APPENDIX G

BALD HEAD CREEK ARCHAEOLOGICAL SURVEY
(Tidewater Atlantic Research, Inc. April 2014)

and

NC STATE HISTORIC PRESERVATION OFFICE LETTER
(July 3, 2014)

A Phase I Remote-Sensing Archaeological Survey of a Proposed Borrow Area Extension off the Mouth of Bald Head Creek, Bald Head Island, Brunswick County, North Carolina

Submitted to:

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Submitted by:

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8 April 2014

Abstract

Olsen Associates, Inc. (OA) is the project engineer representing the Village of Bald Head Island, North Carolina to plan and secure permitting for an extension of a proposed borrow site north of the mouth of Bald Head Creek. In order to determine the effects of proposed dredging on potentially significant submerged cultural resources, OA contracted with Tidewater Atlantic Research, Inc. of Washington, North Carolina to conduct a magnetometer and sidescan sonar survey of the proposed borrow site. Field research for the survey area was conducted on 10 March 2014. Analysis of the remote-sensing data generated during the Bald Head Creek survey identified a total of 38 magnetic anomalies. Four anomalies were located outside a 100-foot buffer surveyed beyond the borrow perimeter. Nine of the anomalies appear to be debris associated with previous navigation range structures. The remaining 25 anomalies appeared to have been generated by modern debris such as fish and crab traps, pipes, small diameter rods, cable, wire rope, chain and small boat anchors. Sonar could not be used in the survey area as water depths, even at high tide, were not sufficient for safe operations. Based on the survey data no National Register of Historic Places eligible submerged cultural resources will be impacted by dredging operations. No additional investigation of the anomalies is recommended in conjunction with the proposed project.

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Introduction

Olsen Associates, Inc. (OA) is the project engineer representing the Village of Bald Head Island, North Carolina in its efforts to permit an borrow area extension at the mouth of Bald Head Creek. The sand source for the project is a borrow area located near the mouth of Bald Head Creek on the northwest tip of Bald Head Island. In order to determine the proposed dredging effects on potentially significant submerged cultural resources, OA contracted with Tidewater Atlantic Research, Inc. (TAR) of Washington, North Carolina to conduct a magnetometer and sidescan sonar survey of the proposed borrow site.

The remote-sensing investigation conducted by TAR archaeologists was designed to provide accurate and reliable identification, assessment and documentation of submerged cultural resources in the study area. The assessment methodology was developed to comply with the criteria of the National Historic Preservation Act of 1966 (Public Law 89-665), the National Environmental Policy Act of 1969 (Public Law 11-190), Executive Order 11593, the Advisory Council on Historic Preservation Procedures for the protection of historic and cultural properties (36 CFR Part 800) and the updated guidelines described in 36 CFR 64 and 36 CFR 66. The results of the investigation were designed to furnish OA with the archaeological data required to comply with submerged cultural resource legislation and regulations.

The survey was conducted around high tide on 10 March 2014. Analysis of the remote-sensing data generated during the Bald Head Creek survey identified a total of 38 magnetic anomalies. Four anomalies were located outside a 100-foot buffer surveyed beyond the borrow perimeter. Nine of the anomalies appear to be debris associated with previous navigation range structures. The remaining 25 anomalies appeared to have been generated by modern debris such as fish and crab traps, pipes, small diameter rods, cable, wire rope, chain and small boat anchors. Sonar could not be used in the survey area as water depths, even at high tide, were not sufficient for safe operations. Based on the survey data no National Register of Historic Places (NRHP) eligible submerged cultural resources will be impacted by dredging operations and no additional investigation of the anomalies is recommended in conjunction with the proposed project.

Project survey personnel consisted of Gordon P. Watts, Jr., principal investigator and Matthew Thompson, remote-sensing operator. Historian Robin Arnold carried out the historical and literature research. Dr. Watts analyzed the remote-sensing data. Dr. Watts and Ms. Arnold prepared this report.

Project Location

The remote-sensing project area is situated at the mouth of Bald Head Creek, which is located on the east side of the Cape Fear River (Figure 1). The approximate center of the borrow site is located on the northwest corner of Baldhead Island approximately 3,500 feet north-northwest of Bald Head Lighthouse.

The initial survey area (red) is polygonal in shape measuring approximately 2,450 feet long and 1,400 feet wide. The polygon covers an area of approximately 65 acres. A previously

surveyed area within the southern portion of the polygon (blue) is roughly trapezoidal in shape measuring approximately 1,200 feet long and 800 feet wide and covers an area of approximately 21.5 acres. To ensure sufficient data would be available to locate any potentially significant targets in the project area, remote-sensing data were collected along parallel lanes spaced on 50-foot intervals. The area surveyed also included a 100-foot buffer zone so that those targets located along the periphery of the borrow area could be identified and the impact from dredging assessed.

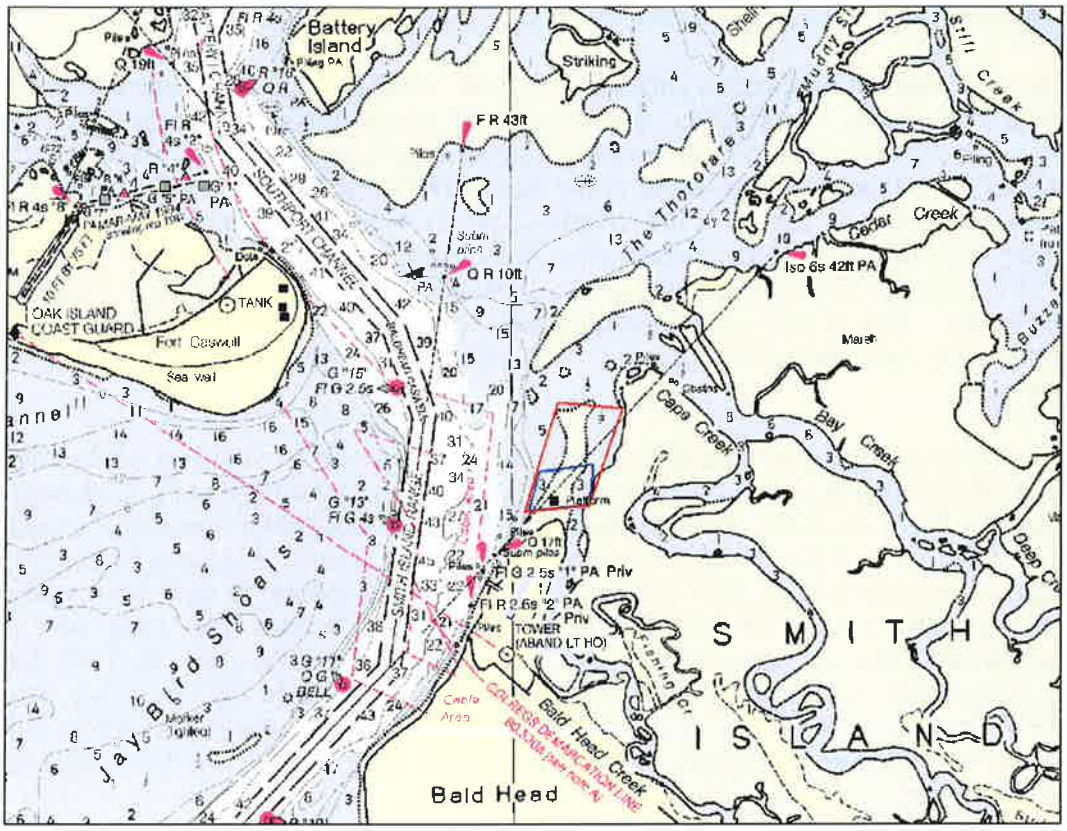

Figure 1. Project Location (NOAA Chart 11537 Cape Fear River).

Coordinates for the survey area (red), defined in North Carolina State Plane Coordinates, based on NAD 83, U.S. Survey Foot are as follows:

Control Point	X coordinate	Y coordinate
A	2304471.7	51659.5
B	2305798.0	51529.0
C	2305128.6	49526.7
D	2303805.0	49385.0

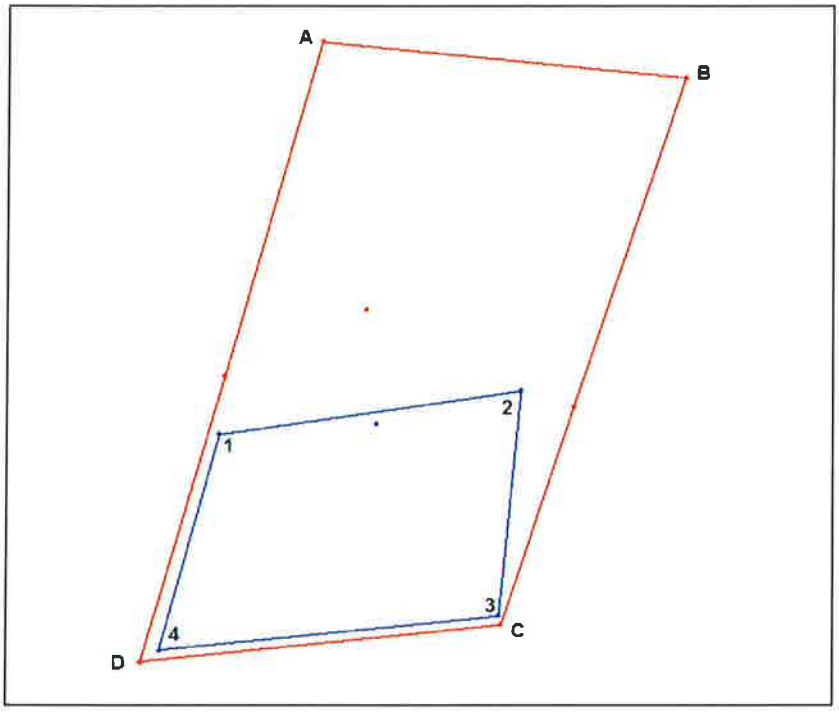

Figure 2. Control points for the 2014 survey area (red) and the area previously surveyed in 2010 (blue).

Coordinates for a previously surveyed area (blue), defined in North Carolina State Plane Coordinates, based on NAD 83, U.S. Survey Foot are as follows:

Control Point	X coordinate	Y coordinate
1	2304087.7	50214.2
2	2305195.5	50374.0
3	2305116.5	49557.8
4	2303876.9	49426.5

Research Methodology

Literature and Historical Research

TAR historians previously conducted a literature search of primary and secondary sources to assess the potential to find significant historical and/or cultural resources within the proposed dredge site. A general background history of Bald Head Island and the lower Cape Fear region was prepared from source material in the TAR research library. Preliminary wreck-specific information was collected from published sources including: *Disasters to American Vessels, Sail and Steam, 1841-1846* (Lockhead 1954), *Encyclopedia of American Shipwrecks* (Berman 1972), *Shipwrecks of the Civil War* (Shomette 1973), *Merchant Steam Vessels of the United States 1790 - 1868* (Lytle and Holdcamper 1975), *Shipwrecks of the Americas* (Marx 1983), and *Official Records of the Union and Confederate Navies in the War of the Rebellion* (National Historical Society 1987). In addition, the *National Register of Historic Places* online database (National Park Service n.d.), the Automated Wreck and Obstruction

Information System (NOAA n.d.) and the Northern Shipwrecks Database (Northern Maritime Research 2002) were queried for wreck-specific information.

