Exhibit 43: 1220 S 2nd St (NH2604), facing northwest

Exhibit 44: 1540 S 2nd St, facing southwest

South 2nd Street (from south of Wright St to north of Kidder St—east side)

Exhibit 45: 1013 S 2nd St (NH2062), facing northeast

Exhibit 46: 1015 S 2nd St (NH2062), facing southeast

Exhibit 47: 1017 S 2nd St (NH2062), facing northeast

Exhibit 48: 1103 S 2nd St (NH2603), facing southeast

Exhibit 49: 1105 S 2nd St (NH2603), facing northeast

Exhibit 50: 1107 S 2nd St (NH2603), facing northeast

Exhibit 51: 1109 S 2nd St (NH2603), facing northeast

Exhibit 52: 1111 S 2nd St (NH2603), facing southeast

Exhibit 53: 1125 S 2nd St (NH2603), facing northeast (New Kelly's Chapel AME Church)

Exhibit 54: 1207 S 2nd St, facing southeast

Exhibit 55: 1209 S 2nd St, facing northeast

Exhibit 56: 1219 S 2nd St, facing northeast; note vacant lots to left (north) and rear of house

South 3rd Street (from south of Wright St to north of Willard St—west side)

Exhibit 57: 1014 S 3rd St (NH2605), partly within HD, and vacant house lot (1016 S Front St) to left (south), facing southwest (source: Google Maps)

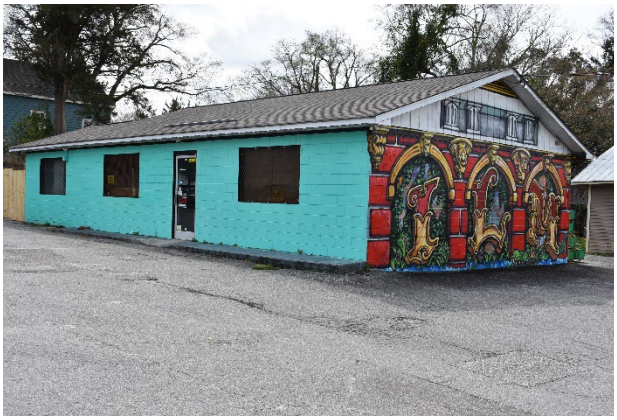

Exhibit 58: 1024 S 3rd St (NH2606), facing southwest

Exhibit 59: 1102 S 3rd St (NH2605), facing northwest

Exhibit 60: Vacant house lot at 1110 S 3rd St (NH2606), facing southwest (source: Google Maps)

Exhibit 61: 1116 S 3rd St (NH2606), facing southwest

Exhibit 62: 1118 S 3rd St (NH2606) , facing southwest

Exhibit 63: 1120 S 3rd St (NH2606), facing northwest

Exhibit 64: 1122 S 3rd St (NH2606) and corner parking lot, facing northwest

Exhibit 65: 1206 S 3rd St (NH2607) with vacant corner lot to right (north), facing southwest

Exhibit 66: 1208 S 3rd St (NH2607), facing northwest

Exhibit 67: 1302 S 3rd St, facing southwest

Exhibit 68: NRHP-listed Seaboard Air Line Railway/ Atlantic Coast Railroad District (NH3674) crossing 1300 block of S 3rd St, facing northwest

Exhibit 69: 1400 S 3rd St, north at top (source: Google Earth)

South 3rd Street (from south of Wright St to north of Willard St—east side)

Exhibit 70: 1103 S 3rd St (NH2606) and paved lot to left (north), facing northeast

Exhibit 71: 1107 S 3rd St (NH2606), facing southeast


Exhibit 72: 1109 S 3rd St (NH2606), facing southeast


Exhibit 73: 1111 S 3rd St (NH2606), facing northeast


Exhibit 74: 1115 S 3rd St (NH2606), facing northeast


Exhibit 75: 1203 S 3rd St (NH2607), facing southeast


Exhibit 76: 1207 S 3rd St (NH2607), facing southeast


Exhibit 77: 1209 S 3rd St (NH2607), facing southeast

Exhibit 78: 1215 S 3rd St (NH2607) and adjacent vacant lot, facing southeast

Exhibit 79: 1227 S 3rd St (NH2607), facing northeast

Exhibit 80: 1303 S 3rd St (NH2608), facing southeast

Exhibit 81: 1305 S 3rd St (NH2608), facing southeast

Exhibit 82: 1307 S 3rd St (NH2608), facing northeast

Exhibit 83: 1309 S 3rd St (NH2608), facing southeast

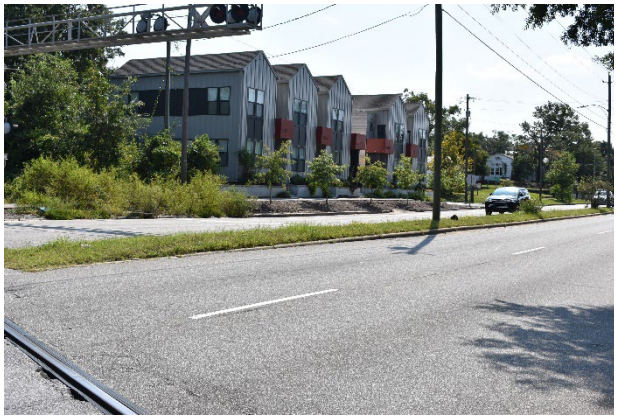

Exhibit 84: 1371-1381 S 3rd St, facing southeast

Exhibit 85: 1401 S 3rd St (NH2609), facing southeast (Greenfield Baptist Church)

Exhibit 86: vacant house lot south of 1401 S 3rd St (NH2609), facing southeast

Exhibit 87: 1415 S 3rd St (NH2609), facing northeast

Exhibit 88: 1423 S 3rd St (NH2609), facing southeast

Burnett Boulevard (north of Carolina Beach Boulevard—west and east sides)

Exhibit 89: 1702 Burnett Blvd, facing northwest (City of Wilmington Parks, Trees & Athletics Maintenance Divisions—offices)

Exhibit 90: 1704 Burnett Blvd, facing north (City of Wilmington Parks, Trees & Athletics Maintenance Divisions—maintenance buildings)

Exhibit 91: 1704 Burnett Blvd, facing north (City of Wilmington Parks, Trees & Athletics Maintenance Divisions—maintenance buildings)

Exhibit 92: 1704 Burnett Blvd, facing south (undeveloped city park property containing maintenance facility north of juncture of Burnett Blvd and S Front St)

Exhibit 93: 1710 Burnett Blvd, facing northwest (City of Wilmington Urban Forestry Division—offices)

Exhibit 94: 1735 Burnett Blvd, facing east (Greenfield Lake Park and Gardens (NH1381), east of juncture of Burnett Blvd and S Front St)

Simon Street (from south of Wright St to north of Greenfield St—west and east sides)

Exhibit 95: 1310 Simon St (NH2696), facing northwest

Exhibit 96: 1305 Simon St (NH2696), facing northeast

South 4th Street (at Martin St—west side)

Exhibit 97: NR-eligible Seaboard Air Line Railway/ Atlantic Coast Railroad District (NH3674) facing northwest from corner of S 4th St and Martin St

Meares Street (from S Front St to S 3rd St—north side)

Exhibit 98: 105 Meares St (NH2581), facing northeast

Exhibit 99: 111 Meares St (NH2581), facing northeast

Exhibit100: 113 Meares St (NH2581), facing northwest

Exhibit101: 115 Meares St (NH2581), facing northeast

Exhibit102:117 Meares St (NH2581), facing northeast

Exhibit 103: 119 Meares St (NH2581), facing northwest (former Southside Church)

