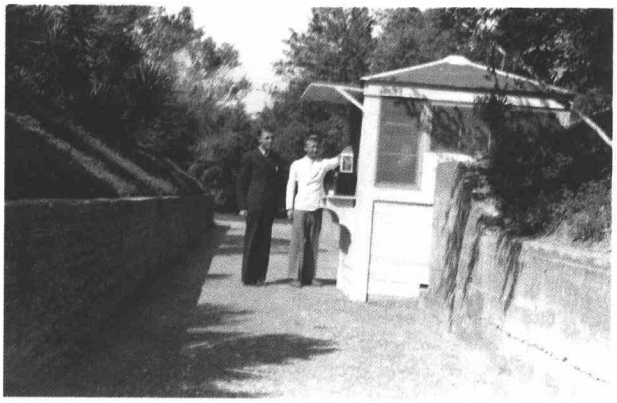


FIGURE 42. Temporary fee collection station, 1940. (FOPU archives)



FIGURE 43. Temporary pier and dock, 1936. (FOPU archives)



FIGURE 44. Battery Horace Hambright, 1941. (FOPU archives)

In a memorandum to the Regional Director concerning the 1942 Master Plan, the Coordinating Superintendent suggested that the contact station be moved from the main entrance to the parking area, and commented that the contact station "seems to act as an obstruction to visitors, rather than to convey a broad feeling of welcome, expected of any main entrance." He also stated that the Park favored a combined administration and service group, designed as two units, but able to take advantage of centralized utilities and supervision.[30]

South Channel Wharf. The south shore area was used again in the 1930s, as a loading dock by the CCC. A temporary pier and dock were built very near the same location as the wharf on the South Channel. A ferry service from the west bank of Lazaretto Creek to the dock moved personnel and goods to and from the island. The ferry service operated from 1934 to 1938, when the South Channel Bridge was completed.[31]

To access the new pier, a loop road was constructed at the end of the "historic walkway," which was also used as a service road. Park planning maps indicate that the loop road and temporary pier were taken out between 1940 and 1941.[32]

Battery Horace Hambright. In April 1941, the dense foliage covering the battery was removed and riprap was placed along the north shore of Cockspur Island to prevent further damage to the north gun platform and steps, both of whose supporting cement was cracked. The cement in those areas was removed and broken into aggregate, which was used in the new concrete. Two deteriorated wooden foot bridges were replaced, as well as sections of the iron guard rails.[33]

Quarantine Station. Following the transfer of the administration of the quarantine station in 1937, the Army Corps of Engineers began planning a series of major improvements to the main shipping channel and port at Savannah. Part of the project included dredging a portion of land west of the quarantine station and using the dredged material to reconstruct the station's shoreline. The Corps completed the project in 1939, which included demolishing the old wharf, two utility buildings and the old hospital building, and constructing a new wharf. A CCC project removed five additional buildings that same year. Prior to the entry of the United States into WWII, park plans show this area to be used as a residence/administration group.[34]

29. General Development Plan, 348/2083, 1943.
30. C. R. Vinten to Regional Director, March 25, 1942, FPNM archives.
31. Groh, 118.
32. Proposed Parking Area, 348/1020A, 1938; Riprap Main Tide Gate, 348/4054, 1940; General Development Plan, 348/2082, 1941.
33. Groh, 116.
34. Memo to Acting Superintendent, Fort Pulaski National Monument from Fred T. Johnston, April 12, 1939, FPNM archives; Office and Resident Group, 348/2067, Razing Undesired Structures, 348/2051, Present Administration Area, 348/8079.

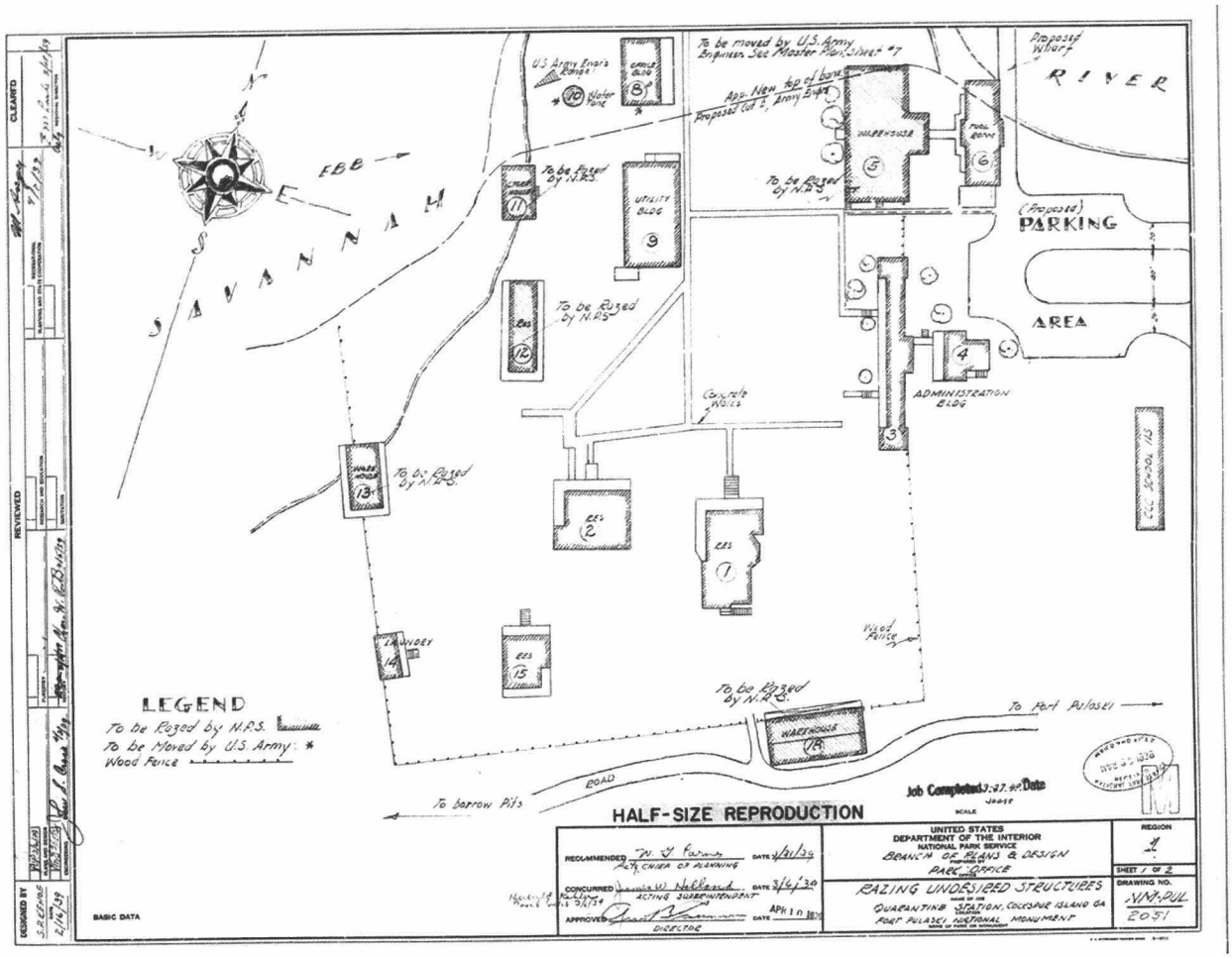


FIGURE 45. 1939 plan of Quarantine Station. (Denver Service Center eTIC 348/2051)



FIGURE 46. Quarantine Station. (FOPU archives 3350)

During WWII, the Navy established a Section Base on Cockspur Island, finding the quarantine station and CCC camp location at the western end of the island could be improved to meet their needs. The Navy spent nearly $2,000,000 to rehabilitate the quarantine station and CCC buildings and construct new Navy structures. The completed section base consisted of barracks housing four hundred men, an administrative office, a movie auditorium, club rooms, cooking facilities, an officers' club, gymnasium, athletic field, tennis courts, and several ammunition magazines southwest of the base.[35]

CCC Camp. The CCC established Camp 460 just east of the quarantine station in 1934 and constructed a large camp that included four barracks, a mess hall, a recreation hall, utility buildings, bath house, foresters' buildings, and officers' quarters. Shell roads connected the various buildings.[36] CCC Camp 460 was transferred to Florida in May 1941.

Savannah Bar Pilots. In 1940, the Savannah Bar Pilots Association was allowed to move their base of operations from Lazaretto Creek, near McQueens Island, to the west end of Cockspur Island. They took over the dock and several of the old quarantine station buildings under a special use permit that was renewed annually.[37]

Maintenance/Utility Area. A metal garage for housing trucks, which included a truck repair shop,

35. Meador, 58.

36. CLI, 10.
37. Meador, 64.



FIGURE 47. CCC camp at Fort Pulaski (FOPU archives 3370)



FIGURE 48. Truck shed, 1936. (FOPU archives)

was completed in November 1935. Also at this time, the oil house and gas tank at the South Channel dock were moved to the garage site. A frame utility building was in place by 1940.

Post-World War II (1945-1955)

In 1945, several construction projects were proposed for Fort Pulaski, including the removal of the entrance checking station. Also approved was the addition of a paved walkway from the demilune entrance to the parking area, installation of catch basins in the parking area, and improvement to the drainage system.[38]

A series of General Development Plans from 1949 to 1960 outlined the Park's efforts after WWII. The final plan called for a picnic area west of the fort along the road to the residence/administration group, and showed the addition of the John Wesley Memorial north of the main parking area. A 1960 revision shows the addition of a visitor center just west of the demilune.[39]

38. Project Construction Program, September 5, 1945, FPNM archives.
39. General Development Plan, 348/2010A-C, 1957-1960.

Between 1951 and 1953, the NPS began removing some of the quarantine station and CCC buildings at the residence/administration group that were planned for demolition when WWII broke out. The job was increased because there were also buildings added by the Navy that were no longer needed. By 1957, only five buildings remained.[40]

Cemetery. In May 1950, members of the 1897 class of the U. S. Military Academy were granted permission to erect a memorial in the cemetery to a member of the Corps of Engineers who lost his life while attempting to rescue the crew of a ship foundered on Tybee Shoals during a hurricane. The memorial was previously located at Fort Screven and was rededicated on Memorial Day.

To prepare for this ceremony, "jungle growth" was removed from the cemetery, and the grave stones were reset at the two marked graves. Protective cradles of galvanized iron chain suspended from two-inch capped pipe stanchions were erected at each grave. Rust was removed from the Columbiad cannon that marked the cemetery site, and all metal work was given two coats of black rust-resistant paint.[41]

Superintendent Lattimore described the cemetery at the time of the Memorial Day ceremony:

> The cemetery plot is rectangular, approximately 25' by 100', framed on both sides by ilex vomitoria, yucca, and palmetto. There is a tall conical cedar at one end. At the other end we have erected a 20' flag staff in order to display the colors at the cemetery on Decoration Day and other national holidays. The flag staff does not rise above the tree tops and is visible outside of the cemetery only from the parking area. We placed the memorial stone directly in front of the flag staff at the end of the cemetery opposite the entrance in order that it could be first viewed at the end of a vista. The military engineers were very much pleased with this arrangement.[42]

John Wesley Memorial. The Georgia Society of Colonial Dames of America erected the memorial on November 9, 1950, to commemorate the landing of John Wesley, founder of Methodism in America, on Cockspur Island in 1736. The monument,

40. Monthly Narrative Report, May 1953; Existing Conditions After Building Sale, 348/2012 A-F, 1950-1956.
41. Monthly Narrative Report, May 1950, FPNM archives.
42. Monthly Narrative Report, June 1950, FPNM archives.

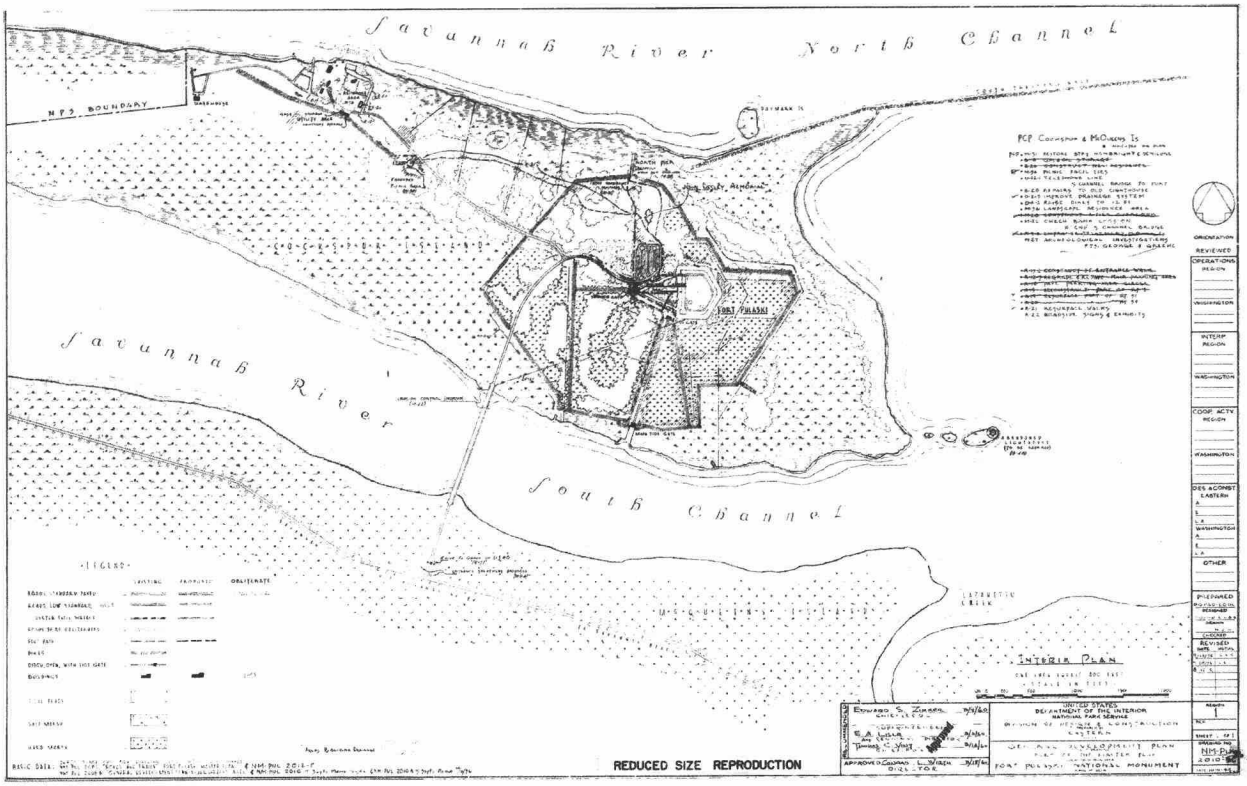


FIGURE 49. General Development Plan, 1960. (Denver Service Center eTIC 348/2010C)

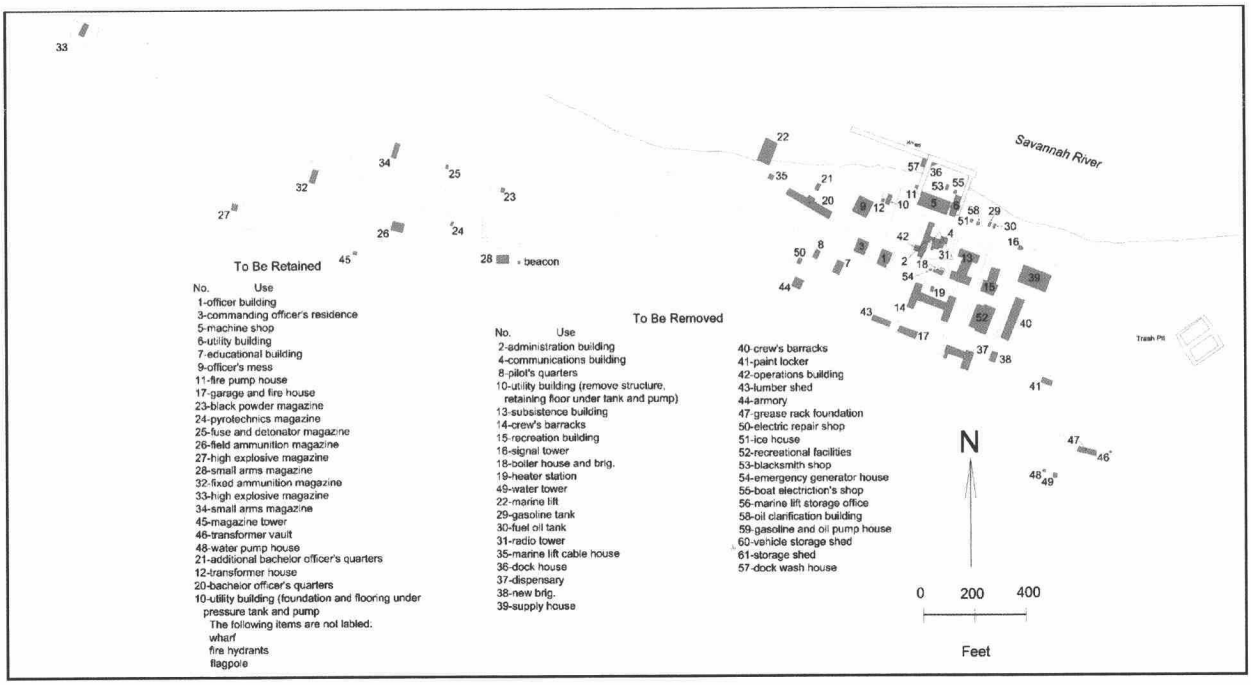


FIGURE 50. Plan of buildings to be removed, 1946. (Southeast Archeological Center)

located south of Battery Hambright, marks the general area of John Wesley's first service on American soil.[43]

Cockspur Island Lighthouse. The United States Coast Guard abandoned the Cockspur Island Lighthouse in 1949.

43. Groh, 160.



FIGURE 51. John Wesley Memorial. (FOPU archives)

Mission 66 (1956-1966)

In conjunction with the construction of a visitor center, Mission 66 plans called for the realignment of the entrance road to allow vehicular traffic to drop off passengers at the visitor center before parking. The new road alignment and resurfacing of the parking area disturbed drainage patterns, which were already problematic in some very low places. Larger pipe lines connecting the catch basin with the concrete box sewer and a new drain to permit drainage of the grassed area west of the parking lot were installed to correct the drainage problems. Sections of the parking area loop road continued to flood after a heavy rain.[44]

Bids for the construction of the visitor center, sited west of the fort, went out in 1962, and the visitor center opened to the public in 1964.

Concrete walkways brought visitors from the parking area into the visitor center. A brick seating area was incorporated into the entrance walk from the parking lot to the front entry. The existing, stabilized-turf service road up to the drawbridge of the fort was realigned and replaced with two paved strips. Also part of the visitor center landscape

44. "Construction of Parking Area and Road Improvements," April 19, 1963, FPNM archives.



FIGURE 52. Visitor Center, 1964. (FOPU archives 3434)

development was the construction of a metal gate with brick piers just east of the intersection of the entrance road and the service road to the west end of the island.

The construction of a fee collection station and gate proposed in the 1965 Master Plan occurred in 1968. Its location was on the main entrance road near the South Channel Bridge.[45]

Quarantine Station. In 1960, the quarantine officer's quarters, one of the first buildings constructed at the station, was demolished. By 1969, only two of the buildings constructed by the Public Health Service remained.[46]

Cemetery. It is possible that the realignment of the entrance road during construction of the visitor center in the 1960s may have covered or disturbed a portion of the cemetery area.[47]

North Pier Overlook. In 1961, the North Pier Overlook was included in the 1962 construction program. It was described as "largely a landscape job, requiring removal of excess shrubbery, establishing a grass cover, and the installation of benches and a brick terrace at the north end of the old pier."[48]

Vegetation clearance began in 1961, and the Park was waiting for a plan for the outer end of the pier. It

45. 1971 Master Plan, 30.
46. Jones, 18.
47. Groh, 117.
48. Superintendent Fort Pulaski NM to Regional Director, March 20, 1961, FPNM archives.



FIGURE 53. North Pier Overlook, 1964. (FOPU archives)

was stabilized in 1963 by filling the space between the granite blocks and bringing the mole up to grade. Repairs were necessary at the extreme end where a granite and rock barrier was constructed to protect the stabilized pier from wave action. The approaches and vicinity of the pier were improved by filling, elimination of weeds, and establishment of a good cover of Bermuda grass. The project was finally completed in 1964, when benches were placed on brick and flagstone platforms under a group of palmettos to provide visitors with a "restful" view of the North Channel of the Savannah River.[49]

Maintenance Area. The construction of the gas and oil storage building occurred in 1960.

Picnic Area. The picnic area was established in 1965 at the approved master plan site, southwest of the service road to the western end of the island, in a small pine grove. Twenty picnic tables were arranged to give each table a maximum amount of privacy. Six concrete platforms were provided for charcoal grills.

Post-Mission 66 (1967-Present)

In 1975, the realignment of the walkway from the visitor center to the fort occurred. The asphalt service road to the South Channel, which previously intersected with the original walkway from the visitor center and was also used by pedestrians leaving the fort and going back to the parking area, was obliterated and the area grassed over. In 1977, a handicapped ramp was constructed at the east entrance to the visitor center.[50]

The ten-ton granite monument to Henry Simms Morgan was transported back to Fort Screven in 1995. The monument had been transferred from Fort Screven to the cemetery at Fort Pulaski in 1950.[51]

In 1983, the U. S. Coast Guard opened a Search and Rescue Station on 1.85 acres just east of the smaller WWII bunker at the west end of Cockspur Island.[52]

The installation of handicapped accessible restrooms at the west entrance to the visitor center occurred in 1997. At this time, the placement of two of the benches from the Mission 66 seating area design was changed to accommodate entrance into the restrooms. A handicap ramp was constructed at this entrance in 1999.

A restroom facility was added to the Picnic Area in 1985 and a picnic shelter in 2004.[53]

Topography

The Building of Fort Pulaski (1829-1856)

The Dike and Ditch System. Cockspur Island is an alluvial island located at the entrance to the Savannah River. The deep mud underpinning the island proved challenging in constructing Fort Pulaski, whose original plans had to be revised due to the topography of Cockspur Island. Major Babcock's soil surveys showed that pilings would be required under much of the foundation, since the mud surfaces of the island did not offer a sufficiently solid base for the enormous weight of the proposed fort.[54]

49. Monthly Narrative Reports November 1961, July 1963, August 1963; Superintendent to Chief, EODC, March 6, 1963; Completion Report North Pier Overlook, August 4, 1964, FPNM archives.
50. Annual Narrative 1975; Notice of Award, September 30, 1977, FPNM archives ; personal communication Mike Hosti.
51. Annual Narrative 1995, FPNM archives.
52. Annual Narrative 1983, FPNM archives.
53. Annual Narrative 1997-2004, FPNM archives.
54. Groh, 119.

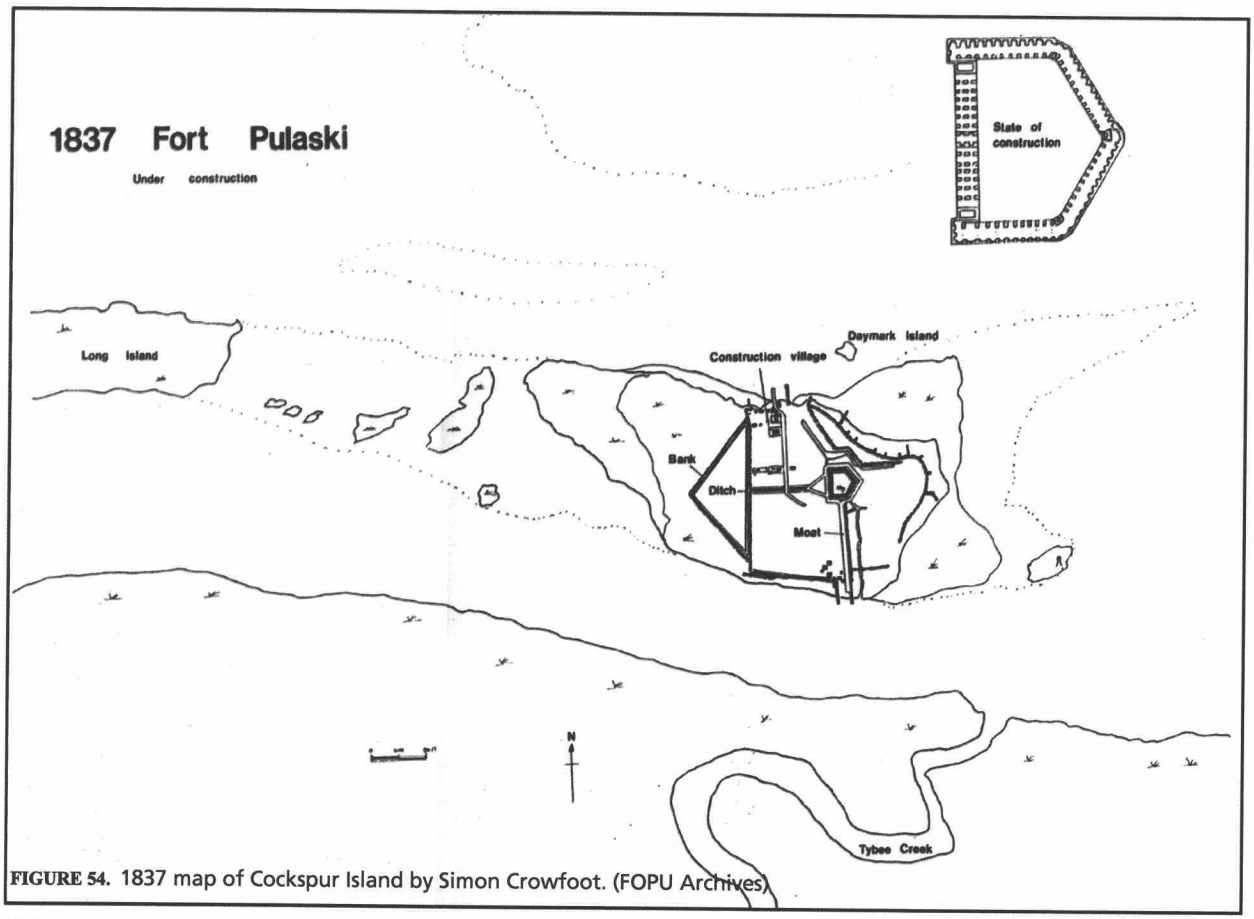


FIGURE 54. 1837 map of Cockspur Island by Simon Crowfoot. (FOPU Archives)

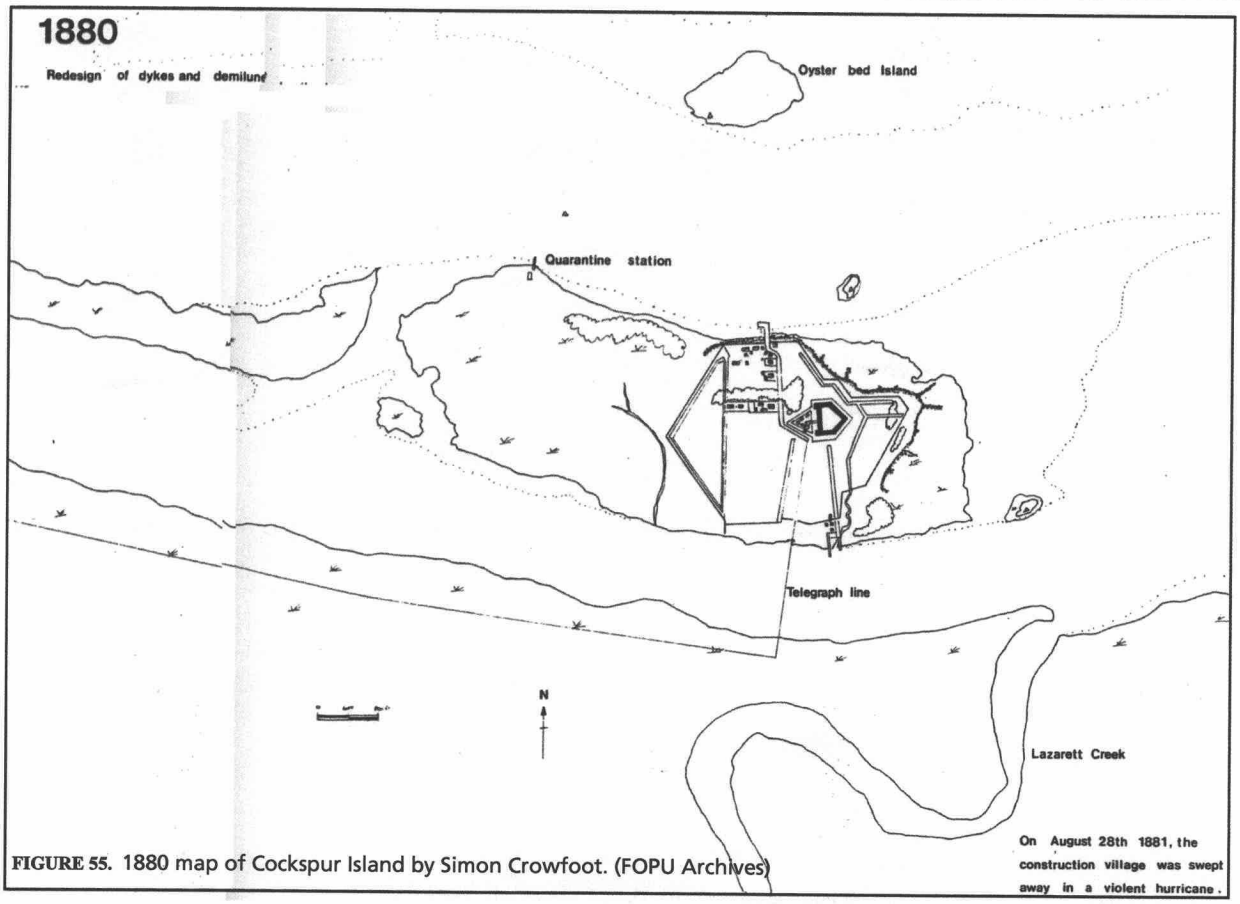


FIGURE 55. 1880 map of Cockspur Island by Simon Crowfoot. (FOPU Archives)

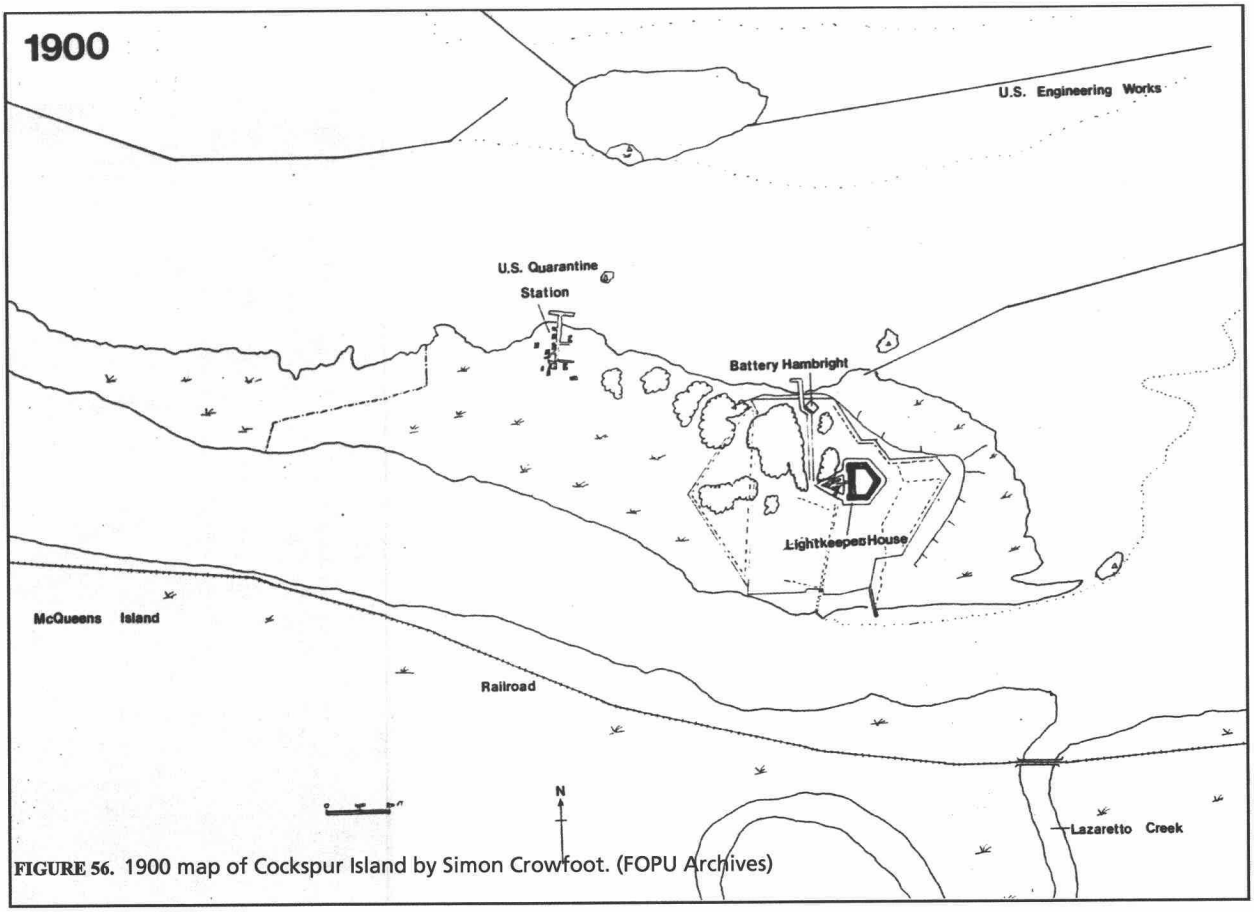


FIGURE 56. 1900 map of Cockspur Island by Simon Crowfoot. (FOPU Archives)

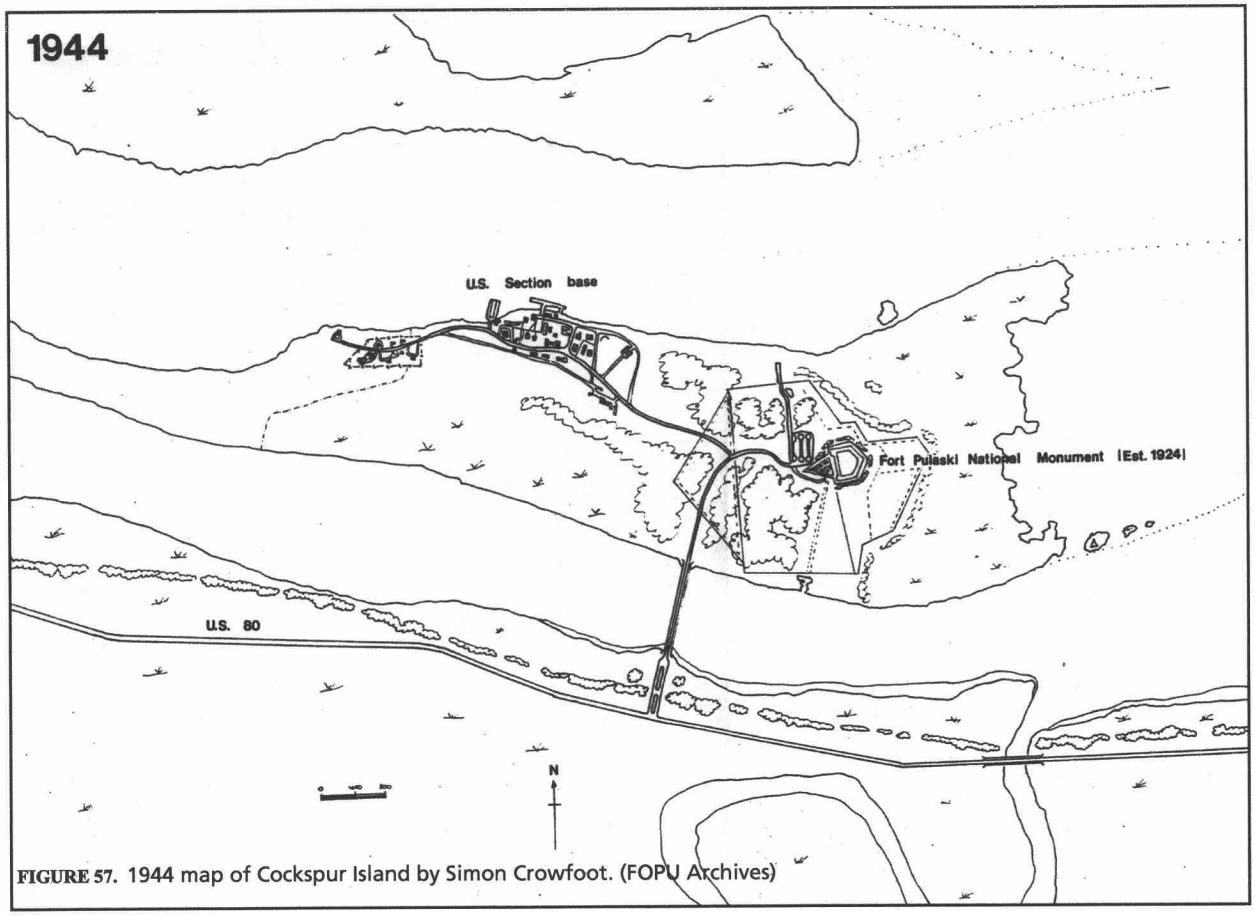


FIGURE 57. 1944 map of Cockspur Island by Simon Crowfoot. (FOPU Archives)

The dike and ditch system was begun in 1830, under the direction of Lieutenant Robert E. Lee, newly graduated from the United States Military Academy, who arrived as Babcock's assistant. Dikes were built around the driest portions of the island, and ditches were cut from the south shore of Cockspur Island toward the center of the island. Tide gates were installed in the ditches to control the flow of water to the center of the island and eventually to the moat that surrounds the fort. Culverts were constructed to house the tide gates and carry the water from the canal to the moat. The culverts were then faced with brick masonry. After the gate was positioned within the culvert, at a depth of approximately ten feet, soil was placed on top of the culvert to provide a walkway.[55]

The dikes were constructed by piling the muddy soils of Cockspur Island into a raised linear trapezoid-shaped mound. The dikes were linked together to form a continuous barrier of nearly two miles around the perimeter of the dry portion of the island. The outer perimeter of the island consisted of very soft mud, which was incapable of supporting the weight of a man and was inundated at high tide.

The dike and ditch system provided protection for the interior of the island from storm surges that frequently washed over the island. The dikes proved effective, but severe storm surges repeatedly damaged sections of the dike system. In 1830, two severe storms damaged portions of the system, which required rebuilding. In January 1831, Lieutenant, later Captain, Joseph K. F. Mansfield assumed command of the construction of Fort Pulaski. During the spring of 1842, two permanent sluices (ditches with tide gates) were constructed through the northwest and southeast dikes and an advanced sluice was constructed at the southern terminus of the feeder canal.

The permanent dikes on the western, northeastern, eastern, and southern sides of the island, which had been nearly completed, were destroyed in an October 1842 gale. In 1843, Lieutenant Barton S. Alexander began a new survey of the island and oversaw the rebuilding of the dike and ditch system, necessitated by the October 1842 storm.[56]

The main feeder canal shown on Lee's 1830 map was abandoned when the fort's location was shifted. The new location of the main feeder canal is shown on Mansfield's map of 1843. Its purpose was to carry tidal water from the South Channel of the Savannah River to the moat surrounding the fort. A tidal gate positioned across the ditch controlled the flow of water into the moat. The excavation of the main feeder canal, which stretched 2,000 feet to the South Channel, occurred in 1843, preparatory to the beginning of the moat revetment project. Plans for the main sluiceway into the moat arrived in December 1844, and its construction, with the exception of its coping, occurred in 1845. Water from the sea was let into the ditches in July 1845. Chief of Engineers Joseph G. Totten described the sluice when he sent the plans to Mansfield:

> Sluice is located so as to be on the prolongation of the Feeder which you have constructed, and empties itself into the ditch opposite the demi-lune. Water flowing from sluice passes on to a pavement of bricks, extending across ditch in a longitudinal direction for 35 feet. . . . Ditch end of sluice is closed by a gate, which rests against a vertical surface, both when closed and opened. Outer extremity of sluice is provided with a gate also, and when shut occupies position (a, a, a); when entirely open, occupies recess (b,b). An opening or waterway (c,c,c) is constructed in side wall of sluice having a bottom reference of ordinary high tide (about 7') so when water rises above this level, it flows thru opening and acts against the back surface of the gate, causing it to move from its position in recess, and to shut.