Personnel at the Underwater Archaeology Branch (UAB) of the North Carolina Office of State Archaeology (Fort Fisher), the North Carolina Maritime Museum (Southport), the Brunswick County Library, and the Smith Island Museum of History were previously contacted for shipwreck data associated with Bald Head Island and the lower Cape Fear River. TAR personnel also interviewed area archaeologists and other individuals knowledgeable in maritime history and shipwreck research to solicit their assistance to generate wreck data.

Remote-Sensing Survey

In order to reliably identify submerged cultural resources, TAR archaeologists conducted a systematic remote-sensing survey of the proposed borrow site extension. Underwater survey activities were conducted from the 25-foot survey vessel *Tidewater Surveyor.* In order to fulfill the requirements for survey activities in North Carolina, both magnetic and acoustic remote-sensing equipment was to be employed. However, even at high tide there was not sufficient water in the survey area to deploy the sonar transducer fish (Figure 3). For the same reason, the magnetometer was mounted on the bow of the survey vessel rather than towed in the water column (Figure 4). Data collection was controlled using a differential global positioning system (DGPS). DGPS produces the highly accurate coordinates necessary to support a sophisticated navigation program and assures reliable target location.

An EG&G GEOMETRICS G-881 marine cesium magnetometer, capable of plus or minus 0.001 gamma resolution, was employed to collect magnetic data in the survey area. To produce the most comprehensive magnetic record, data was collected at 4 samples per second. Due to shoal water within the project area, the magnetometer sensor was towed just below the water surface at a speed of approximately three to four knots. Magnetic data were recorded as a data file associated with the computer navigation system. Data from the survey were contour plotted using QUICKSURF® computer software to facilitate anomaly location and definition of target signature characteristics. All magnetic data were correlated with the acoustic remote-sensing records.

A TRIMBLE AgGPS was used to control navigation and data collection in the survey area. That system has an accuracy of plus or minus three feet, and can be used to generate highly accurate coordinates for the computer navigation system on the survey vessel. The DGPS was employed in conjunction with an onboard COMPAQ 2.4 GHz laptop loaded with HYPACK navigation and data collection software (Figure 5). Positioning data generated by the navigation system were tied to magnetometer records by regular annotations to facilitate target location and anomaly analysis. All data is related to the North Carolina State Plane Coordinate System, NAD 83.

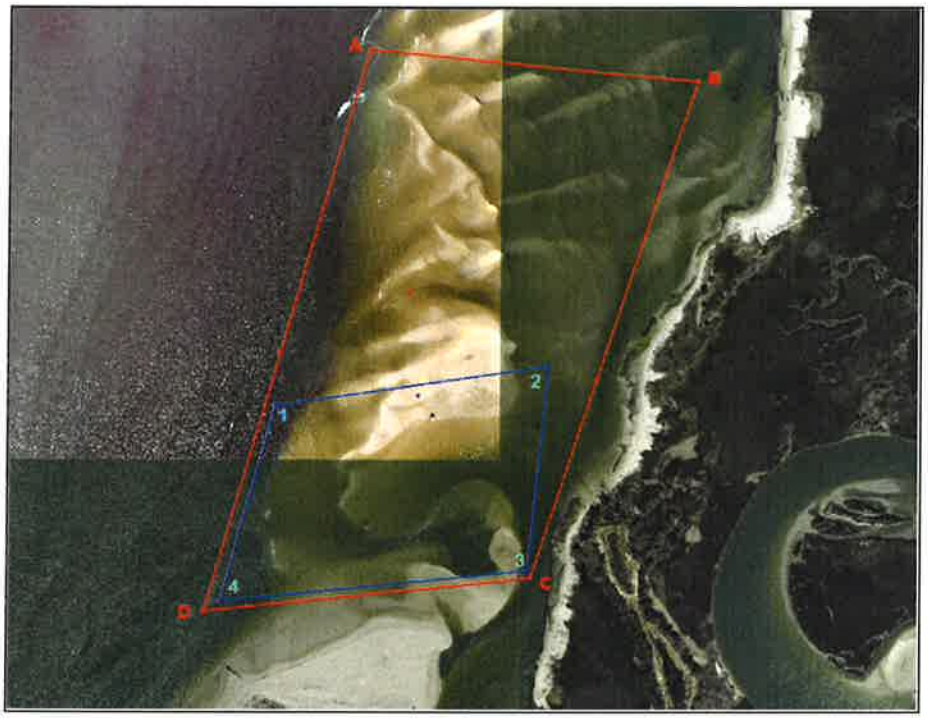

Figure 3. Aerial photographs illustrating the depth of water in the survey area.

Figure 4. Bow mounting the GEOMETRICS G-881 cesium vapor magnetometer.

Figure 5. Computer navigation system located at the research vessel helm.

Data Analysis

To ensure reliable target identification and assessment, analysis of the magnetic and acoustic data was carried out as it was generated. Using QUICKSURF® contouring software, magnetic data generated during the survey were contour plotted at 10-gamma intervals for analysis and accurate location of magnetic anomalies. The magnetic data was examined for anomalies, which were then isolated and analyzed in accordance with intensity, duration, areal extent and signature characteristics. Sonar records were analyzed to identify targets on the basis of configuration, areal extent, target intensity and contrast with background, elevation and shadow image, and were also reviewed for possible association with identified magnetic anomalies.

Data generated by the remote-sensing equipment were developed to support an assessment of each magnetic and acoustic signature. Analysis of each target signature included consideration of magnetic and sonar signature characteristics previously demonstrated to be reliable indicators of historically significant submerged cultural resources. Assessment of each target includes avoidance options and possible adjustments to avoid potential cultural resources. Where avoidance is not possible, the assessment includes recommendations for additional investigation to determine the exact nature of the cultural material generating the

signature and its potential NRHP significance. Historical evidence was developed into a background context and an inventory of shipwreck sites that identified possible correlations with magnetic targets (Appendix A). A magnetic contour map of the survey area was produced to aid in the analysis of each target.

Historical Background

European settlement of the present day Cape Fear region began as early as 1526 when Lucas Vásquez de Ayllón led an expedition from Florida into the Cape Fear region. One of the Spanish vessels was recorded lost near the mouth of the Cape Fear River, referred to by the Spanish as the Jordon River. During the brief existence of the Spanish settlement, the area was known as the "Land of Ayllón" (Lee 1965:3-4).

The next attempt to settle the Cape Fear region came almost a century and a half later with the arrival of the English. Settlers from the New England colonies came to the area eager to establish a Puritan colony in the less harsh climate of the south. Under the leadership of Captain William Hilton, a group arrived in the summer of 1662 to find a suitable location. Arriving at the river and "Cape Fear" as he called it, the group remained for three weeks during which time they purchased the surrounding area from the Indians. The Puritan settlers that followed during the winter of 1662 remained in the Cape Fear vicinity for only a brief time before abandoning the area (Lee 1965:4-5).

In early 1663, King Charles II granted territory south of Virginia to eight noblemen in tribute for restoring the Stuart dynasty to the monarchy. That conveyance included the area from Georgia to the Albemarle Sound region of North Carolina. The territory was divided into three counties: Albermarle [Albemarle Sound area], Clarendon [Cape Fear region] and Craven [South Carolina]. Shortly after, the Lords Proprietors received a proposal from a group of Barbadians for a settlement within the Cape Fear region. In late spring 1664, a group of 200 settlers, under the command of John Vassall, established a colony at the confluence of the Charles [modern Cape Fear] River and Town Creek (Potter 1993:5-6). The capital, Charlestown, was the first English town in Carolina (Lee 1965:5). The colony was reported to have reached a population of 800 and extended some 60 miles along the river at its zenith.

In October 1665, a second expedition by the Barbadians was launched with the intent of establishing a colony in the vicinity of Port Royal. A small fleet consisting of a frigate, sloop and a flyboat, under command of Sir John Yeamans, stopped at the Charlestown settlement after an arduous journey from Barbados. While entering the river, the flyboat, carrying the new colony's armament, ran aground on the shoals on the west side of the channel [modern Jay Bird Shoals] and was lost (Potter 1993:9, 29). The loss of this important cargo abruptly ended the Port Royal venture. Within another two years Charlestown would also be abandoned. Difficulty in obtaining supplies, differences between the proprietors and settlers over land policies and hostilities with the Natives resulted in the colony being deserted by late 1667 (Potter 1993:10-11).

In 1726, permanent settlements on the lower Cape Fear were established by South Carolina and upper North Carolina colonists (Lee 1977:7). On the west bank of the river, about 12 miles above its mouth and several miles below a shoal in the river called "the Flats," Maurice Moore established the town of Brunswick. A shoal located at the mouth of Town Creek impeded larger ships from venturing further upstream. Situated below "the Flats" Brunswick was accessible to vessels of large or small size (Lee 1977:12). In April 1733, another community was established 15 miles upstream from Brunswick. The new settlement became known as New Town or Newton to distinguish it from the "old town" of Brunswick. In 1740, the town was incorporated and the name was changed to Wilmington (Lee 1977:12).

As hostilities with France and Spain grew during the 1740s Governor Gabriel Johnston authorized the construction of a fort along the lower Cape Fear to protect the burgeoning towns of Brunswick and Wilmington. Construction began in July 1745 on a small bluff overlooking the mouth of the river. Johnston's Fort, as it was called, was still uncompleted in 1748 when two Spanish vessels entered the river and raided Brunswick (Carson 1992:20). Efforts to finish construction intensified after the raid and in less than a year the fort was completed. The resulting structure was small and poorly constructed. It was manned by only three men and armed with four rusty cannons (Carson 1992:20). In 1751, the fort was assigned to double as a quarantine station.

Development based upon a maritime economy played a major role in the growth of both Wilmington and Brunswick during the eighteenth century. Vessels of varying size entered the Cape Fear from other coastal ports, the West Indies and Europe. Larger vessels, unable to cross over "the Flats," called at Brunswick, while vessels of smaller size could travel further up the river to Wilmington. Consequently, Brunswick was established as the center for overseas shipping and Wilmington as the center for local and West Indian trade (Lee 1977:16-17).

Rice, cattle, swine, lumber and naval stores made up the majority of the exports from the port district of Brunswick. Prior to the Revolution numerous ships left the Cape Fear River for other ports. The West Indies served as the main destination of these ships with English ports following a close second. A lesser number carried cargo to coastal ports, mostly in the northern colonies, but occasionally some ventured south, down the coast to Charleston (Lee 1977:33).

The Cape Fear region played a minor role in the events of the American Revolution. In June 1775, Royal Governor Martin fled from New Bern to Fort Johnston, then under the protection of the British man-of-war *Cruizer*. Growing patriot activity in the area forced the governor to relocate to the warship a month later. All portable materials were transferred to the ship and the fort's guns were spiked and pushed into the river (Carson 1992:22). Local forces later burned the fort and its outbuildings.

Knowing that a large number of Loyalists inhabited the interior of the colony Governor Martin initiated a plan to subjugate the region using a combination of British and Loyalist forces (Sprunt 2005:113). British reinforcements arrived off the North Carolina coast by the end of March, but by then the opportunity to subdue the colony had passed. On 27 February 1776, Colonel James Moore and the First North Carolina Continentals with a group of militia defeated a contingent of Scottish Loyalists at the battle of Moore's Creek Bridge. This

battle, called the "Lexington and Concord of the south," kept the British from occupying the South at the beginning of the war (Powell 1989:180-182).