Exhibit 104: 201 Meares St (NH2582), facing northeast

Exhibit 105: 205 Meares St (NH2582), facing northwest

Exhibit 106: 209 Meares St (NH2582), facing northwest

Exhibit 107: two vacant lots to left (west) of 1024 S 3rd St, facing northeast

Meares Street (from S Front St to S 3rd St—south side)

Exhibit 108: 106 Meares St (NH2581) and adjacent vacant house lot, facing southwest

Exhibit 109: 110 Meares St (NH2581), facing southeast

Exhibit 110: 114 Meares St (NH2581), facing southeast

Exhibit 111: 118 Meares St (NH2581), facing southeast

Exhibit 112: 120 Meares St (NH2581), facing southeast

Exhibit 113: 202 Meares St (NH2582), facing southeast

Exhibit 114: 208 Meares St (NH2582), facing southwest

Exhibit 115: 210 Meares St (NH2582), facing southeast

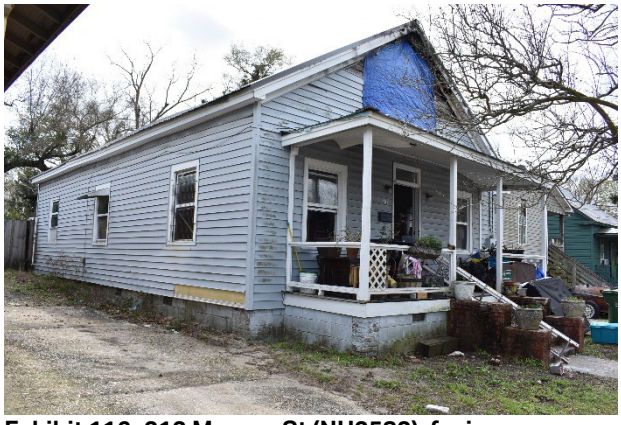

Exhibit 116: 212 Meares St (NH2582), facing southwest

Exhibit 117: 214 Meares St (NH2582), facing southwest

Marstellar Street (from east of S Front St to west of S 3rd St—north side)

Exhibit 118: Vacant lots between 101 and 115 Marstellar St (NH2590), facing north (Google Maps)

Exhibit 119: 115 Marstellar St (NH2590), facing northwest

Exhibit 120: 209 Marstellar St (NH3680), facing northeast

Exhibit 121: 211 Marstellar St (NH3680), facing northeast

Marstellar Street (from east of S Front St to west of S 3rd St—south side)

Exhibit 122: Three vacant house lots at 108 through 116 Marstellar St (NH2590), facing southwest (source: Google Maps)

Exhibit 123: Park on former house lot at southeast corner of junction of Marstellar St and S 2nd St (NH3680), facing southeast (source: Google Maps)

Exhibit 124: 208 Marstellar St (NH3680) and adjacent vacant house lot, facing southwest

Exhibit125: 216 Marstellar St (NH3680) and adjacent vacant house lot, facing southeast (former Holy Church of Jesus Christ)

Kidder Street (from east of S 3rd St to east of Simon St—north side)

Exhibit 126: Vacant house lot at 309 Kidder St, facing northeast

Exhibit 127: 311 Kidder St (NH2597), facing northeast

Kidder Street (from east of S 3rd St to east of Simon St—south side)

Exhibit 128: House moved in late 2021 onto empty lot at 306 Kidder St (NH 2597), facing southeast

Exhibit 129: 306 Kidder St in mid-2021 with adjacent formerly vacant lot, facing southeast

Exhibit 130: 308 Kidder St, facing southwest

Martin Street (from east of S 3rd St to east of S 4th St—north and south sides)

Exhibit 131: 301-305 Martin St, facing northeast

Exhibit 132: 307 Martin St, facing northeast

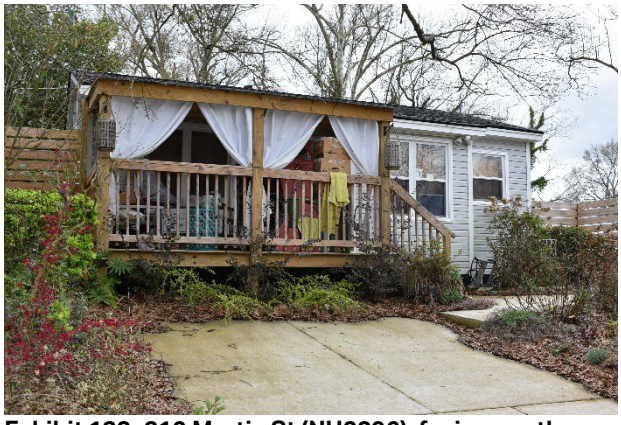

Exhibit 133: 310 Martin St (NH2296), facing south

Greenfield Street (from east of S Front St to west of S 2nd St—south side)

Exhibit 134: 110 Greenfield St, facing southwest

Willard Street (from S Front St to east of S 2nd St—south side)

Exhibit 135: 200 Willard St, facing northeast

Potentially Contributing Resources

Of the 129 southern APE area resources, 98 are standing resources: 21 of these are recommended as potentially contributing, 77 as noncontributing. All are altered but retain multiple early elements that overbalance those changes. The key elements considered in addressing integrity were siding, windows and bays, surrounds and porches. The following eight resources at 1206 S 2nd St, 1103 S 2nd St,1120 S 3rd St, 1303 S 3rd St, 115 Meares St, 1305 Simon St, 306 Kidder St, and 117 Meares Street are representative.

In spite of alterations to its porch and some sash, the house at 1206 S 2nd St (ca.1910) would contribute to the historic district, as it retains early weatherboards, surrounds, cornerboards, and friezeboards (Exhibit 136, at left). The house at 1103 S 2nd St (ca.1915) has modern sash and an altered engaged porch, but also early weatherboards, surrounds and a front gable window (Exhibit 136, at right).

Exhibit 136: 1206 S 2nd St, south side and east front elevations, left; 1103 S 2nd St, west front and south side elevations, right

The ca.1912 frame house at 1120 S 3rd St contributes despite its modern sash, balustrade, and HardiPlank siding due to its early wraparound porch, cornerboards and surrounds, bay window and entryway (Exhibit 137, at left). The contributing two-story house at 1303 S 3rd St (pre-1915) retains an early wraparound porch, surrounds, spandrels, and projecting side bay and rear ell alongside of aluminum and asbestos siding and altered sash (Exhibit 137, at right).

Exhibit 137: 1120 S 3rd St, east front elevation, left; 1303 S 3rd St, west front and south side elevations, right

The pre-1915 gable-end dwelling at 115 Meares St is recommended as contributing despite having vinyl siding due to its retention of early weatherboards visible beneath the vinyl, porch posts and double-hung sash in original surrounds (Exhibit 138, at left). The gable-front house at 1305 Simon St (pre-1915) has weatherboards, wooden surrounds and cornerboards, and a gable ventilator in place. It is recommended as contributing even though its sash and porch are altered (Exhibit 138, at right).

Exhibit 138: 115 Meares St, south front and east side elevations, at left; 1305 Simon St, west front and south side elevations, at right

The two most intact, and therefore most clearly contributing resources, are the gable-front concrete-block house at 306 Kidder St (ca.1945) (Exhibit 139, at left) and the multi-gabled bungalow at 117 Meares St (ca. 1937), which retains its siding, sash, and Craftsman-style porch and woodwork (Exhibit 139, at right). These are the exception within the southern APE area, however.

Exhibit 139: 306 Kidder St, east side and north front elevations, at left; 117 Meares St, south front and east side elevations, at right

The above resources are all residences. Although 29 of the 98 individual/groups of standing resources are non-residential, only one is believed to fall within the historic district's period of significance and to retain sufficient integrity to merit a contributing recommendation—the Holy Church of Jesus Christ which was individually assessed above.