Mansfield reported that he considered it "inadvisable to make the sluice gates and hang them . . . this season." The construction and installation of the main sluice gates occurred in 1846.[57]

In December 1845, Lieutenant Alexander submitted a dike modification plan to Colonel Totten, which was approved with certain exceptions. The plan proposed modifications to the dikes in four sections. One configuration altered the sections to a triangle shape with a suggested base dimension of 25 feet and an elevation of 11 feet 6 inches. Another configuration maintained the original trapezoid shape with a base dimension of 25 feet and an elevation of 13 feet.[58]

55. Young, 200; Groh, 123.
56. Young, 213-15.
57. Col. J. G. Totten, Chief U. S. Engineer, to Capt. J. K. F. Mansfield, Fort Pulaski, December 6, 1844, FPNM archives; Young, 277-80, 300.

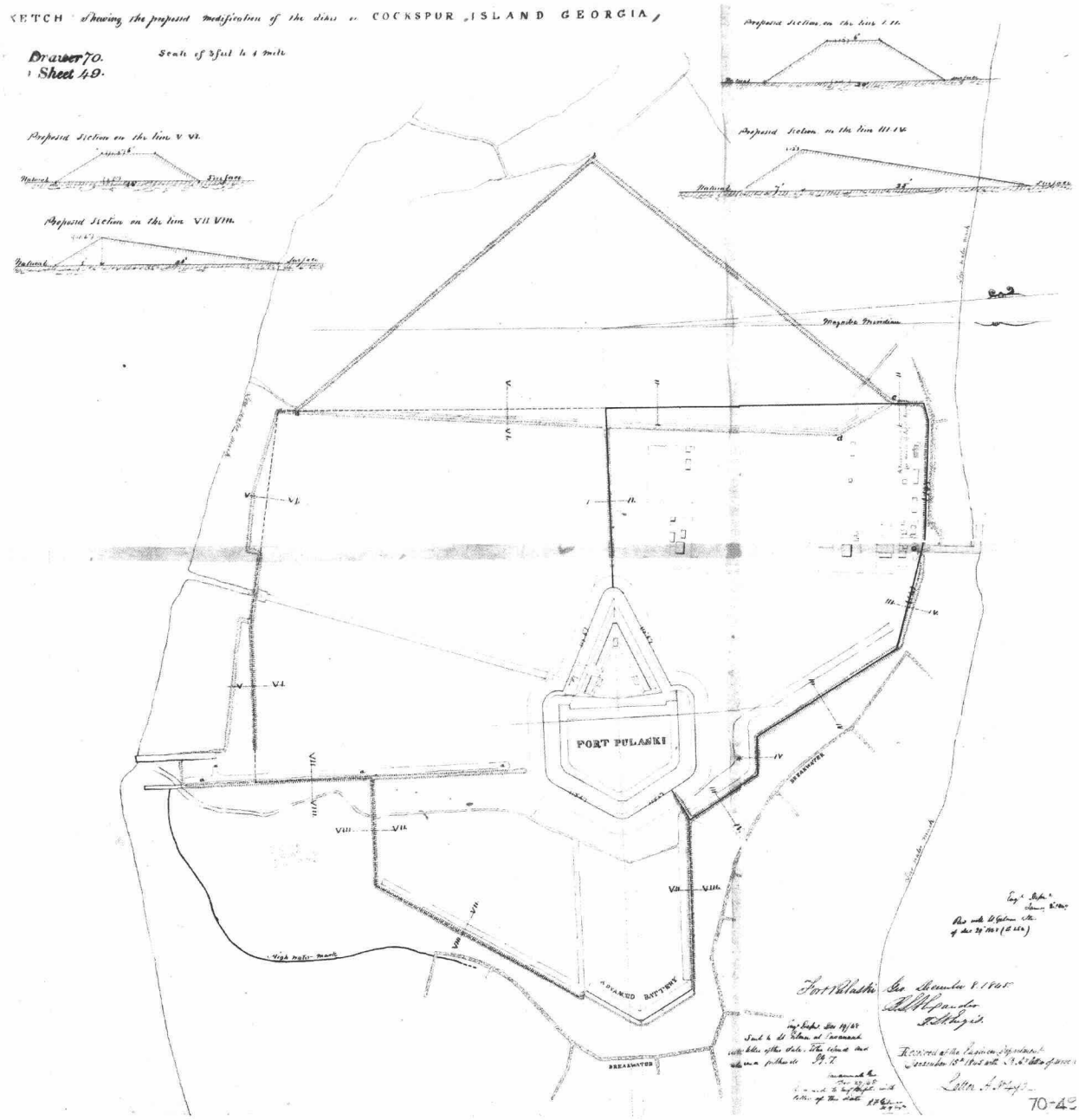


FIGURE 58. 1845 dike plan. Record Group 77, Drawer 7, Sheet 49. (National Archives)

From 1848-1851, Lieutenant Jeremy Gilmer carried out modifications to the dike system encircling the fort, according to the dike plan prepared by Lieutenant Alexander in 1845. Colonel Totten sent Gilmer the following comments: "Have had your letter of December 11, for several days. The Department approves the system of dikes exhibited in Lt. B. S. Alexander's sketch forwarded on December 8, 1845." The letter approves "height of 13 feet, also thickness. However, much of this remains to be fulfilled."[59]

Portions of the dike system were destroyed following a storm in September, 1854. Gale winds and associated water broke through some sections while others were washed away completely. Repairs were also necessary to the main feeder canal. Between 1857 and 1858, the reconstruction of the brick sluiceway at the south end of the feeder canal

58. Col. J. G. Totten to Lt. B. S. Alexander, May 25, 1846; Sketch showing the proposed modification of the dikes on Cockspur Island Georgia, December 8, 1845, Drawer 70 Sheet 49, National Archives.

59. Col. J. G. Totten to Lt. J. F. Gilmer, December 19, 1848, FPNM archives.

occurred, as well as general repairs necessitated by such storms as the hurricane of 1854.[60]

The Fort and Demilune. Simon Bernard's original plan for a two-story structure mounting three tiers of guns was revised when it became evident that the soils of the site would not support the weight of such a massive fortification. Mansfield's revised design reduced the height of the fort to one-story. The position of the redesigned fort was also adjusted toward the north and rotated to face due east.

In 1831, Mansfield received approval for his proposed alterations in the fort site. New excavations for the foundation were dug in April. Mansfield recommended constructing the fort of brick rather than stone, as well as the use of pilings and timber grillage under the foundation. These changes were approved, along with eliminating one of the stories of gun tiers and enlarging and lengthening each face of the fort's walls. Instead of the small demilune originally proposed, plans now called for a large earth demilune, surrounded by a wet ditch.[61]

As excavations continued for the fort's foundation, a large bed of white sand was discovered under the north section of the fort, extending under the southern section. This part of the foundation would need pilings two feet into the sand, requiring another change to the foundation plans. By the end of 1832, the excavation of the entire foundation had been completed. The excavated earth had been deposited as a glacis or dike five feet high, completely encircling the foundation, for the purpose of excluding tidal waters from the construction site.

The completion of the foundation timber work occurred in 1834. The permanent masonry construction, which began in 1833, continued to progress. Work was suspended in March, 1835, and remained completely closed for the year. The masonry of the foundation was complete, and the walls were rapidly rising.

At the time of the suspension of work in 1835, the foundation excavation had been purposely flooded with water to prevent stagnation and to protect the masonry already in place, causing the site to be filled with mud and grass. The canals to and around the fort were filled with silt. Machinery rusted, and scaffolding and other temporary working structures were decayed and unfit for use.

A large expenditure of funds would also be necessary to add masonry revetment to the inner and outer moat walls and part of the main feeder canal. Mansfield found that earth slopes on Cockspur Island, exposed to tidal action, would become soft and fill up the ditches and impair the strength of the fort. His superiors in Washington finally agreed and authorized the moat revetment project in 1836.

In 1841, the terreplein was built up with a layer of oyster shells or coarse gravel, then a layer of well-packed sand several feet in depth, and finally a layer of heavier earth. This system was designed for the purpose of filtering and purifying the rain water that seeped through the earth of the terreplein and passed through lead pipes to the cisterns in the foundations of the fort.

In 1844, the parade grounds of the fort and demilune were being filled in. During the late summer of 1845, Lieutenant Alexander cut away part of the 1842 roadway to provide sufficient fill to complete the project. Also, the embankment of the glacis on the south and southeast fronts of the fort and on the south face of the demilune occurred from 1844-45. The grading and embankment of the glacis slopes of the demilune and fort was finished in 1847. From 1857-1858, maintenance work included sodding the terreplein and parade ground and grading the embankments of the fort and demilune. Colonel Totten specified that the terreplein was "to be covered with Bermuda grass."[62]

The Civil War (1860-1865)

The topography and soil structure of Cockspur Island added to the belief that Fort Pulaski was invincible. The massive fortification was surrounded by soft marsh that could not support the weight of a man. During his inspection of the site in 1861, Lee noticed the dike system had worked as planned. Land maps dated the year of the siege,

60. Young, 200-277.
61. Ibid., 60.
62. Ibid., 254-57, 268, 277-81, 301; Col. J. G. Totten to Lt. B. S. Alexander, May 25, 1846, FPNM archives.

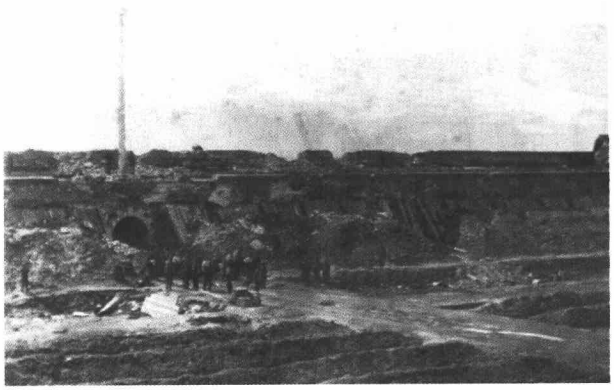


FIGURE 59. Parade ground, 1862. (FOPU archives)

1862, show the area inside the dike as the only dry expanse of land.[63]

In reality, the abandonment of Tybee Island in 1861 gave Union forces the best advantage possible. Like Cockspur, Tybee was in large part a "mud marsh," but the location of some of the batteries was partially skirted by low sand dunes. The seven most advanced batteries, however, were set up on low, marshy ground on Goat Point, within range of Fort Pulaski. This was the location of the rifled guns, whose fire caused the reduction of Fort Pulaski. Confederate General Robert E. Lee never considered Tybee a threat, since the potential damage of rifled guns to brick and mortar was unknown before this battle.

Confederate troops garrisoned at Fort Pulaski prepared for an attack by Federal troops by piling sandbags between the guns on the ramparts and digging "ratholes" in the terreplein for the protection of the gunners. The parade ground was trenched to prevent round shot and shell from rolling. The colonnade in front of the officers' quarters was taken down. Timber blindage, with earth piled against it, encircled the parade ground in an attempt to protect the quarters from enemy fire.

During the two-day battle, many guns were dismounted and rendered useless, and shot and shell passed across the parade ground, and hit the opposite angle, site of the north magazine. Rubble filled the moat at the point of the breached southeast wall and would have provided a good point of assault had Olmstead not surrendered. The timber blindage was damaged but still intact after

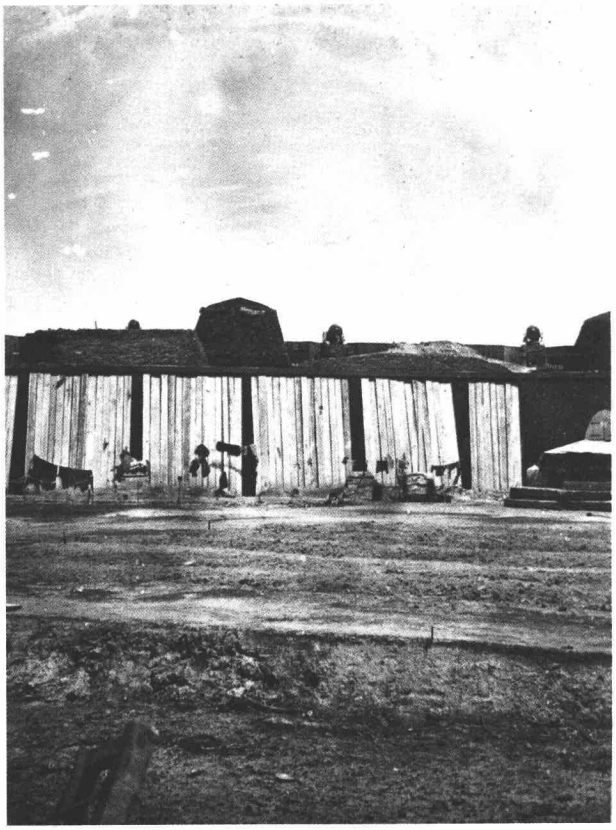


FIGURE 60. Close-up of blindage and ditches in parade ground, 1863. (FOPU archives)

the fort's surrender, but in fact it provided little protection for the casemates behind it.[64]

Post-Civil War (1866-1880)

The Dike and Ditch System. The dike and ditch system received little attention during this period.

The Fort and Demilune. From 1869-1876, the Army Corps of Engineers redesigned the demilune, adding underground magazines and several gun emplacements Above the magazines, the demilune's topography was substantially altered, changing its surface from a flat plane to a series of mounds covering the magazines. The north end of the parade ground was excavated for improvements that were abandoned after it was decided to build a new fort on Tybee Island.[65]

63. http://www.nps.gov/fopu/historyculture/the-third-system.htm.

64. Schiller, 112-42.
65. Annual Report of the Chief of Engineers, June 30, 1876, FPNM archives; HABS, 11; Lattimore, 42.



FIGURE 61. Demilune, 1870s. (FOPU archives 3457)

Fort Pulaski Military Reservation (1881-1923)

The Dike and Ditch System. A devastating hurricane that struck Cockspur Island in 1881 reduced the height of the dikes to six feet and filled the main feeder canal with sediment. Repairs were made following the storm, but Cockspur Island was largely uninhabited at this time. A report dated 1892 described the moat as being "filled with mud and rubbish overgrown with marsh grass" and stated that the dikes "keep out ordinary spring tides, but they are not high enough to prevent storm tides from sweeping over them."[66]

At the beginning of the twentieth century, Fort Pulaski and the eastern part of Cockspur Island were abandoned and neglected. By 1910, the dikes had eroded to the point where daily tides would sweep across, flooding the once dry land, and the moat became filled with mud from the river.

The Fort and Demilune. On October 11, 1885, a heavy storm tide rose over the demilune magazine floors to a height of fourteen inches, lifting moat bridges out of position.[67]

The demilune acquired an additional mound over its southeast corner in 1895, when a detached mound of earth was added near the entrance to the demilune to protect an underground chamber that housed controls for electric mines located in the North Channel of the Savannah River.

Battery Horace Hambright. The rapid-fire gun battery was built along the North Channel of the Savannah River as part of the Endicott System of Seacoast Defense. The concrete and steel battery was covered with several feet of earth on those sides exposed to the North Channel. It was designed with three magazines below and two, 3-inch, rapid-fire rifles on the aboveground gun mounts.

Fort Pulaski National Monument War Department Administration (1924-1932)

The dike and ditch system had been battered by decades of coastal storms, and the ditches and moats were filled with sediment. A 1925 estimate for the work needed to open the fort to the public stated that the feeder canal and moat were choked with vegetation. It was proposed to excavate the moat and feeder canal and use the excavated material to fill a large depression on the north side of the parade ground, but these funds were never appropriated.

By the 1930s, the original dike system had settled and in some places been breached. The ditches were filled with silt from the Savannah River. The moat was entirely filled to the top of the counterscarp wall. High tides continued to sweep over the island with no repair work done, repeatedly flooding the low-lying marshes. The dikes received no further work until the CCC restoration project began in the 1930s.[68]

National Park Service Development Era (1933-1942)

The Dike and Ditch System. A major effort accomplished by the CCC at Fort Pulaski was the rebuilding of the dike and drainage ditch system. The NPS devised a development plan to restore the outer dikes of the old system and install modern tide gates along the inner component. According to a CCC report, this system was designed to lower the ground water level from about 8 inches to

66. "Fort Pulaski, Mouth of Savannah River, Ga.," transcription of original dated 1892, National Archives, Record Group 77, Box 1; Groh, 120; Lattimore, 42.
67. Annual Report of the Chief of Engineers, June 30, 1886, FPNM archives.
68. Groh, 120; Lattimore, 42.

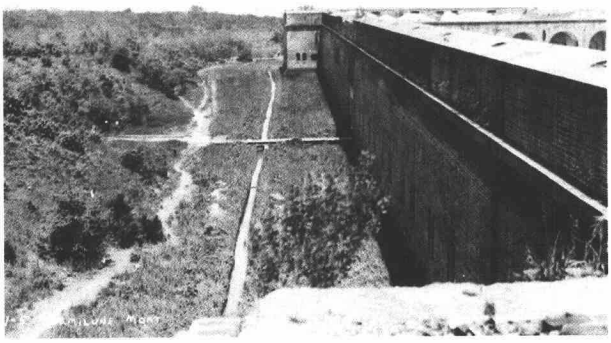


FIGURE 62. Moat before restoration. (FOPU archives 3363)

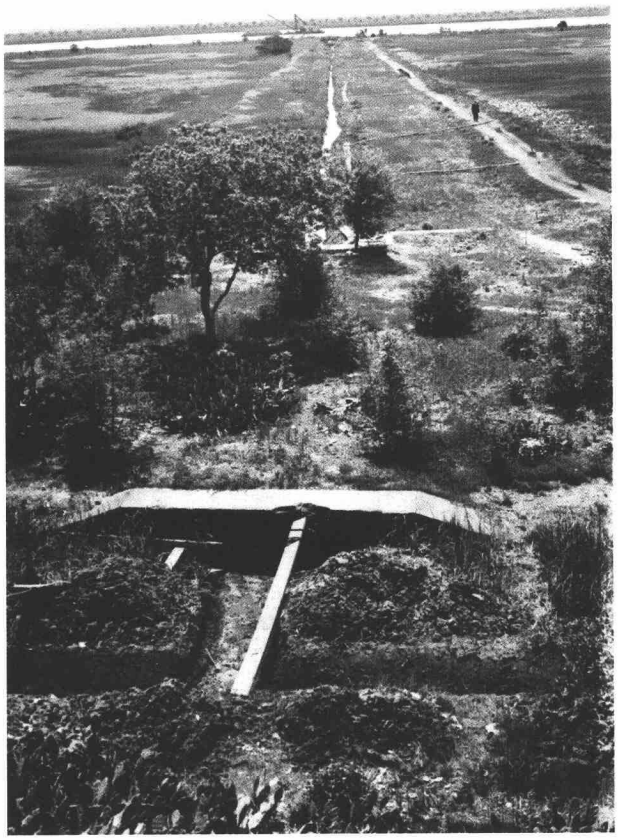


FIGURE 63. Main feeder canal, 1934. (FOPU archives)

approximately 2 feet below the surface, which would allow the salt to leach out of the soil. Grass could then be planted over all the flat areas.[69]

In developing the dike plan beginning in 1934, correspondence among Ralph S. Ellifrit, Junior Landscape Architect; Arthur F. Comer, Associate Architect; Oliver G. Taylor, Chief of the Eastern Division Engineering Branch; Reaville M. Brown, Acting Superintendent; and Charles E. Peterson, Deputy Chief Architect, Eastern Division of Plans and Design, indicates some disagreement about how the dike restoration should be approached. Ralph Ellifrit wrote to Charles Peterson in June 1934:

> The dyke plan submitted by Mr. Brown was in accordance with a desire of his to reclaim portions of the marsh to the south and east of the Fort. I did not submit a dyke plan earlier because I felt that it was more of an engineering problem than a landscape problem. Then too, I realized that you would review his plan and express your desires concerning a dyke system on the basis of his plan. In preparing his plan, Mr. Brown made every effort to cooperate and was careful to run his proposed dyke lines so that important foliage would not be disturbed or destroyed.
>
> Mr. Comer and I have discussed a dyke system from your viewpoint and agree that the old dyke system would be sufficient if rebuilt at points where the action of tide and rain has reduced it's elevation below 10.0' above mean low water. The construction that we propose is shown on the map in solid black. Approximate elevations of existing ground are indicated to show an amount of fill necessary to attain an elevation of 10.0' above mean low water.
>
> Since a fill of not more than six inches on top of the dykes is all that is necessary, where heavy vegetation occurs, we may rebuild along the top of the old dykes. Mr. Brown's plan to build out in front of the old dykes to preserve vegetation was in accordance with my suggestion at that time. However, I have since been convinced that a slight amount of fill on top of the dykes will not be destructive to the vegetation.[70]

Reaville Brown explained how his plan would lower the water level around the fort:

> In talking to Mr. Ellifrit this morning, he now says he is not in favor of a deep ditch in that wide open spot between the old site of Fort George and the outer eastern ridge. I am submitting to you tomorrow plan and profile of a ditch for this area and I consider this ditch absolutely essential for the successful lowering

69. Quarterly Narrative Report, June 30, 1934, FPNM archives.

70. Ralph S. Ellifrit to Charles E. Peterson, June 22, 1934, FPNM archives.

of the water table in and around the Fort. Ellifrit says this morning that he thinks that he would rather have the old marsh grass, just as it is. If they want that, we will have to give up the idea of using trucks.

The water level now is about 8-inches below the surface. In the moats, with the drainage we have, out water level is down 18-inches. If we can reduce the ground water level over the whole area inside the old dykes to about 2-feet, we can use our trucks just as we please. I assume 10-feet as the height of this new dyke system, but I always had in mind that if that was not adequate it could easily be raised, especially, as I planned to build the dykes as far as possible, in layers, and pack them as they were built. My idea was to dig our drainage ditches, putting the dirt over to the side and allowing it to dry and then work it in the dykes, handling it with trucks. . . . You understand that the ground level of all the marsh is about 7.3 above low water, and, after considerable study believe that we should use a combination automatic side gate on the river side and a straight slide gate on the land side. This is in line with the idea of lowering the water level on the Island. For the first year or so the slide gate on the land side would be raised and all water would be allowed to escape thru the automatic gate. After we had lowered the water level and the spoil from the ditches had been put into the dykes or spread out in the lower places and the sides of ditches had become grassed, we would then control the height of the water in the ditches by the use of the inner gate – I would say about three or four feet above low water.

Following my ideas, within a year and a half, we would have a good quality of close growing grass over all of these flats; our large ditches showing no spoil bank whatsoever and the slopes grassed over and the ditch would have three to four feet of water in it, giving the appearance of a canal. This water would be changed every four or five days, thus getting rid of all the mosquito larva.

It is all right to say we will preserve something historically, but I certainly do not see where this coarse, unsightly marsh grass could be considered historical for the very plan of dykes as laid out in the construction period, in the first instance was undoubtedly intended to do exactly what I am trying to do now – Namely: Re-claim all of that land within the dykes.[71]

Apparently, Charles Peterson was originally opposed to constructing any new dikes:

Mr. Peterson is opposed to building any dykes outside of the original dykes which surround the fort. However, he is agreeable to rebuilding the old dykes and does not have any objection to the destruction of some of the vegetation on some of the old dykes. He thinks, however, in raising the old dykes to the higher elevation, which you state was the original height of the dykes, that additions to the dykes should be made on one side and at the top rather than on both sides. In this way less of the growth would be destroyed.

I spoke to Mr. Peterson about your proposition of putting in double tidal gates near your temporary wharf – that is that you propose to restore the old gates to present the original picture but you intended to go outside and put in an outer dyke and outer modern tidal gates to actually serve the practical purpose of these gates. Mr. Peterson does not like to approve this modern gate without more information to show that the old gate was altogether impractical and furthermore he would like to see detailed drawings of the old gates. He has the opinion that even if the old gates were not altogether satisfactory they might be suitable for our purposes.[72]

It was eventually agreed to build a new culvert and modern tide gate south of the original tide gate, leaving the original as a ruin.[73]

CCC workers excavated the moat and main ditch by hand until an excavator arrived in October 1934.

The dike restoration project was described in 1935:

The excavation of the moat is going splendidly now and we are gradually increasing the daily quantity. We are averaging about 400 yards per day, excavated and placed in the various dumps. The top soil of the moat we are using in the raising of the Parade Ground in conformity with the approval plan, submitted by Mr. Ellifrit. The balance of this mud we are putting on the dykes, in low places and filling the shell pit back up to the point where it will drain.

I have heard so much about the excessive high tides and read historical references as to the damage from high tides accompanied by winds on the Island itself, that I asked Mr. Lattimore to prepare a full report on this phase.

On looking this over it would seem to me that we should have a slightly higher dyke than was originally

71. Reaville M. Brown to Oliver G. Taylor, August 2, 1934, FPNM archives.

72. Oliver G. Taylor to Reaville M.Brown, August 25, 1934, FPNM archives.

73. Ralph S. Ellifrit to Reaville M. Brown, September 19, 1934, FPNM archives.

planned. Our bridge end is set at 12-ft., two feet higher than our dykes. You will note in the reports that there are many many instances where the tide exceeds 9-ft. and 9 1/2 ft. is not uncommon. This would allow only 6" to take care of any wave action and, should we have a tide exceeding 10-ft. or wave action that carried the water on top of the dyke, with our 5-foot top, we could expect the water to break through.

I do not believe that an elevation of 12' on our dykes would appreciably change the landscape, nor would a top width of 10' be noticed, nor would any difference in the slopes be noted adversely for no one alive today ever saw these dykes built up to their originally planned proportion, consequently, I recommend that we adopt a top section of 10' with a 4 to 1 slope on the outside and a 6 to 1 slope on the inside. These slopes would be the minimum slopes. If we have further material to add to the outer slope, making it flatter, that it be permitted.

You will note that I recommend 6 to 1 on the inner side. I do this with the idea that should there be subsistence, which there undoubtedly will be, that the top may be brought back with dry earth from this inner slope until it is gotten back to 4 to 1.[74]

In February 1935, work was completed on the 36" south tide gate in the main drainage ditch. In January 1935, a protracted nor'easter caused the entire area around the fort to be under water between tides for three days, as the outer dikes were not yet connected. The tide gauge recorded 9.2 feet above low water, one of the highest tides seen in several years. This tidal erosion caused considerable damage to the work already completed.[75]

By the spring of 1935, workers had distributed 40,000 cubic yards of fill to the dikes, the parade ground, low areas of the demilune, and other places. In May, the tide gate at ditch #5 was complete, and the dike had been built up across and around the headwalls, which were brick veneered. The west bank of ditch #5 had to be resloped because the tide broke through the west dike.

By September 1935, it had been determined that the dike elevation should be increased to 12, with a top width of 10 and a 4:1 slope.[76]

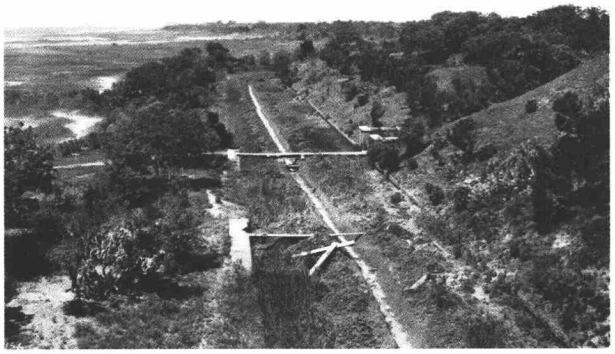


FIGURE 64. Demilune moat, May 1934. (FOPU archives)



FIGURE 65. Demilune moat, 1936. (FOPU archives)

In November 1935, the reconstruction of the north tide gate was complete. In December, salt water filled the moat for the first time in 60 years. Also in November, the original dike on the west side of the fort, near the Advance Battery, was brought to a finish grade elevation of 12 with a width of 6 feet and a 3 to 1 grade on these slopes. 3.9 miles of permanent drainage ditches were constructed during the reconstruction project.[77]

By 1936, most of the original dike system had been reconstructed to a finish grade elevation of 12 and a 3 to 1 slope.[78]

The reconstruction of the main drainage ditch between the moat and the South Channel of the Savannah River was completed in March 1937. This effort was considered one of the most difficult of the ditch and dike restoration program:

In December, 1933, there was very little trace of the old canal, which had completely filled with silt and

74. Groh, 120-21.
75. Quarterly Narrative, April 1935, FPNM archives.
76. H. F. McCray to R. M. Brown, September 24, 1935, FPNM archives.
77. Meador, 26; Groh, 123-125; Monthly Narrative Reports April- January 1936, FPNM archives.
78. John C. Le Bey, Narrative Report Landscape Work for Sixth Enrollment Period, March 31, 1936, FPNM archives.



FIGURE 66. Main feeder canal, 1934. (FOPU archives)

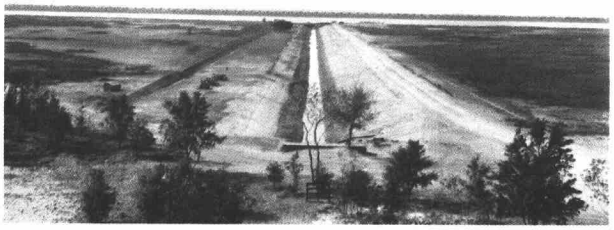


FIGURE 68. Main feeder canal, 1937. (FOPU archives)

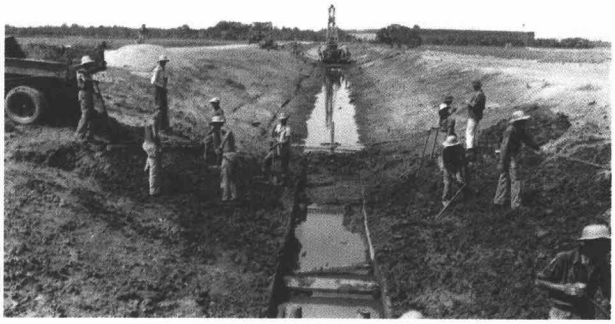


FIGURE 67. Main feeder canal, 1936. (FOPU archives)



FIGURE 69. CCC workers restoring parade. (FOPU archives 3369)

> was covered over with salt marsh. Preliminary excavation was made in January, 1934, by Civil Works Administration laborers, but the main job has been accomplished by members of the Civilian Conservation Corps. After numerous experiments it was determined that a three to one slope would hold provided that there was a wooden or concrete flume in the bottom of the ditch and that no water from the surface of the island was permitted to flow over the banks of the ditch. The flume, a 1,500 foot concrete slab four feet wide and one foot thick with one foot side walls, is laid throughout its entire length on 20 foot pine piling.[79]

The sides of the main moat ditch were covered with gravel sand to help retain the slope of the ditch. The sluiceways along this ditch were faced with old Savannah Grey brick to match the masonry of the fort.[80]

In addition to the restoration project, new drainage ditches were dug to the west and south of the fort.

The Fort and Demilune. Drainage tiles were installed in the parade ground after the rich topsoil was removed, two feet of mud excavated from the moat was placed in a trench, and then the rich topsoil was used to regrade the site. The parade ground had to be graded by hand, since the tractor and road grader were in continuous use in maintaining the roads. An old well located in the parade ground was cleaned out and refilled with soil. All the soil from the top of the terreplein was removed and the underlying lead roof repaired before the soil was replaced.[81]

79. Monthly Narrative Report, March 1937, FPNM archives.
80. Report of Landscape Work Accomplished During the Fifth ECW Enrollment Period, 1935, FPNM archives.



FIGURE 70. Parade ground, May 1934. (FOPU archives)

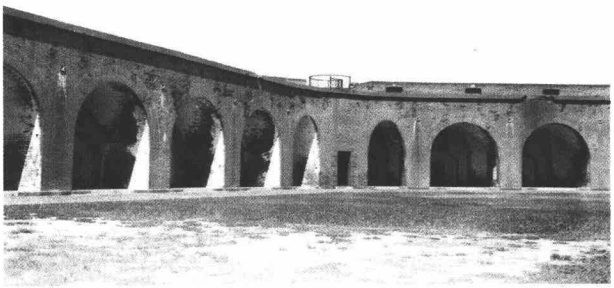


FIGURE 71. Parade ground, June 1936. (FOPU archives)

The demilune required extensive hand grading along the north half of the east side and around the gun emplacements to repair its steep slopes.

When the parking area was being laid out in 1935, beach sand was put out to fill in a low swampy area. Later mud from the moat excavation was also used to build up the area, which was cleaned and sub-graded in November 1935.

Post-WWII (1945-1955)

Dredging from 1939 to 1943 caused several problems that the Park had to deal with in preparing to reopen after the Navy left the island in 1946. Fill obstructed the flow of drainage ditches and caused salt-water flooding that killed vegetation and allowed mosquitoes to breed.[82]

A hurricane in October 1947 damaged about one-fourth of the dike system. One major break and eight minor breaks occurred. At the point of greatest damage, the dike was washed level with the surrounding area and approximately 75 cubic yards of earth were washed away. Erosion, occurring along the bases of the dikes for about 2,800 feet, removed at least 600 cubic feet of earth. Road shoulders were also damaged by the hurricane. In response to a request for additional funds for repair of the dikes, the Regional Engineer responded:

> With reference to your recent request for additional ER & EF funds for repair of the dikes at Fort Pulaski National Monument, your attention is invited to the necessity of regarding the dike and drainage system as a regular maintenance problem. . . . Unless we succeed, the dikes and drainage canal can deteriorate to a point where they will be practically useless.
>
> The dikes are exposed, and breaks such as now exist will occur from time to time. It appears that the easiest and most economical way of repairing the dikes is by re-dressing them with material secured nearby. This is entirely a hand operation. The work to be undertaken as soon as emergency funds now requested become available will give your maintenance crew enough experience so that definite maintenance estimates can be established for this work in the future. As soon as the dikes are re-dressed, it is suggested that periodic inspections be made at high tide in order to detect weak points which can be easily repaired before a major break develops.
>
> Maintenance of the drainage system presents a more difficult problem. The main ditch to control the circulation in the moat must be cleaned periodically. This problem is aggravated by constant silting at the point the ditch enters the Savannah River. No permanent solution to this silting was found during the period of CCC improvement.[83]

A 1948 report that outlined the amount of work needed to restore the eroded dikes damaged by the 1947 hurricane stated that portions of the dike had been completely washed away and many of the ditches needed cleaning and were clogged with marsh grass. The custodian of the fort pointed out that they had very little trouble with the main feeder canal and attributed this to a change in the way the flow of water was handled in and out of the moat. By the end of September 1948, most of the work associated with repairing the dikes and ditches had been completed, with the exception of installing new tide gates. [84]

81. Narrative Report, April to October, 1935, FPNM Archives; Report of Landscape Work, FPNM archives.
82. C. R. Vinten to District Engineer, August 27, 1946; C. R. Vinten to Col. Paschal N. Strong, District Engineer, January 31, 1947, FPNM archives.
83. Monthly Narrative November 1947; W. E. O'Neil, Jr., Regional Engineer to Coordinating Superintendent, Southeastern National Monuments, January 30, 1948, FPNM archives.

In 1949, the entire length of the main feeder canal was cleared of silt. Standing water and flooding continued to be a problem until Mission 66 provided funding for construction of a new drainage system. Ralston Lattimore described these problems in 1951:

> Following the damaging hurricane of 1947 a hundred foot section of the dike on the exposed east side of Cockspur Island was left unrepaired. Unless this weak section of the dike is repaired, the whole dike system will be endangered. Without its dikes the Cockspur Island area surrounding Fort Pulaski will be inundated with each rise of the tide.
>
> About 3 years ago, former Supt. Luckett re-excavated the system of drainage canals east of Fort Pulaski known as Ditch No. 2. The lower end of this ditch, however, is outside the dike system and is subject to silting from the river. The outer ditch has already refilled with silt, blocked the tidegate and caused the whole inner ditch system to be obliterated. As a result the east end of Cockspur is now a fresh water morass.[85]

He complained in 1954 about a lack of funds for routine maintenance:

> The dike system is as much a part of Fort Pulaski as the moat. It was very costly to restore and is essential to prevent the inundation of the historic portion of Cockspur Island. Due to the nature of Cockspur Island the dikes are constantly subsiding. How fast we do not know, but a constant and continuous maintenance and observation are required. I am already on record on this point.
>
> The Engineers who speak in terms of "if and when it is necessary to rebuild the dikes" obviously expect to wait until the dikes completely waste away before showing any further interest in them. These engineers undoubtedly could have had no part in the arduous job of reconstructing them in the '30s and do not fully appreciate the magnitude of such a job. We have no funds for dike maintenance and are not likely to get any.[86]

84. William W. Luckett, Custodian to Coordinating Superintendent, February 8, 1948; William W. Luckett, Custodian to Coordinating Superintendent, February 14, 1948, FPNM archives; Acting Superintendent to Regional Director, September 30, 1948, FPNM archives.
85. Ralston B. Lattimore to Regional Director, April 17, 1951, FPNM archives.
86. Ralston Lattimore to Regional Director, March 3, 1954, FPNM archives.

Mission 66 (1956-1966)

The Dike and Ditch System. The Mission 66 program considered improving the dike and ditch system at Fort Pulaski a "first priority" project, which included redirecting field drainage through the main canal south of the fort entrance and repairing any sections of the dike below the safe elevation of 12 feet above Mean Low Water (MLW). The Mission 66 Prospectus described the problem:

> Fort Pulaski, the parking area, and adjacent territory are all at the elevation of the surrounding tidal marshes. Spring and neap tides and storm driven tides are held in check by a system of dikes about 2 miles in length. Drainage behind the dikes is effected through a series of ditches, canals, and tide gates. This extensive dike and drainage system was imperfectly conceived and is not now in good working order. For the protection of the monument, it is proposed under Mission 66 to perfect and simplify this dike and canal system.[87]

When the dike and ditch system was reconstructed in 1935, the entire area behind the dikes drained through four tide gates: the main tide gate, which controlled the flow of water in and out of the moat; tide gate No. 2, draining areas southeast and northeast of the fort; tide gate No. 5, draining areas west of the fort; and tide gate No. 9, which drained a considerable area between the diked section of Cockspur and a series of hammocks east of the fort. The north portion of the island drained through ditches No. 10, 11, 12, 13, and 14.

Because of dredging that occurred from 1939 to 1943, the accumulation of thousands of cubic yards of sand over the marshes completely obliterated the drainage ditches and created large areas of fresh water swamp. The Army tried to restore the ditches but failed.

Another reason the drainage system was no longer working was the increase in sea level on Cockspur Island, which had risen by more than six inches by the late 1950s. In a memo to the Regional Director, Ralston Lattimore stated: "After studying the dilapidated condition of the drainage system of Cockspur Island for more than 5 years and discussing it with almost every Regional Office visitor between 1950 and 1956, we finally decided

87. Ralston B. Lattimore to Regional Director, October 29, 1957; Mission 66 Prospectus, 9, FPNM archives.

the only salvation was to try to drain all of the area enclosed behind dikes east, south, and west of the fort through the main canal which serves the moat."[88]

The following alterations to the ditch and dike system were carried out as part of Mission 66, beginning in February 1960.

Drainage of the area formerly emptying through tide gate No. 2 was diverted to the main canal. This effort required the excavation of more than 7,000 feet of ditches and canals. 5,300 feet of principal ditches were excavated, 2,900 feet of which were new.

Ditches 6, 7, and 8 and their tributaries were re-excavated. This system, which also empties through the main canal, drains the area south and southeast of the demilune, the parking area, and portions of the woodland north of the parking area. In this section, there were about 4 acres that could not be drained, and these low spots were filled in with sand.

All vegetation was removed from the sides of the main canal and the berms adjoining the canal. Much of the vegetation was removed from the old marsh areas, drained by the above ditch system. It was hoped that the surplus water would then evaporate. Ditch 5 (1,800 feet) and its tributary ditch 19 (1,200 feet) were also re-excavated.