Naval operations were of limited importance in the Cape Fear region. In mid-1776, British warships began taking up regular station over the mouth of the river. In May of the following year two British men-of-war entered the river and destroyed a number of colonial vessels at anchor (Watson 1992:29). To counter the threat posed by British warships the General Assembly voted to purchase and arm three brigs for the defense of the Cape Fear River. However, these vessels proved inadequate for the task and suggestions were made for either selling them or sending them on trading or privateering expeditions (Watson 1992:29).

The lower Cape Fear remained quiet until 1781 when Major James H. Craig was dispatched by Lord Cornwallis in Charleston to take Wilmington. Craig, with a force of 18 vessels and 400 troops, quickly captured the defenseless town (Sprunt 2005:114). From Wilmington, Craig dispatched parties throughout the countryside to rally local Loyalists and to obtain supplies for Cornwallis's troops, then marching through North Carolina. After being checked by Colonial forces in the battle of Guilford Courthouse the British retreated to Wilmington to recoup and replenish supplies. Later, when Lord Cornwallis moved north to suppress Virginia, Craig remained behind in Wilmington to disrupt Colonial activity in that region. News of Cornwallis's surrender at Yorktown made the British position in Wilmington untenable and on 17 November Major Craig evacuated the city.

After the conclusion of the war there was a shift in the maritime development of the Cape Fear region. Almost all the ships that left the Cape Fear now went to Charleston and few to England or the West Indies (Lee 1977:33). Inbound ships now proceeded up to Wilmington. This shift brought about the decline of the town of Brunswick as was indicated by the change in name of the "Port of Brunswick" to the "Port of Wilmington" (Lee 1977:34).

During the last decades of the eighteenth century the area that would become the town of Southport consisted of little more than the remains of Fort Johnston and the homes of local river pilots. The region's potential, however, was realized by three men from Wilmington, Joshua Potts, John Brown and John Husk, who the viewed the area, with its salubrious sea breezes, as an ideal spot for a new town. Though the men's initial petition was rejected in 1790 the group persevered and on 15 November 1792, the General Assembly issued a charter for the establishment of a town on the bluff overlooking the mouth of the river.

The town was named Smithville, after Benjamin Smith who introduced the bill into the legislature. The town was laid out with lots offered for sale in Wilmington and Fayetteville newspapers (Figure 7). The charter specified that no person could purchase more than six lots in their name and the purchase price of lots was to be 40 shillings per lot (Carson 1992:26). The town plan also reserved space for Fort Johnston, which was rebuilt in 1804.

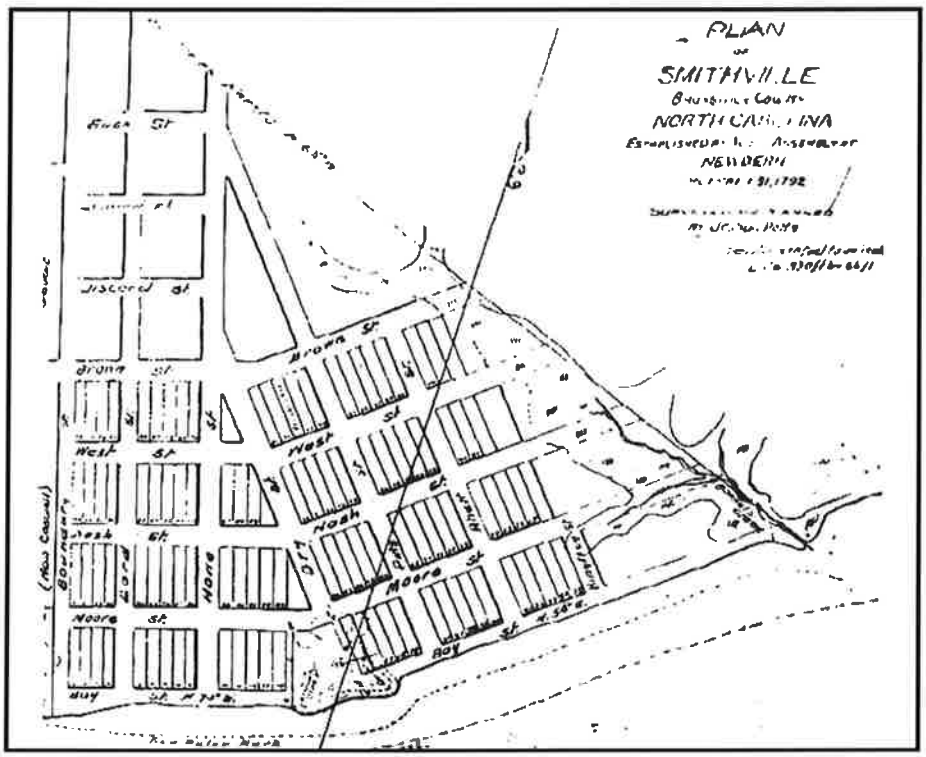

Figure 6. Plan of the town of Smithville, 1792 (Carson 1992:27).

With the growing amount of vessel traffic sailing up to Wilmington there arose a need for improvements in the navigability of the river. As early as 1784, measures were taken to improve the conditions of the lower Cape Fear River (Lee 1977:36). Improvements were needed at the treacherous entrances to the river, at the Bar and upstream at New Inlet. Three major shoals between Wilmington and the sea also caused problems for ships trying to navigate the river. The "upper shoal," located near the foot of Clarks Island, off the southern tip of Eagles Island, had eight and one-half feet of water. The "middle shoal," also known as "the Flats," had nine feet. The "lower shoal," at the foot of Campbell Island, had nine and one-half feet. The main channel of the river was then located in a narrow passage between Campbell Island, Clarks Island and the west bank (Lee 1978:112).

In addition to the shoals, ships deliberately sunk during the American Revolution as obstructions needed to be removed (Lee 1977:36-37). Around 1819, Hamilton Fulton, a noted English engineer, was hired to make improvements on the Cape Fear River mainly between Wilmington and the ocean where a system of jetties was planned. Work continued for six years until financial limitations halted this project. Some improvements were made on the river up until the start of the Civil War with sporadic financing by the state and local Wilmington businessmen (Lee 1977:37).

Steam vessels first appeared on the Cape Fear River in 1817. The first steamboat to arrive was the side-wheel *Prometheus*, built in Beaufort for a firm in Wilmington that intended to run the vessel from Wilmington to Fayetteville and Southport. The following year the Clarendon Steamboat Company was established at Wilmington. The company held the exclusive right to operate steamboats on the Cape Fear for a period of seven years provided

that it kept one boat in service. In addition to the *Prometheus*, the side-wheel *Henrietta*, also made regular runs between Wilmington and Fayetteville (Lee 1977:37-38). By 1822, a second steamship venture, the Cape Fear Steamboat Company, had begun service on the river. With time the number of steamboats on the river increased significantly (Lee 1977:38). By the 1850s, nearly a hundred vessels of all types were in Wilmington at the same time. Many of the ships were large square-rigged foreign craft, while others were side-wheel steamers. Most, however, were American schooners engaged in the coastal trade (Lee 1978:116).

Development of the Cape Fear region was soon disrupted by the Civil War. After Confederate forces in South Carolina attacked the U.S. garrison at Fort Sumter, President Abraham Lincoln declared a state of open rebellion and called for volunteers to preserve the Union. Lincoln also issued a proclamation on 19 April 1861 establishing a blockade of Confederate ports in South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana and Texas. Eight days later, Lincoln extended the blockade to include ports in Virginia and North Carolina. With North Carolina's withdrawal from the Union, Governor John W. Ellis ordered the occupations of forts Johnston and Caswell.

Union naval forces were inadequate to properly enforce the blockade at the onset of the war. In 1861, U.S. navy registers listed 90 vessels, 50 of which were propelled by sail and were considered obsolete for the task at hand. The remaining 40 were steam, but several of the deep draft vessels proved unsuitable for the shallow southern waters. Eight others were laid up while 22 vessels remained at station off foreign shores and would require at least six months travel to reach the United States (Browning 1980:24). However, within a few months of Lincoln's proclamation, Secretary of the Navy Gideon Welles took steps to implement an effective blockade off the southern coastline.

The navy department bought or leased nearly any vessel that could be of service. In nine months, U.S. Navy agents purchased 136 ships, constructed 52 and commissioned and repaired another 76 (Engle and Lott 1975:180). The Union blockade in turn gave rise to the practice of blockade running. At the beginning of the blockade, practically any vessel was considered suitable for breaking through the Atlantic squadrons to carry cargo in or out of the isolated southern ports. The most successful of the early runners were steamers that had belonged to the Southern Coasting Lines and were idle due to the outbreak of the war. The illicit trade carried on by these ships reaped considerable profit, but failed to compare with the great capital resources brought in during the latter part of the war.

Wilmington provided North Carolina with a deepwater port. By 1860, Wilmington had emerged as a modern shipping center with excellent internal communication. Three railroads ran through the city and daily steamboat service to Charleston and New York, as well as, up the Cape Fear River to Fayetteville. With the capture of New Bern, Roanoke Island and Beaufort, Wilmington was the only North Carolina port left open for the importation and exportation of goods. As long as supplies were imported through the two inlets of the Cape Fear River and transported along the railroad lines, which connected with Lee's army in Virginia, the Confederacy had a lifeline. Wilmington soon became the most vital seaport in the "Southern Cause" (Pleasants 1979:15).

Wilmington became the key port for "runners" largely because of the area's topography. Located 28 miles from the mouth of the Cape Fear River, the port had access to the Atlantic

through two separate entrances; eastward through New Inlet and southward through the river mouth (Figure 7). Although the two entrances were only six miles apart, Smith's Island, a strip of sand and shoal, lay in between. Continuing along Cape Fear were the dangerous Frying Pan Shoals, which extended 10 miles further into the Atlantic, making the distance by water between the two entrances a little less than 40 miles (Soley 1883:91).