Noncontributing Resources – alterations

Seventy-seven of the 98 standing resources are noncontributing: 42 due to lost integrity, 34 to build date, and one moved in 2021. The noncontributing resources have intact forms, locations, and at least a few early features. Their multiple alterations are so notable, though, they have

lost their overall integrity. Representative houses with lost integrity are addressed first, below. Following them are nonresidential resources. It should be noted that due to modern siding and windows that mimic original wood cladding and glazing many(from a distance) appear intact.

The noncontributing ca.1915 houses at 1105 and 1107 S 2nd St retain their gable-front frame forms, but have modern vinyl siding, windows, surrounds, and much-altered porches (Exhibit 140, at left). The two-story house at 1015 S 2nd St (ca.1917) and its one-story neighbor to the south at 1017 S 2nd (ca.1912) are altered in similar fashion (Exhibit 140, at right).

Exhibit 140: 1105 and portion of 1107 S 2nd St, north side and west front elevations, left; portion of 1015 and 1013 S 2nd St, south side and west front elevations, right

The houses at 1310 Simon St (Exhibit 141, left) and 1309 S 3rd St (Exhibit 141, right) retain more early features than those above. The Simon St house (ca.1910 or moved post-1955) has some 2/2 sash, weatherboards, and wooden surrounds; a full-façade porch with heavy posts is an early prominent feature at the 3rd St house (ca.1920). But 1310 Simon has multiple later extensions, including a two-story rear addition, and a modern portico, while 1309 S 3rd has vinyl siding, altered sash, and two later doubled window bays at its façade. Both are therefore believed to have lost their integrity and would not contribute to an expanded historic district.

Exhibit 141: 1310 Simon St, east front and north side elevations, left; 1309 S 3rd St, west front and south side elevations, right

The intact appearance of houses opposite each other on Meares St is less evident when they are viewed up close. Frame cornerboards continue to edge 209 Meares (pre-1915), but it is

sided with Masonite rather than weatherboards, its porch is not original, and its 6/6 windows are modern (Exhibit 142, at left). In similar fashion, the house at 208 Meares (ca.1901) retains early cornice returns and porch posts, but has snap-in muntins to create the illusion of early 6/6 sash, a modern porch balustrade, and aluminum siding (Exhibit 142, at right). As their most prominent features are modern, they are recommended as noncontributing.

Exhibit 142: 209 Meares St, east side and south front elevations, left; 208 Meares St, north front and west side elevations, right

Two additional representatives of houses recommended as noncontributing due to the prominence of their later features are those at 115 Marstellar St (ca.1910) and 214 Meares St (ca.1901). The Marstellar St house has an intact transom at its entry and what may be an original pointed-arch window with tracery in its front gable. However, its sash and porch posts have been replaced and its siding is artificial (Exhibit 143, at left). The Meares St house retains an engaged full-façade porch and triangular knee-braces, but has modern porch posts, vinyl siding, windows, and surrounds (Exhibit 143, at right).

Exhibit 143: 115 Marstellar St, west side and south front elevations, right; 214 Meares St, east front and north side elevation, right

Noncontributing Resources – age

Thirty-four of the noncontributing standing resources were built after 1945, the end of the historic district's period of significance. Some are new and clearly would not contribute to an expanded district. These include South Front, a mixed-use commercial development at 1540 S 2nd St (2018) (Exhibit 144, at left), and the condominium development at 1371-1381 S 3rd St/301-305 Martin St, built in 2019 (Exhibit 144, at right). Others were built within the past 25 years, such as New Kelly's Chapel AME Church at 1125 S 2nd St (1999) (Exhibit 145, at left) and four Habitat for Humanity houses, including one at 1207 S 2nd St (2002) (Exhibit 145, at right).

Exhibit 144: 1540 S 2nd St, south side and east front elevations, at left; 1371-1381 S 3rd St (left) and 301-305 Martin St (right), at right

Exhibit 145: 1125 S 2nd St, north side and west front elevations, at left; 1207 S 2nd St, west front and south side elevations, at right

Many of the resources found to be noncontributing due to age were built after 1945, but before 1972, so they are 50 years old or older. Even if the Wilmington HD had a period of significance that extended to 1972, these would not contribute, as they have lost their integrity. The former A & P Market at 1208 3rd St, for example, dates to 1952, but has had its original storefront windows and entries sealed over and altered, greatly diminishing its integrity (Exhibit 146, at left). Since its erection at 1215 S 3rd St in 1959, the former Bordeaux Grocery across the street

has been expanded by concrete-block additions to its north side and rear, and had its storefronts closed in, thereby also losing its integrity (Exhibit 146, at right). Former auto repair shops at 1536A and 1536B S Front St were built in 1954 and 1957, respectively (Exhibit 147, at left). Vacant and heavily deteriorated, they have lost garage doors, windows, entries, and swaths of brick veneer. A late addition to the Block Shirt/Southland Manufacturing Co. was erected in 1957 at 200 Willard St (Exhibit 147, at right). The once expansive factory complex closed in the 1990s and was later demolished, but for this and one other building.[24] The building has seen its windows, entries, and bays altered or closed in, diminishing its integrity.

Exhibit 146: 1208 3rd St, south side and east front elevations; 1215 3rd St, west front and south side elevations

Exhibit 147: 1536A (far left) and 1536B (center) S Front St, north and east elevations, at left; 200 Willard St, north elevation facing Willard (left) and west elevation facing S Front St (right), at right

[24] Frederick L. Block and Susan Taylor Block, 2005, *Tales of a Shirtmaker: A Jewish Upbringing in North Carolina*.

Vacant Lots and Prominently Located Noncontributing Resources

Further reducing the southern APE area's integrity are its 24 vacant lots and the noncontributing resources prominently located on corners. The 1955 Sanborn map places buildings on most of the vacant lots. Four stood at 1209, 1215, 1219-1221, and 1223 S 3rd St in 1955, all now gone. Two sites are vacant, the 1959 former Bordeaux Grocery stands at 1215 S 3rd, and a 1982 mansard-roofed office occupies the corner lot, now numbered 1227 S 3rd St (Exhibit 148). At 1401 S 3rd St, the 1973 Greenfield Baptist Church stands on a house site; only the stairs of a former residence to its south at 1403 S 3rd St survive (Exhibit 149). Empty lots occupy the sites at 106, 114, and 116 Marstellar St where three houses stood in 1955 (Exhibit 150).

Exhibit 148: 1215 (left) and 1227 (right) S 3rd St, west front and south side elevations, left; 1955 Sanborn, right

Exhibit 149: South elevation of 1401 S 3rd St social hall and site of 1403 S 3rd St, left; 1955 Sanborn map, right

Exhibit 150: Multiple vacant house lots on south side of 100 block of Marstellar St, looking west toward Front St, at left; 1955 Sanborn map, at right

Nonresidential buildings erected within the past 50 on prominent corner sites with the southern APE area include the New Anthem Brewery (1986), 110 Greenfield St at S Front St (Exhibit 151, at left); the adjacent self-storage building, 1525 S Front St at Willard St, erected in 1967 by Block Shirt/Southland Manufacturing Co (Exhibit 151, at right); the mixed-use strip building (1997), 1115 S 3rd St at Marstellar St (Exhibit 152, at left); and the 1973 restaurant building at 1423 S 3rd at the corner of Greenfield St (Exhibit 152, at right).