Ditches 10, 11, 12, and 13 drained the north side of Cockspur. They were re-excavated only to be blocked again within 3 or 4 months by sand from displacement waves thrown by rapidly moving vessels in the North shipping channel. Corrugated iron culverts with 18" flap type tide gates were installed after the ditches were unblocked but could not compensate for the erosion taking place. In order to correct this problem, ditches had to be extended riverward and tide gates moved to the end of the pipe. Weirs and groins were used to break up the wave action.

A new 36-inch culvert and tide gate at the outer end of the main canal was installed to replace the existing 25-year-old structure. Likewise, the 30-inch tide gate at the end of ditch 5 was replaced after the



FIGURE 72. Main feeder canal, 1958. (FOPU archives)

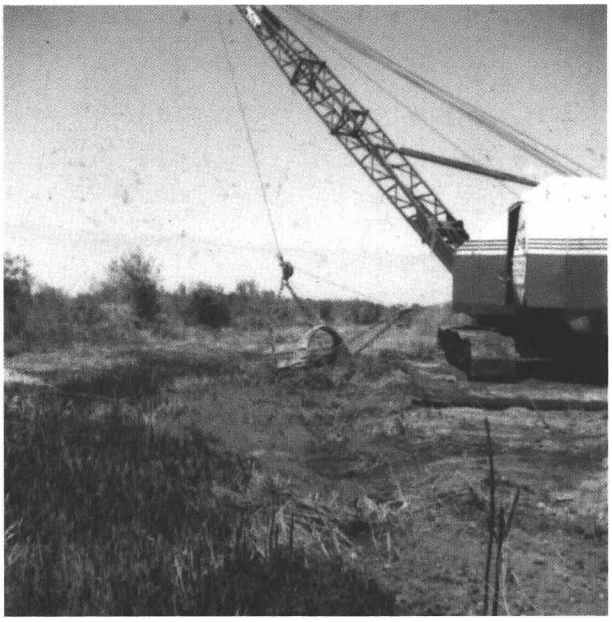


FIGURE 73. Ditch 5 being re-excavated, 1958. (FOPU archives)

culvert was lowered about 2 feet, which allowed ditch 5 and its tributary ditch 19 to be reworked. Culverts were renewed and lowered under the main tide gate service road at ditches 7 and 8, and the drop basin at the outlet of ditch 6 was also lowered 1 foot. All three ditches were then regraded. A new concrete culvert was placed through the dike immediately at the rear of the visitor center site on the long tributary to ditch 6. Approximately 500 feet of new feeder ditches were added to the drainage system south, east, and northeast of the fort.

Through the cooperation of the Chatham County Mosquito Control Commission, tide gate No. 9 was

88. Narrative Report – Improvements to Drainage, April 18, 1959; Ralston Lattimore to Regional Director, July 3, 1960, FPNM archives.



FIGURE 74. Ditch 10, 1958. (FOPU archives)

eliminated. The re-excavation of ditches 9 and 14 created a deep canal that connects the North and South Channels of the Savannah River. Since the time of high water varies in the two channels of the river, a two-way flow of salt water was induced that flushes a long narrow belt where mosquitoes breed to the east of the diked section of Cockspur Island.

The surface of most of the diked area surrounding Fort Pulaski is at the elevation of the natural marsh level. In very long ditches, there can only be a drop of a few feet. In attempting to divert all of the drainage northeast, east, and south of the fort to the main drainage canal through ditch 18, sufficient fall could not be obtained to dry up the farthest fringe areas, which continued to breed mosquitoes. A reservoir canal was established immediately inside the east dike. At times of heavy rainfall, the fringe areas drain first into this new canal. When the reservoir canal reaches capacity, the overflow goes west through ditches 2, 3, and 18 to the main canal and then out through the main tide gate to the South Channel.

The upper area of ditch 19, west of the entrance road, became completely ineffective due to the sinking of the culvert under the road. Ditch 20 was re-excavated and a 12-inch corrugated pipe and flap-type tide gate were installed to help drain the canals established by the Mosquito Control Commission for the collection of rainwater. The Mosquito Control Commission created ditch 15 on the north side of the island to drain a marshy area impounded behind banks of dredged material.

Three very low places in the vicinity of the parking area were filled, as well as several in the residence utility area.[89]

The Fort and Demilune. The regrading of the parade ground occurred in 1958. The condition of the surface was so irregular that grass could not be mowed. 600 cubic yards of sand were used to fill the hollows.

Visitor Center. The area lying immediately to the west of the main entrance to the visitor center dropped off precipitously to marsh level. A jungle like growth of wax myrtle, yaupon, bacharris, and other typical island vegetation covered this area. The landscape plan called for selective removal of trees and shrubs and the filling of a small strip in front of the visitor center extending along the entrance road for about 75 feet.[90]

Post Mission 66 (1967-Present)

In 1970, the Chatham County Mosquito Control Commission offered to help the Park with its ditch work at no cost. They also agreed to clear the outer dike system, which had not been cleared for thirty years due to lack of adequate personnel. In 1970, they cleared 9,800 feet of dike and dug 25,000 feet of ditch. The dredged material was deposited along the eastern dike, which allowed vegetation to take hold.[91]

From 1994 to 1996, the Army Corps of Engineers developed the plans and specifications to repair and reconstruct the eroded historic dike system by raising the height of the dike to 4.05 Mean High Water (MHW), which coincided with the top of the adjacent and adjoining park entrance road. Prior to the repair work, the elevation of the dike varied from 2 feet to 5 feet along its entire perimeter. The top width was increased to 10 feet to accommodate construction and maintenance equipment. The dike

89. Narrative Report - Improvements to Drainage, April 18, 1963; Monthly Narrative Report, August 1960, FPNM archives.
90. Landscape Development Visitor Center, January 30, 1965, FPNM archives.
91. David L. Tomlinson, Superintendent to Director, Southeast Region, September 24, 1970, FPNM archives.

was raised in areas that were below 4.05 MHW. Areas along the dike that were above this elevation were not lowered. The shape of the original dike configuration was not changed. Two flap gates and one sluice gate were replaced with new flap gates mounted to the existing brick retaining walls, which dated to the 1939 restoration.[92]

During the dike reconstruction activities, a heavy piece of equipment inadvertently damaged a section of the dike. The location of the damaged area was along the south leg of the dike system. The interior of the dike was cut into by the vehicle's tires and small fragments of red brick, oyster shell, and cinders/slag or clinkers were observed. These materials are most likely the result of the CCC repair work in the 1930s, since oyster shell was present and the brick fragments were red-colored rather than the rose-colored brick typical of the original construction.[93]

In 1996, legislation passed that eliminated the Corps' unlimited-use right to deposit dredged material along the north shore of Cockspur Island.[94]

Shoreline Accretion/Dredging of the Savannah River/Erosion. In 1867, the Army Corps of Engineers began dredging the Savannah River in an effort to stabilize the North Channel shipping route. Dredged material was deposited on the north shore of Cockspur Island.[95]

Beginning in 1885, the construction of a series of jetties by the Army Corps of Engineers around the mouth of the Savannah River caused sediment to collect, increasing the dry land mass to Jones Island, Turtle Island, and Oyster Bed Island. The last jetty from this era was built from 1894 to 1896 from the northeast tip of Cockspur Island. It extended east out into the Atlanta Ocean, paralleling one of the earlier jetties built out from Oyster Bed Island on the north side of the channel. This jetty also bolstered the accretion of sediment, increasing the land mass of Cockspur Island by creating an arm of dry land along the North Channel.

During this same time, the separation between Cockspur Island and its western neighbor, Long Island, began to close. Until the 1880s, the two islands were separated by salt marsh, interspersed with a few small hammocks. By the beginning of the twentieth century, this separation became filled with dry land. It is unclear whether the actions of the jetties, dredging, or both caused this change. In 2007, a breach occurred that separated the two islands.

The quarantine station was built on dredge deposit at the west end of Cockspur Island in 1890. Because the station was only one foot above spring tide, officials repeatedly requested additional deposits of dredge materials throughout the station's operation in the early twentieth century.[96]

In a 1921 memo, the District Engineer in Savannah wrote that the Savannah River was subject to constant dredging, and the marshy land and the shallow water areas were being gradually built up. He noted that the government owned very little of the land in question, and that Fort Pulaski might become a valuable place for dumping dredge material.[97]

Since 1936, there has been an agreement that allows the Army Corps of Engineers to deposit dredged material on a strip of land on the north shore of Cockspur Island extending 200 feet from the high water mark. After the NPS acquired the defunct quarantine station in 1937, the Army Corps of Engineers decided to construct a new shoreline in that area in accordance with its special use authority. This effort occurred in 1939, using dredged material and riprap for stabilization.

Dredged materials deposited from 1939 to 1943 obstructed drainage ditches and caused salt water flooding that killed vegetation and allowed mosquitoes to breed. Standing water and flooding were a problem until Mission 66 improvements that included a new drainage system.[98]

92. Fort Pulaski Levee Protection System, Concept Design Report, U. S. Army Engineer District, Wilmington, October 1994, FPNM archives.
93. Groh, 75.
94. Meador, 82.
95. Colonel C. A. Reynolds to Lieut. Col. James P. Low, April 6, 1867, Record Group 77 Box 1, National Archives; Meador, 14.
96. Meador, 15.
97. Colonel F. W. Altstaetter to Chief of Engineers, September 26, 1921, Record Group 77 Box 1, National Archives.
98. Secretary of War to Secretary of the Interior, August 25, 1935; C. R. Vinten, Coordinating Superintendent to District Engineer, August 27, 1946, FPNM archives; Meador, 59-61.



FIGURE 75. Dredging, June 1939. (FOPU archives)

In 1942, the Army Corps of Engineers created the Elba Island Cut by using a 600-foot-wide right-of-way across the western end of McQueens Island and a 900-foot-wide borrow area on either side to serve as part of the Intracoastal Waterway. A Special Use Permit issued in 1953 allowed the Army Corps to deposit dredged material on the west end of McQueens Island.

In 1967, an agreement with the Army Corps of Engineers called for the conservation of natural resources and recreation when dredging, filling, or excavating affected navigable waters. 1972 was the last time that dredged material was pumped onto the north shore of the island. In 1997, the agreement with the Army Corps of Engineers to deposit dredged material on Cockspur Island was nullified, removing an element that has changed the historic setting of the fort for the past sixty years, although they have the right to deposit material dredged from the Savannah River on Jones Island and Oyster Bed Island.[99]

In 1964, exceptionally high tides and rough wave action caused accelerated erosion along the South Channel of the Savannah River. Serious erosion occurred under the south abutment of the South Channel Bridge, undermining the rock revetment.

Also in 1964, erosion along the north shore of Cockspur Island was so severe that all small concrete structures at the west end of the island were demolished, broken up, and dumped over the bluff. In 1967, Superintendent Lattimore met with the Army Corps of Engineers to discuss the possibility of placing hydraulic fill along the eroding bank and also of placing additional dredged material in the area between drainage ditches 11 and 12.[100]

Erosion, caused by the ongoing dredging of the Savannah River, has significantly decreased the Cockspur Island Lighthouse's protective land mass and accelerated structural deterioration.

Vegetation

The Civil War (1860-1865)

The landscape of Cockspur Island was almost completely barren of trees and other high vegetation in 1863. Historic photographs show the open character of the landscape. The only vegetation appears to be low grasses and sedges. Low vegetation would have been an asset to the fort, as defending the Savannah River would be easier with views unobstructed by a tree canopy.

Although much of the island was naturally vegetated as salt marsh, there would have been areas suitable for maritime forest, as John Wesley's earlier account shows. The higher ground to the north of the fort and around the construction village would most likely have supported trees. The soldiers may have maintained the grasslands in these drier areas using controlled fires.[101]

The vegetation of Tybee Island was similar to that of Cockspur, with large expanses of salt marsh and mud flats interspersed with small patches of upland hardwood forests. According to Gillmore's report on the reduction of Fort Pulaski, a gradual change in

99. Meador, 80-82; personal communication, Mike Hosti.

100. Narrative Report, March 1964; Hydraulic Engineer to Chief, Project Design, September 15, 1967, FPNM archives.

101. CLI, 16.

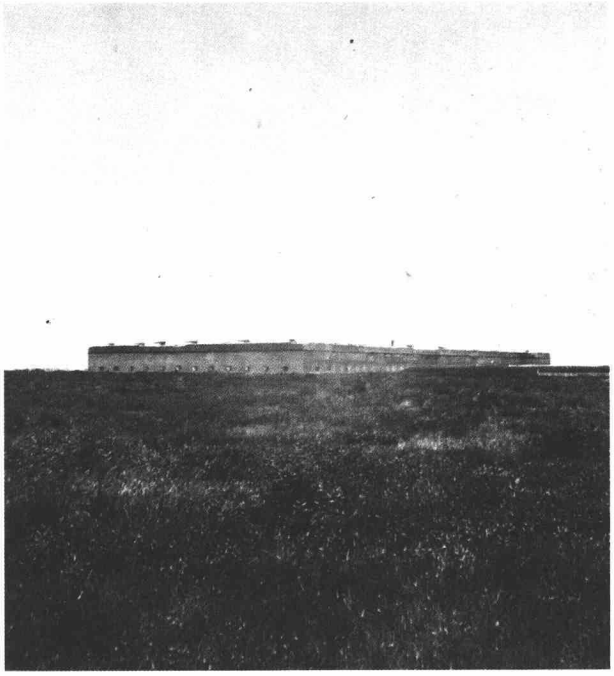


FIGURE 76. Vegetation around fort, 1863. (FOPU archives)

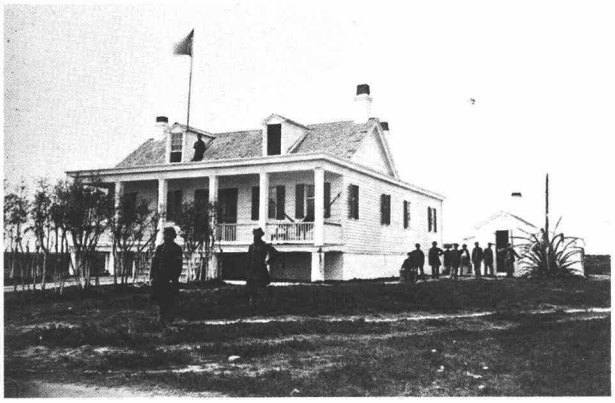


FIGURE 77. Superintending Engineer's Quarters used as a hospital, 1863. (FOPU archives)

the appearance of the vegetation in front of the batteries being set up on Tybee occurred before the battle, so that "no sudden alteration of the outline of the landscape was permitted." Trees provided concealment for the Union batteries.[102]

Photographs from 1863 of the Superintending Engineer's Quarters, which was used as a hospital in the Civil War, show an allée of trees lining the walk to the front door and a century plant towards the rear of the structure. The character of the landscape is very open, with the exception of these plantings. The rear of a building identified as the Pelican House shows a dirt work yard, with no ornamental plantings.

102. Gillmore, 26.

Post-Civil War (1866-1880)

The vegetation at Fort Pulaski continued to be maintained by Army units that occupied the fort until October 1873. Photographs taken in the 1870s show a grass cover on the demilune.

Fort Pulaski Military Reservation (1881-1923)

Two photographs from 1900 show vegetation starting to grow up around the exterior of the fort, and overgrown vegetation on the demilune.[103]

By 1910, Fort Pulaski and the surrounding grounds showed evidence of deterioration. Problems included decayed interior woodwork, a crumbling coping around the top of the wall due to vegetation, and cow manure from animals owned by the lighthouse keeper littering the casemates. The inspection report also stated that "except for the house of the light house keeper, and his garden, everything bears evidence of neglect."[104]

In response to an inquiry as to the need for a caretaker at Fort Pulaski, Colonel Dan C. Kingman wrote that the moat was filled with mud and grown up with weeds, the drawbridge was gone, and the gates were in such bad condition as to exclude no one.

A 1913 inspection reported:

- The casemates were littered with cow manure from cows owned by the lighthouse keeper.
- The interior of the fort was overgrown with low trees and brush.
- The lightkeeper's house was in excellent condition.[105]

A January 1915 inspection found that the caretaker was clearing overgrown vegetation "with a view to

103. Schiller, 145.
104. A. M. Hunter, Headquarters Department of the Gulf, Inspector General's Office to A. L. Mills, Adjutant General of the Army, December 17, 1910, Record Group 77 Box 1, National Archives.
105. Dan C. Kingman, Corps of Engineers to Adjutant General, February 18, 1913; Adjutant General to District Engineers Office, February 14, 1913, Record Group 77 Box 1, National Archives.



FIGURE 78. Demilune, 1870s. (FOPU archives 3456)



FIGURE 79. Demilune, 1900. (FOPU archives 3453)

cultivating vegetables." In December 1915, however, it was reported that, with the exception of slightly improving the approach to the fort, very little progress had been made towards improving its general appearance. The interior of the fort was still overgrown with brush and was littered with manure and other refuse.[106]

By February 1916, conditions had improved. A large part of the parade ground had been cleared and no manure was found on the interior of the fort. The

106. Major James F. Brady to Commanding General, January 19, 1915; Major James F. Brady to Commanding General, December 27, 1915, Record Group 77 Box 1, National Archives.

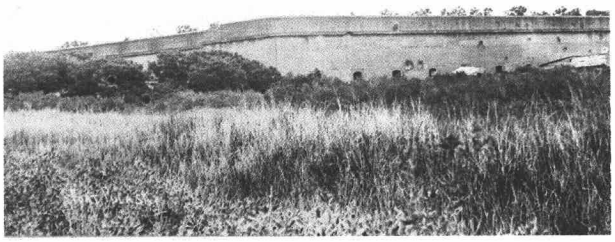


FIGURE 80. Vegetation around fort, 1900. (FOPU archives 3455)

caretaker kept a herd of four cattle that ranged on the island but were kept out of the fort by a gate in the sally port.[107]

In October 1916, John A. Bergman stated that his mother wanted to be caretaker of Fort Pulaski in order to "plant a crop there and cultivate the soil." After a 1917 inspection reported that no one was in residence at the fort, Mrs. E. J. Bergman wrote that she was no longer living there continuously but had "quite a bit of ground planted inside the fort" and wanted to continue as caretaker.[108]

In December 1917, a small appropriation of $500 helped clear vegetation from around the fort and remove vegetation that blocked views of the structure. This operation also unearthed the two gravestones found on the north glacis of the demilune. An additional amount was requested to open a path from the fort to the quarantine station and to continue cleaning up the interior of the fort. An appropriation of $2,300 was received in 1918.[109]

In 1918, Colonel John Millis of the Corps of Engineers, who was in charge of the work at Fort Pulaski, was able to report that a considerable amount of vegetation clearance had been accomplished. He further stated that peach (*Prunus persica*) and fig (*Ficus carica*) trees were left standing



FIGURE 81. Vegetable garden on the parade ground. (FOPU archives 3365)

inside the fort, "as these are quite valuable for their fruit." Later in 1918, it was reported that the "inner court is about one third cultivated" and "there will be a good yield of fine peaches."[110]

A series of letters in 1921 reveals that caretaker Bergman had eleven cows and between thirty-five and forty hogs on the reservation, which were kept out of the quarantine station by a wire fence stretched from channel to channel. A vegetable garden was located inside the fort. A historic photograph from around this time shows a row of vegetation planted on the parade ground.[111]

Fort Pulaski National Monument War Department Administration (1924-1932)

An estimate prepared in 1925 for the funding needed to allow visitors to easily access and view the fort stated that the demilune and interior were covered with "weeds, briars and other vegetation" and "inside the fort there is a peach orchard and some fig trees." The report also stated that the "sluiceway and moat are choked with vegetation."[112]

107. Colonel W. C. Langfitt, Corps of Engineers to the Chief of Engineers, February 7, 1916, Record Group 77 Box 1, National Archives.
108. John A. Bergman to Col. John Millis, Corps of Engineers, October 6, 1916; Mrs. E. J. Bergman to Colonel John Millis, U. S. Engineer Corps, December 4, 1917, Record Group 77 Box 1, National Archives.
109. Colonel John Millis, Corps of Engineers to Chief of Engineers, January 26, 1917; Colonel John Millis, Corps of Engineers to Chief of Engineers, January 26, 1918; Colonel John Millis, Corps of Engineers to Thomas Lynch, Inspector, Fort Screven, February 26, 1918, Record Group 77 Box 1, National Archives.
110. John Millis, Corps of Engineers to Chief of Engineers, February 25, 1918; Report of Inspection at Forts Screven and Pulaski, June 29, 1918, Record Group 77 Box 1, National Archives.
111. John A. Bergman to Col. F. W. Alexander, July 13, 1921, Record Group 77, Box 1, National Archives.
112. Dan Sultan, District Engineer to Chief of Engineers, April 8, 1925, National Archives, RG 77, Box 1, National Archives.



FIGURE 82. Demilune, 1930s. (FOPU archives 3365)



FIGURE 83. Main canal feeder, 1930s. (FOPU archives)

National Park Service Development Era (1933-1942)

Fort and Demilune. In order to restore the parade ground of the fort, the CCC cleared vegetation that had reached the height of the arches, and the two-and-a-half-acre area was restored with centipede grass (*Eremochloa ophiuroides*) from Bonaventure Cemetery in 1935. Some shrubs were replanted to screen the tide gate of the main ditch, but much of the plant material was "very poor and gave one the appearance of a poorly kept parade ground." The terreplein was replanted in Bermuda grass (*Cynodon dactylon*).

The demilune had become overgrown with vegetation, including sizable trees. The CCC cleared much of the vegetation in 1936 in order to lay out the walk from the demilune drawbridge to the sally port drawbridge. Some of the cedars and yaupon taken from the parade ground were replanted on the demilune to screen the new parking area from the northwest bastion of the fort. Park maps from this



FIGURE 84. Parade ground, 1936. (FOPU archives)



FIGURE 85. Demilune before restoration, 1934. (FOPU archives)



FIGURE 86. Demilune after vegetation clearance, 1936. (FOPU archives)

time also show a wooded area north of the entrance road and the parking area.[113]

As crews cleared vegetation from areas where trails and walks were being laid out, they replanted some of it in areas needing screening material, such as the parking area and around the tide gate of the main feeder canal. Care was also taken when removing this material to preserve the natural forest floor and the naturalistic character of the area. This was in keeping with the prevailing National Park Service aesthetic of the time.[114]

113. ECW Narrative Reports, 1935; John C. Le Bey, Narrative Report Landscape Work for Sixth Enrollment Period, March 31, 1936, FPNM archives.

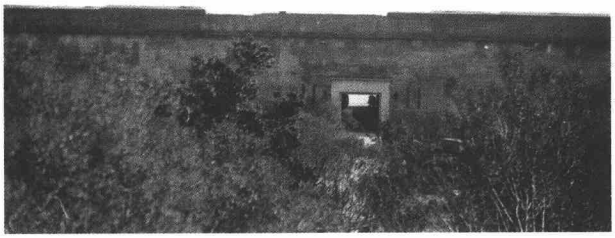


FIGURE 87. Demilune looking toward sally port, 1934. (FOPU archives)

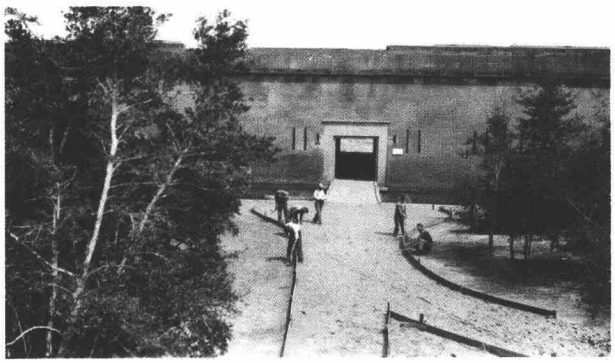


FIGURE 88. Demilune walk being laid out, 1936. (FOPU archives)

Entrance. By 1939, the Park was concerned about vegetation abutting the entrance road on the north side of U. S. 80 and creating a traffic hazard. The Chatham County Commission agreed to remove palmettos lining the road, and the Park also wanted oleanders removed.[115]

Battery Hambright. Battery Hambright required extensive hand grading in preparation for the planting of Bermuda grass.[116]

Post-World War II (1945-1955)

In preparing to reopen to the public in 1947, it was necessary to remove "tons of woods and grass" from the road shoulders and from around the buildings occupied by the Navy during WWII. In 1949, a heavy infestation of terrapin scale threatened to wipe out the entire population of yaupon (*Ilex vomitoria*) on the island. Orange blight, a fungus disease attacking cacti, had already wiped out most of the prickly pear (*Opuntia vulgaris*) on the island. On the other hand, the fig tree inside the fort produced almost fifty bushels of fruit in 1949.[117]

Yaupon was the principal shrub covering parts of the demilune and the glacis surrounding the moat. A description by Superintendent Lattimore of the difficult removal of two Air Force engines from the fort following the 25th anniversary celebration reveals new information about the demilune landscape:

> Now most of the landscaping at Fort Pulaski is the handiwork of the birds and the bees, but the landscaping in the demilune at the entrance of the fort was conceived and executed by the present superintendent when he was in charge during the period of restoration. In the past 12 years the ilex and the yucca of the special planting had grown mightily and had closed up the vistas originally planned. For months the Superintendent had had in mind a project for reestablishing his cherished landscape design, but his love for every twig, leaf, and berry had immobilized the deadly lopping shears. In just two hours the Air Force not only overcame the Superintendent's indecision, but accomplished the entire job.
>
> All's well, we hope, that ends well. At 7 A. M. Monday the Fort Pulaski staff assembled in the demilune. By noon the debris had been cleared away. By sunset Tuesday restoration of the landscape had been completed. And when the monument opened on Wednesday no visitor could tell that ever a leaf had been disturbed.[118]

Quarantine Station. A variety of trees and shrubs were planted in the spaces around the buildings. A pittosporum (*Pittosporum tobira*) hedge and a row of cabbage palms (*Sabal palmetto*) lined the walkways between buildings. Oleanders (*Neruim oleander*) were planted in rows around the entrance drive to the Quarantine Attendants' Quarters (Superintendent's Residence). Pecans and a few live oaks (*Quercus virginiana*) were the major trees.[119]

During removal and sale of the surplus buildings in 1952, perspective bidders were advised that "special attention shall be given the landscape features of the

114. Quarterly Narrative Report, April 1935, FPNM archives.
115. Frederick L. Rath, Jr., Acting Superintendent to Regional Director, December 15, 1939, FPNM archives.
116. Quarterly Narrative Report, April 1935, FPNM archives.
117. Monthly Narrative January 1949; July 1949, FPNM archives.
118. Monthly Narrative Report, October 1949, FPNM archives.
119. 348/8079, 1942; 348/2012F, 1956, FPNM Archives.



FIGURE 89. View of Quarantine Attendents' Quarters on the right and Quarantine Officer's Quarters on the left, c. 1949. (FOPU archives)



FIGURE 90. Superintendent's Residence, 1950s. (FOPU archives)



FIGURE 91. Bank of main feeder canal, 1958. (FOPU archives)

Park, and special care taken to protect the natural surroundings. The purchaser shall not deface, injure or destroy trees or shrubs, or remove or cut them without special authority."[120]

Existing conditions maps of the residence and utility area from the 1950s indicated that roses were being grown just southwest of the Quarantine Attendants' Quarters. Superintendent Lattimore described how the rose garden began:

> It was my wife, who first got the garden fever, and every night for weeks she thrust under my bulging eyes magnificent illustrations of roses, climbing varieties, hybrid teas, and floribundas. Now I had always thought that roses were roses—white, red, pink, yellow—but still roses. If you can maintain that innocence of thought, roses may be purchased cheaply enough. But once you read the catalogues, you find that roses come in as many styles as women's hats and change as often. And the roses you will surely want to buy are patented like medicines. Our order blank was filled with names like "Forty-niner", "Capistrano", "Peace", "Aloha", and "King Midas", and the total cost at the bottom of the page resembled Marshall plan aid to Britain.[121]

Lattimore also reported that an abundant crop of snails almost ruined the spring garden that year and pellets to kill the snails were put out "in our rose and glad beds. The Savannah Flower Show caught us with scarcely a blossom, but we took a blue ribbon for best dark red rose (Happiness) and two blue ribbons for frilled petunias (Burbee Hybrids). Our pet house wren gobbled up our entire first planting of Hybrid Zinnias."[122]

Mission 66 (1956-1966)

The Dike and Ditch System. A major Mission 66 effort was the clearing of dense vegetation from the dike and ditch system. The Park experimented with herbicides and mechanical clearing. Brush cut from ditch banks was burned in the center of the ditch to save transportation to the trash dumps.

Fort and Demilune. Another Mission 66 project was the regrading of the parade ground, which was done twice between 1958 and 1961. The irregular condition of the ground made it impossible to mow grass. Additionally, a severe winter in 1957-58 killed

120. Invitation For Bids and Specifications of Sale of Buildings and Fixtures, General Services Administration, undated, FPNM archives.
121. Monthly Narrative Report, January 1950; 348/2012 F, 1956, FPNM archives.
122. Monthly Narrative Report, April 1953, FPNM archives.



FIGURE 92. Drainage structure obscured by vegetation , 1958. (FOPU archives)



FIGURE 93. Demilune, 1958. (FOPU archives)

most of the centipede grass. Native Bermuda grass was used to reseed the lawn after it was regraded.[123] The regrading of the parade ground introduced crab grass to the lawn areas, which was removed by hand in 1961 to the extent possible. The parade ground was then limed and fertilized.

In 1958, Superintendent Lattimore complained that the maintenance of the demilune had to be abandoned due to inadequate maintenance staff, resulting in the earthworks and gun emplacements being overgrown with vegetation. Photographs show the overgrown character of the demilune, much of which was cleared beginning in 1958. By 1961, the demilune had been cleared of overgrown trees and shrubs and sprigged with Bermuda grass. More than 1,000 small trees covering the glacis were also removed so that the fort and moat would be framed in a wide band of manicured lawn. Bermuda grass seed was sown on the terreplein and the bald spots on the demilune.[124]

The 1965 Master Plan stated that the outer slope of the glacis was covered by a dense thicket of vegetation that cut off all views of the fort. Ralston Lattimore commented in 1965 that foliage had grown so high and was so dense around the fort that the structure was completely hidden. The vegetation succession remained in place until the 1970s, when some of the vegetation was removed so that the landscape more closely resembled its Civil War-era appearance. The large cedar trees were removed from the demilune in 1977.[125]

Visitor Center. Landscaping for the visitor center in 1964 included filling and clearing the area west of the visitor center and the planting of cabbage palms, red cedars (*Juniperus virginiana*), and Carolina cherry laurels (*Prunus caroliniana*). The planting plan called for sweet acacia (*Acacia farnesiana*), but the contractor was allowed to use Carolina cherry laurels instead. Cabbage palms were planted in tree wells next to wooden benches near the entrance.

In 1965, eighteen white and pink oleanders were moved from an abandoned section of U.S. 80 to the vicinity of the visitor center and parking area. The Park also moved three sweet acacias. At this time, the Park ordered twenty-five junipers (*Juniperus chinensis*) and twelve oleanders.[126]

Battery Hambright. In 1960, Battery Hambright was heavily overgrown with trees and shrubs, which masked the earthwork and concealed its military

123. Ralston Lattimore to Regional Director, October 29, 1957; Ralston Lattimore to The Director, November 4, 1958, FPNM archives.
124. Ralston Lattimore to Regional Director, May 12, 1958, FPNM archives Narrative Report – Improvement to Grass Cover Terreplein, Parade Ground, Glacis, Parking Area, Etc., July 22, 1961, FPNM archives.
125. 1965 Master Plan, 6; Superintendent to Regional Director, March 28, 1965, FPNM archives; Groh, 117.
126. David Schmidt to Superintendent, September 9, 1964; Monthly Narrative Report, January 1965, FPNM archives.

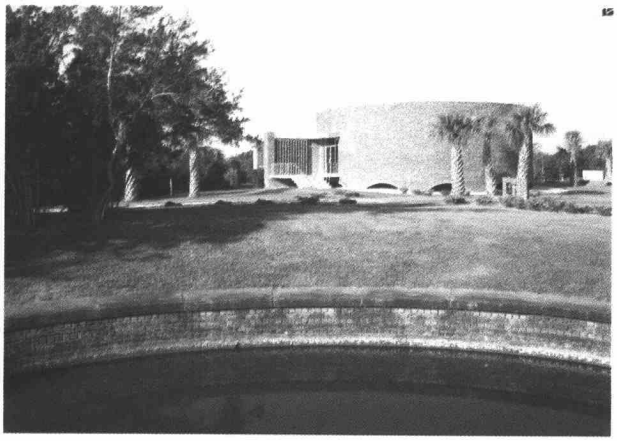


FIGURE 94. Fort Pulaski Visitor Center, c. 1964. (NPS image by Jack E. Boucher)

aspect. The removal of the vegetation, which included more than 2,000 trees and shrubs, occurred as one project for Battery Hambright and the demilune.[127]

Entrance. Palmettos and oleanders that were obstructing the intersection of the park entrance road and U.S. 80 were removed by Chatham County at the request of the Park in 1964.[128]

Post Mission 66 (1967-Present)

Between 1972 and 1974, maintenance personnel cleared overgrown vegetation around the fort and on the dikes to permit a more historically correct field of view from within and without the fort. An aerial photograph from the 1980s shows the vegetation immediately surrounding the fort removed and managed as grassland. There was still a mature canopy to the north and west of the fort, as well as to the east of the dike system, where mosquito borrow allowed vegetation to grow up. In 1988, the Park re-established a mowing program within an area of approximately fifty acres within the historic dike system. Brush was cut back with a tractor and bush hog mower twice a year in order to restore historic vistas.

In 1990, Park maintenance staff removed plants growing on the surface of the fort, Battery Hambright, and several of the construction village cisterns. A large cedar tree was removed from the perimeter of one of the cisterns. Oleander plants were removed from Cockspur Island at this time.

127. Narrative Report – Restoration of Demilune and Battery Hambright, June 24, 1960, FPNM archives.
128. Monthly Narrative Report, July 1964, FPNM archives.

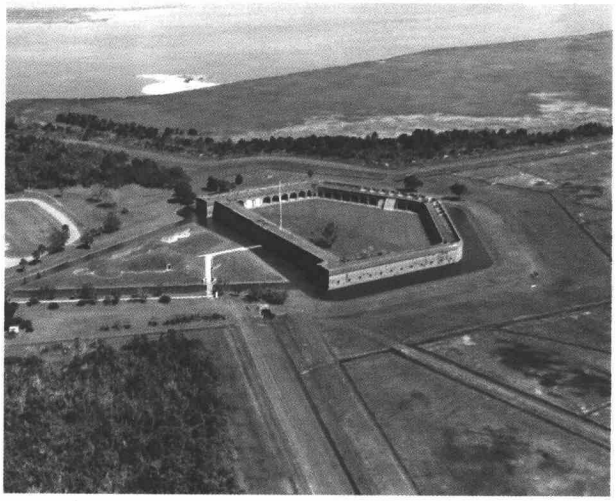


FIGURE 95. Aerial photograph, 1980s. (FOPU archives 3464)

Battery Horace Hambright. The removal of the large cedar trees that were growing on top of Battery Hambright occurred in 1977.[129]

Buildings and Structures

Fort and Demilune. The Daily Georgian published the following description of the proposed fort on Cockspur Island on December 31, 1828:

> We have obtained some additional information from an authentic source, relative to the work of Fortification contemplated to be erected on Cockspur Island. It is to be the kind called in technical language, Casemated; the form of the work pentagonal, and will mount 136 guns, in three tiers; the two lower tiers are to be covered with bomb proof arches; the sally (or gateway) will be covered by a work called Demi-lune; the whole will be surrounded by a ditch about 40 feet in width – in advance of the main work, is to be constructed a open battery, for mortars and howitzers. The permanent quarters for the troops will form that part of the main work, called the gorge – in the interior of the work will be located the furnace for heating shot – height of walls about 30 feet – a canal will connect the ditch of the work with the river, by which means it may be emptied and replenished at pleasure.[130]

Simon Bernard's original plan for a two-story structure mounting three tiers of guns was revised by Mansfield in 1831, reducing the height of the fort to one-story. The position of the redesigned fort was

129. Groh, 116.
130. *Daily Georgian*, December 31, 1828.

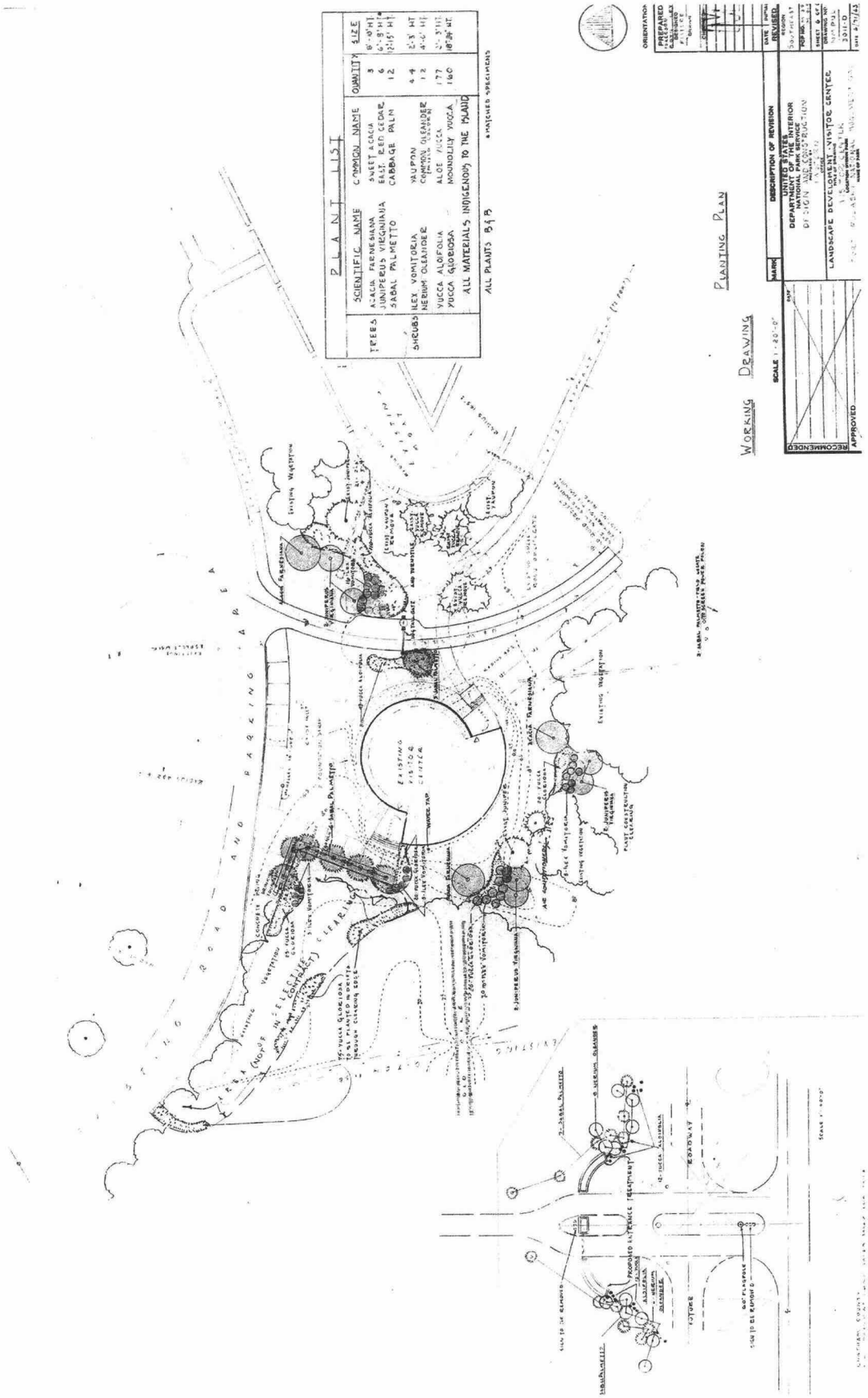


FIGURE 96. Planting plan for the Visitor Center, 1964. (Denver Service Center eTIC 348/3011D)

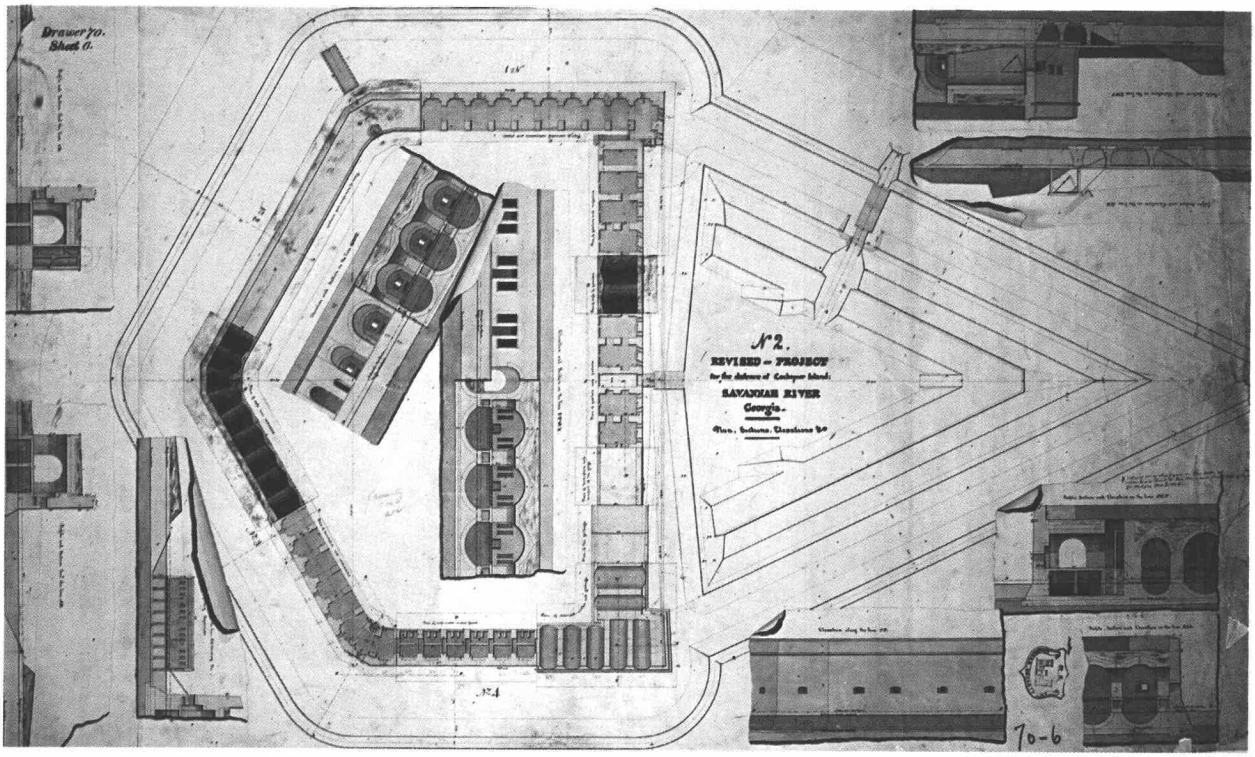


FIGURE 97. Plan of Fort Pulaski, 1868. Record Group 77, Drawer 70, Sheet 6. (National Archives)

also adjusted toward the north and rotated to face due east.