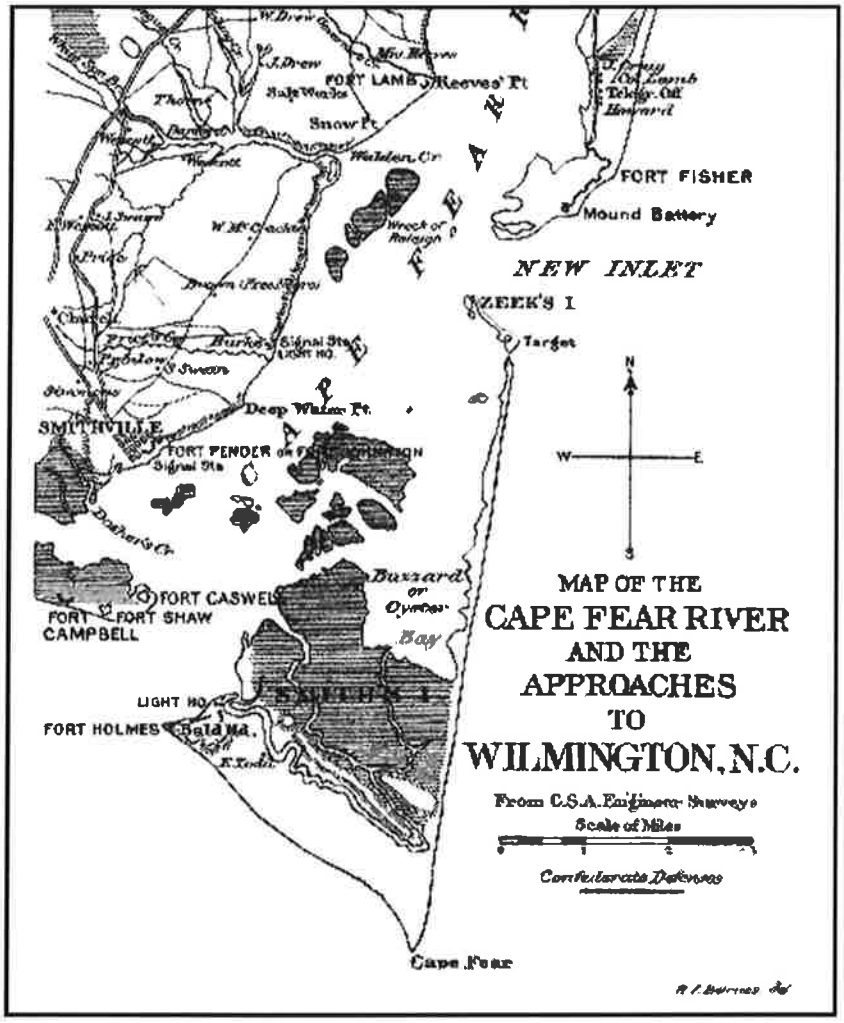

Figure 7. Chart depicting entrances into Cape Fear River (NHS 1987, ser. I, 12:38).

This geographical configuration proved highly advantageous for blockade runners and the initial blockade of Wilmington proved ineffective. When the *Daylight*, the first and at the time the only Union vessel sent to blockade these waters, arrived, it immediately experienced the difficulties associated with guarding the dual entrances of the Cape Fear River. While

pursuing a steamer out of the western bar entrance, the *Daylight* inadvertently allowed several other small vessels to pass out of the New Inlet entrance. Within three months of the *Daylight's* arrival, 42 vessels either entered or cleared Wilmington (Browning 1980:27).

During a two-year period (January 1863-November 1864), Confederate naval sources listed numerous vessel stations on the Cape Fear. These vessels were identified as: the ironclad sloop *North Carolina*, the floating battery *Artic*, the steam gunboat *Yadkin*, the steam gunboat *Equator*, the torpedo boat *Squib*, and the ironclad sloop *Raleigh*, and two, long one-gun cutters. In November 1864, Confederate Secretary of the Navy Stephen Mallory also reported to President Jefferson Davis that two new torpedo boats were under construction at Wilmington (U.S. Navy [USN], 1921, ser. II, vol. 2, 1921:630,528-532, 630,743-745).

The capture of Wilmington proved difficult because both entrances to the Cape Fear were guarded by powerful fortifications and lesser works. Collectively those fortifications became known as the Lower Cape Fear Defense System. The central point of that system was Fort Fisher, located on Confederate Point. That fortification was originally a small earthworks constructed to protect New Inlet. By 1864, Fort Fisher had become the largest seacoast fortification in the Confederacy. Shaped like an inverted "L," Fort Fisher's land face ran 628 yards and was guarded by 20 of the heaviest seacoast guns. The sea face included a 130-pound Armstrong rifle and a 170-pound Blakely, both from England (Browning 1980:35).

Extending from the land face was a string of torpedoes, which could be exploded from inside of the fort (Pleasants 1979:22). Mound Battery, towering to a height of 60 feet with two mounted heavy guns, stood near the end of Confederate Point. Augusta Battery, which stood behind Mound Battery, was located near the river (Pleasants 1979:24).

Fort Holmes, on the other side of New Inlet on Smith's Island, shared the protection of Smith's Inlet in the Cape Fear River with the batteries at Oak Island. Oak Island, located opposite Fort Holmes, held another series of forts and batteries, such as Fort Campbell, Fort Caswell and Battery Shaw (Pleasants 1979:24). Fort Caswell guarded the western bar entrance. Captured by Confederate militia on 14 April 1861, Caswell was renovated into a strong casemated work with new armament consisting of seven 10-inch, four 8-inch Columbiads and a 9-inch Dahlgren gun (Browning 1980:35; Pleasants 1979:24). Both Fort Caswell and Fort Holmes were responsible for shelling union vessels in the Middle Ground area, including the stranded tug *Violet*, which went aground off the Western Bar Channel on the night of 7 August 1864.

After his tug struck the shoal Ensign Thomas Stothard requested assistance from the crew of the nearby 866-ton brig USS *Vicksburg* to attempt to re-float the *Violet.* Despite their quick response, the extra manpower and effort proved fruitless as Stothard was ordered to fire the *Violet* after midnight. In response to a court of enquiry [sic] investigation, Captain Stothard submitted an incident report to Captain B.F. Sands of the USS *Fort Jackson* and offered this account:

> After all preparations for sending officers, crew, and ship's effects off in boats that he [Lieutenant-Commander Braine of the USS *Vicksburg*] and Acting Volunteer Lieutenant Williams, of the *Emma*, had sent, all of which I did, sending property, a list of which you will find enclosed, also a list of crew, I made preparations for her destruction as follows: I put a lighted slow match to a powder tank in the magazine and closed the door, then filled a large, fine drawer

> with shavings and straw taken from pillows and mattresses, partially covered it with another, and sprinkled two quarts of spirits of turpentine over all and on the woodwork around it; hung up an oilcloth from the table, one corner hanging in the shavings, which I touched with a lighted match (in the wardroom), after all the boats, but mine in waiting, had left the side, and I followed about 2:00 o'clock a.m. this morning. The explosion of the magazine containing about 200 pounds of powder occurred within half an hour afterwards, and by daylight she was effectually consumed. One 12-pounder was thrown overboard, one left on the forecastle, spiked with rat-tail file, and the 24-pounder was directly over the magazine aft when it exploded, so that it was thrown into the sea (National Historical Society [NHS] 1987, Ser. I, 10:343,344).

Rear-Admiral S.P. Lee recommended that no action be taken to discipline the acting officer of the *Violet*. Lee remarked to Union Secretary of the Navy Gideon Welles, that: "Stothard is a very intelligent and efficient officer, notwithstanding this casualty" (NHS 1987, Ser. I, 10:344). Prior to its destruction, the *Violet* (ex-*Martha*) was described as a fourth-rate, wooden screw steamer measuring 85 feet in length, with a beam of 19 feet. The 166-ton tug housed one, inverted, direct-acting engine with a 30-inch diameter cylinder and one return flue boiler (U.S. Navy 1921, Ser. II, 1:233).

Farther up river from the *Violet* wreck site there were a series of forts and batteries used as secondary defenses for Wilmington and as protection for blockade runners outbound from Smith's Inlet. Fort Lamb was located on the west side of the Cape Fear River on Reeve's Point. Above Fort Lamb was Fort Anderson, the most important of the secondary defenses. Partially built from the ruins of Old Brunswick Town, Anderson consisted of a series of trenches and earthworks approximately a mile long. Three smoothbore 24-pounders, three rifled 32-pounders and six smoothbore 32-pounders comprised the Fort's armaments. By 1864, Fort Anderson had become an inspection station for all craft heading up the Cape Fear River to Wilmington (Pleasants 1979:25). Several lesser forts, including Stokes, Lee, French, Campbell, Strong and Sugarloaf, were situated on the east side of the river (Pleasants 1979:25).

In addition to this impressive array of forts, a naval construction program was initiated in Wilmington to contribute to the defenses of the harbor. The success of the ironclad ram CSS *Virginia* in the March 1862 battles at Hampton Roads demonstrated the superiority of armored warships to naval officers of both the North and South. In late March 1862, Confederate Secretary of the Navy Stephen R. Mallory, sent "instructions relative to gunboats" to Commander William T. Muse, the ranking naval officer at Wilmington. Shortly thereafter, the navy began building two ironclads in the city, the *Raleigh* at James Cassidy's shipyard at the foot of Church Street, and the *North Carolina* at the Beery shipyard on Eagle Island (Still 1985:5-17, 79-92).

Both vessels utilized a design based on plans conceived by naval constructor John L. Porter. The plans called for a tightly framed hull, with a slight deadrise and a hard chine. The vessels were to be 174 feet long (150 feet between perpendiculars) with a draft of 13 feet. Amidships, a 105-foot long casemate, angled at thirty-five degrees and covered with 4 inches of iron plate, protected the gun deck. Two boilers provided steam for the vessel's two

horizontal engines, which were geared to a single 10-foot screw. The first ironclad built on this design, the CSS *Richmond*, was completed in Richmond in 1862. Known as the *Richmond* class, this group, consisting of five vessels, was numerically the largest standardized class of ironclads constructed by the Confederacy (Holcombe 1993:63-64).

The two Cape Fear ironclads entered into active service by late 1863/early 1864 (*North Carolina* in December 1863 and the *Raleigh* in April 1864) after numerous delays resulting from material shortages, strikes and epidemics. However, the usefulness of these two vessels to the Confederacy's war effort was limited. *Raleigh* grounded on a shoal near the mouth of New Inlet and was destroyed after a sortie against the blockading squadron on 7 May 1864, less than a month after entering service. The *North Carolina*, on the other hand, was reduced to serving as a floating battery; its deep draft and lack of motive power rendered the vessel ineffective as a ram.

The ironclad was further hampered by the use of unseasoned timber in its construction. Warping and splitting timbers caused the ship to leak incessantly and an infestation by teredo worms further weakened the hull. For most of its career, the ironclad remained at anchor near Smithville, positioned to support the nearby forts in the defense of Wilmington. The *North Carolina* finally sank at its moorings in September 1864. Though useless as an offensive weapon, the *North Carolina* served as a deterrent, preventing the United States Navy from entering and seizing the lower Cape Fear until the fall of Fort Fisher in the closing days of the war.

When hostilities ended in 1865 so did some of the regular river trade. The prewar steamer service between Wilmington, Charleston and Savannah was not resumed, since rail service had been established. Steamship service did, however, resume to the northern cities of Baltimore, Philadelphia and New York (Lee 1977:91). The coastal trade also revived and was conducted mainly by schooners ranging between 150 and 600 tons. Because of the decimation of American shipping during the war international commerce was carried in foreign bottoms, usually of British, German or Scandinavian origins (Sprunt 2005:501).

Industry had been severely interrupted during the war, but was beginning to make a comeback. Naval stores and lumber continued to be the principal exports with the addition of some cotton. Exports recorded for the year 1871 amounted to some 95,000 bales of cotton, 100,000 bushels of peanuts, 112,024 barrels of spirits of turpentine, 568,441 barrels of rosin, 37,867 barrels of tar and 17,963 barrels of turpentine (Sprunt 2005:513-514). Without the use of slave labor the rice industry declined dramatically (Lee 1977:86-87). By the turn of the century, a decrease in the availability of pine trees resulted in a decline of the naval stores industry. With improvements in cultivation and transportation, cotton became a major industry in Wilmington until its decline in the 1930s. Guano from the West Indies was brought in for the new fertilizer plants. The production of creosote impregnated wood also helped increase shipping in the region (Lee 1977:87-88).