Exhibit 151: 110 Greenfield St at corner of S Front St, left; 1525 S Front St at corner of Willard St, right


Exhibit 152: 1115 S 3rd St at corner of Marstellar St, left; 1423 S 3rd at corner of Greenfield St, right

3.3.2 Historical Background

The Wilmington HD was listed in the NRHP in 1974.[25] It encompassed 2,222 numbered resources, 1,751 of which were contributing. In 2003 the historic district was expanded to bring in 779 contributing and 255 noncontributing resources.[26] The expansion included an extension of the district's period of significance to 1945, with a few later dates specified for particular resources. The expanded district brought in or expanded upon four areas of the city—Brooklyn, Hemenway, the Bottom, and Dry Pond—and a discrete area referred to as South Eighth Street. The extension to the south of the original boundary included additional portions of Dry Pond, within which the southern APE area is located; the oldest sections of Dry Pond had already been included in the 1974 district.

The 2003 expansion and documentation covers the general history, development, and architecture of Dry Pond. It notes:

> Dry Pond's topography is in keeping with the generally flat elevation of other portions of the expansion area and that of the existing historic district, with only a gentle watershed slope westward toward the river and southward toward Greenfield Lake… The continuation of the city's grid pattern is interrupted only by an at-grade rail line spur. This rail spur curves into the area from the east, cutting a diagonal swath through portions or Marstellar and Kidder streets east of the expansion area, before cresting along the 500 block of Martin Street and then running diagonally northwest through the expansion area at South Fourth and Kidder streets to South Front Street, where the spur branches north to the

[25] Survey and Planning Unit, 1974,"Wilmington Historic District" NRHP nomination form.
[26] Wyatt and King, 2003, "Wilmington Historic District Boundary Expansion and Additional Documentation" NRHP nomination form.

> Bear-Sol Winery and south to industrial concerns along the river and outside of the area's western boundary.[27]

It continues:

> Dry Pond was the last of the area's neighborhoods to develop, with the majority of the houses dating from 1925-1935 and offering the greatest collection of Craftsman-style structures. The construction of rail lines in the area to serve industries such as the c.1910 Bear-Sol Winery (#168), did not take place until the tum of the century. Their later construction may have slowed development of the area, as may have the concentration on the development of the Hemenway and Brooklyn areas to the north of the city.[28]

Dry Pond's residents were predominantly white during its initial development. Its buildings, at least within the district expansion area, "illustrate the history of Wilmington's middle- and lower-income citizens." During the second quarter of the twentieth century, however, Dry Pond "gradually shifted from being predominantly white to being predominantly black." The residents of Dry Pond and the rest of the expansion area, both Black and white, "played a notable role in the city's economy during the early twentieth century.[29]

3.3.3 NRHP Evaluation and Recommendation

The 2003 district expansion explains why certain portions of Dry Pond were and were not included within historic district:

> The Dry Pond neighborhood is the largest section of the expansion area and extends from the southern boundary of the existing historic district starting at Wright Street. The boundary is more irregular, owning [sic] to the *loss of integrity along South Second and Third streets, the presence of modern residential and commercial buildings*, and the inclusion of the impressive Bear-Sol Winery, 1100 block South Front Street (# 168); the Nesbitt Court Housing Project, 1400 block of South Third Street, (# 450); and, the South Fourth Street residential corridor. *The properties within these boundaries are the intact components of the residential, industrial, institutional, and commercial developments important to the history of Wilmington's working class.* In all, the expansion area is roughly bounded on the north by Wright and Meares streets via South Eighth Street; on the south by Willard and Kidder streets via Hooper Street; on the west by South Front Street; and on the east by South Fifth and Tenth streets via Kidder Street. The area extends south from Wright Street, between South Third and Eighth

[27]Ibid: section 7/page 6.
[28]Ibid: section 7/page 7.
[29]Ibid: section 8/page 3.

> streets, for approximately three blocks before following a narrow course along both sides of South Fourth Street to its southern boundary along Willard Street. On the west, the boundary extends west along Greenfield Street to South Front Street to allow for the inclusion of the Southland Manufacturing Company, 1510 South Third Street (# 451), Nesbitt Court, and the Bear-Sol Winery. The area also extends east from its northeastern comer at South Eighth Street to include an approximately two-block area of residential development comprising the south side of Meares Street and the 1100 block of South Ninth Street [*emphasis added*].[30]

In the 20 years since the Wilmington HD's expansion, loss of integrity has continued along South Second and Third streets, and elsewhere within the southern APE area. Additional modern commercial and residential buildings have risen on those streets and more lots stand empty. The photographs of each resource (Exhibit 19 through Exhibit 135) and their associated inventory demonstrates (Table 2) these losses and intrusions. Exhibit 136 through Exhibit 152 and their associated narrative highlight the nature of the alterations and the intrusion of modern resources. Well over half of the resources within the southern APE area would not contribute to the Wilmington HD if they were included within its historic boundaries. Therefore the boundaries of the historic district should not be expanded to include them. The southern APE area resources, unlike those within the historic district, do not represent the "intact components of the residential, industrial, institutional, and commercial developments important to the history of Wilmington's working class."

NRHP Eligibility Evaluation of Historic Significance (Criterion A)

The inventoried southern APE area resources do not retain sufficient integrity to support any significance from association "with events that have made a significant contribution to the broad patterns of our history." It is therefore recommended that they do not merit addition, and would not contribute to the Wilmington HD under the requirements of NRHP Criterion A.

NRHP Eligibility Evaluation of Associational Significance (Criterion B)

The inventoried southern APE area resources have insufficient integrity to support significance "associated with the lives of persons significant in our past" and have no known association with such persons. It is therefore recommended that they do not merit addition, and would not contribute to the Wilmington HD under the requirements of NRHP Criterion B.

NRHP Eligibility Evaluation of Architectural Significance (Criterion C)

The inventoried southern APE area resources do not have insufficient integrity to "represent a significant and distinguishable entity whose components may lack individual distinction." It is

[30]Ibid: section 7/pages 7-8.

therefore recommended that they not merit addition, and would not contribute to the Wilmington HD under the requirements of NRHP Criterion C.

NRHP Eligibility Evaluation of Information-Potential Significance (Criterion D)

The inventoried southern APE area resources are unlikely to yield "information important in prehistory or history" based upon their appearance or construction. It is therefore recommended that they do not merit addition, and would not contribute to the Wilmington HD under the requirements of NRHP Criterion D.

Table 3: Wilmington Historic District Potential Expansion Elements of Integrity

Wilmington Historic District—Potential Expansion Area		
Element of Integrity	**Level of Integrity**	**Assessment**
Location	High	The southern APE area resources stand on the sites where they were built, thereby retaining their integrity of location.
Design	Low	The southern APE area resources have an overall low degree of design integrity due to the many alterations to, or losses of, their original design features, including cladding, windows, entries, surrounds, woodwork, and porches.
Setting	Low	Due to the large number of vacant lots and resources erected after the end of the historic district's period of significance, a number of which stand on prominent corner lots, the southern APE area resources have an overall low degree of setting.
Materials	Low	The southern APE area resources have an overall low degree of integrity of materials due to the many alterations to, or losses of, their original materials, including cladding, windows, entries, surrounds, woodwork, and porches.
Workmanship	Low	The southern APE area resources have an overall low degree of integrity of workmanship due to the many alterations to, or losses of, their original features, including cladding, windows, entries, surrounds, woodwork, and porches.
Feeling	Low	High integrity of location and low integrity of design, setting, materials, and workmanship result in low integrity of feeling.
Association	Low	High integrity of location and low integrity of design, setting, materials, and workmanship result in low integrity of association.