The fort as completed in 1847 had five sides and required approximately 25 million brick. Most of the brick were Savannah Greys manufactured at Henry McAlpin's Hermitage Plantation outside of Savannah. The harder rose-red colored bricks used in the embrasures, arches, and walls facing the parade ground were purchased from Baltimore, Maryland and Alexandria, Virginia. Brown sandstone and granite quarried from New York and Connecticut were used on the exterior walls and below the casemate gun emplacements.[131]

The fort was sited such that two sides guard the South Channel of the Savannah River and two guard the North Channel. The rear section, known as the gorge because it contains the sally port, faces west. Seven-and-one-half-foot-thick walls stand twenty-five feet above the water-filled moat. The fort was designed for two tiers of guns, one mounted in casemates and the other en barbette.

Located west of the main work, the demilune is a flat, triangular-shaped outwork. The interior wall of the moat serves as the exterior wall of the demilune and is revetted with brick masonry. The demilune functions as a physical barrier to the entry of the fort and provides additional space for gun emplacements.

The entrance to Fort Pulaski was well-protected by the moat, two drawbridges, the demilune, and the sally port, which offers several additional defenses. As the drawbridge rises, a strong wooden grill (portcullis) drops through a slot in the granite lintel overhead. The heart-pine doors are studded with iron bolts to make it difficult to chop through them with axes. In times of great danger, the inner doors could also be shut and barred.[132]

The terreplein atop the walls was supported by sixty-seven arched casemates that served as housing for officers and enlisted men, as well as storage for powder and ammunition. The terreplein was lined with lead and covered with sod to collect rainwater for the fort's internal water system. Civil War-era photographs show an observation tower and brick and earthen mounds on the terreplein, which may have been used to shield soldiers from enemy fire.[133]

131. Lattimore, 6-9.

132. Ibid., 49; Schiller, 4; Groh, 109.
133. CLI, 17.

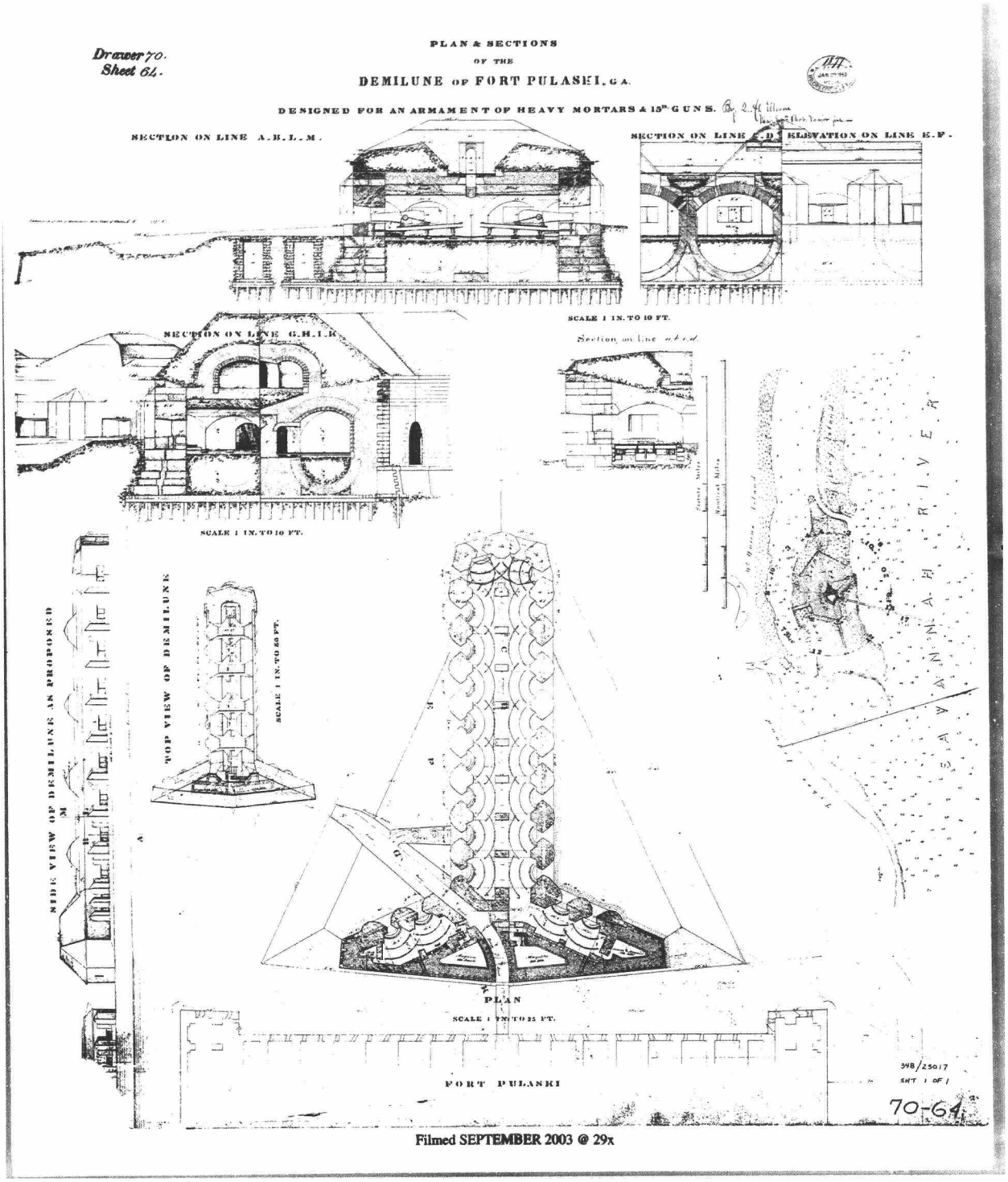


FIGURE 98. Demilune plan, 1869. Record Group 77, Drawer 70, Sheet 64. (National Archives)

On April 11 and 12, 1862, after thirty hours of nearly continuous bombardment by Federal forces with the new rifled cannon, the southeast wall of Fort Pulaski was breached and Confederate troops surrendered. By the end of the summer, troops of the 48th New York Volunteers had repaired the damaged southeast corner of the fort. During this repair, the embrasures of three casemates were closed and protective traverses begun by the Confederates completed.

Between 1862 and 1865, Union soldiers constructed a number of wooden and brick structures on the demilune. Although the exact nature of these buildings is unknown, it is probable that at least one of them served as a kitchen (see Figure 34).[134]



FIGURE 99. View of parade with structures on the terreplein in the background, 1863. (FOPU archives)

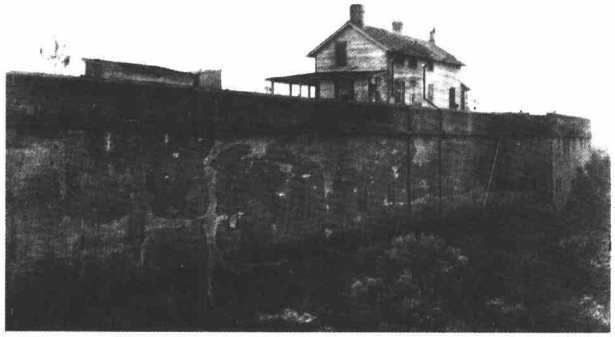


FIGURE 100. Lightkeeper's house. (FOPU archives)

After the Civil War, Fort Pulaski had limited military value. The Army Corps of Engineers altered the demilune during the years 1864-1876. Four underground powder magazines, passageways and emplacements for heavy guns were constructed on the existing ground surface. Then several feet of soil was added to reinforce the underground fortifications.[135]

The next modification to the main work occurred after the 1881 hurricane destroyed the Cockspur Island light keeper's house. In 1902, Congress allocated $4,000 to build the Cockspur Island Lighthouse keeper a one-and-one-half-story frame house on top of the west wall of the terreplein, and it was completed by 1906. In 1925, fire destroyed the structure and damaged the fort casemates beneath.[136]

An Army Corps report dated 1892 described the condition of the fort:

> All of the doors of the gun casemates are rotten; some are in place, and others have fallen down.
>
> The casemates in the southern half of the gorge are designed for quarters. They are serviceable but in a filthy condition. The casemates in the northern half of the same front are used for storage. They are not in good order; doors and window shutters are decayed and broken.
>
> The magazines in the Northwest and southwest angles of the fort are dry, although badly ventilated.
>
> The large excavation in rear of a portion of the north front, near the gorge, made in 1876 while preparing for the construction of concrete piers required in modifying the work, contains stagnant water covered with a fungoid growth which emits a repulsive and unwholesome odor.
>
> Grass and weeds overrun the parade and other parts of the fort.
>
> The Sally port drawbridge and the bridge across the ditch of the demilune are serviceable, and the inner gates of the Sally port are in good condition. The hoisting apparatus of the drawbridge is out of order.
>
> The masonry of the main work is in fair condition, except that the brick parapet is broken in several places on the channel fronts as a result of the bombardment of 1862.
>
> The cistern in the parade is in good condition, but water in the various casemate cisterns is brackish.
>
> The demilune is in fair condition with regard to the masonry work, terreplein, slopes, passages, and magazines, but all the doors at the entrances of the covered passages are rotten and broken down.
>
> There are Six wooden front pintle platforms and one wooden center pintle platform for 15-inch Rodman guns in the demilune. They were laid in April 1874 and are all rotten and unserviceable.[137]

In 1895, the demilune acquired an additional mound over an underground room in the southeast corner, which housed controls for electric mines in the North Channel of the Savannah River.

134. Schiller, 142, Lattimore, 53; "Fort Pulaski, Mouth of Savannah River, Ga.,"1892; HABS, 11.
135. Report of the Chief of Engineers, June 30, 1876, FPNM archives.
136. HABS, 12.
137. "Fort Pulaski, Mouth of the Savannah River, Ga.,"1892.



FIGURE 101. Lead roof repair, c. 1934. (FOPU archives)

A 1913 inspection reported that the fort was without a caretaker, and steps were taken to secure a full-time custodian and obtain a modest amount of funding for repair work. Colonel Dan C. Kingmanof the Army Corps made the following plea:

> Fort Pulaski is a fine specimen of a brick fort . . . The wet ditch is filled with mud and grown up with weeds, the drawbridge is gone, and the gates are in such condition as would hardly exclude anyone who cared to enter it. I think that all these forts should be maintained.[138]

Repairs and restoration to the fort did not take place until 1934. Crews repointed all brickwork throughout the fort and repaired the lead roof. The casemates were restored to their Civil War use. The casemates located south of the sally port, damaged by the 1925 fire, were not restored to their original use but were rehabilitated to accommodate visitor services. Also undergoing restoration work were the circular stair tower railings, the northwest bastion stair tower, and the two drawbridges.[139] Crews restored the demilune parade and constructed a new oval walk from the sally port drawbridge to the demilune drawbridge.[140]

As part of the Mission 66 program, the Park rebuilt the portcullis of the main work, replaced a considerable amount of decking of both moat bridges, and performed extensive repairs and waterproofed the brickwork. By 1960, the interior brickwork and stonework of the demilune had been repaired and repointed. Additions included a brick

138. U. S. Engineers Office, Savannah, Ga., January 27, 1913 to the Chief of Engineers, Record Group 77 Box 1, National Archives.
139. Groh, 115; HABS, 15.
140. Monthly Narrative, July 1938, FPNM archives.



FIGURE 102. Repair work on pintle gun pit, 1958. (FOPU archives)

stairway leading out of the pintle gun pit to the shoulder of the earthwork, where a new brick walk led to a second stairway leading down to the southside gun pit. The stairways and walk formed an important link in a circular tour of the demilune. Sections of the earthworks were repaired and reshaped.[141]

The demilune drawbridge was replaced in 1886, reconstructed in the 1930s, and repaired in the 1950s and in 1975.

Dikes and Ditches. A two-mile system of dikes encircled the driest portions of the island. Ditches were cut from the south shore inland toward the center of the island. Tide gates in the ditches controlled the tide flow to the center of the island and eventually to the moat surrounding the fort. The dike and ditch combination provided protection for the interior of the island from storm surges that frequently washed over the island.[142]

Feeder Canal. The main ditch, stretching 2,500 feet from the moat to the South Channel of the Savannah River, is located on Mansfield's 1843 map. The feeder canal had to be repaired following hurricanes of 1854 and 1881 and was restored during the 1930s CCC project.

141. Superintendent to Regional Director, January 16, 1961. Narrative Report – Restoration of Demilune and Battery Hambright, June 24, 1960, FPNM archives.
142. CLI, 13; Groh, 119.

North Tide Gate. Located just south of the moat and east of the entrance drawbridge, this style of gate is called a "slide" gate. Water is controlled by turning a large wheel located on top of the culvert, which raises and lowers the gate. Plans for the culvert arrived in December 1844 and its construction, with the exception of its coping, occurred in 1845. The north tide gate was reconstructed by the CCC in the 1930s.

South Tide Gate. The original south tide gate was constructed near the south end of the main feeder canal in 1842 and its culvert was constructed from 1857-58. By the 1930s, the culvert had collapsed. The construction of a new tide gate and culvert further south on the feeder canal occurred during the CCC restoration project using a "combination" style gate that automatically slides and acts primarily as a check valve.[143]

Moat. Constructed between 1845-47 at a width of 48 feet around the fort and 32 feet around the demilune, the moat was an integral part of the defenses of Fort Pulaski. It's interior and exterior walls were revetted with masonry, and its average depth was 7 feet. The water was brought in from the South Channel of the Savannah River by a main feeder canal and the flow of water was controlled by a series of tide gates. The moat had to be re-excavated during the CCC restoration project, with an average of 400 yards of soil being removed from the moat daily. Laborers recovered intact wooden planks from the bottom of the moat, suspected of being placed there during construction to stabilize the deep, loose mud.[144]

Mortar Batteries. Three mortar batteries were constructed with sandbags and timber outside the fort. Two were located south of the fort and one was located east of the fort. A water battery was located near the North Channel just west of the construction village. An 1892 report described the water battery:

> The water battery contains two wooden front pintle platforms for 8-inch or 10-inch Rodman guns; they are unserviceable from decay. This work is overflowed at high tide, its sea wall is badly shattered and broken. The battery is not presumed to form a part of the modified project.[145]

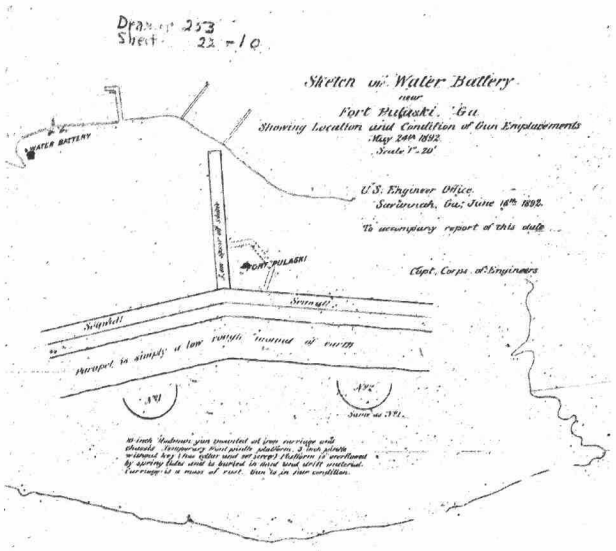


FIGURE 103. Water battery drawing, 1892. (FOPU archives)

Construction Village. Work began on the construction village in 1829, under the direction of Lieutenant Robert E. Lee. The 1830 map drawn by Lee shows the location of quarters for Babcock and Lee, workmen's quarters, the North Channel beacon, and the revenue boathouse.[146]

The construction village buildings were clustered south of the North Channel Pier and northwest of the demilune. These structures were located on Mansfield's 1831 map and Alexander's 1843 map. In 1842, Mansfield sent plan and elevation drawings of the structures located on Cockspur Island to Washington. A historic base map drawn in 1942 depicting conditions in 1862 identifies most of the structures. A Historic American Buildings Survey (HABS) map redrawn as a composite from several historic maps, including the 1842 map and inventory of all structures on the island, identifies the remaining buildings.

Historic photographs of the construction village show structures mainly of frame construction and raised as much as five feet aboveground on masonry posts. Eight cisterns provided drinking water for the village. A masonry beacon rising thirty feet above the dike at the North Channel Wharf dominated the landscape.

143. Young, 202; Groh, 126.
144. Groh, 124-25.
145. "Fort Pulaski, Mouth of the Savannah River, Ga.," 1892.
146. Young, 4; Groh, 126.

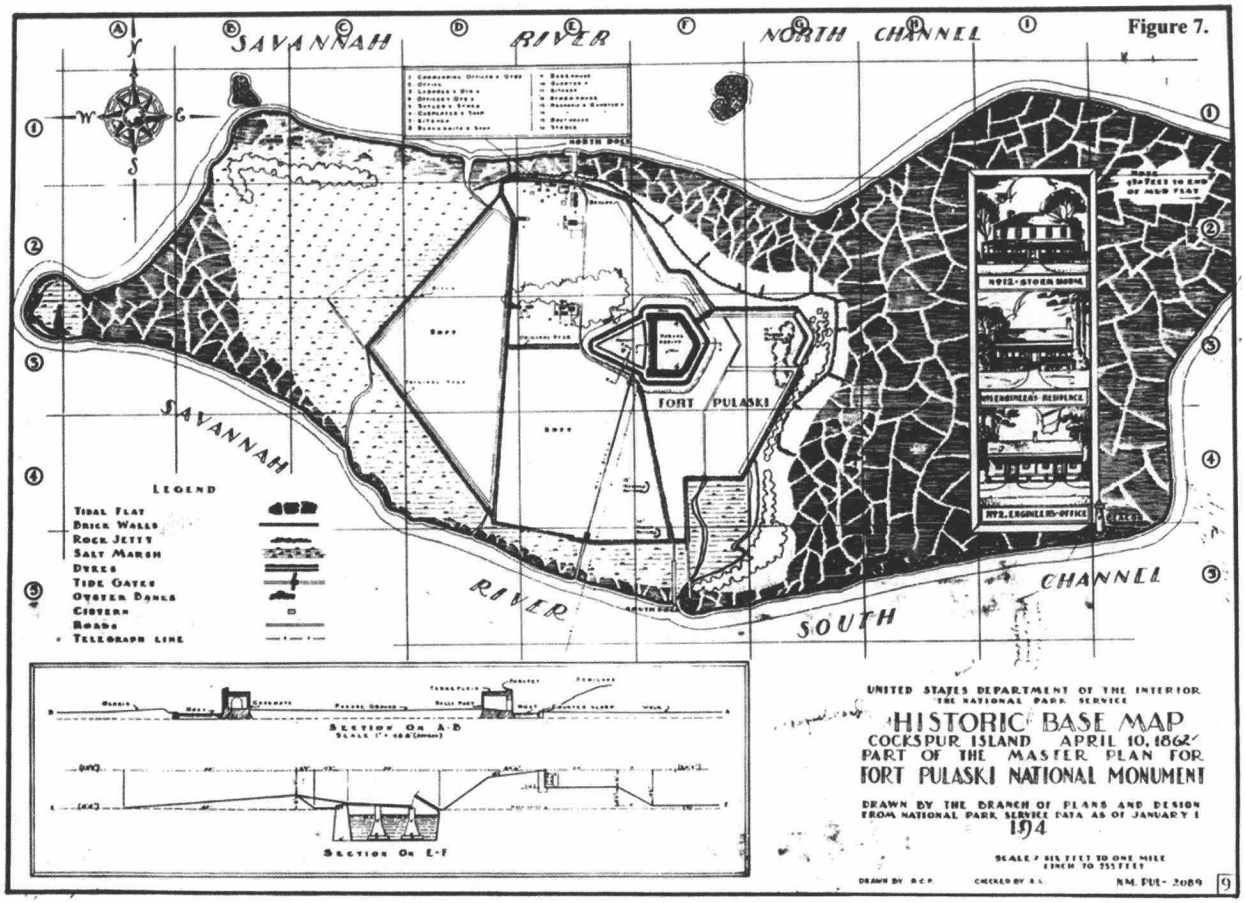


FIGURE 104. Historic base map showing structures, April 1862. (Denver Service Center eTIC 348/2089)



FIGURE 105. Construction village from southwest corner, 1863. (FOPU archives)

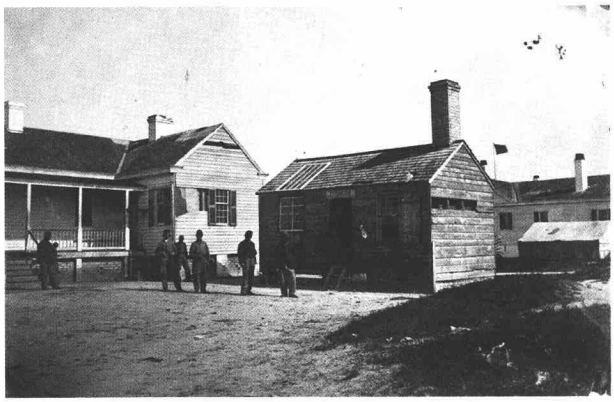


FIGURE 106. Rear of Pelican House, 1863. (FOPU archives)

In 1842, fire destroyed the largest of the temporary quarters, located to the west of the fort. Also in 1842, a violent nor'easter destroyed the boathouse, which was replaced in 1844. In 1847, the workshops and some of the laborers' quarters immediately northwest of the fort were taken down. The carpenter's shop on the north shore was destroyed by the 1854 hurricane but was rebuilt in 1857.[147]

1863 photographs document some of the other structures at a closer scale, including the Superintending Engineer's Quarters, which was used as the hospital, and the rear of another frame building, referred to as the Pelican House. An 1871 drawing shows the Superintending Engineer's Quarters as little changed.[148]

147. Young, 197, 213, 301; "Historic Base Map Cockspur Island Georgia," undated, FPNM archives, 6-7.

148. Prentice, 29.

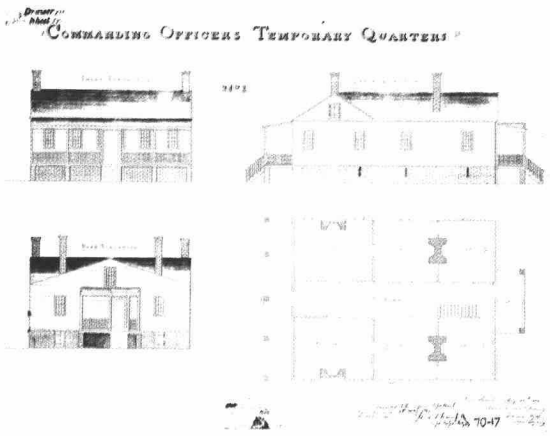


FIGURE 107. Superintending Engineer's Quarters, 1842. Record Group77, Drawer 70, Sheet 17. (National Archives)

From 1869 through 1872, the Army Corps of Engineers undertook repairs and renovation to the construction village buildings. The 1881 hurricane that inundated Cockspur Island destroyed the remaining buildings.

The following is a description of the construction village buildings:

Bakehouse: A one-story frame structure located south of the laborers' quarters and west of the Superintending Engineer's quarters. A large oven occupied the western third of the structure.

Laborers' Quarters: Quarters for the laborers were provided by three separate one-story frame structures. Two of the structures were located southwest of the North Channel Pier and one was located southeast of the North Channel Pier.

Superintending Engineer's Quarters (Commanding Officer's Quarters): Based on Lee's 1830 map and Watts' 1842 map, the approximate location of the one-story frame structure was south of the North Channel Pier, roughly one-third the distance from the north shore to the fort. The building is easily distinguished from the other buildings in the Workmen's Village by the presence of four chimneys. The building was identified in an 1863 photograph as the hospital.[149]

Office: Located immediately north of the Commanding Officer's Quarters on the 1842 Watts map, the office was originally labeled as living quarters for Lieutenant Lee on his 1830 map. In 1849, two rooms were added to the west side of the building. Plan and profile drawings signed and dated 1871 by J. C. McFerran indicate the remodeled building was being used to house an officer and the doctor.[150]

Assistant Engineer's Quarters: A one-story frame structure, it was located just south and west of the North Channel Pier.

Blacksmith Shop: This building was located in the far northwest corner of the construction village.

Carpenter Shop: This building was located in the far northwest corner of the construction village along the north shore.

Kitchens: Two kitchens were located adjacent to officers' quarters buildings near the north shore and another was located west of the Mechanics' Quarters/Storm House northwest of the demilune.

Mechanics' Quarters/Storm House: The Mechanics' Quarters was the only known two-story frame building in the construction village. It was located almost due north of the demilune and west of the roadway from the North Channel Pier to the fort. It is not known if 1871 plan and profile drawings and a rough sketch showing a two-story structure depict an extensively remodeled or entirely new replacement building.[151]

Mechanics' Quarters: Two one-story frame buildings were located near the Stormhouse. One was located northwest of the Stormhouse, and another was located southwest of the Stormhouse.

Stable: The stable was located northwest of the demilune. Another stable was located northwest of the South Channel Pier.

Cisterns: A number of cisterns were located throughout the construction village to supply water to the workers. There were two distinct construction styles. The Carved Portal style was capped by pie-shaped slabs of brownstone into which circular portals were carved to provide access to the water stored inside. The other style was capped by rectangular slabs of granite with a

149. Groh, 130; Prentice, 29.

150. Prentice, 30.
151. Ibid., 33.

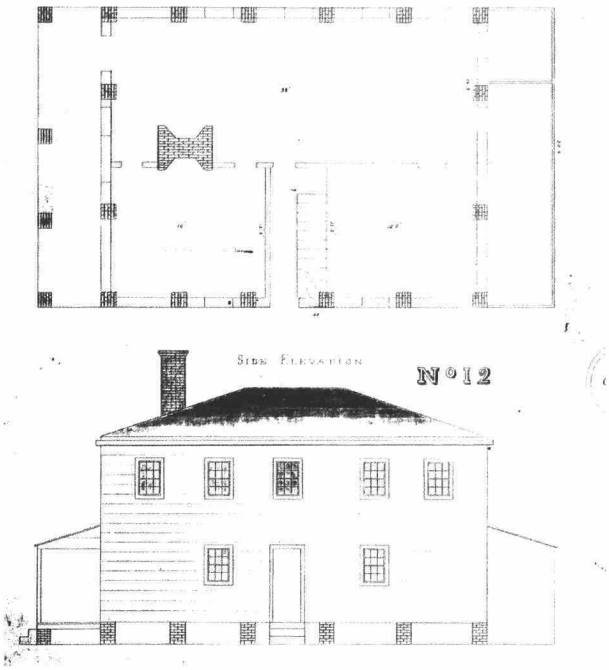


FIGURE 108. Storm house, 1842. Record Group 77, Drawer 70, Sheet 22. (National Archives)

rectangular brick framework built around the cistern's opening. They were constructed of Baltimore Rose brick with brownstone and/or granite covers. All of the cisterns had been constructed by 1842.[152]

Beacon: Lee's 1830 map depicts the beacon, constructed due south of the North Channel Pier. The beacon can be seen is several Civil War-era photographs of the site. The fate of the beacon is unclear, but by the time the CCC began repairs to Fort Pulaski in the 1930s, the beacon was no longer standing.

North Channel Boathouse: Lee's 1830 map identifies a "Revenue Boat House" east of the beacon. This is the same location where the 1842 Watts map places a Boatmen's House with a separate boathouse.

Cockspur Island Lighthouse Complex. The three-story brick structure, located southeast of Cockspur Island, was constructed in 1839 but was not outfitted with lights until 1848, when noted New York architect John Norris was contracted to "repair alter and put up Lanterns and Lights on Cockspur Island ... and to erect a suitable Keeper's House." The lighthouse was reconstructed in 1856 following a hurricane in 1854.

152. Ibid., 27.



FIGURE 109. Cockspur Island Lighthouse, 1950s. (FOPU archives 3400)

The lighthouse was reactivated after the Civil War, and in 1868, it was reported that a "substantial boat landing has been erected; piles cased with yellow metal; tower whitewashed; station in good condition." In 1876, the tower was fitted with storm doors for the lantern, and the stairs and landing repaired.[153]

Repairs to the lightkeeper's house, constructed in 1848, were necessary following the 1854 gale, and it was suggested that a brick foundation and a small frame kitchen be added. In 1876, it was reported that the house was "decayed to the point that repairs are unadvisable." In 1880, the house was struck by lightening and was reported to be almost uninhabitable. It perished in the 1881 hurricane that devastated Cockspur Island.[154]

The U.S. Lighthouse Service extinguished the light of the Cockspur Island Lighthouse on June 1, 1909, but the tower itself continued to serve as a shoreline navigational aid. The U.S. Coast Guard discontinued even this use in 1949.

After the lighthouse property was transferred to the National Park Service in 1959, the structure underwent extensive repairs to the brick. In 1980, repairs were made to the iron hand rails and to the exterior brickwork. In 1990, the wood door and window frames were replaced and the exterior of the tower was painted white. The lantern was replaced in 2000, and the lighthouse beacon was relit in 2007 as an interpretive aid.[155]

153. Ibid., 44.
154. Ibid., 45.
155. Groh, 147-48.



FIGURE 110. North Channel Pier, 1930s. (FOPU archives 3377)



FIGURE 111. CCC dock, 1936. (FOPU archives)



FIGURE 112. South Channel bridge, 1938. (FOPU archives)

North Channel Wharf. Construction of the North Channel Pier and Dock occurred in 1830 at a site chosen by Major Babcock. It was a mole composed of two walls constructed of huge granite blocks with earth fill in between. The mole was 120 feet long, and, at its outer extremity, there was a 30-foot-wide wooden pier constructed on piles where sailing vessels would discharge their cargo. Small boats would tie up to iron rings embedded in the granite blocks.[156]

In 1837, a breakwater was begun to protect the north and northeast shores of the island. Up to this point, the wharf had been in a state of disrepair, and supplies came in on the more active South Channel. By 1839, the breakwater was nearly complete and the north wharf had been considerably enlarged. Repairs were needed in 1841 after the project was suspended for a year and again in 1842 following a severe gale. A severe storm that struck coastal Georgia in 1854 destroyed the wharf. The surviving pier was stabilized in 1963.[157]

South Channel Wharf. These wharves were built by Mansfield in 1831 at the southern terminus of the transport canal, when he abandoned Babcock's wharf site on the North Channel. They were repaired and enlarged in 1841. By 1843, Mansfield wanted to build a new small wharf on the South Channel at the terminus of the 1842 roadway because the old temporary construction pier was rotten. The1854 gale destroyed the wharf. Army Corps reports indicate that the wharf was rebuilt around 1870 but had almost disappeared by 1892.

The CCC constructed a loading dock at or near the same location as the previous pier. A ferry service from the west bank of Lazaretto Creek to the dock moved personnel and freight to and from Cockspur Island. The ferry service operated from 1934 to 1938.

South Channel Bridge. A composite wood and concrete bridge constructed in 1938 spanned a distance of 1,280 feet across the South Channel of the Savannah River. In 1965, decayed diagonal bracing was replaced. Repairs to deteriorated abutments (1997) and guardrails (1999) and replacement of damaged cross-braces, asphalt decking, expansion joints, and the north bridge approach (1999) occurred in the 1990s. Extensive work to the bridge also occurred in 2007.[158]

Cemetery Markers. Two grave sites are marked within the cemetery. The first is that of Lieutenant Robert Rowan, an officer stationed at Fort Greene,

156. Narrative Report, August 27, 1964, FPNM archives.
157. Young, 134-47; Groh, 119.

158. Completion Report, Repairs to the South Channel Bridge, February 12, 1965, FPNM archives; personal communication, Randy Wester.



FIGURE 113. Grave marker with cannon in background. (FOPU archives 3379)

who died in 1800. The grave site is most likely a reburial since the glacis on which the grave is located was part of the fort construction from 1829-1847. The marker for Rowan's grave can be seen in a historic photograph, which also shows the memorial cannon that marked the Civil War period cemetery.[159] The second grave marker is that of Charles Howard Sellmer, an infant son of Lieutenant Charles Sellmer, who was stationed at Fort Pulaski in 1872.

Battery Horace Hambright. A concrete and steel rapid-fire gun battery was completed in 1900 along the north shore of Cockspur Island. The soil upon which it was built proved to be inadequate to properly support its weight, resulting in significant settlement. A 1902 letter stated that "the following additional work will have to be done, to comply with the conditions of your letter, in regard to the rapid-fire battery at Fort Pulaski, Ga., which is on a poor foundation and has settled so that the rooms do not have positive drainage, although they now remain dry owing to a hole cut through the floor to the sand underneath." By 1906, it was reported that "it has settled considerably, causing several very bad cracks; that the magazines are quite damp and that the battery will require a pretty thorough overhauling before it can be put in commission."[160]

159. Groh, 118.

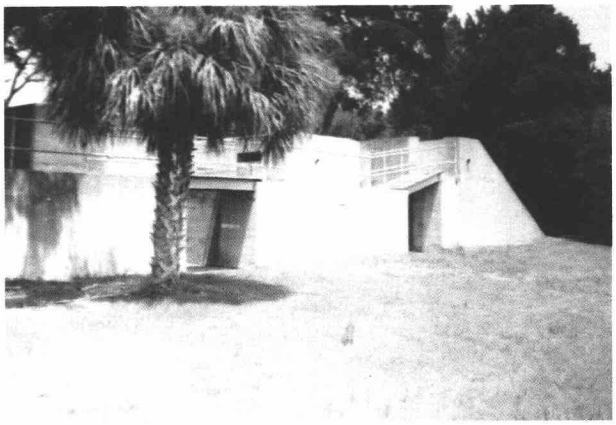


FIGURE 114. Battery Hambright, 1950s. (FOPU archives 3404)

A 1913 inspection reported that the entire platform for the right gun had separated from the interior wall causing it to sink several feet and sand covered the floor of the magazine. The side walls and steps were also cracking and breaking down. By 1915, it was reported that the emplacement was practically a "ruin."[161]

Cleaning and painting of the concrete and steel occurred in 1960. Park staff waterproofed the concrete structure and applied anti-rust paint to the exposed steel. Stairways were constructed from gunpits to permit continuous circulation without climbing onto the earthworks. The structure was repaired and repainted in 1976. In 1995, vegetation was removed, the surface cleaned, cracks sealed with caulk and mortar as appropriate, damaged areas rebuilt, nonhistoric metal removed to prevent spalling, and boardwalks rebuilt. In 1996, eroded soil was replaced on the northern slope.[162]

John Wesley Memorial. The installation of the memorial, designed by the Albany architect Edward Vason Jones, occurred in 1951. The square brick column, erected by the Georgia Society, Colonial

160. HABS, 11; Cassius E. Greene to Brig. Gen. G. L. Gillespie, June 11, 1902; Lieut. Col. Dan C. Kingman to Brig. Gen. A. Mackensie, April 21, 1906, Record Group 77 Box 1, National Archives. Construction date of c.1895 in National Register nomination and LCS. Date of 1898 in HABS written narrative.

161. Colonel Dan C. Kingman, Corps of Engineers to Adjutant General, February 18, 1913; Major James F. Brady to Commanding General, January 13, 1915, Record Group 77 Box 1, National Archives.

162. Narrative Report – Restoration of Demilune and Battery Hambright, June 24, 1960; Annual Narrative 1995 and 1996, FPNM archives.



FIGURE 115. John Wesley Memorial, 1992. (FOPU archives)



FIGURE 117. Quartantine Attendents' Quarters, 1939. (FOPU archives)



FIGURE 116. Quarantine Officer's Quarters, 1891. (FOPU archives)

Dames of America, marks the general area of Wesley's first service on American soil.

Quarantine Station. Quarantine Officer's Quarters: one-story frame building constructed in 1891, it stood just east and north of the Quarantine Attendants' Quarters and was always used for the officer in charge. It was demolished in 1960.

Quarantine Attendants' Quarters: one-story frame structure with hipped roof, two dormers, and engaged porches on two sides, built after 1900 for the pharmacist and hospital attendants. The structure underwent a major remodeling by the Navy in 1942, which included enclosure of the building's ground level. In 1998, the NPS dramatically altered the building's exterior in an attempt to restore the cottageto its historic appearance.[163] It was later used as the superintendent's residence.