During the last quarter of the nineteenth century efforts were undertaken to develop Smithville into a port city. In 1886, the North and Southern Railroad Company announced plans to extend rail service from Wilmington to Smithville. Developers, envisioning a port that would rival Charleston and Norfolk, requested that the town's name be changed to Southport to draw attention to the "Port of the South" (Carson 1992:61). In anticipation of the expected development the town's dirt roads were paved in crushed shell and the dredge

boat *Woodbury* began deepening and straightening the channel to accommodate increased vessel traffic. However, the proposed rail line did not materialize and Southport remained a small town relying on fishing and tourism for its economic livelihood. The Wilmington, Brunswick and Southport Railroad eventually extended a line to the town in 1911.

Improvements to navigation on the Cape Fear River had deteriorated during the war. Continual silting reduced the navigable channel. By 1870, federally financed projects were again started to improve the conditions of the river. One such project was the closure of one of the two inlets. New Inlet was closed in 1881 with the belief that the increased force of the concentrated flow would sweep out the channel. The closure was accomplished by placing a rock dam that extended for more than a mile from Federal Point to Zeke's Island. The dam was completed in 1881 and later became known as "the Rocks." Another rock barrier was later built between Zeke's Island and Smith's Island. The channel depth was dredged to accommodate the deeper draft vessels (Lee 1977:91).

Two life-saving stations were established near the mouth of the Cape Fear River during the 1880s. Those stations included the Cape Fear station (b. 1882) at east end of Bald Head Island and the Oak Island station (b. 1889) located west of Fort Caswell. Each station was equipped with line-throwing guns and self-righting surfboats (Sprunt 2005:527). Surfmen maintained a constant vigil of the sea from the station house and conducted regular nightly beach patrols; additional patrols were conducted in daylight during stormy weather. Both stations remained active until the 1930s when new Coast Guard facilities were constructed to replace them.

On 20 July 1895, the U.S. Marine Hospital Service appropriated $25,000 for the construction of a quarantine station at Southport. The new station was to be located on the river on the east side of the channel between the upper end of Battery Island and Price's Creek Lighthouse (Carson 1992:73). The entire station was to be built on a pier 600 feet long and to consist of a hospital building, a disinfecting house, attendant's quarters and a kitchen. The station opened for service by the middle of 1897 with Dr. J. M. Eager appointed as the station's first quarantine officer. A report for the fiscal year 1907 illustrates the level of activity at the station:

> [Eighty six] vessels spoken and passed; 19 steamers and 1 sailing vessels inspected and passed; 2 steamers and 3 sailing vessels disinfected; and 485 crew on steamers, 125 crew on sailing vessels, and 3 passengers on sailing vessels inspected. The vessels disinfected were from Bahia, Portobello, Santos, Rios, and Barbados (Brown 1974).

By 1937 the station had become obsolete and was placed on caretaker status. As the facility was located on water and not a navigation hazard it was left to deteriorate and on 19 August 1951, the abandoned station was destroyed by fire (Brown 1974).

The fishing industry provided the financial stamina for the economy on the lower Cape Fear during the early years of the twentieth century. The principal source of income for Southport was the menhaden fisheries. Most catches were processed into oil which was used in the manufacture of paints, linoleum, tanning solutions, soaps and waterproof fabrics (Carson 1992:96). Leftover scrap was ground up for fertilizer and feed for livestock. The Southport Fish Scrap and Oil Company and the Brunswick Navigation Company established processing

plants along the Elizabeth River while additional plants could be found above the town on the Cape Fear River.

World War I initiated a revitalization of the economy with the establishment of the Carolina Shipyard in May 1918. At about the same time, the Liberty Shipyard started producing steel ships as well as experimental concrete ships. The success of the shipyards was short-lived and the economy fluctuated for several years until it fell during the 1930s. Though Wilmington saw moderate success in shipping and shipbuilding after the war, most of the yards had closed by the mid-1920s and competition from Norfolk and Charleston slowly relegated the city to an import distribution center catering mainly to regional trade (Watson 1992:145).

This trade averaged 200,000 or more tons through most of the 1920s, but with the coming of the Great Depression, the amount fell to 94,007 tons by 1932 (Watson 1992:150). Wilmington's economy would not fully recover from the effects of the depression until the end of the decade. Despite this economic uncertainty, foundations were laid for future development. By the beginning of World War II, Wilmington boasted 54 wharves, piers and docks and the opening of the Atlantic Intracoastal Waterway expanded the city's trade with its hinterland and increased its role in the coastal trade (Watson 1992:148-9).

With war in Europe and German submarines prowling the east coast during the early 1940s protection and defense of the coast became a top priority in Washington. The vulnerability of the Cape Fear had been confirmed during World War I and U.S. Navy officials were anxious to be prepared for future enemy intrusions (Gannon 1990:242-243). On 17 November 1941, the U.S. Navy reacquired the 248.8-acre Fort Caswell reservation, sold into private hands in 1929. The old fort grounds were to be used for training, communications and submarine tracking (Carson 1992:126).

The U-boat threat finally reached the Cape Fear region in early 1942. On 16 March, the 11,641-ton tanker *John D. Gill* was torpedoed in the coastal waters off the mouth of the river. As a result of the high number of vessel losses during the early stages of the war, defensive measures were put into place. Coastal communities were systematically blacked out, a more efficient convoy system was devised and additional planes and patrol vessels were put into service along the North Carolina coast (Stick 1952:237-239).

In addition to the menace that Axis submarines and aircraft represented during the conflict, a significant hurricane struck the project area in late summer 1944. On 1 August, the tropical storm made landfall near Southport and the Oak Island coast guard station reported maximum wind speeds of 80 miles per hour. To the north, "substantial damage" occurred in Wilmington and Wrightsville Beach and the combined losses of real estate and crops amounted to two million dollars (Galecki 2005:133-134).

World War II also brought renewed growth to the shipyards and relief to the area (Lee 1977:88-90). The increased jobs and higher wages allowed Wilmington's economy to increase and become stable. After the war many of the people brought in to build ships chose to stay and make Wilmington their home. In 1945, the State Port Authority was formed, promoting ports in Wilmington and Morehead City and creating new jobs. In 1955, the military established the Sunny Point Army Terminal [Military Ocean Terminal at Sunny Point]. The facility serves as a terminal for shipping military hardware and ammunition to

American forces around the globe. The base is a major employer in the area and local service and retail industries serving the military contribute to the economic prosperity of the region. By 1960, the population of Southport was reported as 2,034 residents. At that time, the town boasted a popular bookmobile, a new water tank, a "lighted" athletic field and a picnic area at the community park. Maritime news included the launch of a "big, new charter boat," the *Riptide*. Herman Sellers constructed the vessel for Glenn Trunnell of Southport. Other local commercial fishermen commenced discussions on the merits to install an artificial reef near the town. In September 1960, Hurricane *Donna* struck the region and fortunately caused only minimal damage in Brunswick County (Reaves 1999:169,172).

In early February 1970, the Atomic Energy Commission approved construction of a 385 million dollar nuclear power plant to be situated north of Southport. The downtown also experienced a significant economic boost when First-Citizens elected to build a bank in Southport, its first branch in Brunswick County. At the same time, waterfront interests offered services to the public such as the modern 150-seat restaurant Herman's and the new 450-foot long "fishing and pleasure pier" (Reaves 1999:243).

Today, the region presents a strong economy with a state port facility that is daily frequented by international cargo vessels. The economy is further augmented by the military and commercial fisheries, which provide an important source of income to area residents. In addition, Southport and the coastal communities on Oak Island and the resort on Bald Head Island are popular tourist destinations. The area's offshore waters are a sportsman's paradise catering to recreational boaters and sport fishermen alike.

Improvement History of the Entrance Channel to the Cape Fear River

In 1870, the U.S. Army Corps of Engineers (USACE) initiated a project to improve navigation on the Cape Fear River. An examination of the river conducted by a commission appointed by the War Department suggested that priorities at that time should be given to closing off the channel between Smith's and Zeke's Islands (U.S. Army Corps of Engineers [USACE] 1870:70). In 1874, the closing off of New Inlet increased the flow of water in the main navigation channel and scouring effects were noted to be deepening the channel over Bald Head Bar (USACE 1874:88-89). The officer in charge of operations also stated that a suction dredge was employed at Bald Head Bar to assist in the scouring process. Furthermore, the officer's report also noted that there were two channels into the river: a western channel with two bars (an outer with 14 feet at low water and an inner or "rip" with 10 feet at low water) and the Bald Head channel (USACE 1874:69). It was suggested that since the Bald Head channel was the natural channel all efforts should be directed towards maintaining a 12-foot level of water over it and that the western channel be disregarded.

In 1889, the project was modified to provide for a 20-foot depth, at low water, from Wilmington to the Ocean. Surveys conducted during the fiscal year ending 30 June 1890 reported that the depth of water over bar had reached 16 feet (USACE 1890:131). The wreck of a Civil War gunboat was uncovered during dredging activities on the bar in 1891. The boiler from the wreck reduced water depths in the channel to 13.5 feet providing a serious impediment to navigation (*The Messenger* [*TM*] 16 May 1891). Examinations of the wreck indicated that it was a wooden-hull vessel approximately 110 tons and 100 to 110 feet long (USACE 1893:1451). Portions, of the flue and boiler, were removed by the USACE in 1890. On 20 May 1893, Messrs. Johnston and Townsend were awarded a contract to remove the

rest of the wreck structure (USACE 1893:1451). The wreck site was dynamited and remaining sections of boiler recovered for disposal. Subsequent inspections of the wreck area revealed no trace of the hull, and soundings in the vicinity indicated a depth of water of 22 feet (*TM* 7 July 1893; USACE 1893:1451).

The River and Harbor Act of 2 March 1907 provided for additional dredging for completing the channel to the mandated 20-foot depth level. In addition, this act also authorized for improvements in excess of 20 feet as appropriations permitted (USACE 1912:459). The project was modified again in the River and Harbor Act of 25 July 1912. Those modifications called for a channel of 26 feet deep at low water with widths of 300 feet in the river, increasing to 400 feet across the bar and in curves in the river (USACE 1912:459-460). The controlling depths of the channel were increased to 30 feet in the River and Harbor Act of 2 March 1919. In 1922, the USACE discontinued the contemporary entrance channel and authorized for a new one over the bar with the same dimensions as the previous one (USACE 1922:682-683). The new channel was to run in a southwesterly direction from Bald Head Point. These improvements were noted as being completed in 1932.

In the River and Harbor Act of 2 March 1945, the controlling dimensions for the navigation channels on the Cape Fear River were increased further. Water depths from the outer end of the bar to Wilmington were increased to 32 feet and all channels were now to maintain a width of 400 feet throughout (USACE 1945:632-631). The project was estimated to be 65 percent complete by the end of the fiscal year. In 1950, the controlling depths over the ocean bar were increased to 35 feet (USACE 1950:653-654). Additional modifications to the navigation channels were authorized in the River and Harbor Act of 23 October 1962. Among the provisions of that act was the deepening and widening of the entrance channel to 40 feet deep and 500 feet wide (USACE 1962:360-361). The channel was to maintain those dimensions as far as Southport were they were reduced to 38 feet deep and 400 feet wide up to Wilmington. The project was reported as being completed in 1973 (USACE 1979:6-9).