4.0 RECOMMENDATIONS

The former Holy Church of Jesus Christ is recommended eligible for NRHP listing under Criterion C as a rare surviving example in the Wilmington area of the basic, traditional, rectangular form and frame construction of Protestant meetinghouses in the late nineteenth and early twentieth centuries. The Church retains all seven elements of NRHP integrity in support of its significance under Criterion C. Further, the Church also meets the requirements of Criteria Consideration (Exception A) as a religious resource that derives its primary significance from its architectural importance.

The resources within the Wilmington Historic District-Potential Expansion area, or southern APE area, do not retain sufficient overall integrity to support significance, or merit NRHP-listing, under any of the four NRHP Criteria. It is recommended that these resources should not be added to the Wilmington Historic District.

5.0 REFERENCES

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APPENDIX B3: TERRESTRIAL AND UNDERWATER ARCHAEOLOGICAL SURVEY

Terrestrial and Underwater Archaeological Survey for Wilmington Rail Realignment, City of Wilmington, Brunswick and New Hanover Counties, North Carolina

Prepared For:

Federal Railroad Administration and

the City of Wilmington

Prepared By:

AECOM

Principal Investigator: Matthew Jorgenson, RPA

Authored By: Peter Sittig, RPA; Christopher Cartellone, RPA; Adam K. Parker, RPA; Stephen James; William Wilson; Duke Hunsaker; Jeffery Pardee; and Michael Rice

August 2022

Revised May 2023

MANAGEMENT SUMMARY

The City of Wilmington (Wilmington), with assistance from the Federal Railroad Administration (FRA), proposes to construct the Wilmington Rail Realignment (WRR) project. The WRR project would construct a new freight rail route to bypass the existing route between Navassa (Davis Yard) and the Port of Wilmington. Six alternatives were under consideration for environmental studies, and as a result of an Alternatives Analysis, Wilmington has identified Alternative 2 as the Preferred Alternative.

AECOM Technical Services, Inc. (AECOM) was contracted to perform terrestrial and underwater archaeological surveys (Phase I Studies) for archaeological resources within the Area of Potential Effects (APE) for the Preferred Alternative of the project. The APE is defined by the FRA as extending 150 feet (ft; 45 meters [m]) in either direction from the proposed WRR centerline 300 ft (90 m) for its 3.98-mile (mi; 6.4 kilometers [km]) length. The APE within the Cape Fear River is defined as 1,500 ft (450 m) in width at the northern survey area and 1,000 ft (300 m) in width at the southern survey area. The APE totals approximately 148 acres (60 hectares).

Terrestrial fieldwork was conducted from November 8 to 11, 2021. Underwater fieldwork was conducted on November 16, 2021.

The terrestrial survey revisited one previously recorded site and identified one new archaeological site. Site 31NH686, originally defined as a 20th century railroad causeway and turntable, was revisited during this project. The current survey refined the site boundary, refined the temporal affiliation as a late-19th to early 20th century causeway, and identified an isolated prehistoric component. Site 31NH895 is a newly identified 19th century domestic scatter and 20th century railroad causeway with an isolated prehistoric component.

Sites 31NH686 and 31NH895 are recommended as not eligible for the National Register of Historic Places (NRHP). This recommendation is based on low densities of artifacts and/or their recovery from disturbed contexts. No further work is recommended at these two sites.

The underwater survey identified a total of 46 magnetic anomalies, 25 side-scan sonar targets, and no subbottom paleofeatures. Correlated datasets resulted in the identification of seven targets, N.1-N.4 and S.1-S.3, which may represent submerged cultural resources. These seven targets were investigated by AECOM scientific divers in March 2023. The likely sources for all seven targets were determined to either be modern debris or natural features on the riverbed. All seven targets do not meet criteria to be considered archaeological or historic in nature. No further work is recommended at any of the seven identified marine archaeological targets.

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1.0 INTRODUCTION

The City of Wilmington (Wilmington), with assistance from the Federal Railroad Administration (FRA), proposes to construct the Wilmington Rail Realignment (WRR) project. The WRR project would construct a new freight rail route to bypass the existing route between Navassa (Davis Yard) and the Port of Wilmington. Six alternatives were under consideration for environmental studies, and as a result of an Alternatives Analysis, FRA has identified Alternative 2 as the Preferred Alternative (Figure 1).

AECOM Technical Services, Inc. (AECOM) was contracted to perform terrestrial and underwater archaeological surveys (Phase I Studies) for archaeological resources within the Area of Potential Effects (APE) for the Preferred Alternative of the project. The terrestrial portion of the APE is defined by the FRA as extending 150 feet (ft; 45 meters [m]) in either direction from the proposed WRR centerline (300 ft/90 m). The underwater portion of the APE measures 1,500 ft (450 m) wide at the northern crossing of the Cape Fear River and 1,000 ft (300 m) wide at the southern crossing of the river. In total, the project measures 3.98-miles (mi; 6.4 kilometers [km]) length. The APE totals approximately 148 acres (60 hectares).

This document presents the results of the terrestrial and underwater archaeological surveys for the project. Background research was conducted by AECOM throughout the lifecycle of the project. Terrestrial fieldwork was conducted from November 8 to 11, 2021. Matthew Jorgenson, RPA, acted as principal investigator for the study and as primary liaison with the City of Wilmington. In addition, Mr. Jorgenson led the terrestrial survey with assistance from Peter Sittig, RPA, and Mary Glenn Krause, RA.

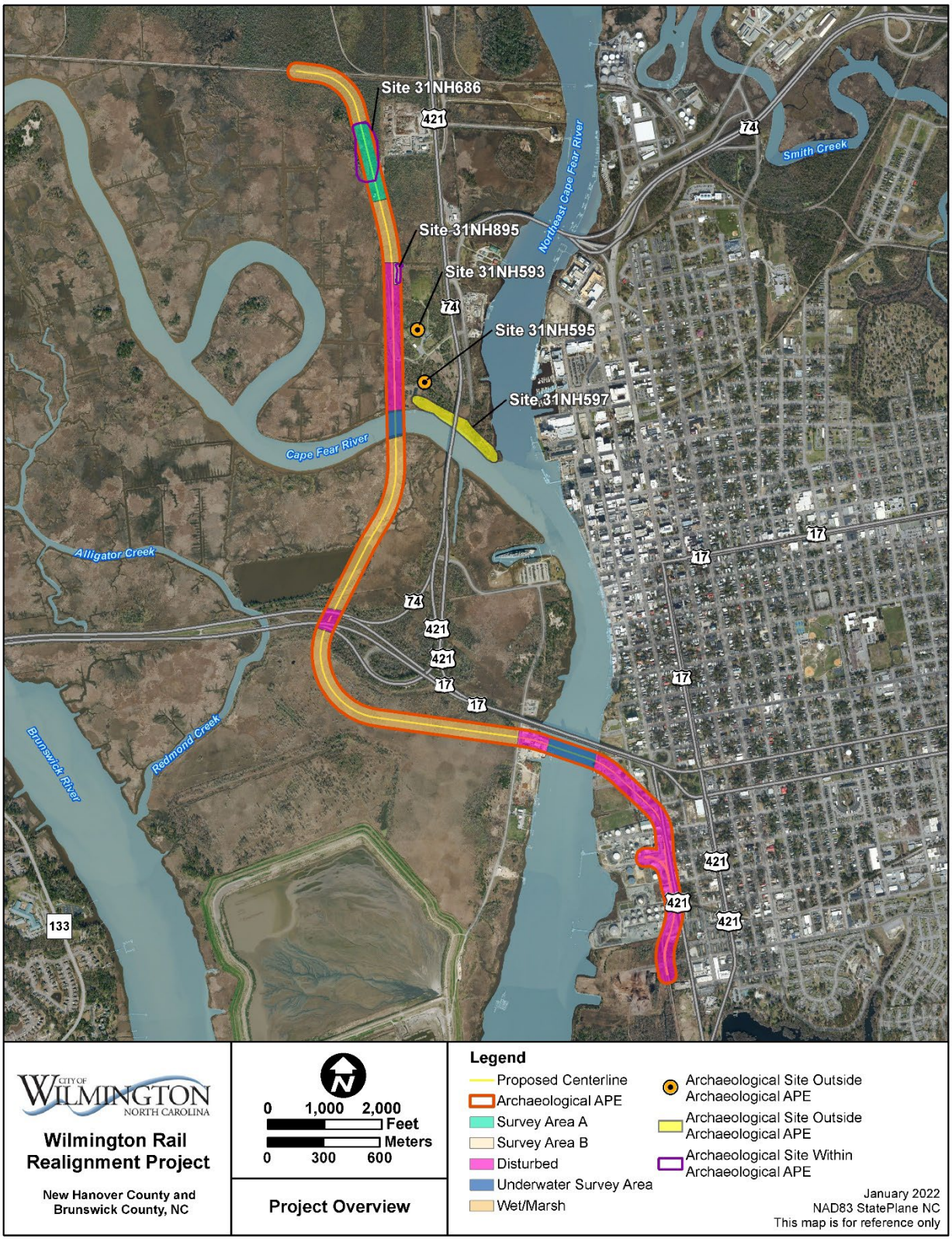
Underwater fieldwork was conducted on November 16, 2021. The underwater archaeology portion of the project was led by Stephen James, Principal Marine Archaeologist, and William Wilson, Marine Archaeologist, with Panamerican Environmental (Commonwealth Heritage Group, Inc. [CHG]). Mr. Wilson assisted with data processing. Additional assistance was provided by Duke Hunsaker (Dial Cordy and Associates, Inc. [DCA]) and Jeffery Pardee (Panamerican) as Field Operations Leads, and Michael Rice (DCA.) as Remote Sensing Analyst. Christopher Cartellone, RPA, and Adam Parker, RPA, served as AECOM's marine archaeologists.