Tybee Knoll Cut Range Lighthouse Complex. A wooden lighthouse with an attached tower was

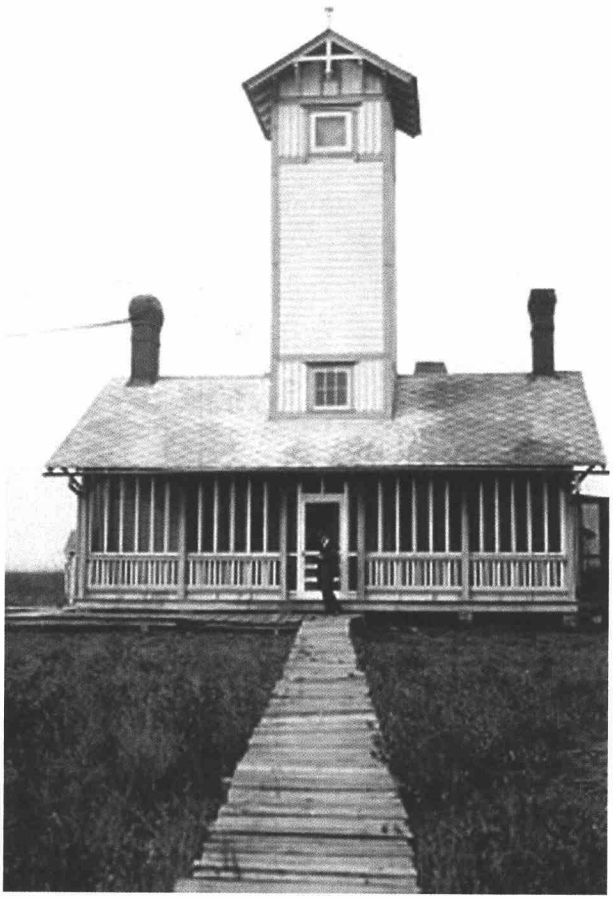


FIGURE 118. Tybee Knoll Cut Range Lighthouse, c.1923. (United States Coast Guard Archive)

constructed in 1878 off the easterly end of Long Island along the northern side of the South Channel of the Savannah River. A single story frame building with a central tower and boathouse were added by 1882, a wharf in 1888, and a brick oil storage shed in 1893. The light was extinguished in 1909.[164]

163. Jones, 30-31.

164. Prentice, 47.



FIGURE 119. Frame utility building, 1940. (FOPU archives)



FIGURE 120. Contact station, 1940. (FOPU archives)

The lighthouse, keeper's house, boat house, and wharf were razed by the Park in the 1970s for reasons of visitor safety. The oil storage shed, being brick, was not burned.

WWII Bunkers. Two bunkers were built in 1943 by the U. S. Navy at the west end of Cockspur Island. They are constructed of concrete with all surfaces but the face covered with dirt and turf. One is located on the south side of the service road and the other is on the north side of the service road.[165]

Maintenance Area. The construction of a metal building, which included a truck shed, truck repair shop, and tool storage room, occurred in 1935. The oil house and gas pump were moved from the South Channel boat landing to the maintenance area at this time. A one-story frame utility building had been added by 1940.

In 1960, a cinder-block, gas-and-oil storage house was constructed, replacing the oil house and gas pump. A rehabilitation and expansion of the utility building occurred in 1973. An equipment pole shed to house the park boat, tractor, and truck was constructed in 1993. Metal roofs were added to the gas house, garage building, and pole shed in 2003 and 2005.[166]

Entrance Station. A visitor contact station was constructed in the 1930s. Its removal occurred in 1945. The Park constructed a temporary fee collection station in 1968. The present fee collection station was acquired in the 1980s and expanded in 2001.[167]

Visitor Center. A one-story circular structure was constructed in 1964 of reinforced concrete and brick. Its height was kept low to minimize visual intrusions upon the fort. Handicapped ramps were added in 1977 and 1999. Between 1994 and 1995, the Park resurfaced the roof and added an auditorium by partitioning off a portion of the lobby. A detached restroom building was constructed in 1997.

Picnic Area. A Mission 66 project that occurred in 1965 included twenty picnic tables placed in an area southwest of the service road to the west end of the island. A restroom facility was added in 1985. In 1988, the Park modified the picnic area for handicap accessibility by constructing two elongated tables with oversized concrete slabs and added an accessible drinking fountain, designated parking area, and unobstructed pathways to the restroom. A picnic shelter was added in 2004.[168]

Circulation

The Building of Fort Pulaski (1829-1856)

In 1831, a temporary canal was dug to connect the new South Channel Wharf and the fort. Building materials were transported to the fort site by lighter. The canal appears on the 1843 Mansfield map. In 1851, Lieutenant Gilmer filled in the temporary canal used to transport building materials during the fort's construction.[169] The roadway from the North Channel Wharf to the fort is shown on the 1843 Mansfield map (see Figure 26).

165. Ibid., 54.
166. E. C. W. Narrative Report, November and December 1935; Narrative Report – Gas and Oil Storage, October 10, 1960; Annual Narrative 1974, 1993, FPNM archives; personal communication, Mike Hosti.
167. Superintendent, Fort Pulaski to Regional Director, May 8, 1968, FPNM archives.
168. Annual Narrative 1988, 2004, FPNM archives.
169. "Historic Base Map Cockspur Island, Georgia," 4.

In 1837, a narrow gauge railway was constructed from the South Channel to the fort. Mules were used to haul brick down the tract.

During the digging of the main feeder canal in 1843, excavated earth was placed west of the feeder canal to form a roadway. Mansfield planned on building a new wharf at the southern terminus of the roadway, explaining to Washington that the old wharf, located 600 feet east of the new roadway, was rotten and should be abandoned. During the late summer of 1845, Lieutenant Alexander cut away part of the 1843 roadway to provide sufficient fill to grade the parade ground.[170]

In 1843, Colonel Totten, Chief of Engineers, directed Mansfield to pave the walk along the gorge with "the very best and hardest bricks laid flatwise," while the postern was to be paved with "the hardest brick on edge or with granite flagging."[171]

Civil War Era (1860-1865)

Civil War-era photographs show at least two major roadways: one from the North Channel Wharf to the fort, and the other from the South Channel Wharf to the fort. Remnants of the 1843 road just west of the main feeder canal can also be seen. Numerous smaller routes connected the buildings of the construction village.

Fort Pulaski Military Reservation (1881-1923)

As the island was largely uninhabited during the 1880s, little is known about the circulation system at this time. A 1915 inspection reported that "the wharf is a total wreck" and that in order to reach the fort, "it was necessary to land at the quarantine station and cross very swampy ground." In 1918, funding was sought to open up a trail from the fort to the quarantine station.[172]



FIGURE 121. Road from South Channel Wharf, 1863. (FOPU archives)

Fort Pulaski National Monument War Department Administration (1924-1932)

Access to the island was by boat, generally from Lazaretto Creek across the South Channel of the Savannah River or to the quarantine station on the North Channel of the Savannah River. It appears that only a trail from the fort to the quarantine station existed before the 1930s.

National Park Service Development Era (1933-1942)

In January 1934, when the restoration project was begun by the NPS, the remains of the 1843 roadway, with an average elevation of 8 feet, were found paralleling the main feeder canal on the western side, approximately 18 feet from its center line and forming a 97 degree angle with the demilune. Mud excavated from the moat was used to rebuild the roadway, which led to the new dock on the South Channel, where all repair materials were unloaded. In 1937, "fine grading" of this shell roadway occurred. By 1938, a loop road shows up on park maps at the end of the roadway, which was used as a service road out to the CCC dock. The section of the service road between the main parking area and

170. Young, 226.
171. Ibid., 244.
172. Major James F. Brady to Commanding General, January 19, 1915; Colonel John Millis, Corps of Engineers to Chief of Engineers, U.S. Army, January 26, 1918, Record Group 77 Box 1, National Archives.



FIGURE 122. Parking area, 1935. (FOPU archives)



FIGURE 123. Parking area, 1941. (FOPU archives)

the demilune drawbridge was converted to stabilized turf when oyster shells became difficult to purchase.[173]

The old trail to the quarantine station was used as a temporary truck trail beginning in 1934. This trail allowed access to a large oyster shell bed. Road maintenance required significant time and effort of the CCC enrollees since mud excavated from the ditches was being constantly hauled over them. Sand and shell from the borrow pit located near the quarantine station were spread over them on a regular basis. Charles E. Peterson, Deputy Chief Architect, Eastern Division, Branch of Plans and Design, supported the restoration of the old pier remains on the North Channel and the roadway leading from it to the demilune, which appears on Alexander's 1843 map and can be seen in historic photographs from 1863.[174]

The final survey of the new road to the quarantine station and staking out of the final location of the entrance road and parking area occurred in January

173. Young, 226; Monthly Narrative, April 1937, FPNM archives; 348/4054, 1940.
174. ECW Narrative Reports, November 1934; Charles E. Peterson to Arthur F. Comer, August 24, 1934; Oliver G. Taylor to Reaville M. Brown, August 25, 1934, FPNM archives.



FIGURE 124. Temporary parking next to fort, 1938. (FOPU archives)

1935. Actual construction of the South Channel Bridge and entrance road began in 1937, and the project was completed in 1938. Cutback asphalt, sand, cinders, and ground oyster shells were used to surface the new road, which was 20 feet wide and 4 to 5 inches thick, with an elevation of 12. This road stopped at the quarantine station. Park maps show the road extended to the western park boundary by 1946.[175]

The main parking area was completed in 1940. It appears from NPS drawings and correspondence that the parking area was paved by 1942. Coordinating Superintendent C. R. Vinten stated in 1942:

> Our first reaction to the existing paved parking area was that it was located too far from the Fort, and that a smaller parking area should be located near the draw bridge entrance. However, further study of the problem ... indicates that a much more pleasant and practical solution is available by restricting all parking to the existing paved parking area.[176]

Cars parked directly south of the demilune drawbridge before the construction of the formal parking area. Although it was supposed to be temporary until the main parking area was completed, its use continued until the roadway up to it was taken out in the 1970s.

A curvilinear shell walkway with a large oval was constructed from the demilune drawbridge to the sally port bridge in 1936. A brick curb was placed along its edge in 1937. The walkway was

175. 348/2008B, August 1946; 348/8070, November 1938; Report of Road Fill Job, March 6, 1940, FPNM archives.
176. C. R. Vinten to Regional Director, March 25, 1942, FPNM archives; 348/2064, 1939; 348/20008, undated; 348/2083, 1943.

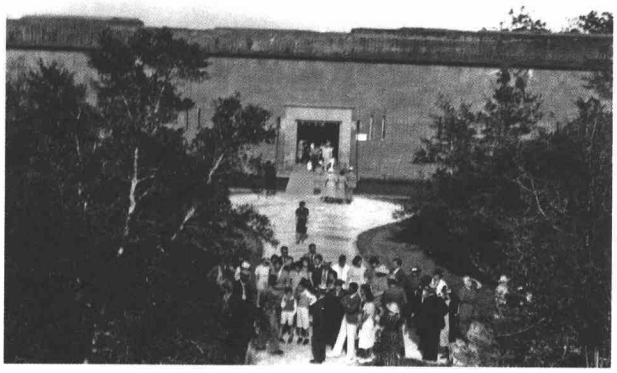


FIGURE 125. Oval walk, 1938. (FOPU archives)

documented in CCC photographs and park planning maps.[177]

In 1939, the CCC constructed the following shell walks:

- A five-foot-wide walk from the new parking area to the old quarantine station along the route of an old wagon road. It was to pass near several of the construction village cisterns, through the wooded area northwest of the fort.
- An eight-foot-wide walk along the roadway from the South Pier overlook to the fort, continuing through the parking area to the old North Pier.
- Three-foot-wide walks on top of the dike system to access tide gates for inspection and to reach the outside marsh areas.

The walks were surfaced with a mixture of cutback asphalt, washed sand, and oyster shells, and then a thin layer of crushed oyster shells was rolled into the mixture with a hand-operated roller.[178]

In order to accomplish the dike and ditch restoration and other projects, five miles of temporary oyster shell truck trails were built, most of which were later obliterated.

Another CCC project was the restoration of the walk encircling the major part of the parade ground. Brick was taken up, the area was leveled and filled with oyster shell, and then the walk was re-laid. In

177. March 1936 Narrative Report Landscape Work; 348/1020A, March 1938; Monthly Narrative Report, July 1938, FPNM archives.
178. Walks (Shell) Justification, Job 87, January 1939, FPNM archives.



FIGURE 126. Shell walk, 1940. (FOPU archives)



FIGURE 127. Walkway between quarantine station buildings, 1939. (FOPU archives 3348)

1938, the brick walk at the northeast powder magazine had to be redesigned with a wire-reinforced concrete layer put down to prevent the brick from sinking down and causing a safety hazard.[179]

Quarantine Station. It seems that the quarantine station was generally accessed by boat, even during the early stages of the CCC work on the island in June 1934. By the end of 1934, a trail from the fort to the quarantine station was developed into a temporary service road until a new road was constructed as part of the South Channel Bridge and entrance road project in 1938.[180]

Concrete walkways connected the quarantine station buildings. As buildings in this area were removed in the 1950s, walkways were obliterated, but parts of the historic walkway system remain intact.[181]

179. Monthly Narrative Report, November 1938, FPNM archives.
180. Quarterly Narrative Report, June 30, 1934; Monthly Narrative, November 1934, FPNM archives.
181. 348/2051, March 1939; 348/2012F, March 1956, FPNM archives.

Post-World War II (1945-1955)

Ralston Lattimore described the historic nature of the trail system at Fort Pulaski and his efforts to restore it after the war:

> William W. Luckett, who served as monument superintendent immediately after the war, did not know personally of the trail system, and apparently had no reliable plan showing them. He rehabilitated the main walk from the parking area to the North Dock (Hambright Trail), but did not restore the remaining section of this walk, which originally extended through the parking area to fort entrance at the outer drawbridge. He restored no other trails. Soon after my arrival in November 1948, the Georgia Society Colonial Dames proposed a memorial to John Wesley, a circumstance which caused me to investigate the condition of the trail system, which I knew to exist. When a site for the John Wesley memorial was determined, I immediately restored a section of the trail system which gave access to the memorial site and constructed two short spurs to provide ingress and egress. Subsequently, as I could spare the labor I restored additional sections of the trail system. The Government has a large investment in these walks, which I assumed to be my duty to protect.
>
> For your information, the Fort Pulaski trail system antedates master planning. It was originally designed in 1934 by Ralph S. Ellifrit, a promising and talented young landscape architect, who unfortunately was only with the National Park Service for one year. Mr. Ellifrit went from us to Hare & Hare in Kansas City and was recommended by that firm for a position with the City of Houston, Texas. Mr. Ellifrit is now City Planner for that great metropolis.
>
> Mr. Ellifrit's plan received approval, but it was agreed that it be constructed only as the need for it developed. Mr. James Swanson made a few minor changes to the layout of the system. By 1937 all trails that now exist had been laid out with a base course of oyster shell. Shell was found unsuitable for a surface course and many experiments were tried in an attempt to find a satisfactory surface treatment. Finally a mixture of shell, sand, and asphalt was adopted. In the second sentence above I should have said all trails except the Quarantine Trail. . . . [In 1940] the Quarantine Trail was constructed and the surfacing of all completed except about 400 feet of the loop trail east of Battery Hambright. Trails on the dikes, approved in this job were not constructed, nor was the main trail from the Fort entrance to the South Channel ever surfaced.[182]

Mission 66 (1956-1966)

A realignment of the entrance road occurred in 1962 to bring visitors from the parking area directly to the visitor center. Mission 66 philosophy placed an emphasis on interpretation and visitor orientation, and it was felt that visitors should be directed to the visitor center before going to the fort. The new road alignment also allowed visitors to be dropped off in front of the visitor center before entering the parking area. From the visitor center, concrete walkways provided an all weather surface to the fort. Existing asphalt walkways connecting the fort with the parking area and cemetery were retained.

Existing roads and trails were resurfaced in 1963. The stabilized turf portion of the service road from the parking area, which was used both as a pedestrian path to the fort and a road to the main tide gate, was realigned and replaced with two asphalt strips up to the fort, where it merged with the existing shell road down to the main tide gate. The construction of the visitor center created a conflict of pedestrian and vehicular circulation that persisted until the 1970s when the service road was finally obliterated.[183] At some point after 1958, the oval walk in the demilune was replaced with the present walk.

Post Mission 66 (1967-Present)

To achieve a more historic appearance, the Park covered asphalt walks and roads with a pebble aggregate mixture in 1972. In 1975, the walkway at the visitor center was realigned to direct people into the main entrance. In 1977, in conjunction with the construction of the handicapped ramp at the visitor center west entrance, the asphalt section of the service road to the South Channel was obliterated. This change eliminated the conflict in vehicular and pedestrian circulation that had existed since the construction of the visitor center. The asphalt section intersected with the visitor center walkways and was also used by pedestrians leaving the fort and going back to the parking area. A section of walkway was added at this time to connect the

182. Superintendent FPNM to Regional Director, February 12, 1953, FPNM archives.
183. Ralston Lattimore to Regional Director, June 3, 1963; Ralston Lattimore to Regional Director, June 10, 1964, FPNM archives.



FIGURE 128. Oval walk, 1958. (FOPU archives)

walkway to the parking area with the walkway leading from the west entrance of the visitor center to the fort.[184]

In 1984, park roads and trails were resurfaced. In 1993, the asphalt walkway leading to the cemetery was resurfaced in concrete with a broom finish to match the existing walk to the main visitor center entry. The Nature Trail was resurfaced with a chip seal treatment. A section of the trail north of the cemetery was removed and the area scarified and reseeded in grass. A trail around the Wesley Memorial was realigned. In 2000, the historic trail from the parking area out to the old North Pier was overlaid with concrete, with an exposed aggregate surface.[185]

In 1994, a nonhistoric dry-laid brick sidewalk was constructed on the terreplein in an effort to provide a safe and durable walking surface for visitors. Efforts to grow grass in this area were unsuccessful due to high traffic volume. Also in 1994, the construction of wood guardrails along the shoulder of the entrance road occurred.[186]

184. Annual Narrative Report, 1975, FPNM archives; personal communication Mike Hosti.
185. Meador, 32; 348/80007, May 1993; personal communication Mike Hosti.
186. Chief, Historic Architecture to Superintendent, February 18, 1994; Annual Narrative Report, 1994, FPNM archives.

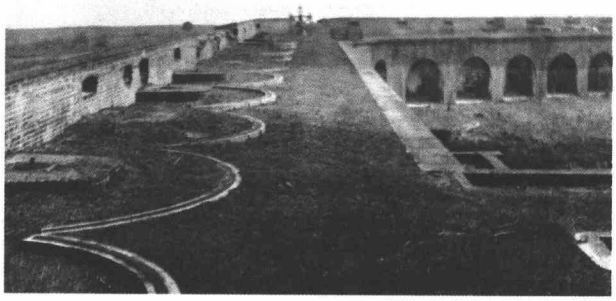


FIGURE 129. View from terreplein, undated. (FOPU archives 3374)



FIGURE 130. View from terreplein showing vegetation succession, 1935. (FOPU archives 3371)

Views and Vistas

Views and vistas at Fort Pulaski would have been open in all directions during the Civil War era.

Photographs from the 1930s show vegetation surrounding the fort, cutting off views from the fort out into the landscape that would have been open during the Civil War. Dredge deposits that added to the dry land mass and vegetation succession over the years has contributed to the loss of views and vistas.

In a 1958 report, Superintendent Lattimore remarked that it was difficult to maintain views from the fort because of vegetation growing on the demilune. The 1965 Master Plan addressed the need for a vista from U.S. Highway 80 and a view of the "field of fire" in front of the fort. In 1960, a vista was opened to the north of Battery Hambright to show the relationship of the battery to the river.[187]

187. Restoration of the Demilune and Battery Hambright, June 24, 1960, FPNM archives.

By the 1980s, most of the vegetation encircling the fort had been removed. Cedar trees growing up on borrow deposits east of the fort and within the diked area south of the fort remained and truncated views from the fort that would have been open during the Civil War. Mature trees remained north of the fort. In the 1980s, a vista was cleared from the northeast corner of the fort looking out towards the North Channel. In 1988, a mowing program was re-established to restore historic vistas in an area of approximately fifty acres within the historic dike system.



FIGURE 131. Entrance feature, 1941. (FOPU archives)

Small-scale Features

According to park planning maps, a picket fence enclosed the Administration and Residence area on three sides in 1939, prior to the removal of five buildings by the CCC. In 1948, a barb-wire fence was constructed across the trail leading from the parking area to the demilune drawbridge. This fence replaced the "old pipe fence," which had broken allowing cars to drive through to the old South Channel Pier.[188]

In 1994, archeology uncovered the fence post footers associated with a fence that once surrounded the cemetery, erected in 1918.[189]

The fort flagpole was reconstructed in 1935. Also at this time, water fountains were installed in restrooms within the fort. In 1970, the flagpole erected in 1935 had to be dismantled after a severe electrical storm damaged it beyond repair. It was replaced in 1974 with another replica flagpole.[190]

An entrance feature at the demilune was completed in 1941. A new entrance sign was erected in 1947, and a new interpretive sign explaining the significance of the demilune was erected in 1948. The installation of cast aluminum signs to identify parts of the fort and other features of the landscape occurred in 1954. In the 1950s, new entrance signs and markers were placed along the approach to the Park on U. S. Highway 80. In 1966 and 1975, new



FIGURE 132. Entrance sign, 1958. (FOPU archives)

informational and directional signs and markers were erected within the Park.[191]

The construction of an entrance feature on McQueens Island adjacent to U. S. Highway 80 occurred in 1964. In 1968, an entrance gate that could be locked at night was added when the fee collection booth was constructed.[192]

The removal of overhead power lines and poles along the entrance road to the fort occurred

188. 348/2053, February 1939; Monthly Narrative Report, February 1948, FPNM archives.
189. Groh, 69.
190. Superintendent to Director, December 10, 1970; Annual Narrative 1974.
191. Narrative Report August 1947; Narrative Report January 1954; Construct and Erect Signs and Markers, October 8, 1966, FPNM archives.
192. Superintendent, Fort Pulaski to Regional Director, May 8, 1968, FPRM archives; Master Plan, 30.

between 1976 and 1977. Utility lines were installed underground.[193]

In the 1980s, the Park enclosed spigots outside the Quarantine Attendant's Quarters in brick.[194]

In 1990, maintenance staff constructed decorative trash container holders to standardize exterior trash cans throughout the Park.[195]

Natural Systems and Features

Cockspur Island was primarily salt marsh before human intervention. It also probably supported some coastal hammock forest or woodland. As part of the building of Fort Pulaski, the island was modified by the installation of drainage canals and a dike system, and later, by the deposition of dredge material. During the Civil War period, vegetation was removed to enhance visibility and kept in early successional stages. Since the late 1800s, portions of the island have reverted to maritime forest. Currently, the upland portions of Cockspur (approximately 260 acres) support a mosaic of maritime forest, maritime shrub communities, maintained grasslands, and successional borrow deposit areas. The island also includes over 340 acres of tidal shrubland and tidal herbaceous marsh.[196]

Land Use

Cockspur Island holds a strategic location at the mouth of the Savannah River. Since colonial times, the island has been home to continuous military and governmental installations. Forts George, Greene, and Pulaski defended the access to Savannah throughout the eighteenth and nineteenth centuries. Battery Hambright was constructed as a Spanish-American War emplacement. The Navy occupied Cockspur Island from 1942-46. Today, both the U. S. Coast Guard and the Savannah Bar Pilots have installations at the west end of Cockspur Island. The establishment of Fort Pulaski National Monument occurred in 1924.

The west end of Cockspur Island has been used by several governmental agencies since the late nineteenth century. A quarantine station was in operation at the west end of Cockspur Island from 1889 until its closure in the spring of 1937. CCC Camp 460 on the northwest shore of Cockspur Island directly east of the quarantine station was in operation from 1934 through 1942. The Savannah Bar Pilots moved their operations to the west end of Cockspur Island in 1940. In 1983, the establishment of a U.S. Coast Guard Search and Rescue Station occurred.

Archeological Resources

In October 1994, the Southeast Archeological Center (SEAC) conducted a non-invasive remote sensing survey to search for the graves of the Confederate prisoners of war interred at Fort Pulaski. The most probable location for the cemetery based on historic records is north of the demilune and moat near the visitor parking area.

The results of the survey were inconclusive. None of the anomalies recorded and subsequently excavated revealed evidence of the graves.[197]

During repairs to the northern portion of the main ditch for mosquito control by Chatham County's maintenance staff in 1995, a Civil War refuse area was exposed. A team from SEAC examined the exposed refuse area, which was interpreted as a dump used by Union forces while making repairs to the fort in 1862. This interpretation was based on the location of the refuse area and the presence of complete bottles rather than bottle fragments. The presence of whole Civil War bottles helped rule out the possibility that the refuse area was the result of CCC activities from the 1930s because complete bottles recovered at that time were typically placed in curation at Fort Pulaski.[198]

In 1997, SEAC conducted a survey of the dikes prior to rehabilitation to determine the original size, shape, and methods employed during construction of the dike in the 1830s. Two locations were chosen

193. Annual Narrative Report, 1976, FPNM archives.
194. Personal communication, Mike Hosti.
195. Annual Narrative Report, 1990, FPNM archives.
196. Thomas E.Govus, "Fort Pulaski National Monument Inventory" (Atlanta, GA: Southeast Regional office, 1998), 1.
197. Groh, 68, 78.
198. Groh, 78.

based on historic documentation that indicated they may not have been repaired over the years. Clearly visible in all profiles, however, was a thin layer of oyster shell, which was most likely added to the top of the original dike during the CCC reconstruction. The soil used in the original construction and the original ground surface were found below this layer of oyster shell. The second location also showed evidence of repairs made by Fort Pulaski maintenance crews in the past fifty years.[199]

Extensive excavations of the cemetery occurred in 1999, leading to the complete delineation of its boundaries. 37 separate burials were identified. Of these, 19-21 lie in the general area of the documented Confederate section. Based on archival research and the 1999 excavations, it is felt that most of the Union troops who died during the Civil War were exhumed, and their cemetery plots were reused by civilians and post-Civil War military personnel.[200] In addition to the 37 burials, 5 areas of disturbance were identified. These disturbances probably had an impact on surrounding burials.

In 1999, 80 shovel tests in the assumed vicinity of Fort George, Fort Greene, and the Lyford Pilot House failed to yield any positive proof of their location. Historic documentation indicates that the search for these particular sites should focus on the mud flats at the southeastern end of Cockspur Island for Fort George and the area around the North Channel Pier for Fort Greene. It seems unlikely that enough remains of the Lyford Pilot House to warrant further archeological investigation.[201]

In 1999, limited archeological investigations were conducted in the vicinity of the brickwork thought to be associated with the residence occupied by the ordnance sergeant in the 1880s. This area was labeled as an oven on a 1936 CCC map. Artifacts observed during the excavation seem to corroborate that a building was located here, but additional archeological investigations will be needed to confirm these findings.[202]

Ethnography

There is a diverse ethnographic component to the history of Cockspur Island. Although as yet unexplored, previous prehistoric-related archeological investigations conducted in the vicinity of Fort Pulaski National Monument have identified prehistoric sites dating from the Late Archaic period to European contact. It is possible that similar sites exist on Cockspur and McQueens Islands.

Although the major interpretive focus at Fort Pulaski is the battle of April 10 and 11, 1862, the monument properties have a rich and diverse history. The area of Cockspur Island that holds the greatest potential for future ethnographic research is the construction village. This area was home to a diverse contingent of laborers, both free and enslaved. The dynamic between free European-American and enslaved African-American laborers has not been well-documented.

Other subjects for future ethnographic studies include the life histories of: Cockspur Island lighthouse attendants, those assigned to and those treated at the U.S. Quarantine Station, and CCC camp enrollees stationed at Fort Pulaski.

Three oral histories regarding the Confederate Officers imprisoned during the Civil War at Fort Pulaski are available.

199. Ibid., 121-22.
200. www.cr.nps.gov/seac/pulaski/2-civil_war/index-2.htm.
201. www.cr.nps.gov/seac/pulaski/1-before/index.htm; Prentice 49-51.
202. Prentice, 24.

Existing Conditions

Existing conditions are documented to clearly identify and describe the landscape characteristics that compose a cultural landscape. Contemporary site functions, visitor services, interpretation, park operations, and maintenance are included to the degree they contribute to or influence treatment of a landscape. Also recorded is detailed technical information, such as data on soils, climate, vegetation, and archeological resources.

Spatial Organization

The historic two-mile dike and ditch system encircles the fort and extends to the South Channel of the Savannah River. North of the fort, the dike passes between the old North Pier and Battery Hambright. It crosses the nature trail and the service road, then turns south again and crosses the main entrance road. The main ditch or feeder canal runs north to south from the moat to the South Channel of the Savannah River. Two 36-inch tide gates positioned across the ditch control the flow of water into the moat. The north tide gate is a shut off valve that holds water in the moat, and the south tide gate is a flapper valve that empties into the South Channel. An 18-inch flapper valve is located approximately 100 yards from the main feeder canal. New drainage ditches are located northwest of the service road. A 15-inch flapper is located on the west side of the dike system and empties into the marsh.

Fort Pulaski is sited at the eastern end of Cockspur Island and faces due east. It encompasses 3.25 acres, surrounded on three sides by the broad waters of the Savannah River. The historic two-mile system of dikes and ditches encircles the fort and demilune.

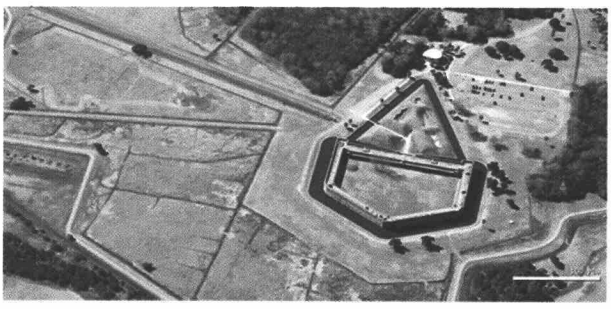


FIGURE 133. Bird's eye view of the dike and ditch system, 2007. (Microsoft Virtual Earth)

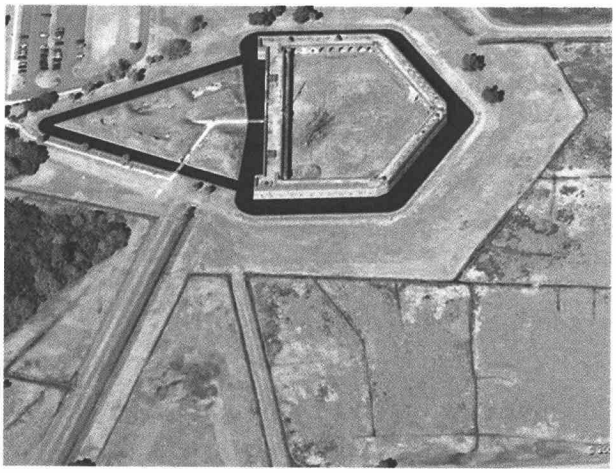


FIGURE 134. Bird's eye view of the fort and demilune, 2007. (Microsoft Virtual Earth)

The fort is encircled by a wide moat, with two drawbridges, and a rear fortification known as a demilune. The outer drawbridge crosses the demilune moat. The demilune is a flat, triangular-shaped outwork constructed west of the main ditch or moat, consisting of two ramparts forming a salient angle. The interior wall of the moat serves as the exterior wall of the demilune. The demilune functions as a physical barrier to the fort entry, where another drawbridge restricts entry to the sally port. Outside the demilune moat, the glacis contains two marked graves.

Three mortar batteries were constructed at the same time that Fort Pulaski was built. Two are located south of the fort and east of the main feeder canal. One is located east of the fort and was depicted on the Lee and Mansfield maps.

The 1964 visitor center is located due west of the fort. North of the visitor center and fort is the CCC-era parking lot constructed from 1938-1940.

The foundations of the approximately twenty-five buildings in the construction village, which once stood south of the North Channel Pier and northwest of the fort's demilune, remain as a subsurface archeological resource. Several cisterns survive aboveground.

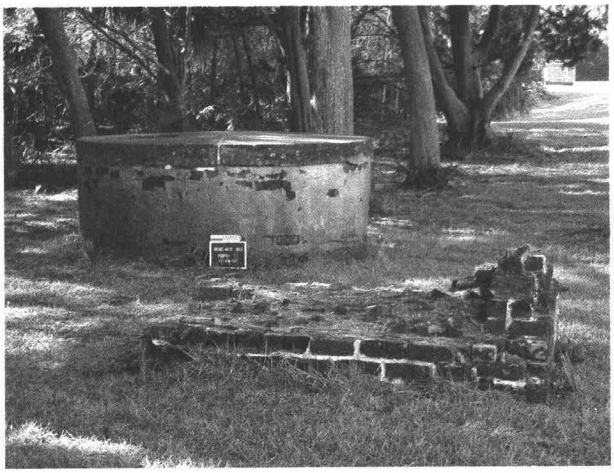


FIGURE 135. Construction village cistern and fireplace remains, 2005. (NPS photo)



FIGURE 136. North Pier Overlook, 2006. (NPS photo)

Just east of a cluster of cisterns is the location of Battery Hambright, completed in 1900 as part of the Endicott Seacoast Defense System. Immediately to the north of the battery are the remains of the North Channel Pier. Several of the original posts remain in the water. The granite outlined section of the pier jutting out into the marsh is still visible and accessible. Dredge deposits now separate the pier from the Savannah River. The area has been converted into an overlook, where visitors may sit and view the river and passing ships.

A pathway leads south from Battery Hambright, looping back to the John Wesley Memorial, commemorating the landing of John Wesley in 1736. From the memorial, the pathway leads west through the maritime forest to the picnic area, located across the service road in an area shaded by pines.

The maintenance area is a cluster of three buildings located west of the picnic shelter, including the maintenance building, gas house, and pole shed. Northwest of the maintenance area and across the service road is the site of the old quarantine station. The only aboveground structure remaining is the Quarantine Attendants' Quarters, now Park Headquarters. Remnants of a walkway, planting beds, and a cabbage palm allée remain from the 1940s, although it is possible that some of the walkway might date to the quarantine era.

Two WWII bunkers are located behind a cyclone fence that crosses the western portion of the service road. One bunker is located north of the service



FIGURE 137. Maintenance area, 2007. (Microsoft Virtual Earth)



FIGURE 138. Bar Pilots complex and U.S. Coast Guard station, 2007. (Microsoft Virtual Earth)

road and is sometimes used to store black powder if there is an excess amount. The other bunker is located to the south of the service road and is sometimes used for storage.

A pathway extends south from the western edge of the bunkers to the site of the Tybee Knoll Cut Range Lighthouse complex. The only extant structure is the brick oil storage shed. Only the chimney foundation of the keeper's house survives. The site is not open to the public and is overgrown.

The 1980s Savannah Bar Pilots Association complex is sited just northeast of Park Headquarters. Further west along the north shore is the Coast Guard station. This is a modern complex surrounded by a six-foot-high cyclone fence. The grounds consist mainly of a parking lot, turf, a few scattered cabbage palms, pampas grass, cedars, live oaks, and small gas tanks.

A Leave-No-Trace camping site is located in an open field northeast of the picnic area. There are no structures associated with this location.

The CCC workman's camp was built on the northwestern portion of Cockspur Island, adjacent to the quarantine station, to provide housing for approximately 100 laborers. There are no structures remaining from this camp.

Four Volunteers-in-Parks Program (VIP) pads were constructed in 2006 west of Park Headquarters.

Foundations of a pier and dock built in the 1930s by the CCC are found at or very near the location of the previous South Pier, destroyed by a hurricane in 1854. The South Channel Bridge connects the islands of Cockspur and McQueens.



FIGURE 139. South Channel Bridge, 2007. (NPS photo)

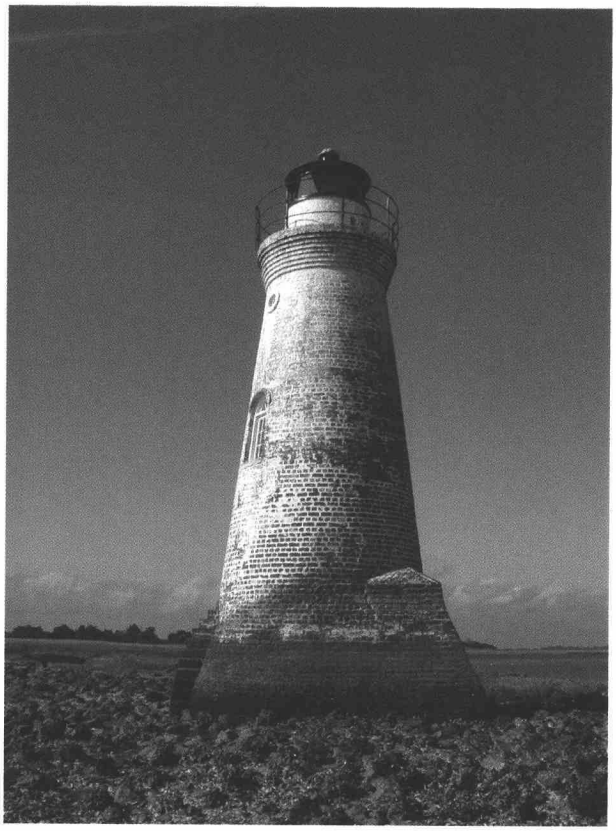


FIGURE 140. Cockspur Island Lighthouse, 2007. (NPS photo)

Cockspur Island Lighthouse is located on an islet off the southeastern tip of Cockspur Island and marks the South Channel of the Savannah River.

Topography

Cockspur is a low, marshy island. Much of it was formally salt marsh, but centuries of draining, dredging, and filling have created dry land. Still, elevations seldom reach more than six or seven feet above sea level and about half the island is



FIGURE 141. Cedars growing on dredge material, 2005. (NPS photo)

inundated at high tide. Most of the high ground is located within the historic two-mile dike system and in the area to the west of the fort and north of the service road, extending as far as the WWII bunkers. Much of the area south of the service road has never been filled and stays wet most of the time.

Two retention ponds are located on Cockspur Island. One is located within the historic dike system, in an area just west of the intersection of the entrance road and the spur service road. The second pond is located north of the historic dike system, on the opposite side of the service road. Neither pond is visible to the public.

Long Island, to the immediate west of Cockspur, has had a similar history of draining, dredging, and filling. Over the years, the two islands have become joined through this process. In 2007, a breach occurred that eventually separated the two islands once again by about 200 yards.

Another spit of high ground faces the Atlantic Ocean, beyond the eastern dike, where dredge material from mosquito ditches has been deposited, and cedars have grown up along it.

Cockspur Island Lighthouse Complex

The Cockspur Island Lighthouse complex is located on a one-acre alluvial island southeast of Cockspur Island. The island is separated from Cockspur by an area of very soft mud that is inundated at high tide. The lighthouse foundation is threatened by years of erosion from storms and the active shipping channel that lowered the height of the island and removed previous revetment causing the island to be underwater at all times except low tide. The wooden platform that supports the masonry foundation is exposed to shipworm infestation that can compromise and eventually destroy the platform. An Environmental Assessment was completed in 2009 to evaluate a proposal to replace the historic revetment around the lighthouse.

Vegetation

Much of the vegetation that had grown up immediately around the fort was removed in the 1970s and managed as grasslands in the following decades. A number of red cedars, palmettos, and sugarberrys remain in the diked area surrounding the fort. Around the visitor center, junipers and palmettos are planted in mulched beds. There is still a mature canopy to the north and west of the fort, however, as well as to the east of the dike system.

Much of the area surrounding the fort, large areas to the east and south of the fort, and the central portion of Cockspur Island are covered with grass. This habitat occupies over 140 acres on Cockspur and, next to salt marsh communities, it is the second most abundant habitat present. Cultivated grass species such as bermuda grass (*Cynodon dactylon*), dallis grass (*Paspalum dilataum*), vasey grass (*Paspalum urvillei*), and bahia grass (*Paspalum notatum*) dominate but a number of native species and a few exotic grass species are also present. Broomsedge (*Andropogon virginicus*), bushy beardgrass (*Andropogon glomeratus*), rescue grass (*Bromus catharticus*), rabittfoot grass (*Polypogon monspielensis*) and Mediterranean beardgrass (*Polypogon maritimus*) are examples of other grass species that can be found in these areas. A number of herbaceous species, mostly introduced, are also associated with these lawn type habitats. Commonly found species include false dandelion (*Pyrrhopappus carolinianus*), richardia (*Richardia brasiliensis*), evening primrose (*Oenothera laciniata*), wood sorrel (*Oxalis stricta*), centella (*Centella asiactica*), pennywort (*Hydrocotyle bonariensis*) and verbena (*Verbena brasiliensis*). The proximity of Savannah, with a history of maritime trade and potential for new species from old ballast piles, makes this habitat a good site for newly introduced exotics. Grassed areas inside the fort have a manicured lawn appearance.[1]

1. Govus, 19.

Approximately 100 acres of turf, including the dikes, are cut biweekly eight months out of the year. Another 50 acres are cut three times a year. Ditches are mown three times per year with a bush hog.