Previous Surveys

In conjunction with the efforts of OA to assist the Village of Bald Head Island in its actions to permit an excavation area at the mouth of Bald Head Creek, TAR carried out a magnetometer and sidescan sonar survey of an initial borrow site on 2 February and 8 March 2009. An extension of this area was surveyed by TAR on 29 April 2010 (Figure 8). Analysis of the remote-sensing data generated during the 2009 Bald Head Creek survey identified a total of 17 magnetic anomalies in the initial project area. Four magnetic anomalies had a related acoustic signature; these were associated with a modern reinforced concrete platform. All targets appeared to have been generated by modern debris such as fish and crab traps, pipes, small diameter rods, cable, wire rope, chain, small boat anchors, and the modern concrete platform. No additional investigation of those sites is recommended in conjunction with the proposed dredging. The extension of the survey area, investigated in 2010, contained 37 magnetic anomalies and two acoustic signatures. All targets appeared to have been generated by modern debris such as fish and crab traps, pipes, small diameter rods, cable, wire rope, chain, small boat anchors, and a modern wood platform. No additional investigation of those sites is recommended in conjunction with the proposed dredging (Figure 9).

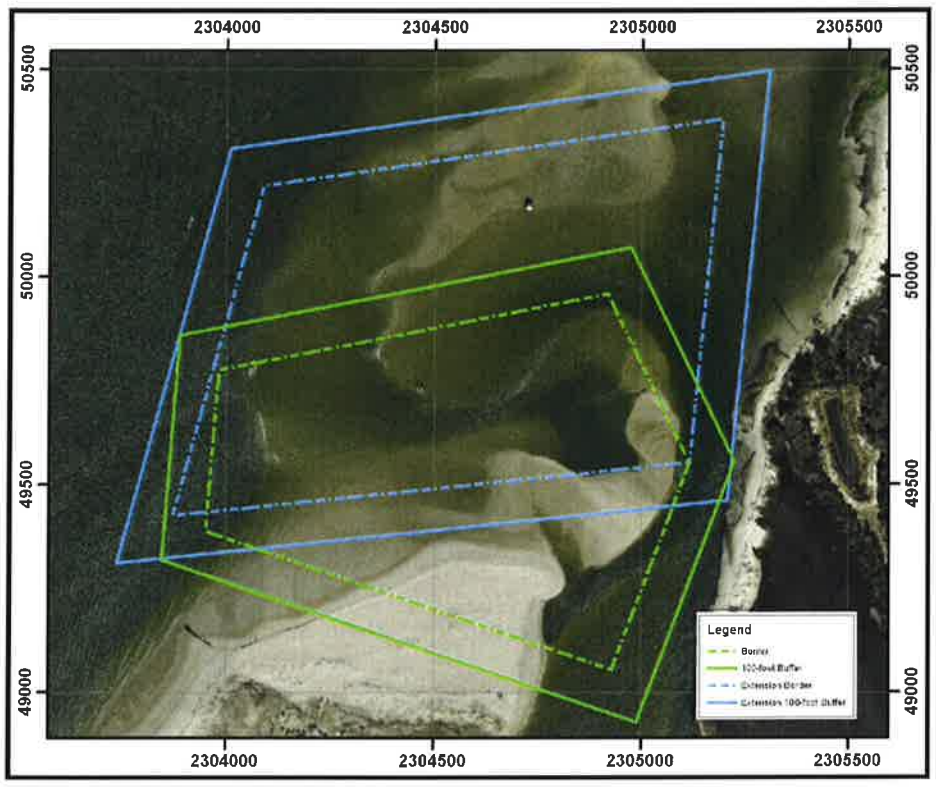

Figure 8. Image illustrating the 2009 and 2010 survey areas at the mouth of Bald Head Island Creek (Courtesy U.S. Geological Survey).

Description of Findings

Analysis and contouring of the remote-sensing data generated during the Bald Head Creek survey identified a total of 38 magnetic anomalies (Figure 9). Four anomalies were located outside a 100 foot buffer surveyed beyond the borrow perimeter. Nine of the anomalies appear to be debris associated with previous navigation range structures. The remaining 25 anomalies appeared to have been generated by modern debris such as fish and crab traps, pipes, small diameter rods, cable, wire rope, chain and small boat anchors (Appendix B).

Sonar could not be used in the survey area as water depths, even at high tide, were not sufficient for safe operations. Based on the survey data no NRHP eligible submerged cultural resources will be impacted by dredging operations and no additional investigation of the anomalies is recommended in conjunction with the proposed project.

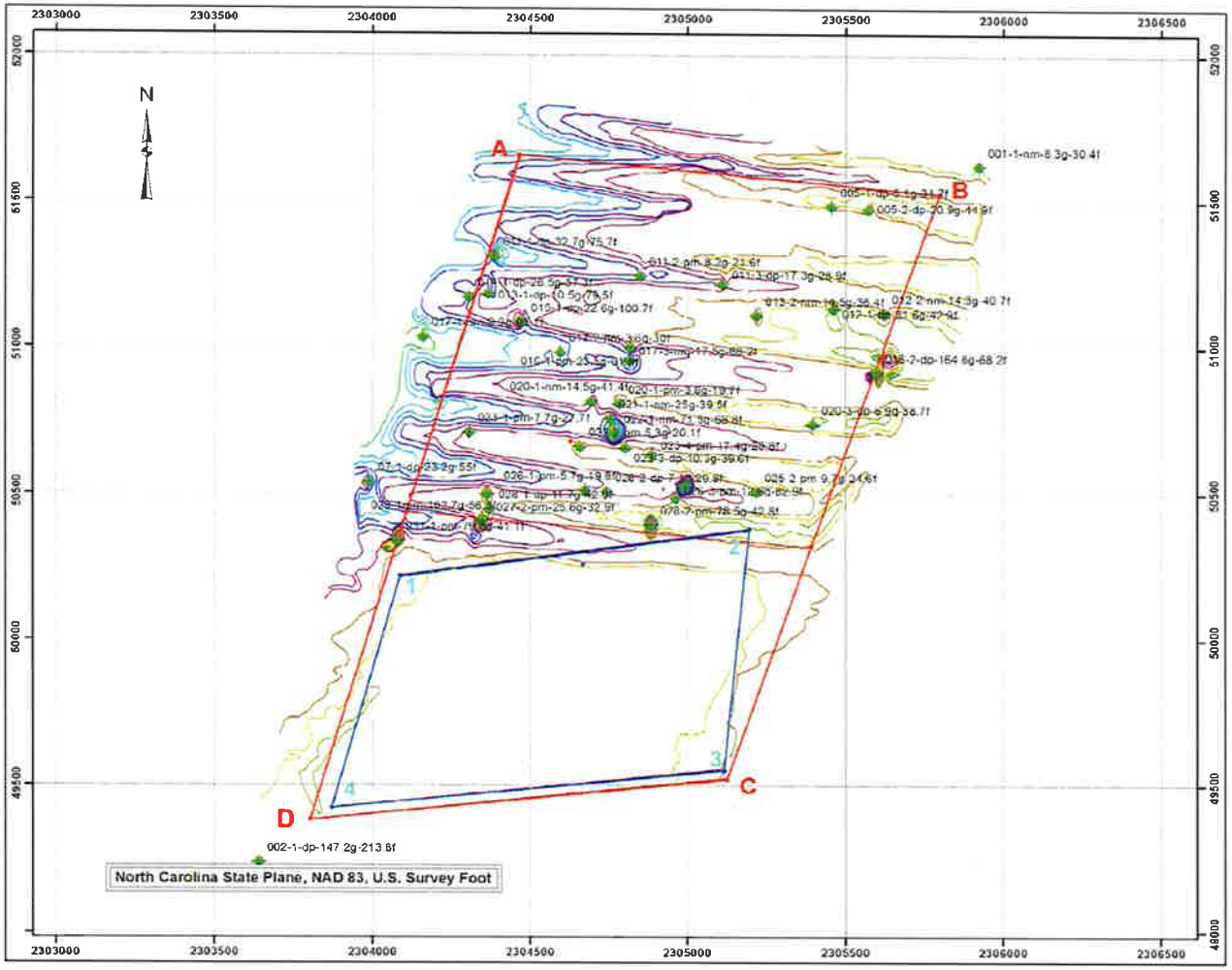

Figure 9. Magnetic contour map of the 2014 Bald Head Island Creek survey area.

Conclusions and Recommendations

A survey of historical and archaeological literature and background research confirmed evidence of sustained historic maritime activity associated with the Bald Head Island and Cape Fear River area that continues even today. Documented transportation activities in the vicinity of Bald Head Island and neighboring waterways date from the first half of the sixteenth century. The Cape Fear River region became a focus for European activities as early as 1526 when Lucas Vásquez de Ayllón led an expedition from Florida into the Cape Fear region. Permanent settlement along the banks of the Cape Fear River began during the second decade of the eighteenth century.

As a consequence of nearly 400 years of navigation in the coastal region of Brunswick County and settlement along the banks of the Cape Fear River since the eighteenth century, there is a high probability that historically significant submerged cultural resources are located in the area. While no shipwrecks in the project vicinity have been listed on the NRHP or with the UAB, previously identified vessel remains document that they exist; there are at least 27 shipwrecks recorded in the coastal waters near Bald Head Island and the mouth of the Cape Fear River (Appendix A). Because of their association with the broad patterns of North Carolina history, the remains of sunken vessels preserve important information about the maritime heritage of the North Carolina coast.

In spite of the high probability for cultural resources in the area, no potentially significant anomalies were identified in the 2014 survey area. Of the 38 magnetic anomalies identified during the survey four were located outside a 100 foot buffer surveyed beyond the borrow perimeter. Twenty-five anomalies have signature characteristics indicative of fish and crab traps, pipes, small diameter rods, cable, wire rope, chain, small boat anchors and other modern debris. The remaining nine anomalies appear to be debris associated with previous navigation structures.

The shallow area north of the mouth of Bald Head Creek has been the location of a number of channel range markers. As early as 1884 a front-range marker for the Bald Head Channel reach was located north of the mouth of the creek (Figure 10). By 1911, realignment of the Bald Head Channel required placement of a back-range beacon on the shoal north of Bald Head Creek (Figure 11). Within 12 years the Cape Fear Bar Channel realignment required shifting the Bald Head Channel reach beacon. A front-range beacon was also installed for the Smith Island Channel reach and another beacon was installed northwest of Bald Head Light to serve as front-range for the Southport Channel reach (Figure 12). The 1932 C&GS chart shows that only a front-range beacon for the Bald Head Channel reach was being maintained on the shoal north of the mouth of Bald Head Creek (Figure 13) and the previous range structures had been removed. Although the front-range location shifted in relation to a back range beacon in Cedar Creek that configuration persisted until sometime between 1988 and 1998. During that period the front-range beacon for the Cedar Creek back beacon was moved southwest to a location off the northwest point of Bald Head Island (Figure 14). That configuration remains intact today [2014], as the Bald Head Channel alignment has been stabilized by dredging.