Marine archaeological diving investigations were performed by the AECOM scientific dive team and occurred between 22-28 March, 2023. Fieldwork was overseen by Adam Parker, who also acted as a scientific diver. Joe Grinnan, RPA, Chris Marshall, BS, Professional Geologist (PG), and Ashley Matthews, BS also participated as scientific divers. DCA supported dive investigations by providing the diving platform and vessel operator, Doug Faircloth.

This report is organized as follows. Section 2 presents the environmental setting of the project area. Section 3 provides a cultural context for the region as well as background information on previous archaeological work in the project vicinity. The methodologies utilized in the study are detailed in Section 4. The results of the terrestrial investigation are presented in Section 5 and

the results of the underwater investigation are presented in Section 6. Results of archaeological diving investigations are presented in Section 7. A summary and recommendations can be found in Section 8. Following the summary is a list of references (Section 9), an artifact catalog for the project (Appendix A), and dive logs (Appendix B).

Figure 1: General Overview of WRR Project, Brunswick and New Hanover Counties, North Carolina.



2.0 ENVIRONMENTAL SETTING

2.1 TERRESTRIAL PROJECT SETTING

The WRR project is located in the Coastal Plain physiographic region of eastern North Carolina. Deep sands underlie the Coastal Plain and can be as deep as 10,000 ft (3,048 m, near Cape Hatteras). These sands are underlain by crystalline bedrock. Topography is characterized by relatively flat terrain with short breaks separating the uplands from the lower floodplains and marshes. Numerous "blackwater streams," low-lying swamplands, and productive estuarine areas are common in the Coastal Plain region. Streams flowing through swampland areas are naturally discolored by tannic acid from decomposing plant material and become tea-colored, hence the name "blackwater." In general, streams and rivers in this area meander more, move slower, have lower banks, and are often lined by extensive swamps, bottomland forests, or marshes. Elevations across the Coastal Plain range from about just above sea level to 600 ft (183 m) above mean sea level (AMSL), while elevations within the APE range from about 25 to 105 ft (8 to 32 m) AMSL.

The project is located within the Cape Fear River Basin, which is one of only four basins that are completely within North Carolina. The Cape Fear River Basin covers approximately 9,149 miles and is the largest river basin in North Carolina. The headwaters of the Cape Fear River are technically the headwaters of both the Haw River and Deep River, which begin in the Piedmont Triad region of the state (i.e., the cities of Winston-Salem, Greensboro, and High Point). The Haw River (100 mi/177 km in length) begins near Kernersville in extreme eastern Forsyth County while the Deep River (125 mi/200 km in length) begins near High Point in Guilford County. These two rivers converge at the Chatham and Lee County line northeast of Sanford to create the Cape Fear River (202 mi/325 km in length). To the east of the main Cape Fear River, the South, Black, and Northeast Cape Fear Rivers contribute to the large size of this river basin.

The overall project APE cuts across an array of landscapes (Figure 2). The northern portion of the APE is a largely undeveloped landscape where tidal marshes and dredge spoil containment areas are present. After crossing the Cape Fear River, the central portion of the APE traverses additional tidal marshes and the US 17/74 highway interchange on Eagles Island. The southern portion of the APE crosses the Cape Fear River a second time, then traverses industrial facilities and existing roadways.

2.2 SOILS

The online Web Soil Survey (WSS) lists five different soil types within the WRR APE (WSS 2021) (Figure 3 and Table 1). Soils present in the APE with significant quantities (> 20 acres) include: Chowan silt loam, Dorovan soils, and Urban soils. The cultural resources identified during the current study are present on Dorovan soils, described in detail below.

Figure 2. Topographic Overview of WRR Project Area.