Over the decades, dredged materials from the North Channel of the Savannah River and mosquito ditches have been dumped on various islands, including Cockspur, creating artificial hummocks. On these hummocks, woody vegetation has taken hold. Because the majority of the borrow banks are located near the shores of the islands, rings of vegetation surround Cockspur Island. (See Vistas and Views)

The islet on which the Cockspur Island Lighthouse stands has lost its vegetative cover. A remnant of a cabbage palm alleé that once lined a quarantine station walkway is standing next to Park Headquarters.

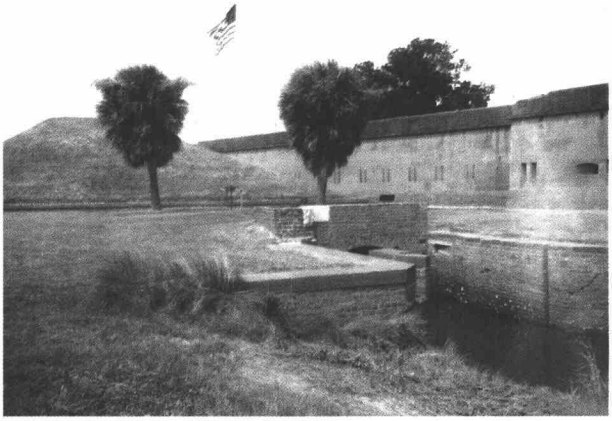


FIGURE 142. North tide gate, 2007. (NPS photo)

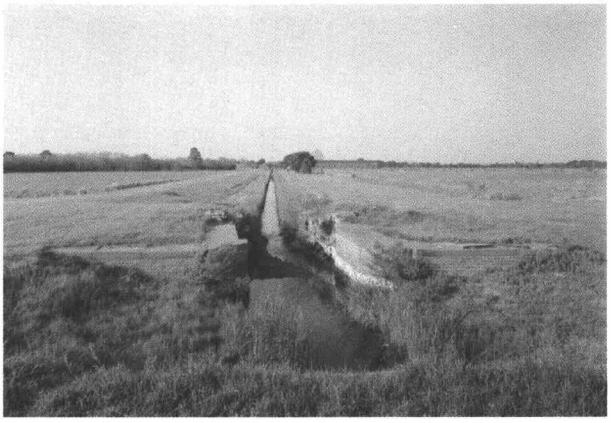


FIGURE 143. South tide gate, 1992. (NPS photo)

Buildings and Structures

Dikes and Ditches

The historic dike system is an earthen dike approximately 4-5 MHW with an irregular circumference of two miles. An additional two miles of dikes of similar construction were added in the 1930s by the CCC to drain the western portion of Cockspur Island. All of the dikes were returned to an elevation of 4.02 MHW by the Army Corps of Engineers in 1997.

North Tide Gate and Canal Lock

A 36-inch slide-style gate located approximately 20 feet south of the moat and east of the entrance drawbridge. Water from the feeder canal enters an arched brick culvert, containing the tide gate, just before it enters the moat. A large metal wheel located on top of the brick culvert raises and lowers the tide gate. The culvert is flanked by brick retaining walls measuring 51 feet by 77 feet. The CCC reconstructed the north tide gate in 1935.

South Tide Gate

A 36-inch combination style tide gate that automatically slides and acts primarily as a check valve was constructed in 1935 by the CCC to replace the original south tide gate, whose culvert collapsed. In 1997, a 30-inch pipe liner was inserted into the pipe and the flap gate and sluice gate were replaced with new flapper valves.

Main Feeder Canal

The feeder canal stretches approximately 2,000 feet from the moat to the South Channel of the Savannah River. Brick retaining walls form the banks near the moat. The CCC reconstructed the feeder canal in 1937.

Moat

The moat is 48 feet wide where it surrounds the fort, including the gorge, and is 32 feet wide around the



FIGURE 144. Feeder canal, 2007. (NPS photo)

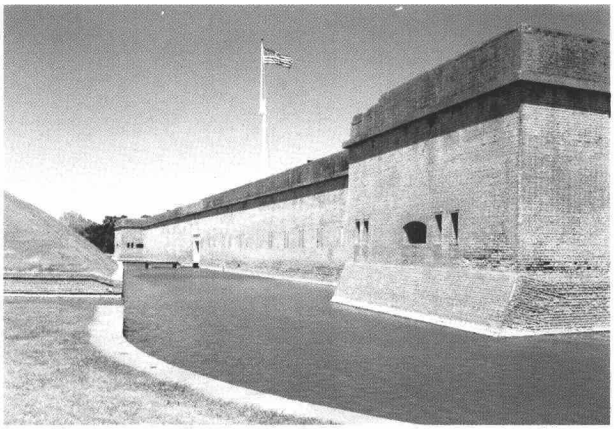


FIGURE 145. Fort, demilune, and moat, 1992. (HABS photo)

demilune. The average depth is 7 feet. The CCC restored the moat in 1935.

Fort and Demilune

Fort Pulaski is a five-sided (truncated hexagon) brick structure, with 7 1/2-foot-thick outer walls, and is approximately 274 feet on the flanks and faces and 474 on the gorge. Opposite the gorge face is a triangular demilune with sides approximately 400 feet long. The demilune consists of a network of four magazines, gun emplacements, and connecting passages with oyster shell-imbedded concrete walls protected by earthen mounds. The fort and its demilune are separated by, and completely surrounded by, a wet moat.

Construction Village

Currently, scattered remnants of brick and stone foundations and seven circular brick cisterns are the only above-ground resources remaining from the construction village. An eighth cistern is buried beneath the northern outer dike reconstructed by



FIGURE 146. Battery Hambright, 1991. (NPS photo)

the CCC in the 1930s. The cisterns average 10 feet in diameter and 4 feet in height and are constructed of Baltimore Rose bricks with brownstone and/or granite covers. The cisterns have been filled with sand for safety reasons.

Mortar Batteries

The remains of Mortar Battery No. 1, located due east of the fort, are obscured by erosion and vegetative growth. The remains of Mortar Battery No. 2, the northernmost of the batteries located south of the fort, are no longer visible above-ground. The remains of Mortar Battery No. 3, the southernmost of the batteries located south of the fort, are barely visible as a small rise in elevation bordering the southern dike in the southeast portion of the site.[2]

Battery Horace Hambright

Located southwest of the old North Pier, this 100-foot-by-50-foot-by-15 foot steel and concrete battery contains three ammunition magazines and two gun emplacements. Its north face is covered with a sloped earthen surface, which is planted in grass. The above-ground gun mounts are designed to hold two 3-inch rapid fire rifles.

South Channel Wharf

The basal remnants of paired wooden posts that probably date from the pier built by the CCC in the 1930s are visible.

2. Groh, 116; Prentice, 15.



FIGURE 147. North Channel Pier, 2005. (NPS photo)

North Channel Wharf

The North Channel Pier is all that remains of the wharf on the North Channel. It extends northward from the north shore of Cockspur Island approximately 120 feet. It measures 20 feet wide and approximately 4 feet high.

The sidewall and headwalls are formed by large granite blocks stacked two courses high. The joints between the granite blocks are filled with brick and mortar. Mooring rings and spikes are spaced along the capstones of the sidewalls. Soil fills the central area.

The granite outlined section of the pier jutting out into the marsh is still visible and accessible. The deteriorated end of the pier, jutting out toward the water, has been stabilized using granite curbing relocated from the gun racks on the terreplein of the fort. On the terreplein, these arched curbing units would have formed semi-circles around the guns. On the North Pier, the direction of these units has been alternated, creating a serpentine effect unlike that of the original pier materials.

John Wesley Memorial

The memorial is a 15-foot-high square brick column with a limestone base, with the brick shaft laid in Flemish bond, and a limestone cap surmounted by a limestone cross, all set on a square base of slate tiles. Turf grass is maintained around the memorial.

Cemetery Markers

The cemetery is located within the glacis, in the area north of the demilune and moat. Lieutenant Robert



FIGURE 148. John Wesley Memorial, 1991. (NPS photo)

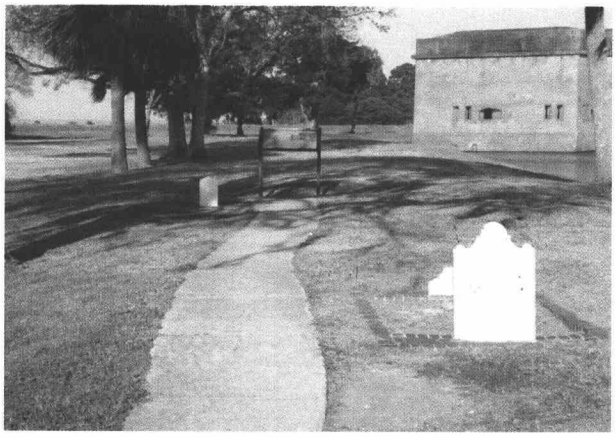


FIGURE 149. Cemetery markers, 2005. (NPS photo)

Rowan Grave Marker: a 1-1/2-foot-wide-by-2-1/6-foot-high marble marker with an inscription and a cut top.

Charles Howard Sellmer Grave Marker: a 10-foot-wide-by-2-foot-high white marble grave marker with an inscription.



FIGURE 150. Picnic area, 2007. (NPS photo)

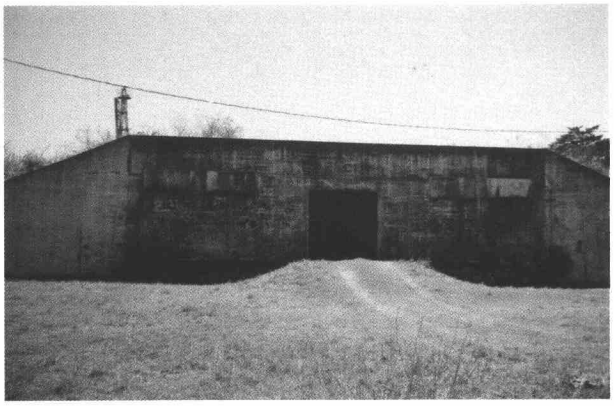


FIGURE 152. Bunker, 2005. (NPS photo)



FIGURE 151. Frame utility building, 2007. (NPS photo)



FIGURE 153. Park headquarters, 1992. (HABS photo)

Picnic Area

There are presently 18 tables and 4 grills in the original picnic area. A rest room building with handicap ramp, added in 1985, has a metal roof. In 2004, a picnic shelter with concrete tables was constructed west of the picnic tables, incorporating a new pump house into the structure.

Maintenance Area

The maintenance area consists of a frame utility building, frame pole shed, and masonry gas house. In 2005, metal roofs were added to the utility building and pole shed.

WWII Bunkers

A WWII bunker located south of the service road has a trapezoidal north face spanning roughly 130 feet. The bunker is constructed of concrete with all outer surfaces except the north face covered in dirt and turf. Originally, the north face held four glass-block windows, which have been replaced with solid concrete. A smaller bunker of similar construction is located north of the service road.

Quarantine Station

Now used as Park Headquarters, the Quarantine Attendants' Quarters is the only remaining historic structure from the quarantine station established by the City of Savannah in 1889 and operated by the U.S. Public Health Service after 1899. The building is wood framed, raised on creosoted wood piles. The roof is hipped and there were originally open porches on three sides of the building, with a porch added on the south side early in the historic period.

Cockspur Island Lighthouse Complex

The Cockspur Island Lighthouse is a three-story tapered tower that stands 46 feet above the small one-acre island. It is constructed of brick with a base diameter of 16 feet. A spiral stair case leads to the first landing, which is constructed of wood. A hatch and ladder provide access to the second floor where

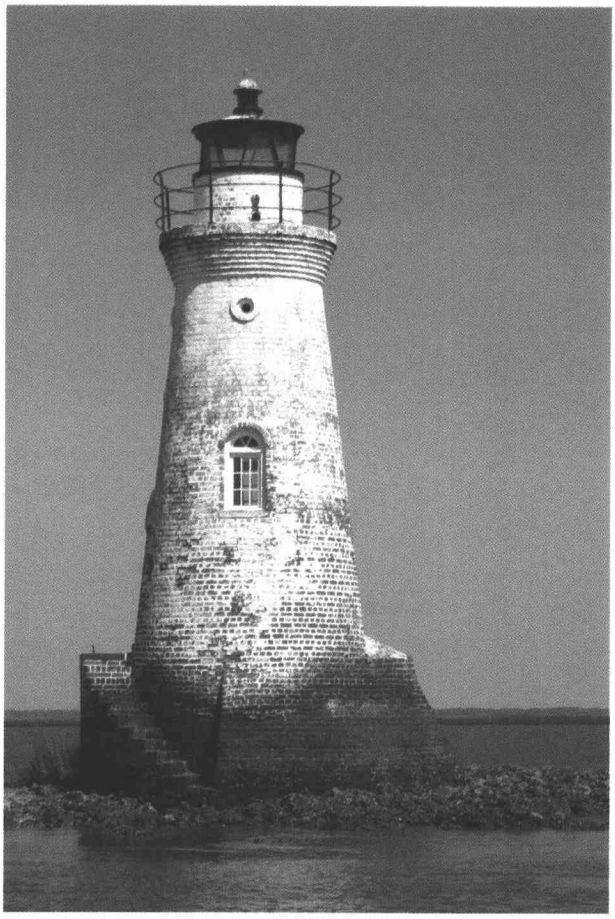


FIGURE 154. Cockspur Island Lighthouse, 2007. (NPS photo)

the lantern is mounted. A small iron door leads to an exterior catwalk encircled by an iron guard rail. Ninety-nine percent of the brick structure is original. The lantern, replaced in 2000, is a replica. The lighthouse beacon was relit in 2007. It was not reactivated as an aid to navigation, as the light is only visible from the south side of the lighthouse and not from the sea side of the structure.

Tybee Knoll Cut Range Lighthouse Complex

The Tybee Knoll Cut Range Lighthouse oil storage shed is without a viable roof and is not easily accessible. The location of the lightkeeper's house and attached light tower is marked by loose piles of brick, intact brick footers, and other structural debris scattered in a wooded area southwest of the larger WWII bunker.

Savannah Bar Pilots Complex

The Savannah Bar Pilots complex consists of a dormitory building and a large fixed dock that



FIGURE 155. Oil storage shed, 2007. (NPS photo)



FIGURE 156. Savannah Bar Pilots complex, 2006. (NPS photo)

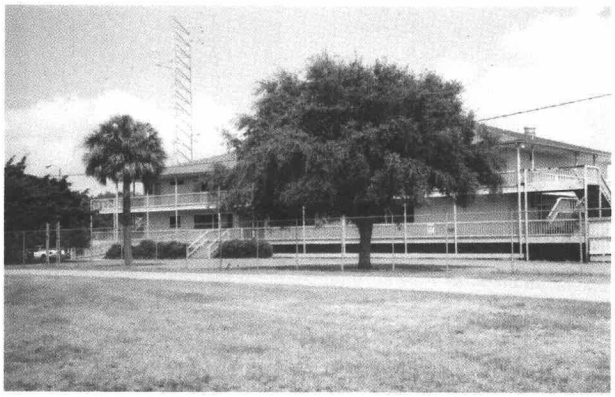


FIGURE 157. U.S. Coast Guard station, 2005. (NPS photo)

extends out into the North Channel of the Savannah River to moor and fuel the harbor pilot's boats.

U. S. Coast Guard Station

The Coast Guard station consists of two structures. A residence hall, which is a two-story structure, resembling a motor inn, with outside hallways along the perimeter of both floors. The other structure is a meeting room.



FIGURE 158. Visitor Center, 2005. (NPS photo)



FIGURE 159. South Channel Bridge, 2007. (NPS photo)

Visitor Center

The circular brick visitor center that opened to the public in 1964 is located approximately 300 yards west of the fort. It is potentially eligibility for listing in the National Register of Historic Places. A detached brick restroom building was added in 1997.

South Channel Bridge

A 1,280-foot-long trestle bridge with a composite timber/asphaltic-concrete floor resting on timber pilings connects McQueens Island and Cockspur Island.

Fee Collection Station

The fee collection station dates to the 1980s and was expanded in 2001.

CCC Camp

The remains of the CCC Camp are located directly east of the driveway from the service road to the Savannah Bar Pilots complex parking lot. This is primarily an open expanse of grass. A scattering of shell and patches of old concrete foundations are the only remains of a complex of structures and walkways once occupied by CCC workers in the 1930s.

Circulation

2.94 miles of roads and 1.38 miles of trails are maintained by Park staff.

Access to Cockspur Island is from U. S. Highway 80 via a 1938 trestle bridge built over the South Channel of the Savannah River. Once on the island, a paved entrance road curves eastward terminating at a parking lot adjacent to the fort and visitor center.

A spur off the main park entrance road provides access to the western end of the island, passing by the picnic area, maintenance area, and Park Headquarters. The Bar Pilots complex and U.S. Coast Guard station are also accessed from this service road. Immediately west of the Coast Guard Station, the road is blocked by a cyclone fence and gate that restrict access to the WWII bunkers at the far end of the island. The road is not maintained beyond the bunkers to the park property line. Shortly after the road passes off park property, it loses its integrity and ends.

A variety of pedestrian-oriented routes are provided on Cockspur Island. From the visitor center and parking lot, an exposed aggregate walkway leads east to the entry of the demilune and fort. The walkway is restricted by a drawbridge over a wet moat. The southeast flank of the demilune must be crossed to enter the fort, where another drawbridge restricts access to the sally port. In 2007, the Park changed the layout of the walkway from the parking lot to funnel visitors more directly to the visitor center. A portion of the walk was taken up and the surface changed to oyster shell as a reflection of the Civil War-era roadway to the South Channel.



FIGURE 160. Walkway to fort, 2005. (NPS photo)



FIGURE 161. New walkway configuration, 2007. (NPS photo)

The walkways around the visitor center and heading east to the glacis and grave markers are concrete, with brick detailing near the entry to the visitor center. Along the outer perimeter of the glacis, the turf is manicured, making it easy to walk around the fort. From the northeast section of the glacis walk, a short connecting path leads to the perimeter dike. The entire span of the two-mile dike is maintained for pedestrians and park maintenance vehicles.

A 0.7-mile nature trail, beginning at the northern section of the parking lot, loops out to the North Pier Overlook, passing by the John Wesley Memorial and Battery Hambright. In 1995, the trail was resurfaced with chip seal for full accessibility. In 2000, that portion of the trail from the parking lot to Battery Hambright and the North Pier Overlook was resurfaced with exposed aggregate. That portion of the trail leading west over historical ditches and contemporary mosquito ditches and ending at the picnic area is gravel.

Access to the Cockspur Island Lighthouse has always been by boat.



FIGURE 162. Walkway to picnic area, 2005. (NPS photo)

In 1992, the construction of the Savannah/Tybee Railroad Historic Scenic Multi-Use Trail occurred. This bicycle path and hiking trail follows the old railroad bed right-of-way parallel to U. S. Highway 80. The trail crosses the entrance to the South Channel Bridge, but no separate entry exists for non-vehicular traffic.

In 2006, a 0.75-mile trail was constructed along open marsh and through forested areas offering views of the Savannah River, Tybee Island, and back towards Fort Pulaski. The trail also offers the island's best view of the Cockspur Island Lighthouse.

Views and Vistas

Dividing the mouth of the Savannah River into the North and South Channels, Cockspur Island commands an impressive position on the coast. As one approaches the island from the west, the island shoreline and, at times, the South Channel Bridge are visible. From the east, one is afforded a more dramatic view of the island, the fort, and the bridge from the vantage point of the U.S. Highway 80 Lazaretto Creek Bridge.

To the east of Cockspur Island, over the protective stands of spartina salt marsh, lies the Atlantic Ocean. This ocean view is truncated by a line of vegetation growing on a borrow bank by the eastern dike. The Cockspur Island Lighthouse is barely visible over this ever growing hedge of cedar. This line of vegetation also partially obscures one of the more historically important views from Fort Pulaski during the Civil War towards McQueens Island and the Union batteries at Goat Point on Tybee Island.



FIGURE 163. View from terreplein of lighthouse, 2007. (NPS photo)



FIGURE 164. View from terreplein to Goat Point, 2007. (NPS photo)

On the northeast horizon, the silhouette of Hilton Head Island can be seen. Closer in, across the North Channel, is a view of Oyster Bed Island, with a lash for anchoring ships, constructed off its southern shore. The half-mile-wide North Channel is the primary shipping route into the port of Savannah, and the visitor is often afforded very close views of oceangoing vessels arriving or leaving.

The views to the south are dominated by the South Channel. Where high vegetation does not interrupt, one has a vista of the salt marshes on McQueens Island, with the South Channel Bridge in the foreground. In some areas, U.S. Highway 80 is also visible on McQueens, but the low elevation of the road keeps the view relatively undisturbed. Where the highway crosses Lazaretto Creek, the bridge is quite visible but does not interfere with the overall scene. In 2006, some cedars within the historic dike system blocking the view to the South Channel were removed.

Views to the North Channel are also blocked by vegetation. In the 1980s, a partial vista was cleared



FIGURE 165. Partial vista to North Channel, 2007. (NPS photo)



FIGURE 166. Visitor center plaza, 2005. (NPS photo)

from the northeast corner of the fort looking out towards the North Channel, but the North Channel Pier is presently not visible.

Impressive views of the fort can be seen from the turf paths atop the perimeter dike system.

The Army Corps of Engineers has the right to deposit dredge material from the Savannah River on Jones Island and Oyster Bed Island on the north shore of the river. An agreement has not been made to alter these actions.

Small-scale Features

Four benches are located in a small brick seating area at the visitor center and another bench is located near the walkway from the visitor center to the fort. Two of the benches in the seating area were moved when the brick restroom building was added in 1997. Two benches and an interpretive wayside at the North Pier Overlook provide visitors with a place to view the North Channel of the Savannah River and the remains of the old pier.

Metal gates with brick piers secure the Park after closing.

Brick trash enclosures are located in the parking area. Decorative wooden enclosures screen dumpsters at the picnic area.

Two spigots remain at Park Headquarters. They were enclosed with old bricks in the 1980s.

Natural Systems and Features

Cockspur Island is surrounded by vast salt marshes interspersed by rivers and tidal estuaries. These tidal marshes, which are formed in conjunction with barrier island development, have delicate ecological characteristics including essential life support systems for shrimp, oysters, clams, mussels, and the usual variety of fish found in southern coastal estuaries.

The following plant communities were identified on Cockspur Island in a 1998 vascular plant inventory prepared by Thomas E. Govus[3]:

Lowland temperate seasonal evergreen forest

Live oak – Cabbage palm forest alliance. This maritime forest community is located on central Cockspur Island within the dike system, to the northwest of the fort. It represents the most well-developed and diverse forest community for this site. It is located on the highest elevation and most protected portion of the island. It differs significantly from other examples of this association along the south Atlantic Coast in that live oak is absent from both the canopy and understory layers of the community. The fact that Cockspur Island has been largely a product of spoil deposits in an area primarily of salt marsh has probably caused this anomaly. This forest, although now reaching maturity, has only developed since the early 1920s. The canopy is diverse and well-developed, including an even mixture of cabbage palm, coastal red cedar (*Juniperus virginiana var. silicicola*), sugarberry (*Celtis laevigata*), and a scattering of large American elms (*Ulmus americana*). The understory includes redbay (*Persea borbonia*) and Carolina cherry laurel. The shrub layer varies from dense thickets of yaupon to more open situations with sparse Carolina cherry laurel, wax myrtle (*Myra cerifera*) and beauty berry (*Callicarpa americana*). This is a densely shaded habitat with few herbaceous species present. Vines are an important component of this forest and Virginia creeper (*Parthenocissus quinquefolius*), pepper vine (*Ampelopsis arborea*), smilax (*Smilax auriculata*), and muscadine vine (*Vitis rotundifolia*) represent the most common species found.

Coastal red cedar forest

This is the most widespread forest type on Cockspur Island and occurs largely on the older spoil deposits to the west of the dike system and along the southwestern edge of the island within the dike system. The canopy typically is an even mixture of coastal red cedar, cabbage palm, and sugarberry, but variation does occur and the exotic species Chinese tallow (*Sapium sebiferum*) and Chinaberry (*Melia azederach*) are occasionally present. In some cases, the shrub layer is absent or sparsely developed. Hercules' club (*Zanthoxulum clava-herculis*), winged sumac (*Rhus coppalina*), and wax myrtle are common members of a sparse shrub layer. In other instances, there is a dense yaupon shrub layer. Herbaceous species are generally absent, but vines such as pepper vine, muscadine, and smilax are present. The groundcover layer is typically comprised of a dense cover of old cabbage palm leaves.

Portions of this association occur in low-lying areas within the dike system on the southern part of Cockspur Island. The canopy here includes a significant amount of Chinese tallow. In some small areas near the mosquito control pond tallow may actually dominate. Sugarberry is also a significant part of the canopy. In these wetter situations, the shrub layer is dominated by dense, tree-like stand of yaupon, with wax myrtle present to a much lesser extent. Few to no herbaceous species are present. Smilax and pepper vine are the most common vines.

Temperate or subpolar needle leaved evergreen forest

Slash pine planted forest alliance. This forest located on south central Cockspur was planted by

3. Govus, 11-19.

the NPS, and is the site of the picnic area. The canopy and subcanopy are comprised solely of slash pine (*Pinus elliotii*). There are a few widely scattered shrubs or understory species including cabbage palm and Carolina cherry laurel. The groundcover is maintained grass and is regularly mowed. A few herbaceous species are mixed in with the grasses, including seaside pennywort (*Hydrocotyle bonariensis*) and frog fruits (*Phyla nodiflora*). This pine dominated community is significant for nesting birds on Cockspur Island.

Temperate broad-leaved evergreen woodland

Cabbage palm woodland alliance. This alliance consists of nearly pure stands of cabbage palm located along the north edge of Cockspur Island, adjacent to the high marsh communities, in an area of high exposure to storm tides and salt spray. Coastal red cedar is occasionally a very minor component of the subcanopy layer. The shrub layer is usually very open but includes yaupon, wax myrtle, winged sumac, and Spanish bayonet (*Yucca aloifolia*). The groundcover layer is devoid of herbaceous species and largely consists of a dense carpet of palmetto leaves. Vine species include pepper vine and smilax.

Saturated temperate broad-leaved evergreen shrubland

Wax myrtle saturated shrubland alliance. These tree-like stands of nearly pure wax myrtle or yaupon (or a mixture of both) occur along the southern edge of Cockspur Island. They are located just above the tidal shrublands and salt pan communities of central Cockspur or occur within the dike system near the southeastern part of the island in very low lying areas. Occasionally, these associations include widely scattered coastal red cedars and cabbage palms. In the eastern portion (within the dike system), a substantial amount of Chinese tallow also occurs. There is not enough light to support an herbaceous layer.

Tidal cold-deciduous shrublands

Groundsel tree – Maritime marsh elder tidal shrubland alliance. This community is widespread on Cockspur Island and occurs as a fringed shrubland between either salt pan communities and upland forests or high marsh communities and upland communities. It is especially well developed along the southern edge of Cockspur where extensive salt flats grade gently into the adjacent upland communities. In addition to groundsel tree (*Baccharis halimifolia*) and marsh elder (*Iva frutenscens*), false willow (*Baccharis angustifolia*), sea lavender (*Limnobium carolinianum*), and fimbristylis (*Fimbristylis castanea*) are present.

Seaside oxeye tidal shrubland alliance. This community occurs on tidal flats adjacent to the extensive salt marsh communities of eastern Cockspur Island. Typically, this community is monospecific, being made up almost exclusively of seaside oxeye.

Tidal needle leaved or microphyllous evergreen dwarf shrubland

Saltwort tidal dwarf shrubland alliance. Two large examples of this association occur on hypersaline flats that grade into other salt pan communities along eastern and southeastern Cockspur Island. Saltwort (*Batis maritima*) is by far the most dominant species, but other halophytes found here include woody glasswort (*Sarcocornia perennis*), sea blite (*Sueda linearis*), sea purslane (*Sesuvium portulacastrum*), and sea lavender.

Woody glasswort tidal dwarf shrubland alliance. This association is particularly well developed on the broad gentle flats that lie along the south side of Cockspur. This is a hypersaline environment caused by the repeated evaporation of tidal water from these expansive shallow areas. Vegetative cover varies from a total absence of vascular plants to a dense concentration of halophytic herbs, particularly woody glasswort. Saltwort and salt grass (*Distichlis spicata*) are also abundant and usually interspersed with dwarf saltmarsh cordgrass (*Spartina alterniflora*). Additional species include sea lavender, sea blite, and sea purslane.

Tidal temperate or subpolar grassland

Saltmarsh cordgrass tidal herbaceous alliance. This community is the largest present on Cockspur Island, over 340 acres. It is best developed in areas between mean high and low tides that are regularly

flooded. It is largely monospecific but is occasionally interspersed with patches of the needlerush (*Juncus roemarianus*) community.

Saltmeadow cordgrass tidal herbaceous alliance. This "high marsh" community occurs primarily along the steep terraces of north central Cockspur Island, which receive infrequent tidal flooding. In addition to saltmeadow cordgrass (*Spartina patens*), saltgrass, and seaside oxeye, other species found here include seaside goldenrod (*Solidago sempervirens*), sea lavender, sand vine (*Cynanchium angustifolium*), knotgrass (*Paspalum distichum*), fimbristylis, and sea beach atriplex (*Atriplex prostrata*).

Man-influenced habitats

Sandy spoil deposits. Spoil deposits comprised nearly of pure sand have been placed along the north central and southwestern portion of Cockspur Island over the past 15-17 years, resulting in young successional communities. Currently, the existing vegetation consists of widely scattered trees with large areas of exposed open sand, sparsely inhabited by a number of herbaceous species and vines. Coastal red cedar, sugarberry, cabbage palm, chinaberry, and white mulberry (*Morus alba*) are the principal trees found in this habitat. Along the north central area (east of the Bar Pilots complex) the canopy is pure coastal red cedar. Shrubs scattered in these areas include wax myrtle, groundsel tree, yaupon, winged sumac, and lantana (*Lantana camara*), along with a diverse herbaceous layer.

Exotics

Cockspur Island is home to a number of non-native species that tend to be invasive to natural communities. A 1998 plant inventory identified eighteen such exotics, including sweet acacia, camphor tree (*Cinnamomum camphora*), lantana, Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), chinaberry and Chinese tallow tree.[4]

Fauna

The salt marshes and upland areas of Cockspur Island support many species of wildlife. Large populations of both resident and migrant birds are present. Mammals are abundant and include marsh rabbit (*Sylvilagus palustris*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), mink (*Mustela vison*), otter (*Lontra canadensis*), and white-tailed deer (*Odocoileus virginianus*). There are many species of reptiles, of which the eastern diamondback rattlesnake (*Crotalus adamanteus*) is venomous. The tidal waters surrounding the fort contain a great variety of fish typical of southern coastal estuaries. The following federally listed or state listed rare, threatened, or endangered species have been documented at Fort Pulaski: American oystercatcher (*Haematopus palliates*), bald eagle (*Haliaeetus leucocephalus*), gull-billed tern (*Gelochelidon nilotica*), loggerhead sea turtle (*Caretta caretta*), West Indian manatee (*Trichechus manatus*), peregrine falcon (*Falco peregrinus*), piping plover (*Charadrius melodus*), swallow-tailed kite (*Elanoides forficatus*), Wilson's plover (*Charadrius wilsonia*), wood stork (*Mycteria americana*), and shortnose sturgeon (*Acipenser brevirostrum*).

Soils and Geology

All the soils identified within Fort Pulaski National Monument are dominated by sandy soils of the Capers series and the Tidal Marsh, Salty category. These soils occur in very poorly drained tidal marshes that have a clayey underlying layer. A third soil type on Cockspur Island, Made Land, is primarily the result of dredging and filling.

The Capers series soils consist of very poorly drained soils of the tidal marsh flats. The soils are flooded when tides are higher than normal.

Tidal Marsh, Salty series soils are covered daily by normal high tides and support indigenous salt-tolerant grasses. Within the estuaries, many tidal streams of varying size often dissect the marshland. Soils may be redistributed and/or relocated by strong tidal currents and shifting stream channels. Some areas are very unstable and do not support the weight of large animals.

Made Land consists of built-up areas that were formerly marshland. Generally, dredged materials from the coastal streams were added to low lying areas. This occurred mainly along the Savannah

4. Govus, 27-29.

River shipping channel. On Cockspur Island, some of the dredged materials are confined by dikes.

Land Use

Current land uses within the Cockspur Island Historic District include recreation, interpretation, administration, maintenance, law enforcement, and burial.

Archeological Resources

Below-ground resources associated with the April 1862 battle include remains of the construction village, roadways, and mortar batteries. Dredged materials deposited on the north shore of the island by the Army Corps of Engineers has covered the archeological remains associated with the northern portion of the Workman's Village. Additionally, by comparing the route of the dike system as it appeared on the 1843 Mansfield map with the route of the dike system today, it is likely that repairs to the dike system in the 1930s altered the original route in the area where the Laborers' Quarters and the Blacksmith Shop stood and covered their remains.[5]

Linear arrangements of brick and stone that, judging from their placement and alignment, correspond with the original South Channel Pier built during the fort's construction are visible on the island's marsh flats. Thus, although the South Channel Pier was washed away long ago, archeological remains are still preserved in place and are considered to be in good condition.[6]

In August 2004, ground penetrating radar was performed in an open area west of the visitor center parking lot. It appears that remnants of the Storm House, a kitchen, and one of the Mechanics' Quarters may be present below the ground surface.[7]

In 1999, limited archeological investigations were conducted in the vicinity of the brickwork thought to be associated with the residence occupied by the ordnance sergeant in the 1880s. This area was labeled as an oven on a 1936 CCC map. Artifacts observed during the excavation seem to corroborate that a building was located here, but additional archeological investigations will be needed to confirm these findings.[8]

Colonial Sites

A comparison of the 1766 map of Cockspur Island to those prepared by Robert E. Lee in 1830 and 1831 shows an island that had been reshaped considerably. The small hammock upon which Fort George was built in 1761 had been reduced to a mud flat by 1830. It is still possible, however, that remains of the fort may be buried in the mud at the southeastern end of Cockspur Island now that the island has regained some of its former shape. Aerial photographs taken in 1999 show a discernable area roughly 100 feet across with a clump of trees in the middle that may be the former location of Fort George.[9]

Although previous studies stated that Fort Greene, constructed from 1794-95, was located on or near the same location as Fort George, a letter recently found at the National Archives dated July 26, 1842, indicates that the location was near the North Pier:

> With respect to the original reserve of 20 acres on Cockspur Isd I can only say it is impossible for me to indicate from the information I have been enabled to collect on what part of the Island they should be laid off. I enclose to the Dept herewith a copy of a survey and plan of a sort made by Col De Brahm of the Engineers (a Prussian) in 1762 which would indicate the English Government had originally chosen the east end of the Island for their reservation. If on the contrary the reserve were on the site of the fort occupied by the U.S. and destroyed in the gale of 1804 which is the position occupied now by our north wharf, this office and other buildings and a permanent beacon; thus the title is already vested in the U.S. being occupied by a beacon arguably to the act, a copy of which is herewith enclosed, marked a.
>
> If Fort Greene was in fact located in the northeastern portion of the construction village, remnants may remain buried beneath the ground surface between Battery Hambright and the North Channel Pier.[10]

Locating the Lyford Pilot House on the easternmost hardwood hammock of Cockspur Island was attempted in 1999 without success. This site was

5. Prentice, 28,
6. Ibid.,18.
7. Ibid.,32, 38.
8. Ibid., 24.
9. Ibid., 51.
10. Ibid.,52.

probably washed away by the hurricane that destroyed Fort Greene in 1804. Comparing the 1758 and 1766 maps prepared by Henry Yonge and William De Brahm with Lee's 1830s maps shows that much of the southeastern portion of Cockspur was reduced to a mud flat.[11]

11. Ibid.

Analysis and Evaluation

In order to better understand the relationship between the existing Cockspur Island landscape and its historic character , this chapter includes a comparative analysis of historic and existing conditions. The focus of this section is to identify the broad patterns and specific features associated with the historic periods and to evaluate to what extent they survive today.

Spatial Organization

The spatial organization of Cockspur Island is dominated by the fort and demilune, the ditch and dike system, the remains of the construction village, and development at the west end of the island.

The ditch and dike system is an integral part of the spatial organization of Cockspur Island. Robert E. Lee is credited with the development of an approximate two-mile system of dikes around the perimeter of the driest portions of the island, linked together to form a continuous barrier. In addition to the dike system, ditches were dug from the south shore of Cockspur Island toward the fort site. Tide gates were installed in the ditches to control tidal flow to the center of the island and eventually to the moat that surrounded the fort.

During his tour of duty at Fort Pulaski from 1829-1831, Lee made numerous surveys and located the permanent site for the fort. Lieutenant Joseph K. F. Mansfield, who served on Cockspur from 1831-1845, however, deserves the credit for the actual construction of the ditch and dike system, along with Lieutenant Barton S. Alexander, Mansfield's assistant engineer. Mansfield also designed modifications to the ditch and dike system, which were completed in 1851, under the direction of Captain Jeremy F. Gilmer, later Chief Engineer of the Confederate Army.[1]

The fort as completed in 1847 was surrounded by a wide moat, with two drawbridges, and a rear fortification known as a demilune, which functioned as a physical barrier to the fort entrance.

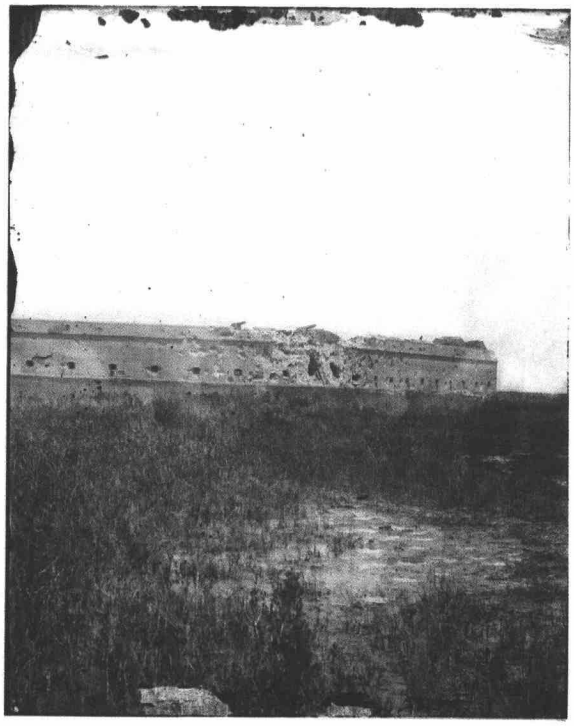


FIGURE 167. Vegetation around fort, 1863. (FOPU archives)

In 1862, Fort Pulaski was considered invincible. Its seven-and-one-half-foot solid brick walls were backed with massive masonry piers. Navy boats could not safely come within effective range of the fort, and there was no firm ground on which land batteries could be erected nearer than Tybee Island. All previous military experience had shown that smoothbore guns and mortars would have little chance to break through masonry walls beyond a distance of 700 yards, and beyond 1,000 yards no chance at all.

During the two-day battle beginning on April 10, 1862, Union batteries erected on Tybee Island accomplished something that had never been done before: the reduction of a brick fortification from a distance of more than 1,600 yards. They used a new weapon—the rifled gun. The mortars from the rifled guns honeycombed the southeast wall of the fort by the end of the first day. The accuracy and range of the rifled cannon eventually rendered brick fortifications obsolete.

1. Young, 302.

An effort to strengthen and modernize the fort began in 1869, when troops stationed at Fort Pulaski began a project to remodel the demilune, constructing a network of heavy gun emplacements and underground magazines, connected by tunnels. On October 8, 1873, the last Army units stationed at Fort Pulaski were withdrawn, and Fort Pulaski officially closed on October 25. The work of remodeling the demilune by the Corps of Engineers continued in intervals from 1872-1876. By 1880, Fort Pulaski stood vacant, except for a caretaker, and was set aside as a military reservation for potential military use.[2]

The strategic importance of Cockspur Island was rediscovered during the Endicott System of Seacoast Defense program, funded by Congress in 1895. The demilune acquired an additional mound over its southeast corner, which housed controls for electric mines placed at the bottom of the North Channel. To provide additional harbor protection for Savannah during the Spanish-American War, Battery Horace Hambright on Cockspur Island's north shore was constructed. Neither the mines nor Battery Hambright ever saw combat action. No further improvements were planned for Fort Pulaski, funds going instead to construct Fort Screven on Tybee Island.[3]

In January 1924, legislation to have Fort Pulaski designated a national monument was passed and signed by President Calvin Coolidge. Funding for the site was not forthcoming, however, and the fort's condition worsened after a lightning strike in June 1925 destroyed part of the southwestern gorge, including the caretaker's house on the terreplein.[4]

Fort Pulaski's neglect continued until 1933 when President Franklin D. Roosevelt's Executive Order 6166 transferred all federally managed historic sites, monuments, and battlefields to the National Park Service (NPS). The NPS greatly benefited from New Deal programs that funded projects to revitalize the country's natural and cultural resources, and Fort Pulaski was able to achieve many of its development goals from 1933 until the beginning of the country's entry into World War II (WWII) in 1941.