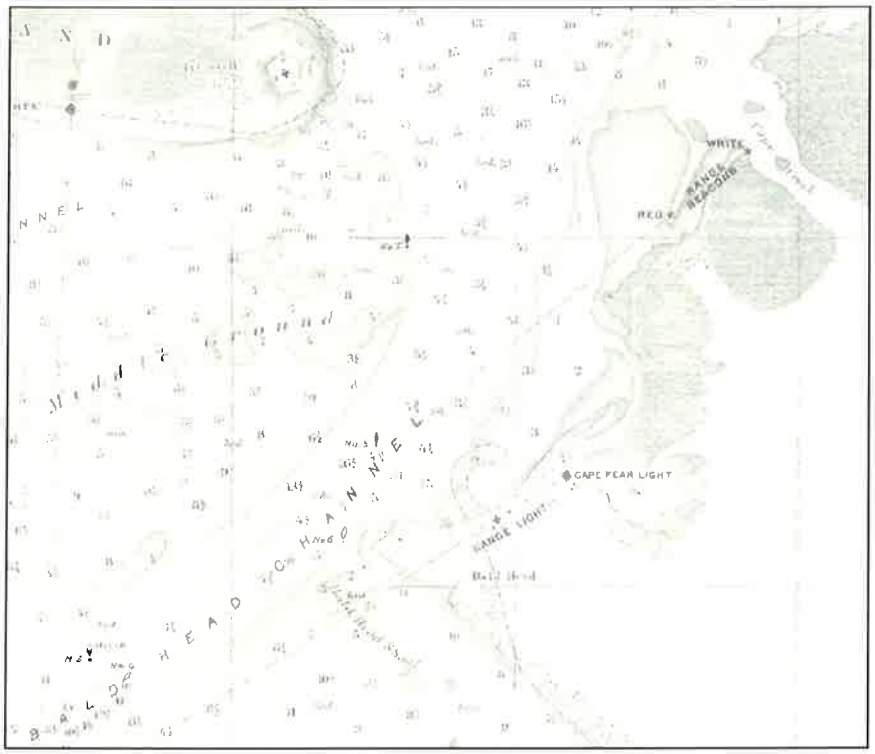

Figure 10. 1884 C&GS Chart showing a front range beacon for the Bald Head Channel reach in the survey area.

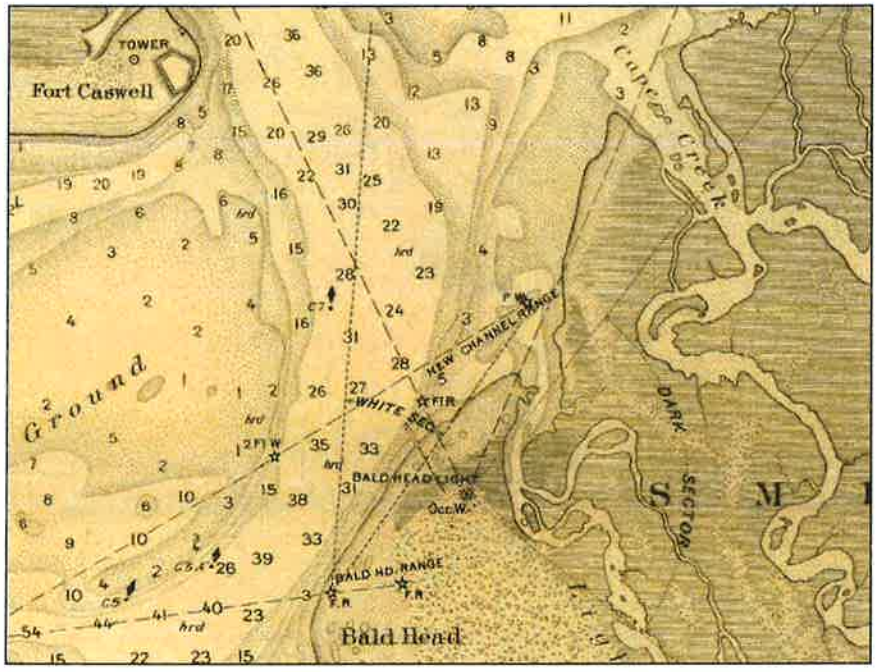

Figure 11. 1911 C&GS Chart showing a back range in the survey area for the Cape Fear Bar Channel reach.

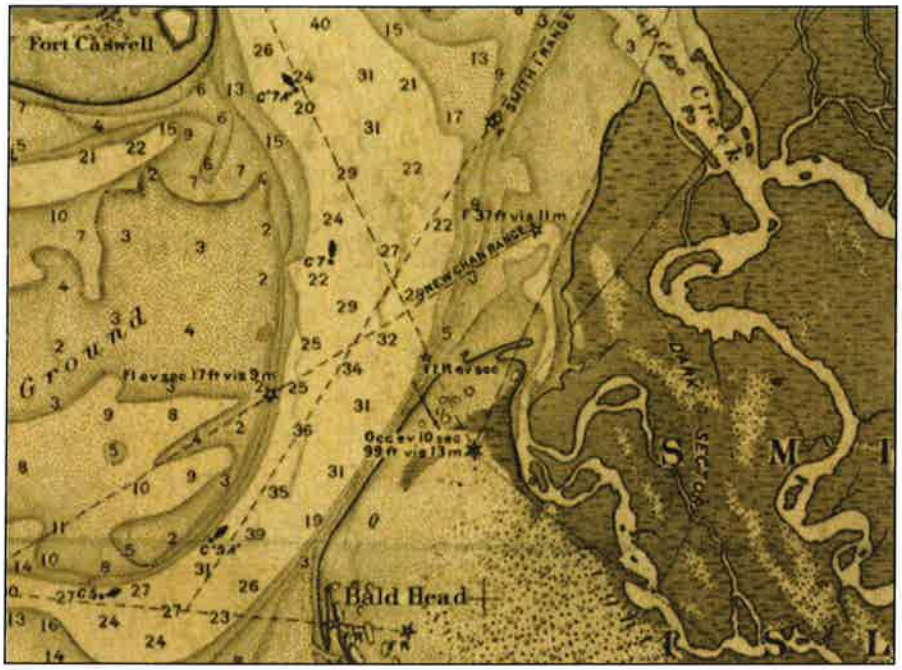

Figure 12. 1923 C&GS chart showing realignment of the Bald Head Channel reach beacon, installation of a front beacon for the Smith Island Channel reach and a front-range beacon for the Southport Channel reach.

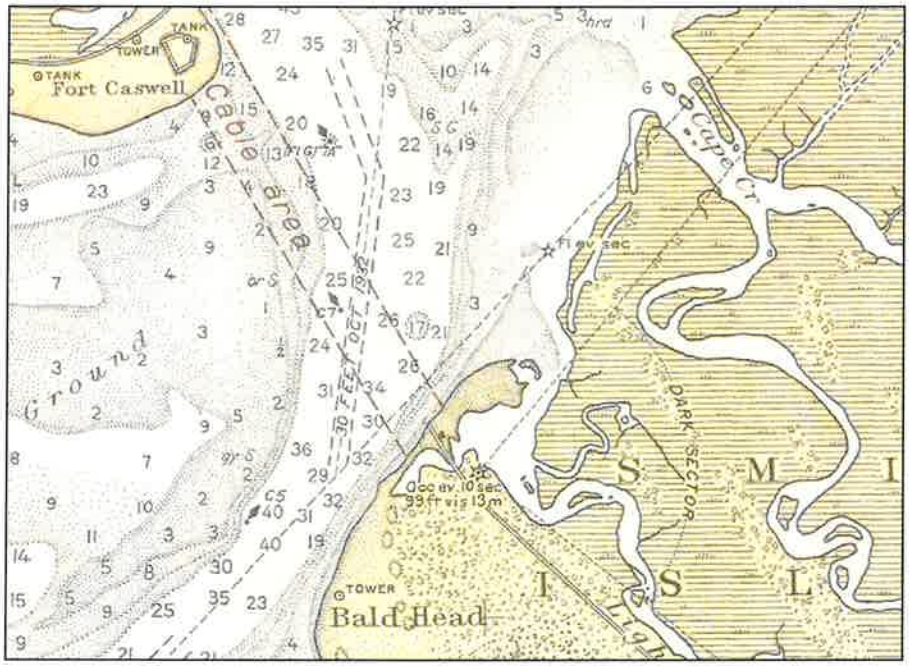

Figure 13. 1932 C&GS chart showing the Bald Head Channel reach front-range beacon in the survey area.

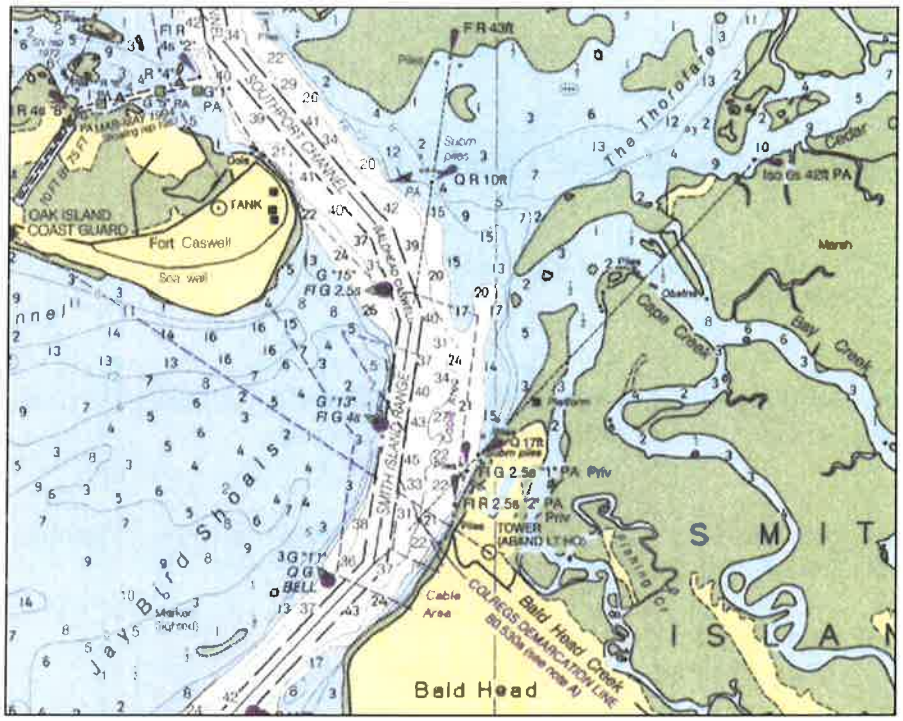

Figure 14. 1998 NOAA chart showing the current configuration of range markers in the survey area.

Although magnetic anomalies suggest that debris associated with range beacons in the project area remains at the site, the beacon light structure would have been salvaged and the supporting structure removed to prevent confusion by vessels navigating the Cape Fear. Although their design has not been researched, patent designs for lights and structure design information is likely available in the patent and Corps of Engineers records. The remaining debris is not appear likely to shed sufficient light on design and construction information to merit additional investigation unless the structures were destroyed by storms rather than salvaged.

Based on the historical and remote sensing survey data no NRHP eligible submerged cultural resources will be impacted by dredging operations and no additional investigation of the anomalies is recommended in conjunction with the proposed project. However, in the event that dredging exposes the remains of one or more of the range beacons, the UAB at Fort Fisher should be informed so that an assessment of the structures historical significance can be made and the remains documented. With that exception, no additional investigation is recommended in conjunction with the proposed project.