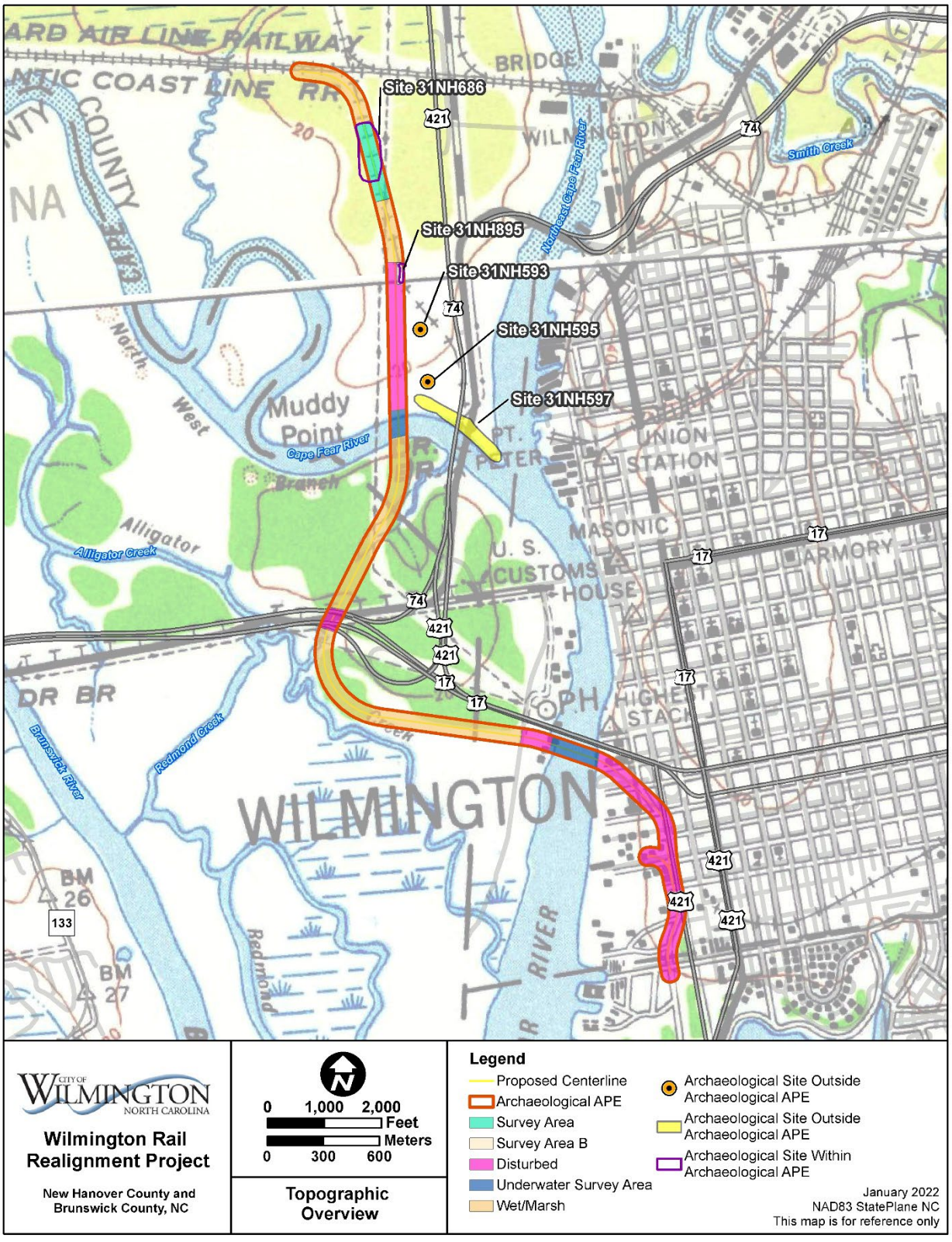


Figure 3. Soils Map of WRR Project Area.

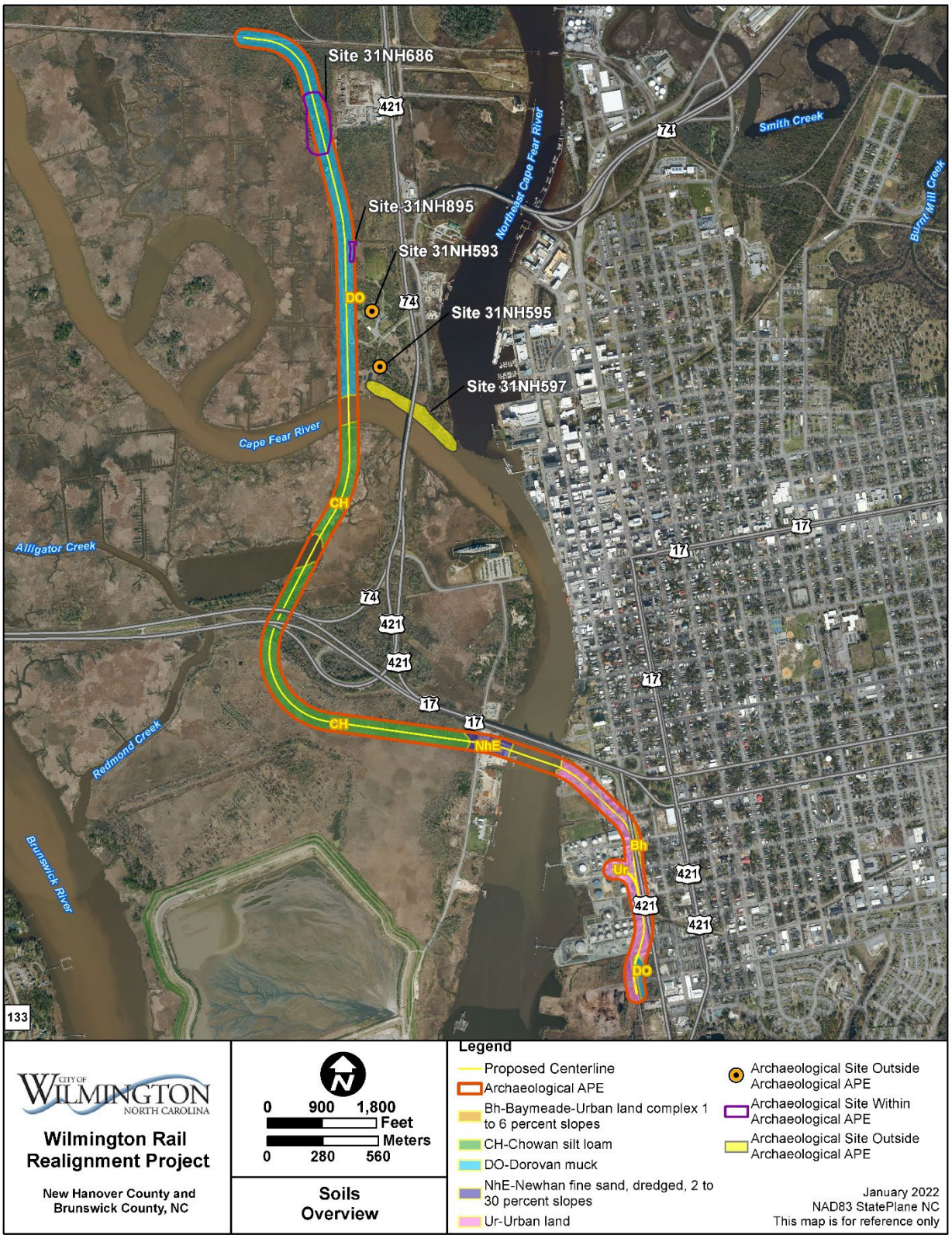


Table 1. Soil Types within WRR Project Area.

Map Soil Symbol	Map Soil Name	Acres in APE	Percent of APE	Comments
Bh	Baymeade-Urban land	1	1	Disturbed, 1 – 6% slopes
CH	Chowan silt loam	51	35	
DO	Dorovan soils	48	33	
NhE	Newhan fine sand	5	3	Dredge Spoils, 2 - 30% slopes
Ur	Urban land	30	20	Disturbed
W	Water	12	8	
	TOTAL	**147**	**100**	

Baymeade- Urban land (Bh). Baymeade soils consist of deep, well drained soils derived from sandy marine sediments. The general profile consists of a shallow A-horizon with fine sands, underlain by an E-horizon with fine sand where a second deep E/Bh-horizon contains fine sand underlain by a Bt-horizon with fine sandy loam where a series of BC- and C-horizons continue. The Urban land component of this soil complex indicates a modern urban environment where soils have been built upon or heavily disturbed.

Chowan silt loam (CH). Chowan silt loam is derived from loamy marine sediments over highly decomposed organic material. This poorly drained soil type exhibits a very deep soil profile. Surface soils consist of a silty loam A-horizon underlain by a series of mucky loam Cg-horizons which are then underlain by 20A horizon which is sapric material.

Dorovan soils (DO). Dorovan soils are typically situated in densely forested flood plains and hardwood swamps. These soils are formed in highly decomposed acid-organic materials and consist of very deep, very poorly drained areas. A general profile consists of stacked Oa-horizons of muck underlain by a series of Cg-horizons with sand. Both archaeological sites 31NH686 and 31NH895 were identified within Dorovan soils.

Newhan fine sand (NhE). Newhan fine sand is comprised of excessively well drained wind-blown sand dunes. This well drained soil exhibits a shallow A-horizon with fine sands underlain by a series of C-horizons with fine grained sands.

Urban soils (Ur). Urban soils are comprised of heavily disturbed soils or form the base of a modern built environment.