Major projects included fort restoration, the rebuilding of the ditch and dike system, vegetation clearance, and road and trail construction. One of the most important projects was the construction of a bridge from U. S. Highway 80 on McQueens Island across the South Channel of the Savannah River to Cockspur Island, completed in 1938. An entrance road and a parking area north of the fort demilune were completed in 1940. Previous to the construction of the South Channel Bridge, entrance road, and parking area, access was by ferry from Lazaretto Creek to the south shore of Cockspur Island.

A series of General Development Plans (348/2010) from 1949 to 1960 outlined the Park's efforts after WWII. The 1957 plan called for a picnic area west of the fort along the service road to the residence area, and showed the addition of the John Wesley Memorial north of the main parking area. A 1960 revision shows the addition of a visitor center just west of the demilune, which was completed in 1964.

Construction Village

Fort Pulaski required a support village, which was begun in 1829 with a few buildings near the North Channel Wharf. The completed village of more than 20 buildings was clustered in three areas: south of the North Channel Wharf, on a mud flat inside the dike about 100 to 200 yards northwest of the fort's demilune, and around the South Channel Wharf. Roadways connected both wharves and the fort. A severe storm that struck coastal Georgia in 1854 damaged several buildings and both wharves.

In August of 1881, the storm surge from a strong hurricane demolished the construction village. The storm also destroyed much of the dike system and returned much of the land to its original marsh. After another hurricane in 1893, a two-story house for the Cockspur Island lighthouse keeper was built on top of Fort Pulaski's gorge terreplein, the grassy upper level of the fort. The exact construction date is unclear, but the funds were appropriated in 1902. The house burned in 1925 after being struck by lightning.[5]

2. Meador, 13; HABS, 14; Report of the Chief of Engineers, June, 30, 1886, FPNM archives.
3. Meador, 14; HABS, 13.
4. Dan Sultan, District Engineer to Chief of Engineers, April 8, 1925, National Archives, RG 77, Box 1; HABS, 15.
5. HABS, 12

Development at the West End of the Island

Quarentine Station. Development at the west end of the island centered around a quarantine station begun in 1889 and a CCC camp directly west of it. During WWII, the Navy occupied Cockspur Island, finding the western end of the island best suited to its needs with the docking facilities and quarantine station and CCC buildings already in place. The Navy spent nearly $2,000,000 to rehabilitate the quarantine station and CCC buildings and construct new Navy structures during its occupation of the island from 1941-1946.

Between 1951 and 1953, the NPS began removing some of the quarantine station and CCC buildings that were planned for demolition when WWII broke out. By 1969, only two of the buildings constructed by the Public Health Service remained.[6]

Tybee Cut Knoll Range Lighthouse. The U.S. Lighthouse Service constructed the Tybee Cut Knoll Range Lighthouse, located at the far west end of Cockspur Island in 1878. It was destroyed in the 1970s, leaving only the oil storage shed.

Maintenance/Utility Area. Beginning in 1935, a maintenance/utility area was placed southwest of the service road to the west end of the island, across from the quarantine station.

Savannah Bar Pilots. In 1940, the Savannah Bar Pilots moved their operations to the west end of Cockspur Island, occupying a dormitory and two small buildings. This arrangement was through a special use permit that was renewed annually.

Picnic Area. The picnic area was established in 1965 at the approved master plan site, southwest of the service road leading to the western end of the island, in a small pine grove.

Cockspur Island Lighthouse Complex

Located southeast of Cockspur Island on its own one-acre islet, the present Cockspur Island Lighthouse was constructed in 1856. It was a feature in the landscape at the time of the battle but survived the fort's bombardment. A lightkeeper's house constructed in 1848 was destroyed in an 1881 hurricane.

Topography

Cockspur Island is an alluvial island located at the entrance to the Savannah River. The deep mud underpinning the island proved challenging in constructing Fort Pulaski, the original plans of which had to be revised due to the poor soils of Cockspur Island. The dike and ditch system was begun in 1830, under the direction of Lieutenant Robert E. Lee, newly graduated from the United States Military Academy. Dikes were built around the driest portions of the island, and ditches were cut from the south shore of Cockspur Island. Tide gates installed in the ditches controlled the flow of water to the center of the island and eventually to the moat that surrounds the fort.

Lieutenant Joseph K.F. Mansfield's plan of the sluiceway through the northwest and southeast dikes as actually executed in May 1844 showed an elevation of 12 feet for the dikes. The sluice at the foot of the glacis (northeast front) showed an elevation of 12 feet 3 inches. High water spring tide was noted as 9 feet 9 inches. High water storm tide was noted as 12 feet 6 inches.[7]

Lieutenant Barton S. Alexander's 1845 Dike Modification Plan showed two different configurations for the four sections of dikes that were to be modified. One configuration altered the sections to a triangular shape with a suggested base dimension of 25 feet and an elevation of 11 feet 6 inches. Another configuration maintained the original trapezoid shape with a base dimension of 25 feet and an elevation of 13 feet. Totten approved the plan on December 19, 1848, with the notation "approve height of 13 feet, also thickness."[8]

During restoration of the dike and ditch system in the 1930s, a CCC progress report argued for returning the dikes to an elevation of twelve feet, reasoning that a height of ten feet was not sufficient

6. Annual Narrative Report May, 1953. FPNM archives; Jones, 18.

7. Plan of Sluice at the Foot of the Glacis, N.E. Front, Drawer 70, sheet 46; Plan of the Sluice Through the NW/SE Dike as Actually Executed, Drawer 70, sheet 39, National Archives.
8. Sketch showing the proposed modification of the dikes on Cockspur Island Georgia, November 8, 1845, Drawer 70 Sheet 49, National Archives.

to keep back an excessive tide in an area where a nine-foot tide was not uncommon. By September 1935, it had been determined that the dike elevation should be increased to 12, with a top width of 10 and a 4:1 slope. A 1940 Summary Report indicated that the dike restoration project rebuilt five miles of dikes with a base dimension of 35 feet and an elevation of 6 feet above the marsh.[9]

NPS plans and reports show that an elevation of 12 MLW was used for the dikes after 1935. In 1936, landscape architect John C. Le Bey reported that "the entire dyke system has been practically completed. It was brought to the finish grade elevation 12.0 with a width of 6 feet for the top of the dykes. The slopes were given a final grade of 3 to 1."[10]

In a 1963 report, Superintendent Ralston Lattimore stated that "about forty (40) acres of land immediately surrounding Fort Pulaski lie behind twelve (12) foot dikes, which were designed to hold back all but storm tides. Were it not for the dikes, the parking area and many other sections of the Fort enclosure would be under water at the monthly spring and neat tides." He further explained that the Army Corps of Engineers dumped spoil on the north shore of Cockspur Island in 1939 and 1943, spreading thousands of cubic yards of sand over the marshes, filling ditches 10-14 and creating large areas of fresh water swamp. He also stated that ditches 2 and 9 had become filled with silt long before WWII and had to be re-excavated in 1948 but had filled in again by 1950. He also pointed out that between 1929, the last time mean low tide had been corrected, and 1963, sea level at Fort Pulaski had risen more than six inches.

Lattimore summed up the results of the Mission 66 work:

> In the four years of work, we have dried up most of the wet areas of the island, have materially cut down the areas for mosquito breeding, and have brought this unpleasant feature under control. From time to time canals in the salt marsh, outside of the diked areas, will have to be re-excavated. For the maintenance job, we hope to have the assistance of the Chatham County Mosquito Control Commission. From time to time also we shall have to repair erosion damage to the tide gates on the north shore of Cockspur.[11]

From 1994 to 1996, the Army Corps of Engineers developed the plans and specifications to repair and reconstruct the eroded historic dike system by raising the height of the dike to 4.05 Mean High Water (MHW), which coincided with the top of the adjacent and adjoining park entrance road. Prior to the repair work, the elevation of the dike varied from 2 feet to 5 feet along its entire perimeter. The top width was increased to 10 feet to accommodate construction and maintenance equipment. The dike was raised in areas that were below 4.05 MHW.

Several factors might explain why several CCC reports stated that the restored elevation of the original dikes was twelve feet, when the dike elevations in 1994 were much lower in some areas:

Dredging that occurred from 1939 to 1943 resulted in the accumulation of thousands of cubic yards of sand over the marshes.

A report that outlined the amount of work needed to restore the eroded dikes damaged by the 1947 hurricane stated that portions of the dike had been completely washed away and many of the ditches needed cleaning and were clogged with marsh grass. In 1951, Ralston Lattimore noted that part of the dike was not repaired on the exposed east side of Cockspur Island and that without its dikes, the area surrounding Fort Pulaski would be inundated with each high tide. He further noted in 1954: "Due to the nature of Cockspur Island the dikes are constantly subsiding. How fast we do not know, but a constant and continuous maintenance and observation are required. I am already on record on this point. . . . The Engineers who speak in terms of 'if and when it is necessary to rebuild the dikes' obviously expect to wait until the dikes completely waste away before showing any further interest in them."[12]

9. Groh, 120-21; H. F. McCray to R. M. Brown, September 24, 1935, FPNM archives.
10. John C. Le Bey, Narrative Report Landscape Work for Sixth Enrollment Period, March 31, 1936, FPNM archives.
11. Narrative Report, December 17, 1963, FPNM archives.
12. William W. Luckett, Custodian to Coordinating Superintendent, February 8, 1948; Ralston B. Lattimore to Regional Director, April 17, 1951; Ralston Lattimore to Regional Director, March 3, 1954, FPNM archives.

An increase in sea level on Cockspur Island lowered the elevation of the dikes.[13]

Vegetation

During the Civil War, the area within the original diked section of Cockspur Island had been cleared of vegetation, resulting in a landscape devoid of trees and shrubs. Historic photographs show the view from the southwest and northwest bastions of the fort. The view west from these vantage points is clear to the horizon. The only vegetation appears to be low grasses and sedges. All the roadways and structures of the construction village are clearly visible from the fort. The views to the south and east are similarly open, although the vegetation in this direction, since it was beyond the dike system, was most likely salt marsh, not dry land. Low vegetation would have been an asset to the fort, as defending the Savannah River would be easier with views unobstructed by a tree canopy. Conversely, trees on Tybee Island concealed Union batteries.

In 1900, vegetation was starting to grow up around the exterior of the fort and demilune. By 1925, vegetation covered the demilune and fort interior and clogged up the moat. Much of the vegetation was cleared by the CCC in the 1930s during restoration of the fort. Park maps from this time also show a wooded area north of the entrance road and the parking area.[14]

After WWII, the landscape of Cockspur Island saw significant changes. A 1954 aerial photograph shows vegetation succession taking over the former grasslands, converting them to forest and shrub thickets. The demilune was covered with a mature yaupon holly canopy, as was the perimeter of the moat. Grasslands south of the fort had succeeded to woody shrubs, and the area to the north and west of the fort, open areas in the Civil War-era

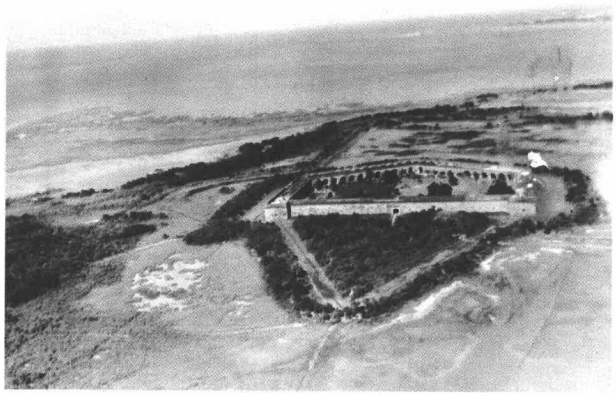


FIGURE 168. 1920s aerial view of vegetation. (FOPU archives 3460)

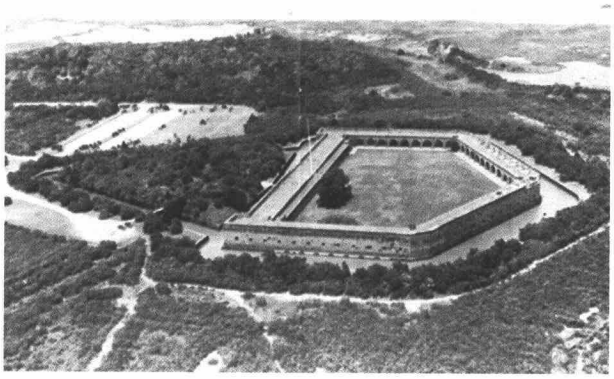


FIGURE 169. 1954 aerial view of vegetation. (FOPU archives 3442)

photographs, had succeeded into a maritime forest. These changes were also documented in park maps of this period.

Such a dramatic change in vegetation may be attributed to a lack of fire control and a gradual accretion of spoil deposits. During the nineteenth-century construction and occupation of Fort Pulaski, the island vegetation was likely maintained by burning. Elimination of burning would naturally allow drier areas of the island to revert back to forest. Adding more dry land in the form of spoil deposits would accelerate the process.

The 1965 Master Plan stated that the outer slope of the glacis was covered by a dense thicket of vegetation that cut off all views of the fort. Superintendent Ralston Lattimore commented in 1965 that foliage had grown so high and was so dense around the fort that the structure was completely hidden.[15]

13. Superintendent Ralston Lattimore appears to have been ahead of his time. He attributed the rise in sea level to "a warming of the Polar region." This discussion is found in "Narrative Report – Improvements to Drainage," April 18, 1963 and David L. Tomlinson, Acting Superintendent to Regional Chief of Maintenance, May 11, 1968, FPNM archives.
14. John C. Le Bey, Narrative Report Landscape Work for Sixth Enrollment Period, March 31, 1936, FPNM archives.
15. 1965 Master Plan, 6; Superintendent to Regional Director, March 28, 1965, FPNM archives.



FIGURE 170. 1985 aerial view of vegetation. (FOPU archives 3465)

By the 1980s, most of the vegetation encircling the fort had been removed. An aerial photograph from 1985 shows the vegetation immediately surrounding the fort removed and managed as grassland. There is still a mature canopy to the north and west of the fort, as well as cedar trees on spoil deposits to the east of the fort and within the dike system south of the fort.

Buildings and Structures

Buildings and structures on Cockspur Island have always been dominated by Fort Pulaski and the associated dike and ditch system. Nothing remains of the construction village, which perished in the 1881 hurricane, except for several cisterns and a portion of the North Channel Pier. Headstones on the fort glacis mark the location of two nineteenth-century graves.

The Cockspur Island Lighthouse was constructed in 1839 but was not outfitted with lights until 1848, when noted New York architect John Norris was contracted to "repair, alter, and put up lanterns and lights on Cockspur Island ... and to erect a suitable keeper's house." It was reconstructed in 1856 following a hurricane in 1854. The lightkeeper's quarters perished in the 1881 hurricane. After another hurricane in 1893, a house for the lightkeeper was built on the terreplein.

Late nineteenth-century additions included the Tybee Knoll Cut Range Lighthouse Complex in 1878 and Battery Hambright, completed in 1900.

At the west end of the island, the quarantine station and later CCC camp dominated the landscape. Now used as Park Headquarters, the Quarantine Attendants' Quarters is the only surviving historic structure from the quarantine station and CCC camp. A maintenance area was constructed in 1935. The Navy added two concrete bunkers during their WWII occupation.

An entrance road, the South Channel Bridge, and a parking area were constructed between 1935 and 1940.

The installation of the John Wesley Memorial occurred in 1951.

Mission 66 improvements included the visitor center, picnic area, and entrance station.

Circulation

In the nineteenth century, a roadway connected the North Channel Pier and the fort. It appears on the 1843 Mansfield map. Smaller paths connected the construction village buildings clustered around the north shore and can be seen in 1863 photographs.

During the digging of the main feeder canal in 1843, excavated earth was placed west of the feeder canal to form a roadway. Lieutenant Mansfield planned on building a new wharf at the southern terminus of the roadway, explaining that the old South Pier, located 600 feet east of the new roadway, was rotten and should be abandoned. Another road connected the fort, the construction village, and the North Pier. During the late summer of 1845, Lieutenant Alexander cut away part of the 1843 roadway to provide sufficient fill to grade the parade ground.[16]

In January 1934, the remains of the 1843 roadway were found paralleling the main feeder canal on the western side, approximately 18 feet from its center line. Mud excavated from the moat provided fill to rebuild the roadway.

The historic alignment of the roadway to the old North Pier served as the footprint for a shell pedestrian trail constructed in 1939. At this point, the roadway from the old North Pier to the old

16. Young, 226.

South Pier was one continuous shell surface. Lack of funding to maintain the shell roadway to the old South Pier and main tide gate resulted in its eventual obliteration, although the road trace can still be seen. The pedestrian trail to the North Pier Overlook has been preserved over the years.

CCC workers completed a five-foot-wide walk from the new parking area to the old quarantine station along the route of an old wagon road in 1940. This trail was later referred to as the Loop Trail or Nature Trail. The picnic area was sited across from its terminus in 1965.

Construction of the South Channel Bridge and entrance road began in 1937, and the project was completed in 1940. The road to the west end of the island stopped at the quarantine station. Park maps show the road extended to the western park boundary by 1946.[17]

The completion of the main parking area occurred in 1940. Although originally unpaved, NPS correspondence and maps indicate that the parking lot was paved by 1942. A temporary parking area located directly south of the demilune drawbridge continued to be used until the 1970s.[18]

During the construction of the visitor center, the Park changed the entrance road alignment to allow drop off of passengers at the visitor center before parking. The Park converted the service road between the main parking area and the demilune drawbridge to stabilized turf when oyster shells became difficult to purchase. In 1963, it was realigned and replaced with two asphalt strips up to the fort, where it merged with the existing shell road down to the main tide gate. The construction of the visitor center created a conflict of pedestrian and vehicular circulation that persisted until the 1970s when the asphalt section of the service road was finally obliterated.[19]

17. 348/2008B, August 1946; 348/8070, November 1938; Report of Road Fill Job, March 6, 1940, FPNM archives.
18. C. R. Vinten to Regional Director, March 25, 1942; S. P. Kehoe, Jr., Report of Road Fill Job, March 6, 1940, FPNM archives.
19. Ralston Lattimore to Regional Director, June 3, 1963; Ralston Lattimore to Regional Director, June 10, 1964, FPNM archives.

Quarantine Station

It seems that the quarantine station was generally accessed by boat, even during the early stages of the CCC work on the island in June 1934. By the end of 1934, a trail from the fort to the quarantine station was developed into a temporary service road until a new road was constructed as part of the South Channel Bridge and entrance road project in 1938.[20]

Walkways connected the quarantine station buildings. As buildings in this area were removed in the 1950s, walkways were taken out, but some remnants remain.

Views and Vistas

Views and vistas at Fort Pulaski would have been open in all directions during the Civil War era. From the terreplein of the fort, a 360 degree view would have been available. During the Civil War, the island was virtually devoid of trees and shrubs, being primarily a grassy wetland. Views were long and broad.

The U.S. Army Corps of Engineers periodically dredges the North Channel of the Savannah River. Over the decades, the dredge spoil has been dumped on various islands, including Cockspur. Because the majority of the spoil banks are located near the shores of the islands, rings of vegetation surround Cockspur, blocking the historic viewshed.

One of the more historically important views from Fort Pulaski during the Civil War was towards McQueens Island and the Union batteries on Tybee Island. Mosquito dredge deposits that added to the dry land mass and vegetation succession over the years has contributed to the loss of open views and vistas that are critical to understanding Fort Pulaski's field of fire as a defensive coastal fort and the sight lines during the historic battle.

Today, huge ships pass quite close to the fort, distorting the historic viewshed as they pass through the North Channel, although views from the fort to

20. Quarterly Narrative Report, June 30, 1934; Monthly Narrative, November 9, 1934, FPNM archives.



FIGURE 171. Vegetation blocking view of Tybee Island, 2007. (NPS photo)

the North Channel Pier remain blocked by vegetation.

Natural Systems and Features

When construction of Fort Pulaski first began in 1829, the landscape was noticeably different from that of today. The island would have been primarily salt marsh with some coastal hammock forest. In order to develop the island for defense, the construction of a ditch and dike system modified the topography of the island. Prior to the battle of April 1862, existing vegetation would have been removed to enhance visibility.

Beginning in the late 1800s, dredge spoil was deposited on the north shore of Cockspur Island. As a result, Cockspur Island is now more than forty percent dry land. Today, approximately 250 acres of upland areas support a mosaic of maritime forest, shrub communities, maintained grasslands, and successional spoil deposit areas.

In addition, Cockspur Island includes over 350 acres of tidal marsh. These tidal marshes have delicate ecological characteristics, including essential life support systems for shrimp, oysters, juvenile fish, and shellfish.

Archeological Resources

In 1994, SEAC conducted a remote sensing survey to locate the graves of the Confederate prisoners of war interred at Fort Pulaski. The results of the survey were inconclusive. Although several anomalies were recorded, no evidence for the location of the graves was discovered.[21]

Extensive excavations occurred in 1999, leading to the complete delineation of the cemetery's boundaries. 37 separate burials were identified. Of these, 19-21 lie in the general area of the documented Confederate section. Based on archival research and the 1999 excavations, it is felt that most of the Union troops who died during the Civil War were exhumed, and their cemetery plots were reused by civilians and post-Civil War military personnel.[22]

In 1997, archeological investigations of the dike occurred. Two locations were chosen that were considered likely to have been undisturbed by repairs to the dike system in the 1930s. Park management wanted to ensure that restoration work by the Army Corps of Engineers be as historically accurate as possible. The chance to observe the original stratigraphy would be maximized in a location that had not been disturbed.

The excavations demonstrated that the basic shape of the original dike has been maintained since their construction in the 1830s. Natural erosion, however, continuously causes a reduction in the height of the dike and an accompanying increase in the width of each repair or reconstruction episode.[23]

In 1999, eighty shovel tests in the assumed vicinity of Fort George, Fort Greene, and the Lyford Pilot House failed to yield any positive proof of their location. Historic documentation indicates that the search for these particular sites should focus on the mud flats at the southeastern end of Cockspur Island for Fort George and the area around the North Channel Pier for Fort Greene. It seems unlikely that enough remains intact of the Lyford Pilot House to warrant further archeological investigation.[24]

National Register Status

A National Register nomination was completed for Fort Pulaski National Monument in 1975. It is nationally significant in the areas of architecture, engineering, and military history.

21. Groh, 68, 78.
22. www.cr.nps.gov/seac/pulaski/2-civil_war/index-2.htm.
23. Groh, 79, 121.
24. www.cr.nps.gov/seac/pulaski/1-before/index.htm; Prentice 49-51.

Period of Significance

The period of significance for the Cockspur Island Historic District cultural landscape is 1829-1895. The period of significance begins with the construction of Fort Pulaski in 1829 and ends with the last significant change to the demilune in 1895. Fort Pulaski is the best preserved and most original of a system of eastern coastal forts designed by the French military engineer Simon Bernard, while in the employ of the U. S. Army Corps of Engineers. It was one unit in the Third System of United States Coastal Defense planned and built to protect the eastern seaboard cities after the British burned Washington, D.C. during the War of 1812.

Its massive brick walls, backed by heavy buttresses, and casemated rooms reflected the continuing search for security against increasingly large-caliber smoothbore cannon of the period. The best military engineering principles and the finest joinery and masonry techniques of the day were used in its construction. Yet the siege and rapid reduction of Fort Pulaski in April 1862 by heavy rifled artillery of the Federal Army, which had never before been attempted, proved that masonry forts could no longer provide an effective coastal deterrent to a seacoast assault. As a result, masonry forts were becoming obsolete.

A secondary period of significance, from 1933-1942, includes the construction associated with the New Deal programs at Fort Pulaski. CCC and WPA workers carried out an extensive program of repair, restoration, and reconstruction on Cockspur Island. Significant projects included the restoration of Fort Pulaski, the repair and reconstruction of the historic dike and ditch system, and the construction of the South Channel Bridge, entrance road, parking area, and a system of trails north of the fort.

Assessment of Integrity

The effort to determine a landscape's significance according to National Register criteria focuses on seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. The persistence of these qualities as they apply to the landscape determines whether the landscape retains enough of its important features to convey its historically significant appearance or associations.



FIGURE 172. View from terreplein looking northeast, 1863. (FOPU archives)



FIGURE 173. View from terreplein looking northeast, 1992. (HABS photo)

Location: the place where the historic event occurred. Fort Pulaski National Monument retains a high level of integrity of location. It is the location of the Battle of Fort Pulaski. The location of a property, complemented by its setting, is particularly important in recapturing the sense of historic events. The location of Fort Pulaski within the original diked area between the North and South Channels of the Savannah River is a character-defining feature.

It is possible that the realignment of the entrance road in the 1960s may have covered or disturbed a portion of the cemetery area, compromising integrity of location.[25]

Archeological integrity has been affected by the placement of dredge spoil on the north shore of Cockspur Island, which has buried the locations of some of the construction village buildings under several feet of unrelated fill. Comparing a digitized version of Mansfield's 1831 map with Global

25. Groh, 117.

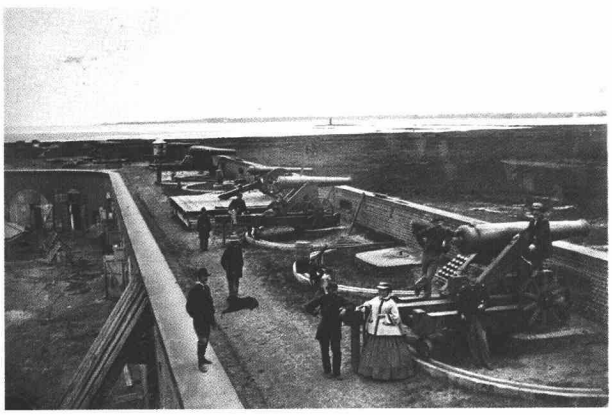


FIGURE 174. View of Cockspur Island Lighthouse and beyond, 1863. (FOPU archives)

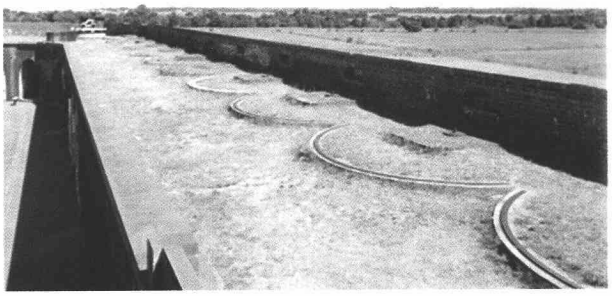


FIGURE 175. View to Cockspur Island Lighthouse and beyond, 1992. (HABS photo)

Positioning System (GPS) locations of the cisterns and square brickworks showed that the Mansfield map was very accurate. Using Mansfield's map, SEAC crews tried to locate the blacksmith shop and bakehouse. The area of the blacksmith shop had been covered by a section of the dike system constructed in the 1930s. Large amounts of fill covered the supposed site of the bakehouse.[26]

The location of the lightkeeper's house, which burned in 1925, was disturbed when the terreplein was restored in the 1930s.[27]

Setting: the physical environment of a historic property. The setting of Fort Pulaski has changed considerably since 1862 when the island was devoid of trees and shrubs. In a mild coastal climate such as Cockspur Island's, plants grow, mature, and die at an accelerated rate. The opportunistic encroachment of native plants and the spread of exotic species are all factors that have diminished integrity of setting, obscuring the dominance of the fort as it existed in a landscape devoid of trees and shrubs in 1862. The open character of the landscape at the time of the April 1862 battle is a character-defining feature.

A comparison of Civil War images with 1992 HABS images taken from the same viewpoint of the fort terreplein demonstrates how much the setting has changed. Civil War images show an open landscape devoid of vegetation. 1992 images show mature vegetation blocking the historic views that were so important to the defense of the fort.

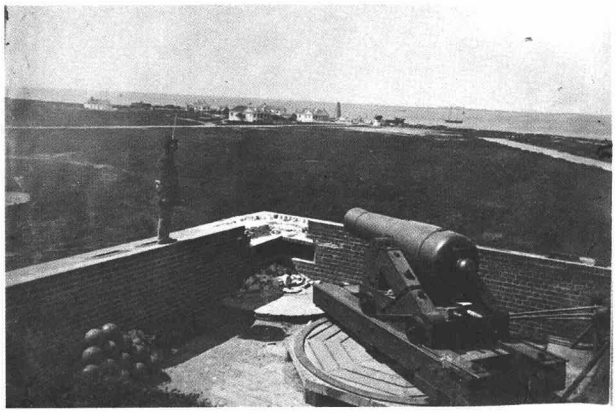


FIGURE 176. Northwest corner, 1863. (FOPU archives)

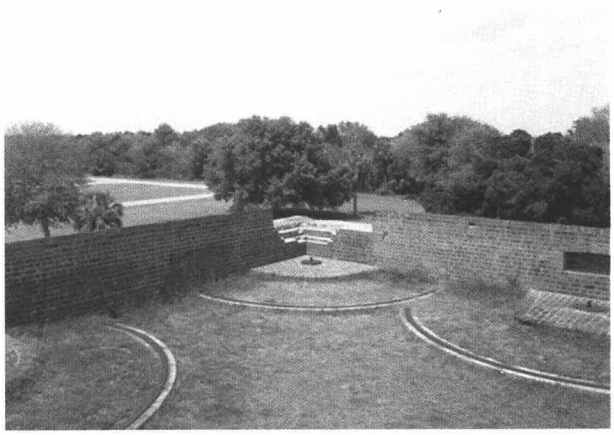


FIGURE 177. Northwest corner, 1992. (HABS photo)

The loss of the construction village in the 1881 hurricane further compromised integrity of setting. The cisterns and a portion of the North Channel Pier remain as the only above-ground resources associated with the construction village.

The configuration of the historic dike and ditch system remains a key feature of the setting of Fort Pulaski.

26. www.cr.nps.gov/seac/pulaksi/0-introduction/index.htm.
27. www.cr.nps.gov/seac/pulaski/3-post/index.htm.



FIGURE 178. Palm alleé remnant at quarantine station, 2005. (NPS photo)

Three mortar batteries were present at the time of the battle. The remains of Mortar Battery No. 1, located due east of the fort, are partially obscured by erosion. The remains of Mortar Battery No. 2, the northern most of the batteries located south of the fort, are below-ground resources. The remains of Mortar Battery No. 3, the southern most of the two batteries located south of the fort, are visible as a small rise in the soil.[28]

The setting of the quarantine station begun in 1889 does not survive. Remnants of the spatial organization that once connected the buildings in the complex remain, but with only the Quarantine Attendants' Quarters surviving, integrity of setting has been lost.

Design: the combination of elements that create the form, plan, space, structure, and style of a property. The design of Fort Pulaski retains a high level of integrity. Although Fort Pulaski suffered from neglect prior to 1933, restoration work done by the CCC and PWA in the 1930s and Mission 66 in the 1960s has preserved its design. The design of Fort Pulaski is the cornerstone of the Cockspur Island cultural landscape.

28. Groh, 116.

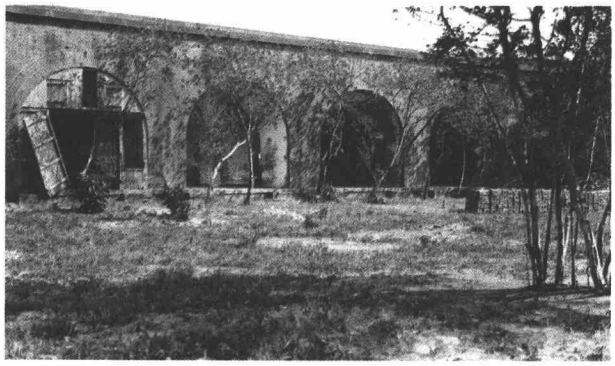


FIGURE 179. Casemates before restoration, 1934. (FOPU archives)

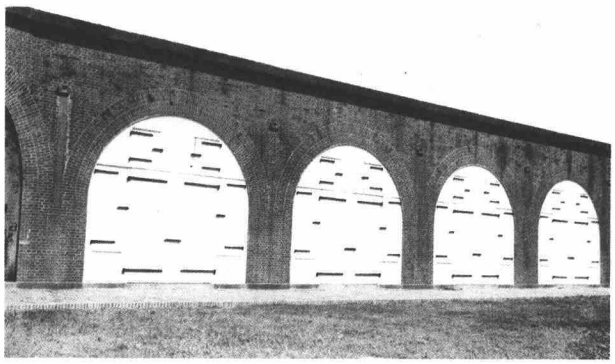


FIGURE 180. Casemates after restoration, 1936. (FOPU archives)



FIGURE 181. Gorge face before restoration, 1934. (FOPU archives 3361)

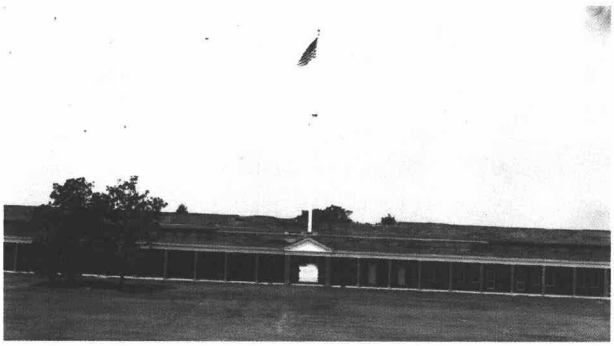


FIGURE 182. Gorge face after restoration, 1938. (FOPU archives 3437)

The design of the dike and ditch system retains a high level of integrity. The repair and reconstruction of the dike and ditch system was one of the primary accomplishments of the CCC in the 1930s. Archeological excavations carried out in 1997 demonstrated that the basic shape of the original dike has been maintained since its construction in the 1830s. Natural erosion, however, continuously causes a reduction in the height of the dike and an accompanying increase in the width of each repair or reconstruction episode. The repair and reconstruction of the eroded historic dike system in 1997 to 4.05 Mean High Water (MHW) restored its historic elevation. The restored elevation of the historic dike system is a character-defining feature of the Cockspur Island cultural landscape.[29]

The Cockspur Island Lighthouse is threatened. Erosion, caused by the ongoing dredging of the Savannah River, has significantly decreased the structure's protective land mass and accelerated structural deterioration.

Several cisterns associated with the construction village are the only surviving intact aboveground resources for this important feature of the cultural landscape. They have been filled in due to safety issues. The integrity of the cisterns varies from good to severely compromised. For example, the bakehouse cistern was covered with dredge spoil from the North Channel of the Savannah River. The upper portion of the cistern has been uncovered, leaving the apertures and side walls visible.

Historic roadways connected Fort Pulaski with both the North Channel of the Savannah River and the South Channel of the Savannah River at the time of the April 1862 battle. The historic alignment of the roadway from the North Channel Pier was incorporated into the loop trail constructed by the CCC in 1938 that terminates in the parking area. It originally extended through the parking area to the fort entrance at the demilune drawbridge, but this section was changed many times and finally taken out in 1977.

The roadway reconstructed by the CCC in the 1930s, whose trace can still be seen west of the main feeder canal, may not have been in use at the time of the battle, as it was partially cut away in 1845 to



FIGURE 183. Road trace, 2005. (NPS photo)

provide sufficient fill for the parade ground. A roadway angling east of the feeder canal in 1863 photographs appears to link the South Channel Pier and the fort. This roadway has not survived.

All of the CCC trails, including the loop trail out to the North Pier, were designed in 1934 by Ralph S. Ellifrit, a young landscape architect who eventually became the City Planner for Houston, Texas. Although neglected after WWII, these trails were restored by Ralston Lattimore during his tenure as Superintendent. They retain a high level of integrity.

Battery Hambright retains a high level of design integrity. It is a good example of defense emplacements built at the end of the nineteenth century. It replaced, in concept, the masonry fortification represented by Fort Pulaski. Restoration work carried out in 1960 and again in 1995-96 has preserved the concrete, steel, and earthen rapid-fire gun battery.

The Quarantine Attendants' Quarters is the only historic structure remaining from the quarantine station established by the City of Savannah on Cockspur Island in 1889 and operated by the U.S. Public Health Service after 1899. Although the exterior was significantly altered in recent years, the building remains essentially a product of the remodeling and rehabilitation of the structure by the Navy during WWII. Although very few interior features of the original building can now be identified, many of the features and finishes added by the Navy remain intact and should be treated as historic. The modern rehabilitation of the exterior somewhat diminished the building's integrity of design and left it with an appearance that is historically confused. The present configuration of the exterior stairway on the east side of the house

29. Groh, 79, 121.



FIGURE 184. South Channel Bridge, 2007. (NPS photo)

never existed, nor were the porch banisters present after the Navy's remodeling. Most importantly, recent installation of lattice at the basement level introduced a feature that was never present historically. Nevertheless, the modern changes to the exterior did not destroy historic features and are generally reversible.

The John Wesley Memorial retains a high level of design integrity.

The design integrity of the old North Channel Pier was somewhat compromised when the deteriorated end, jutting out into the water, was stabilized in the 1960s using granite curbing relocated from the gun racks on the fort terreplein. The direction of these units has been alternated, creating a serpentine effect unlike that of the original pier materials. Changes have also occurred to the Overlook. The brick and flagstone platforms have been removed from both benches that were placed when the Overlook was completed in 1964. It is unknown when these changes occurred. Cabbage palms that were part of the original Overlook design remain.

The South Channel Bridge, entrance road, and parking area retain a high level of design integrity. The alignment of the entrance road was altered when the visitor center was constructed in 1964, but the spatial footprint was not compromised. Other than the restoration of the fort, the construction of the South Channel Bridge is the most significant PWA project completed at Cockspur Island.

The 1964 visitor center retains a high level of design integrity. The addition of handicapped ramps in 1977 and 1999 and a detached rest room building in 1997 did not significantly change the spatial organization of the Mission 66 design. The orientation of two of the benches from the Mission 66 seating area design, however, was changed to accommodate entrance into the restrooms.

Materials: the physical elements that were used to construct the features of the landscape. Construction materials associated with the landscape features at Cockspur Island include wood, brick, concrete, steel, iron, shell, and tabby.

Fort Pulaski retains a high level of material integrity. An effort has been made over the years to replace materials in kind, especially the Savannah Grey brick at both the fort and the ditch and dike system. Total replacement in kind was necessary for many of the structures of the ditch and dike system, as well as the drawbridges, in the 1930s. In some cases, more modern tide gates were used to control the flow of water. The Park presently uses three flapper valves and one shut off valve.

Battery Horace Hambright retains a high level of material integrity. The concrete and steel construction added a new level of durability, especially against weapons that could shoot further with more accuracy than ever before.

Even within the maintenance complex and the picnic area, material integrity has been maintained when buildings were rehabilitated or constructed. Decorative brick trash can receptacles have been constructed in public areas and dumpsters have been screened with wooden enclosures. Four of the original six grills remain in the picnic area.

In 2006, a lime mortar workshop was held at Fort Pulaski to help educate NPS personnel about the importance of using historically correct mortars.

Alterations to the Quarantine Attendants' Quarters over the years have diminished material integrity. In 1998, plastic lattice at the basement level was installed over new plywood walls. In 2003, windows in Room 107 were replaced with vinyl windows. Nevertheless, highly significant features and materials remain intact from the Navy's remodeling of the building in 1942.

The material integrity of the South Channel Bridge has been compromised. This composite wood and concrete bridge was completed in 1938, but the deck was reconstructed in 1965, and extensive repair

work in the 1990s altered many of the bridge's structural components.

The loss of the roof has severely compromised material integrity of the Tybee Knoll Cut Lighthouse oil storage shed.