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Appendix A

Known shipwrecks in the vicinity of the mouth of the Cape Fear River, North Carolina

Vessel	Type	Use	Date of Loss	Location	Disposition
Spanish Vessel			1526	Mouth of the Cape Fear River	
Sir John	Fly Boat		Oct. 1665	Middle Ground	
Unknown			Feb. 1767	Cape Fear River Bar	
Enterprise			15 Feb. 1768	Mouth of the Cape Fear River	
Clementine			March 1775	Middle Ground	Salvaged(?)
Unknown			Feb. 1784	Mouth of the Cape Fear River	
Neptune	Brig		26 Jan. 1789	Middle Ground	
Sabine		Privateer	11 Sept. 1814		
Florie		Blockade Runner	Oct. 1864	Inside Bar	
Georgiana McCaw		Blockade Runner	2 June 1864	SW of Baldhead Light	
Violet		U.S.S. Gunboat	7 Aug. 1864	Western Bar	Possibly cleared by USACE
Frying Pan Shoals Lightship		Light Ship	20 Dec. 1861	North of Fort Caswell	Sunk by U.S.S. *Mount Vernon*
Ellen	Schooner	Blockade Runner	26 June 1862	Burned while ashore at Bald Head Channel	Taken in tow by U.S.S. *Victoria*. Sunk in 15 minutes.
Emily	Schooner	Blockade Runner	26 June 1862	Burned under the guns of Fort Caswell	
Lizzie	Sloop	Blockade Runner	1 August 1862	Captured and burned by U.S.S. *Penobscot* off Bald Head.	
Ella	Steamer	Blockade Runner	3 Dec. 1864	Run ashore on Bald Head Beach.	Partially Salvaged
Agnes Emily Frye	Steamer	Blockade Runner	27 Dec. 1864	Lost 2 miles south of Fort Caswell off Old Inlet	
Pine	Sloop		May 1868	Cape Fear Bar	
Alex Sprunt		Lighter	Feb. 1872		
Felicitus	Bark (Ger.)		July 1874	Main Bar	Salvaged
Maria Needham	Bark (Br.)		14 Jan. 1874	Middle Ground	Salvaged
Vapor	Schooner		5 Nov. 1895	Cape Fear Bar	
San Antonio	Bark (Br.)		13 Jan. 1890		Salvaged
Ogir	Bark (Nor.)		10 Nov. 1894	Middle Ground	Salvaged
Clarence H	Schooner		9 Dec. 1902	South of Cape Fear Bar	
Col. Thos. F. Austin	Schooner		24 Feb. 1916	Middle Ground	
Unknown	Bark		13 June 1930	Middle Ground	

Appendix B

Magnetometer Anomaly List

(All coordinates North Carolina State Plane, NAD 83, U.S. Survey Foot)

Designation	X Coordinate	Y Coordinate	Latitude	Longitude	Line #	Target #	Signature	Gammas	Feet	Assessment	Potential Identification
001-1-nm-8.3g-30.4f	2305923.6	51623.9	33.88756748	-77.99214441	1	1	Negative Monopolar	8.3g	30.4f	Small ferrous object	Possible Traps or Debris
005-1-dp-5.1g-31.7f	2305455.8	51485.6	33.88720056	-77.99369007	5	1	Dipolar	5.1g	31.7f	Small ferrous object	Possible Traps or Debris
005-2-dp-20.9g-44.9f	2305572.8	51475.6	33.88716983	-77.99330498	5	2	Dipolar	20.9g	44.9f	Small ferrous object	Possible Traps or Debris
011-1-dp-32.7g-75.7f	2304386.9	51311.8	33.88675279	-77.99721706	11	1	Dipolar	32.7g	75.7f	Small ferrous object	Possible Traps or Debris
011-2-pm-8.2g-21.6f	2304851.7	51244.8	33.8865558	-77.99568814	11	2	Positive Monopolar	8.2g	21.6f	Small ferrous object	Possible Traps or Debris
011-3-dp-17.3g-28.9f	2305112.8	51218.6	33.88647656	-77.9948289	11	3	Dipolar	17.3g	28.9f	Small ferrous object	Possible Traps or Debris
012-1-dp-31.6g-42.9f	2305463.4	51133.7	33.88623355	-77.99367679	12	1	Dipolar	31.6g	42.9f	Small ferrous object	Possible Traps or Debris
012-2-nm-14.3g-40.7f	2305619.6	51119.1	33.88618909	-77.99316273	12	2	Negative Monopolar	14.3g	40.7f	Small ferrous object	Possible Traps or Debris
013-1-dp-10.5g-79.5f	2304370.9	51184.1	33.88640239	-77.99727402	13	1	Dipolar	10.5g	79.5f	Small ferrous object	Possible Traps or Debris
013-2-nm-14.5g-36.4f	2305219.6	51111.7	33.8861799	-77.99448065	13	2	Negative Monopolar	14.5g	36.4f	Small ferrous object	Possible Traps or Debris
014-1-dp-26.5g-57.3f	2304306.8	51171.8	33.88637038	-77.99748558	14	1	Dipolar	26.5g	57.3f	Small ferrous object	Possible Traps or Debris
015-1-dp-22.6g-100.7f	2304475	51089.5	33.8861396	-77.99693424	15	1	Dipolar	22.6g	100.7f	Small ferrous object	Possible Traps or Debris
016-1-pm-23.5g-61.4f	2304821	50999.4	33.88588245	-77.99579745	16	1	Positive Monopolar	23.5g	61.4f	Small ferrous object	Possible Traps or Debris
016-2-dp-164.6g-68.2f	2305599.2	50917.7	33.88563634	-77.99323666	16	2	Dipolar	164.6g	68.2f	Moderate ferrous object	Possible Range Marker Debris
017-1-nm-9.2g-65.1f	2304162.3	51034.6	33.88599745	-77.99796616	17	1	Negative Monopolar	9.2g	65.1f	Small ferrous object	Possible Traps or Debris
017-2-nm-3.6g-30f	2304597	50983.3	33.88584445	-77.99653588	17	2	Negative Monopolar	3.6g	30f	Small ferrous object	Possible Traps or Debris
017-3-nm-17.5g-68.2f	2304818	50955.7	33.88576248	-77.99580879	17	3	Negative Monopolar	17.5g	68.2f	Small ferrous object	Possible Traps or Debris
020-1-nm-14.5g-41.4f	2304695.5	50816.6	33.88538372	-77.99621696	20	1	Negative Monopolar	14.5g	41.4f	Small ferrous object	Possible Traps or Debris
020-1-pm-3.8g-19.7f	2304784.7	50807.1	33.88535515	-77.99592344	20	1	Positive Monopolar	3.8g	19.7f	Small ferrous object	Possible Traps or Debris
020-3-dp-6.9g-38.7f	2305397.6	50738.8	33.88515045	-77.99390673	20	3	Dipolar	6.9g	38.7f	Small ferrous object	Possible Traps or Debris
021-1-nm-25g-39.5f	2304755.3	50755.8	33.88521502	-77.996022	21	1	Negative Monopolar	25g	39.5f	Moderate ferrous object	Possible Range Marker Debris
022-1-nm-71.5g-68.8f	2304770.4	50705.1	33.88507531	-77.99597394	22	1	Negative Monopolar	71.5g	68.8f	Moderate ferrous object	Possible Range Marker Debris
023-1-pm-7.7g-27.7f	2304308.5	50708.8	33.8850983	-77.99749539	23	1	Positive Monopolar	7.7g	27.7f	Small ferrous object	Possible Traps or Debris
023-2-pm-5.3g-20.1f	2304660.1	50660	33.88495447	-77.99633879	23	2	Positive Monopolar	5.3g	20.1f	Small ferrous object	Possible Traps or Debris
023-3-dp-10.3g-39.6f	2304802.5	50654.5	33.8849354	-77.99586989	23	3	Dipolar	10.3g	39.6f	Small ferrous object	Possible Traps or Debris
023-4-pm-17.4g-25.6f	2304888.3	50634.9	33.88487917	-77.9955879	23	4	Positive Monopolar	17.4g	25.6f	Small ferrous object	Possible Traps or Debris
025-1-nm-99.8g-44.7f	2304992	50523.6	33.88457051	-77.99525001	25	1	Negative Monopolar	99.8g	44.7f	Moderate ferrous object	Possible Range Marker Debris
025-2-pm-9.7g-24.6f	2305218.6	50507	33.8845186	-77.99450412	25	2	Positive Monopolar	9.7g	24.6f	Small ferrous object	Possible Traps or Debris
026-1-pm-5.7g-19.8f	2304676.6	50511.1	33.88454493	-77.9962894	26	1	Positive Monopolar	5.7g	19.8f	Small ferrous object	Possible Traps or Debris
026-2-dp-7.1g-29.8f	2304744	50505.2	33.88452685	-77.99606757	26	2	Dipolar	7.1g	29.8f	Small ferrous object	Possible Traps or Debris
026-3-pm-12.6g-62.9f	2304963.8	50484.9	33.88446497	-77.9953442	26	3	Positive Monopolar	12.6g	62.9f	Small ferrous object	Possible Range Marker Debris
07-1-dp-23.2g-55f	2303993.4	50538	33.88463779	-77.99853905	7	1	Dipolar	23.2g	55f	Small ferrous object	Possible Traps or Debris
027-2-pm-25.6g-32.9f	2304365.4	50496.7	33.88451401	-77.99731501	27	2	Positive Monopolar	25.6g	32.9f	Small ferrous object	Possible Traps or Debris
028-1-dp-11.7g-42.9f	2304372.8	50446.2	33.88437506	-77.99729231	28	1	Dipolar	11.7g	42.9f	Small ferrous object	Possible Traps or Debris
028-2-pm-78.5g-42.8f	2304886.2	50391.3	33.88420997	-77.99560294	28	2	Positive Monopolar	78.5g	42.8f	Moderate ferrous object	Possible Range Marker Debris
029-1-pm-102.7g-56.3f	2304350.7	50407.8	33.88427018	-77.99736639	29	1	Positive Monopolar	102.7g	56.3f	Moderate ferrous object	Possible Range Marker Debris
031-1-pm-79.8g-41.1f	2304079.1	50335.1	33.88407798	-77.99826349	31	1	Positive Monopolar	79.8g	41.1f	Moderate ferrous object	Possible Range Marker Debris
002-1-dp-147.2g-213.8f	2303642.7	49239.9	33.88108116	-77.99973739	2	1	Dipolar	147.2g	213.8f	Large ferrous object	Possible Range Marker Debris

North Carolina Department of Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

July 3, 2014

Ronnie D. Smith
US Army Corps of Engineers
69 Darlington Avenue,
Wilmington, NC 28403

RE: Village of Bald Head Island, Dredge the Mouth of Bald Head Creek & Place Material Along the Shoreline of Bald Head Island, Brunswick County, ER 02-8817

Dear Mr. Smith:

We reviewed the report *A Phase I Remote-Sensing Archaeological Survey of a Proposed Borrow Area Extension off the Mouth of Bald Head Creek, Bald Head Island, Brunswick County, North Carolina*, transmitted to us electronically by Tidewater Atlantic Research, Inc.

The report meets our office's guidelines and those of the Secretary of the Interior. After careful review, our staff concurs with the findings and recommendations contained within the report. No further archaeological work is necessary in the proposed dredging area.

It should be noted that all previous comments regarding the placement of sand on Bald Head Island beaches and the proposed terminal groin remain in effect regarding the identified cultural resources. (ER 12-0437)

These comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966, North Carolina legislation (G.S. 121-22 to 28, Article 3), and the Abandoned Shipwreck Act of 1987 (P.L. 100-298).

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or renee.gledhill-earley@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

cc: Gordon P. Watts, Jr., Tidewater Atlantic Research, Inc.
Erik Olsen, Olsen Associates, Inc.