Workmanship: the qualities of the ways in which landscape features have been fashioned and constructed for both functional and decorative purposes. Fort Pulaski retains a high level of workmanship. The finest joinery and masonry techniques were used in its construction from 1829-1847. Highly skilled and experienced craftsmen from the PWA accomplished the restoration work done in the 1930s. A crew from the Historic Preservation Training Center completed repair work done in the 1980s. The workmanship of the maintenance crew is of a very high standard.

The ditch and dike system retains a high level of workmanship. The brick revetment of the moat and main feeder canal walls and of the tide gates are excellent examples of nineteenth-century workmanship. The repair and reconstruction project carried out by the CCC in the 1930s was supervised by highly trained architects and landscape architects who maintained a high standard of workmanship. The Army Corps of Engineers completed the restoration work done in the 1990s.

The Cockspur Island Lighthouse retains a high level of workmanship. Extensive repairs since the lighthouse was transferred to the NPS in 1959 have been carried out by trained professionals.

The addition of modern materials to the Quarantine Attendants' Quarters in the late twentieth and early twenty-first centuries has lowered integrity of workmanship.

The South Channel Bridge was one of the most significant construction projects carried out on Cockspur Island during the 1930s. It epitomized the craftsmanship of the work undertaken by the PWA, but its integrity has been severely diminished

The John Wesley Memorial retains a high level of workmanship. It was designed by architect Edward Vason Jones of Albany, Georgia.

The loss of the Tybee Knoll Cut Lighthouse oil storage shed roof has compromised integrity of workmanship.

Feeling: a property's expression of the aesthetic or historic sense of a particular period of time. Overall, integrity of feeling has been diminished by the loss of the open character of the landscape surrounding Fort Pulaski, which is critical to understanding the sight lines of the battle and the siege and reduction of Fort Pulaski as a coastal fortification.

The presence of the restored dike and ditch system contributes to the atmosphere of the historic era.

The loss of the construction village and historic circulation patterns has somewhat lowered integrity of feeling.

The extensive exterior changes to the Quarantine Attendants' Quarters have compromised integrity of feeling.

A decrease of the structure's protective land mass has lowered integrity of feeling for the Cockspur Island Lighthouse.

Association: the direct link between an important historic event or person and a historic property. Overall, integrity of association remains high. The restoration of Fort Pulaski in the 1930s and subsequent repair work has maintained the link between the battle of April 1862 and the property today. There is also a link in public memory to Robert E. Lee, who began the system of dikes and ditches surrounding the fort and completed an important survey of the island in 1831, and to John Wesley, the founder of Methodism, who landed on Cockspur Island in 1736.

The historic configuration of the ditch and dike system and the Cockspur Island Lighthouse also contribute to integrity of association, since both of these features were present at the time of the battle. Erosion, however, threatens the lighthouse.

Integrity of association has been somewhat lowered by the loss of the construction village.

As the only remaining structure of the quarantine station, the Quarantine Attendants' Quarters has lost integrity of association.

As the only remaining structure of the Tybee Knoll Cut Lighthouse complex, the oil storage shed has lost integrity of association.

Summary

The cultural landscape of the Cockspur Island Historic District is dominated by Fort Pulaski and the surrounding historic dike and ditch system. The integrity of these two landscape features remains high for location, design, materials, workmanship, and association.

Vegetation succession has compromised integrity of setting and feeling.

The loss of the construction village lowers integrity of association.

The integrity of historic circulation patterns is somewhat intact. The historic alignment of the roadway from the North Channel Pier to the demilune has been preserved as part of the loop trail constructed in the 1930s. The integrity of the original roadway from the South Channel Pier to the demilune has been compromised, but its trace can still be detected within the dike system.

Erosion, caused by storms and the ongoing dredging of the Savannah River, threatens the Cockspur Island Lighthouse.

Archeological resources in the construction village have been compromised by borrow deposits on the north shore of the island and repair work to the dike system by the CCC in the 1930s.

Treatment

The area defined by the Cockspur Island Historic District is the site of Fort Pulaski, whose massive brick walls, backed by heavy buttresses, and casemated rooms reflected the continuing search for security against increasingly large-caliber smoothbore cannon of the period. The best military engineering principles and the finest joinery and masonry techniques of the day were used in its construction.

On April 10, 1862, Union batteries opened fire on Fort Pulaski. Within thirty hours the southeastern wall had been breached and the Confederate garrison surrendered. The secret of the siege was the use of rifled cannon by the Union artillery. These new weapons were able to fire their elongated projectiles farther and with more accuracy than the smoothbore cannons that Fort Pulaski was built to withstand. The Battle of Fort Pulaski began the transformation of the masonry forts built as a part of the Third System of United States Coastal Defense from impenetrable bastions of ingenious engineering to obsolete symbols of American military defense.

The overarching treatment associated with the historic landscape is preservation of all identified resources. Restoration has been applied to a select number of features, primarily the restoration of the open character of the landscape to more accurately reflect the conditions at the time of the April 1862 battle and to provide the visitor with a greater understanding of the Siege and Reduction of Fort Pulaski.

Vegetation

During the Civil War, the area within the original, diked section of Cockspur Island had been cleared of vegetation, resulting in a landscape devoid of trees and shrubs. Low vegetation would have been an asset to the Confederates, as defending the Savannah River would be easier with views unobstructed by a tree canopy. It was also an asset to Union forces, who had a clear view of Fort Pulaski from Tybee Island.

In order to facilitate a better understanding of Fort Pulaski's field of fire as a defensive coastal fortification and to better represent the sight lines during the battle, restore views to the North and South Channels in accordance with the approved GMP preferred alternative.

- Remove selective vegetation to restore the open character of the landscape within the dike system. To mitigate the loss of selected mature trees and other vegetation removed inside the dike system, the following measures are proposed:
- Replant mature trees outside the dike system on Cockspur Island on a 2 for 1 basis.
- Remove mature red cedars only as they succumb to disease, lightning damage, etc.
- Tree removal should be done by a certified arborist after being marked by a surveyor and forester to ensure that no more trees are removed than necessary to achieve the desired sightlines.
- Mitigation plan should include young tree maintenance plan that involves weekly watering for the first 2 years.
- Screening would remain to block the view of the Lazaretto Creek Bridge and modern development on Tybee Island and Cockspur within view of Fort Pulaski.
- Clear a vista from the end of the nature trail to the southeast corner of the fort.
- Remove a section of the mosquito spoil that has allowed perimeter vegetation to grow up on artificial hummocks and return to the 1862 grade, allowing marsh to reclaim the land. Leave the outer section to block development on Tybee Island.
- Consider a prescribed burn program to discourage new deciduous vegetation from taking hold on dredge spoils.

- Continue exotic plant management. Do not remove exotic vegetation around buildings without consultation with cultural resources.
- Consider equally both cultural and natural features of the project area in treatment and land use decisions.
- Evaulate the potential impact to wildlife habitat and remaining vegetation prior to undertaking any vegetation removal project.
- A Vegetation Management Plan may be needed to describe which trees will be removed and how the open character of the landscape is to be maintained.

The Fort and Demilune

- Preserve the fort and demilune.
- Continue to ensure that historically accurate mortars are used to repair brick work.
- Maintain the open character of the fort parade ground.
- Allow the ancient fig and pecans inside the parade ground to mature naturally but do not replace.
- Remove selective trees around the fort to restore views to the North and South Channels of the Savannah River.

Dike and Ditch System

- Preserve the restored elevation of the historic dike and ditch system.
- Preserve the historic configuration of the dike and ditch system.
- Preserve the brick-faced tide gates.
- Maintain ditches so that they hold 18" of water at all times.



FIGURE 185. Mature trees growing up around the fort, 2005. (NPS photo)



FIGURE 186. Example of clogged ditch, 2005. (NPS photo)



FIGURE 187. Example of cleared ditch, 2005. (NPS photo)

Battery Horace Hambright

- Preserve the rapid-fire gun battery.
- Keep the area around the battery clear of vegetation.

Cockspur Island Lighthouse

- Preserve the lighthouse, one of the earliest surviving structures within the Cockspur Island Historic District.
- Perform bank stabilization to mitigate wave action per recommendations of Environmental Assessment (EA).

Construction Village

The construction village was a key component of the cultural landscape during the period of significance. Archeology could provide the information necessary to restore portions of the construction village landscape.

- Preserve the cisterns, the only intact aboveground resources remaining of the construction village.
- Conduct archeological investigations to locate the foundations of the construction village buildings. Although it may be possible to use Ground Penetrating Radar to avoid the expensive process of excavating the entire site, 1994 remote sensing investigations that occurred in the area of the cemetery showed that the soils of Cockspur Island make non-intrusive subsurface investigations difficult.
- Using wayside exhibits with historic photographs or plans to mark the foundations would be one option for interpretation.
- The CLR will follow the recommendations of the GMP.

Mortar Battery

Three mortar batteries were constructed during the Civil War, but only one has aboveground remains.

- Preserve the location and configuration of Mortar Battery No. 3.

Quarantine Attendants' Quarters[1]

- Maintain and preserve all of the present wooden, six-over-six windows, repairing weather stripping and adding storm windows if necessary for energy efficiency.
- Maintain and preserve existing exterior woodwork on the main body of the house above the basement level.
- Make restorative changes as recommended in the Historic Structure Report.

Old North Channel Pier

- Preserve the stabilized North Channel Pier. Although stabilization efforts in the 1960s used granite curbing that created a serpentine effect unlike that of the original materials, the stabilized pier is an important feature in the cultural landscape. It was used during the early period of construction and was later supplemented by another wharf on the South Channel of Cockspur Island.
- The North Channel Pier is at risk for erosion if the Savannah River is deepened to allow passage of larger ships. A shoreline erosion study is currently underway to determine the impacts of such activity to the park's cultural and natural resources.

South Channel Bridge

- Preserve the 1938 South Channel Bridge, one of the more significant resources of the CCC era on Cockspur Island.
- Evaluate for addition to the List of Classified Structures.

Parking Area

The current proposed GMP preferred alternative includes the relocation of the 1938 parking area to allow restoration of the cultural landscape to the

1. All recommendations taken from HSR.



FIGURE 188. South Channel Bridge, 2007. (NPS photo)

period of the April 1862 battle. If this alternative is approved:

- Relocate the visitor parking area to a site near the visitor center but outside the viewshed from the top of the fort.
- Restore the open character of the cultural landscape so that the area between the fort and the North Channel of the Savannah River more closely resembles the April 1862 site conditions.
- The area should be grubbed and reseeded after the parking lot is demolished.
- Removal of the parking area would allow for restoration of the Civil War-era roadways as pedestrian trails: one from the North Channel Pier to the fort, and the other from the South Channel Pier to the fort.
- Interpretation of the CCC-era parking lot should be considered, explaining why the parking lot was moved. This could occur inside the visitor center or with a wayside.

If another alternative is approved that does not include relocation of the parking area:

- Preserve the current configuration of the 1938 parking area. Although the alignment of the entrance road was changed in the 1960s to accommodate the visitor center, the basic configuration of the CCC-era parking area was retained.

Cemetery

- Preserve the cemetery headstones.
- Preserve the cemetery's boundaries as delineated in 1999 archeological investigations.

Loop Trail

- Preserve the North Pier Trail (sometimes referred to as the Nature Trail), which was designed in 1934 by Ralph S. Ellifrit, a landscape architect who eventually became the City Planner for Houston, Texas.
- An important component of the North Pier Trail was the footprint of the historic roadway that ran from the North Channel Pier to the demilune. Alexander's 1843 map was used to determine the alignment during CCC construction in the 1930s.
- If the parking lot is relocated, it would be possible to remove the concrete surface through the parking lot and replace with oyster shell to mimic the historic road trace.

Maintenance Area

- Preserve the CCC-era maintenance building. Although the building has a substantial addition, it does not detract from the original construction.

WWII Batteries

- Preserve the WWII batteries.

John Wesley Memorial

- Preserve the John Wesley Memorial.
- Preserve the open space of lawn around the memorial.

Tybee Knoll Cut Range Lighthouse Complex

- Stabilize the brick oil storage shed. It is the only surviving structure of the 1878 complex and is in a state of disrepair.

Pre-Fort Pulaski Sites

- Conduct archeological testing to locate historic sites such as Fort George and Fort Greene.
- Historic documentation indicates that the search for these particular sites should focus on the twenty acres in the southeastern area of Cockspur Island.
- Recent documentation indicates that Fort Greene may have been located near the North Channel Pier.

National Register Nomination

- Update the National Register nomination to include the landscape resources identified in the CLR.

Rare, Threatened, and Endangered Plant and Animal Species

- Avoid altering the habitats of rare, threatened, or endangered species or species of special concern.
- Evaluate the potential impact to wildlife habitat prior to undertaking any construction or vegetation removal project.

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Appendix A

Fort Pulaski Construction Timeline

1829: The excavation of a short canal, upon which building materials were to be transported from the North Channel to the northwestern edge of the fort site, had been completed. Some embankments and sluices had been built to prevent a tidal inundation.

1830: A drainage system of ditches and embankments around the entire island was begun, as well as the excavation of the ditch around the fort site. The main wharf on the North Channel was completed but was damaged in a November 1830 gale.

1831: Upon his arrival in January 1831 to replace Major Babcock, Lieutenant Mansfield directed Lieutenant Lee to complete a survey of the island. Lee's survey map shows the dikes and ditches as actually executed at that time and the exact position and extent of ditches around the fort site, as executed by Babcock.

Mansfield pressed Washington to alter the profiles of the proposed foundation of the fort and on other changes to the fort's plan. His new soil survey showed that at no place on the island did the soil strata offer sufficient resistance to support the proposed foundation of the fort.

The ditches on the eastern part of the island were sufficient to keep out ordinary tides but Mansfield considered those constructed on the western side a waste of labor. The north wharf site was a total loss, necessitating the use of the South Channel and the building of a new landing on pilings opposite the southeast angle of the fort. A temporary canal, twenty-five feet wide and three feet deep, was dug to connect the new South Channel wharf with the fort site. Heavy materials were floated up the canal to the fort site on lighters.

In 1831, Mansfield received approval for his proposed alterations in the fort site. New excavations for the foundation were dug in April. Mansfield recommended constructing the fort of brick rather than stone, as well as the use of pilings and timber grillage under the foundation. These changes were approved, along with eliminating one of the stories or gun tiers and enlarging and lengthening each face of the fort's walls. Instead of the small demilune originally proposed, plans now called for a large earth demilune, surrounded by a wet ditch.

1832: As excavations continued for the fort's foundation, a large bed of white sand was discovered under the north section of the fort, extending under the southern section. This part of the foundation would need pilings two feet into the sand, requiring another change to the foundation plans. By the end of 1832, the excavation of the entire foundation had been completed. The excavated earth had been deposited as a glacis or dike five feet high, completely encircling the foundation, for the purpose of excluding tidal waters from the construction site.

1834: The completion of the foundation timber work occurred in 1834. The permanent masonry construction, which began in 1833, continued to progress.

1835: Work was suspended in March and remained completely closed for the year. The masonry of the foundation was complete, and the walls were rapidly rising.

1836: At the time of the suspension of work in 1835, the foundation excavation had been purposely flooded with water to prevent stagnation and to protect the masonry already laid, causing the site to be filled with mud and grass. The canals to and around the fort were filled with silt. Machinery rusted, and scaffolding and other temporary working structures were decayed and unfit for use.

A large expenditure of funds would also be necessary to revet with masonry the scarp and counterscarp walls of the fort and demilune moats and part of the slopes of the canal to the moats. Mansfield found that earth slopes on Cockspur Island, exposed to tidal action, would become soft and fill up the ditches and impair the strength of the

fort. His superiors in Washington finally agreed and authorized this moat revetment project.

The construction of extensive breakwater and seawall on the north and northeast shore of Cockspur Island began in 1836, designed to protect the shoreline and the temporary quarters in that section. It is likely that these quarters were separate from the construction village to the northwest of the fort.

1837: Construction of short narrow gage railway for hauling bricks from the wharf on the South Channel occurred. Its cars were pulled by mules. Considerable progress was made in forming the parade ground from excavated dirt. A permanent dike system was finally begun at this time.

1838: A permanent granite pierhead was constructed at the wharf on the North Channel and the remainder of the gravel placed on the breakwater. Up until this point, the wharf had been in a state of disrepair, and supplies came in on the more active South Channel. Construction continued on the North Channel wharf through the spring of 1839. The North Channel wharf would later become the more active docking point on the island.

1839: The greatest mass of masonry to be laid occurred in 1839, with the exterior walls and the casemates almost complete.

1840: A seventeen months' suspension of construction work due to a lack of funds began in May 1840.

1841: After a year's suspension of work, decay, rot, and corrosion were widespread. Work on the breakwater at the eastern end of the island and on the permanent dike system continued.

1842: Workers completed the loading of the terreplein roof with earth, designed to filter and purify rain water as it seeped through the terreplein and passed through lead pipes to cisterns in the foundation of the fort. A violent nor'easter struck in October. Lieutenant Barton S. Alexander reported to Fort Pulaski as Mansfield's assistant engineer.

The permanent dikes on the western, northeastern, eastern, and southern sides of the island, which had been nearly completed, were destroyed in the October gale. In 1842, permanent brick sluices were constructed through the northwestern and southeastern dikes and the first "permanent advanced sluice for changing the water of the ditch of the fort" was built at the southern terminus of the proposed feeding canal. The breakwater was finally completed on the northern and northeastern sides of the island.

1843: Lieutenant Alexander began a new survey of the island and oversaw the rebuilding of the dike and ditch system, necessitated by the October 1842 storm. Mansfield delivered the new survey to Washington in November.

In 1843, the excavation of the main "feeder ditch" or canal, which was to carry tidal water from the South Channel to the moats, and the building of a roadway along its western slope occurred. This excavation was preparatory to the beginning of the moat revetment project.

The north and southeast dikes had been strengthened and repairs made to the breakwater.

The earth excavated from the main feeder ditch was used to create a roadway from the demilune to a suitable position on the South Channel west of the feeder ditch. Mansfield intended on constructing a new wharf at the end of the roadway, as the old wharves 600 feet to the east were rotten and needed to be abandoned.

1844: Plans of the sluices were made and sent to Washington with note that "these sluices have not failed in any particular nor has it been necessary to strengthen them at all since they were built."

Progress made toward the final completion of the demilune. Work concentrated on construction of the scarp and counterscarp walls of the demilune and the counterscarp of the main work and the excavation of its moat. The north moat of the demilune had been completely excavated and the south moat partially excavated. Parade ground of the demilune was filled in. The foundation of the demilune drawbridge was completed.

Decayed portions of the North Channel Wharf were replaced with a dry stone wall.

1845: Plans for the main sluiceway arrived in December 1844, and its construction, with the exception of its coping, occurred in 1845.

With the sides of the moats revetted with masonry, they were ready to be filled with water. The grading of the terreplein and parade ground was finished.

When Captain Mansfield left Cockspur Island in July 1845, he had directed the building of the foundations of the fort and demilune, the erection of the massive walls of both works and the completion of many interior details, the excavation of its moats and the construction of their retaining walls, the building of necessary wharves, and the laying out of a drainage and dike system on the island.

1846: Lieut. Alexander assumed supervision of the work after Mansfield's departure in July 1845. Construction of the main sluice gates occurred and work continued on the permanent wharf and on the dike system.

1847: The completion of Fort Pulaski was officially announced in April 1847. All interior details had been completed, as well as the hanging of the massive sally-port and main drawbridge doors. Sodded banquettes were constructed on the terreplein. The grading and embankment of the glacis slope of the demilune and fort were finished.

1847-1861: During much of this time, Lieutenant, later Captain, Jeremy Francis Gilmer was in command of Fort Pulaski.

1848-1851: Modifications were made by Gilmer to the dike system encircling the fort to protect the island from tidal action, according to the dike plan prepared by Lieut. Alexander in 1845.

1857-58: The building of a new brick sluiceway at the south end of the main ditch to the moat occurred.

Maintenance work included sodding the terreplein and parade ground, cutting weeds and grass, grading the embankments of the fort, demilune, and dike system, removing accumulated mud from the ditches, pointing brickwork, painting, and making general repairs necessitated by such storms as the hurricane of 1854.

Appendix B

The various sources of the glossary include:

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Glossary

Barbette: Platform in fortification on which guns are mounted to fire over parapet.

Bastion: Work consisting of two faces and two flanks, all the angles being salient. Two bastions are connected by means of a curtain which is screened by the angle made by the prolongation of the corresponding faces of two bastions, and flanked by the line of defense. Bastions contain, sheltered by their parapets, marksmen, artillery, platform and guards.

Battery: Place where cannon or mortars are mounted for attack or defense.

Blind Embrasure (False Embrasure): Surface indentation in a walled fortification of such details and dimensions as would simulate the appearance of an actual embrasure or gunport. In the case of Fort Jefferson, the barbette tier armament surmounts the illusory blind embrasures immediately below the parapet.

Breastwall: Interior slope of parapet, against which the garrison lean in firing.

Casemate: Bombproof chamber in which cannon may be placed to fire through embrasures in its front.

Coping: Highest or covering course of masonry in wall, often with sloping edges to carry off water.

Corbel: Masonry or brick construction which consists of one of a series of brick courses projecting slightly by steps from the wall surface. Essentially a short cantilever.

Counterscarp: Vertical or nearly vertical side of the ditch opposite to the scarp; exterior slope of ditch or moat opposite the scarp; moat wall.

Curtain: That part of the rampart or scarp wall that extends between bastions or gates.

Embrasure: Opening in a fort wall or hole in the mask wall of a casemate through which guns are pointed. The throat of the embrasure is sometimes closed with iron shutters.

Embrasure Iron: Massive piece of wrought iron armor which is integrally constructed with the brickwork of an embrasure and is located immediately behind the jambs of a gunport.

En Barbette: Guns are said to be en barbette when they are elevated by raising the earth behind the parapet or by placing them on a high carriage so that instead of firing through embrasures, they can be fired over the crest of the parapet. In this position the guns have a wide range instead of being limited, as in firing through embrasures.

Enrockment: Protective layer of loose stone to prevent undermining of counterscarp foundation.

Exfoliation: Condition of advanced iron corrosion characterized by swelling and detachment of material in flakes, scales or layers.

Faces: Name given to several parts of a fortification, as the face of the bastion which is the two sides reaching from the flanks to the salient angles. Also a particular elevation of a fortified work, as the parade face.

Front: Designation of a side of the fort; curtain.

Grillage: Arrangement of sleepers and crossbeams forming a foundation in loose or marshy soil.

Magazine: Building or room in a fortification for the protected storage of powder or explosives, or more generally for provisions.

Magistral: Baseline from which the positions of various units of the fortification are determined.

Moat: Deep Ditch around a fort, usually containing water.

Mole: A pier, jetty, breakwater, or junction between places separated by water.

Ordnance: Artillery.

Parade: Courtyard or enclosure in fortification where troops are mustered for assembly or drilled.

Parapet: Wall crowning curtain to protect soldiers from enemy fire.

Parrott: Early piece of rifled artillery firing an elongated projectile and bearing the name of its designer, Robert P. Parrott.

Pier: Mass of detached masonry, distinct from a column, form which an arch springs.

Pier head – the outer end of a wharf

Pintle: Pivot about which the chassis of the gun carriage sweeps.

Portcullis: A strong heavy grating sliding up and down in vertical grooves, lowered to block a gateway in a fortress etc

Postern: A postern is a secondary door or gate.

Rampart: Broad embankment round a place upon which the parapet is raised.

Revetment: A facing of wood, stone, or any other material, to sustain an embankment when it receives a slope steeper than the natural slope; also, a retaining wall.

Rodman: Large piece of smoothbors ordnance firing a spherical projectile and named after its designer, Thomas J. Rodman.

Salient: Angular work which projects outward from the interior.

Sally Port: Gate or passage by which the garrison of a fortress may make a sally against attackers.

Scarp: Slope of the protecting ditch or moat which touches the wall or parapet; inner slope of the protecting ditch as the foot of the parapet, nearly perpendicular.

Short Furnace: Furnace in which round shot were heated, and subsequently conveyed and loaded into muzzle-loading cannon with a ladle to be then fired as red-hot projectiles.

Stairtower (Bastion Tower): Section of the bastion enclosing a spiral stairway.

Subsidence: Sinking or settling of the earth.

Terreplein: Main upper level of a rampart, between the parapet and the parade face, where guns are mounted; roof of the fort.

Tier: Level of fortification.

Totten Shutters: Iron shutter assembly developed by Engineer Joseph C. Totten. The shutters were part of an entire lining and enclosure for the embrasure and permitted the embrasure to be closed to enemy fire after discharging cannon through the gunport.

Traverse Arc: Arc of part of a circle described by the movement of a gun carriage about the Pintle or center point; the stone support and iron track upon which the gun carriage rolls to aim the gun right or left.

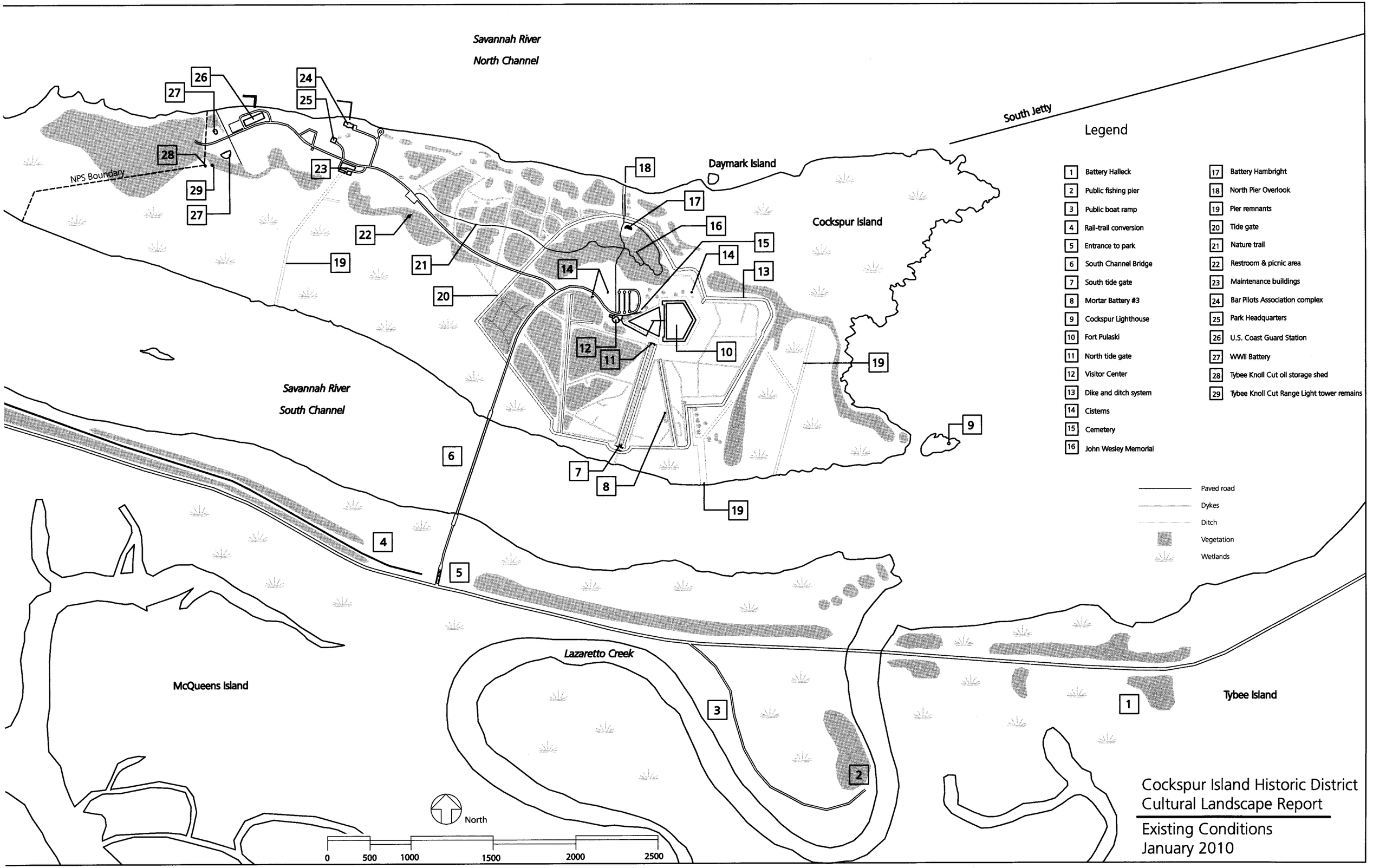
Appendix C

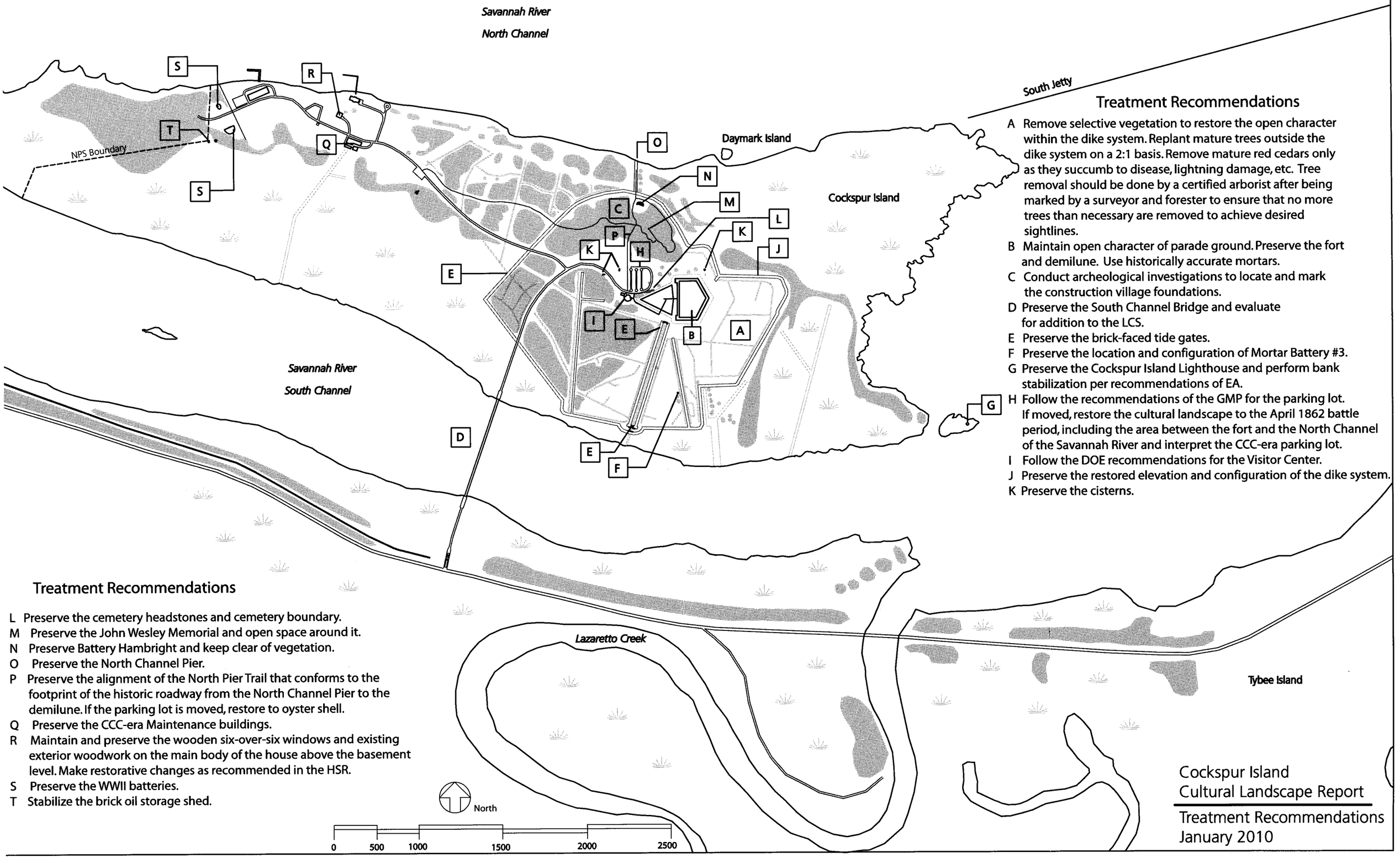
List of Classified Structures (LCS) at Fort Pulaski National Monument

Structure Name	Structure Number	LCS ID	Physical Description
Fort Pulaski	HS-01	368	An irregular pentagon with a circumference of 1508' and sides approximately 350' surrounded by a wet moat. walls are 32' high and 7' to 11' thick. The fort contains 64 vaulted casements and 54 gun mounts on the terreplein.
Cistern No.5 (Ruin)	HS-2A1	12167	These are the visiable remains of a 15' diameter round cistern. Visible on the gorund surface are pieces of the stone cistern cover.
North Pier (Ruin)	HS-03	12169	Appx. 20' x 20' ruins of a 200' long, L-shaped granite pier. Portions of the side walls, with some iron hardware, end in the remains of a tabby end wall. granite pavers that once supported iron tracks for cannon carriages at the fort have been relocated to the end of the pier.
Cockspur Island Lighthouse	HS-04	12170	A tapered brick tube, 16' in diameter and 46' high, with corbeled brick cornice. Exterior brick stair, fanlight door at first landing. An interior spiral stair leads to the 2nd landing. A wooden stair to 3rd landing, which supports iron lantern house.
Battery Horace Hambright	HS-05	12171	The battery is a steel-reinforced concrete structure with overall dimensions of 100' x 50' x15' high. At ground level are three magazines with two gun emplacements above. The battery's north face is covered by a grassed earth berm.
John Wesley Memorial	CS-01	12173	A 15' high square column with a limestone base, a brick shaft in Flemish bond, and a limestone cap surmounted by a limestone cross, all set on a square of slate tiles. The base, cap, and a limesotne plaque on the shaft carry inscriptions.
Moat	HS-07	90083	A wet moat 32' to 48' wide and 7' deep surrounding Fort Pulaski and its demilune. Moat walls are brick.
Demilune	HS-08	90084	The triangular demilune consists of aa network of four magazines, gun emplacements, and connecting passages with oyster shell-embedded concrete walls protected by eathern mounds.
Dike	HS-09	90085	An earthen dike approximately 4-5' above grade with an irregualr circumference of 2 miles.
Canal Lock	HS-10	90086	Water from the canal enters this arched brick tunnel, containing a tide gate, just before it enters the moat. The tunnel is flanked by brick retaining walls; dimensions are 51" x 77'; a metal valve handle that controls the gate lies just north.
Feeder Canal	HS-11	90087	The canal is 2000' long and runs south from the moat to the South Channel of the Savannah River. The canal banks are earthen except near the moat, where there are brick retaining walls.
Lt. Robert Rowan grave stone	HS-13	90089	A 1-11/2' wide x 2-1/16' high marble marker with an inscription and a cut top.
Sellmer, Charles Howard grave marker	HS-14	90090	A 10" wide, 2"deep, 2' high white marble grave marker with an inscription.
Cistern No. 2	HS-2A6	90091	A circular brick cistern 9' in diameter with a sandstone cap. the cistern rises approximately 3' above grade, isfilled with sand, and exhibits the remains of a cementitious coating over the brick.
Cistern No. 3	HS-2A7	90092	A circular brick cistern, 13' in diameter with a smaller, square opening set into the top. Portions of the stone cap remain along with remnants of a cementitious coating on the brick.
Brick Foundation Ruin at Cistern No. 3	HS-2A5	90093	A 7'1" x 6'4" rectangular brick platform, rising 2' above grade at its highest point and filled with sand. It may have supported a pump or other equipment associated with the cistern.
Cistern No. 1	HS-2A4	90094	A 9' diameter circular brick cistern with a cementitious coating on the brick and a sandstone cap. The cistern rises approximately 4' above grade.
Cistern No. 4	HS-2A2	90095	A 14'8" diameter brick cistern that has been filled with sand. No trace of a cistern cover is visible.
Brick Foundation Ruin at Cistern No. 4	HS-2A3	90096	A rectangular brick platform ruin, 4'3" x 5'3" and rising approximately 1' above grade. It could have supported a pump or other equipment.
Cistern No. 6	HS2B3	100716	A large brick, stone, and mortar cistern appx. 12' in diameter and 2' high. The cistern head is a rectangular brick box (5' x 5') with a 3' square opening.

List of Classified Structures (LCS) at Fort Pulaski National Monument

Cistern No. 7	HS2B4	100717	A large stone, brick, and mortar cistern with pedestal and head. The pedestal is comprised of large stones and is approx. 5' x 10'. the cistern head is an open, rectangular box made of mortared brick and measures appx. 4' x 3' and 1' high.
Stones from Cistern (ruin)	HS2B5	100718	Pieces of stone on the ground that appear to be pieces of a cistern cap or cover.
Residence	HS-06	214329	A 65/5' x 56.3' raised cottage with weatherboard siding, one internal brick chimney, a pyramidal roof, and a wraparound porch.


Savannah River
North Channel
South Jetty
Daymark Island
Cockspur Island
NPS Boundary
Savannah River
South Channel
Lazaretto Creek
McQueens Island
Tybee Island
Legend
1 Battery Halleck
2 Public fishing pier
3 Public boat ramp
4 Rail-trail conversion
5 Entrance to park
6 South Channel Bridge
7 South tide gate
8 Mortar Battery #3
9 Cockspur Lighthouse
10 Fort Pulaski
11 North tide gate
12 Visitor Center
13 Dike and ditch system
14 Cisterns
15 Cemetery
16 John Wesley Memorial
17 Battery Hambright
18 North Pier Overlook
19 Pier remnants
20 Tide gate
21 Nature trail
22 Restroom & picnic area
23 Maintenance buildings
24 Bar Pilots Association complex
25 Park Headquarters
26 U.S. Coast Guard Station
27 WWII Battery
28 Tybee Knoll Cut oil storage shed
29 Tybee Knoll Cut Range Light tower remains
Paved road
Dykes
Ditch
Vegetation
Wetlands
North
0 500 1000 1500 2000 2500
Cockspur Island Historic District
Cultural Landscape Report
Existing Conditions
January 2010



Treatment Recommendations

A Remove selective vegetation to restore the open character within the dike system. Replant mature trees outside the dike system on a 2:1 basis. Remove mature red cedars only as they succumb to disease, lightning damage, etc. Tree removal should be done by a certified arborist after being marked by a surveyor and forester to ensure that no more trees than necessary are removed to achieve desired sightlines.

B Maintain open character of parade ground. Preserve the fort and demilune. Use historically accurate mortars.

C Conduct archeological investigations to locate and mark the construction village foundations.

D Preserve the South Channel Bridge and evaluate for addition to the LCS.

E Preserve the brick-faced tide gates.

F Preserve the location and configuration of Mortar Battery #3.

G Preserve the Cockspur Island Lighthouse and perform bank stabilization per recommendations of EA.

H Follow the recommendations of the GMP for the parking lot. If moved, restore the cultural landscape to the April 1862 battle period, including the area between the fort and the North Channel of the Savannah River and interpret the CCC-era parking lot.

I Follow the DOE recommendations for the Visitor Center.

J Preserve the restored elevation and configuration of the dike system.

K Preserve the cisterns.

Treatment Recommendations

L Preserve the cemetery headstones and cemetery boundary.

M Preserve the John Wesley Memorial and open space around it.

N Preserve Battery Hambright and keep clear of vegetation.

O Preserve the North Channel Pier.

P Preserve the alignment of the North Pier Trail that conforms to the footprint of the historic roadway from the North Channel Pier to the demilune. If the parking lot is moved, restore to oyster shell.

Q Preserve the CCC-era Maintenance buildings.

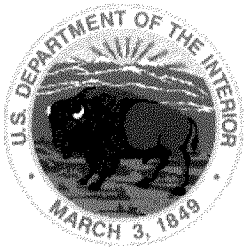
R Maintain and preserve the wooden six-over-six windows and existing exterior woodwork on the main body of the house above the basement level. Make restorative changes as recommended in the HSR.

S Preserve the WWII batteries.

T Stabilize the brick oil storage shed.

Cockspur Island Cultural Landscape Report

Treatment Recommendations
January 2010





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

NPS 348/105060 August 2011

Fort Pulaski National Monument

Cultural Landscape Report

National Park Service
U.S. Department of the Interior

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