2.3 PALEOENVIRONMENT OF THE PROJECT AREA

The following presentation of paleoenvironmental reconstruction is drawn from Delcourt and Delcourt (1983), and others (cf. Claggett and Cable 1982; Davis 1983; Griffin et. al. 2001; Meltzer and Mead 1983; Watts 1980, 1983; Webb 1988; and Whitehead 1973). The section is organized by the late Pleistocene (Late Wisconsin ca. 25,000-13,500 Before Present [BP]), the Pleistocene-Holocene transition (Late Glacial transition ca. 13,500-10,000 BP), the early Holocene (ca. 10,000-8000 BP), the middle Holocene (Hypsithermal ca. 8000-6000 BP), and the late Holocene (ca. 6000 BP to present).

During the late Pleistocene (Late Wisconsin glaciation ca. 25,000-13,500 BP), when continental glaciers extended south out of Canada into the northern portions of the United States, conditions were considerably cooler, with cool summers and harsh winters. It was also considerably drier during this time. In the late Pleistocene, the project area appears to have been covered by a more open, xeric landscape with spruce and pine dominant.

Climate began to warm, and precipitation increased during the Pleistocene-Holocene transition (Late Glacial transition ca. 13,500-10,000 BP), when Paleoindian peoples began populating North America (see next chapter). Although warmer than the preceding late Pleistocene, climate was still cooler than that of today. The glaciers in the north began to retreat, and sea level began to rise. During this timeframe, mesic deciduous tree types typical of "northern hardwood forests" became dominant in the region. Beech, oak, birch, hemlock, ironwood, and elm were the characteristic species of this time. By about 10,000 BP, many of the faunal species that thrived in the colder climate of the Late Pleistocene had become extinct.

During the early Holocene (ca. 10,000-8000 BP), climate continued to warm, and precipitation lessened creating drier conditions. These warmer and drier conditions led to a xeric oak-hickory-pine forest characterized by relatively rapid changes in forest composition, but still with a low density of pine species. In addition, during this time, sea level rise stabilized, coming to within a few meters of its present stand, probably by about 9000 BP.

A pronounced warming period during the middle Holocene, between ca. 8000 and 6000 BP, is referred to as the Hypsithermal, also termed the mid-Holocene temperature maximum or the Altithermal. During this time, temperatures continued to warm. During the first 1000 years of the Hypsithermal, temperatures were close to modern conditions; during the second 1000 years of the interval, temperatures were higher than they are currently. Traditionally, the Hypsithermal has been seen as a time of drier conditions, leading to xeric conditions; however, recent analyses have begun to challenge these arguments (cf. Leigh et al. 1999), suggesting the middle Holocene was warmer and wetter than previously thought. As with the 1000-year temperature trends just presented, vegetation during this time period shifted. During the first 1000 years, the oak-hickory-pine forests from the early Holocene reached their zenith. The latter 1000 years of the Hypsithermal saw a transition to a southern pine forest type, though. This shift put in place the setting for the modern vegetation communities seen today (including extensive swamps in the coastal plain post-6000 BP).

Since the end of the Hypsithermal, the late Holocene (ca. 6000 BP-present) is characterized by a slight cooling of the climate, and conditions become somewhat wetter. From about 6000 to 600 BP, temperatures were generally warmer than seen today, although cooler than the preceding Hypsithermal. The 400-year period between about 600 and 200 BP is known as the Little Ice Age and is a time of cooler-than-modern conditions. Following the Little Ice Age, a modern climate has been in place. During the late Holocene, vegetation stabilized to near modern conditions, with the oak-pine forests becoming predominant.

3.0 CULTURAL AND ARCHAEOLOGICAL BACKGROUND

3.1 PREHISTORIC OVERVIEW

North Carolina has been inhabited for at least 12,000 years and has experienced several major changes in the cultural traditions of its residents. This section of the report presents a basic understanding of the major cultural time periods and subperiods observed in the Southeastern United States, and specifically, in the Coastal Plain of North Carolina. The following chapter will present a more detailed discussion of the components present and recent regional work at other sites from similar time periods and cultural groups.

3.1.1 Pre-Clovis Occupations in the Southeast (ca. pre-12,000 BP)

For several decades, the Meadowcroft Rockshelter in Pennsylvania has been an anomalous site with intriguing evidence indicative of early human occupations predating the classic Clovis Paleoindian assemblages that have long been thought to be the first inhabitants of North America (Adovasio et al. 1999:427-428). However, within the past few decades, data from other sites along the Atlantic and Gulf coastal plains have begun to convince many archaeologists that there may have been a pre-Clovis occupation that predates 14,000 B.P. by several thousand years. The Topper Site in South Carolina (Chandler 2001; Goodyear and Sain 2018) and the Cactus Hill site in southern Virginia (McAvoy and McAvoy 1997) have produced well-documented pre-Clovis assemblages. Other sites in the Southeast such as Capps and Shelley (Ensor 2018) in southeastern Alabama, and Vero (Hemmings et al. 2018) in Florida have also produced artifacts that appear to pre-date classic Clovis occupations. Although distinct diagnostic artifacts for these assemblages have not yet been thoroughly defined, typical artifact types include "small flake tools such as side and end scrapers, spokeshaves, utilized flakes, gravers, prismatic blades, and bend-breaks…and by larger artifacts such as cores, choppers, and planes" (Goodyear and Sain 2018:13-15). There are indications that possibly pentagonal (Cactus Hill) and lanceolate (Meadowcroft) point forms may be associated with the early, pre-Clovis occupations.

3.1.2 Paleoindian Period (ca. 11,500-10,000 BP)

The first relatively well-documented inhabitants of eastern North America have been termed Paleoindians by archaeologists. This cultural period corresponds with the late glacial transition in eastern North America and is marked by the retreat of the Laurentide ice sheet. The end of the Paleoindian period coincides with the Pleistocene/Holocene epoch transition, which in most areas of the southeast is estimated to be ca. 10,000 BP. Paleoindians are presumed to have been fairly mobile hunters and gatherers. High concentrations of Paleoindian sites along the Cumberland, Ohio, and Tennessee Rivers have prompted Anderson (1990, 1996) to suggest these major rivers provided routes for initial populations to enter the Eastern Woodlands, and provided these groups with staging areas "where at least some of these initial populations slowed their movement, settling in for greater or lesser periods of time" (Anderson

1996:36). Such a decrease in mobility would have allowed these groups "to familiarize themselves with the resources available in their new homeland" (Anderson 1996:36). These initial settlements are presumed to be the core from which later regional cultural traditions would emerge in the Middle and Late Paleoindian subperiods (Anderson 1996:37).

The Paleoindian tool kit was based on a highly refined flake and blade technology as well as a significant bone, wood and antler assemblage as evidenced by material recovered from waterlogged sites in Florida (Milanich and Fairbanks 1980). Paleoindians exhibited a marked preference for the use of high-quality cryptocrystalline or metavolcanic lithic materials for the fashioning of their tools, suggesting many of these groups focused their seasonal settlement/subsistence activities around quarries (Gardner 1981). Base camps tied to traditional access rights to quarry material may have contributed to increasing differentiation in projectile point forms as well as tribal distinctiveness and culturally circumscribed territoriality. This would set the stage for many of the trends associated with the subsequent Archaic culture period. Key diagnostics of the Paleoindian period are fluted, and later, unfluted lanceolate projectile points. Over the course of the Paleoindian period, fluted point forms underwent a general reduction in size, and true fluting gave way to basal thinning. A wide range of Paleoindian lithic implements have been recovered from sites in North America, reflecting associations with discrete functions and activities: unspecialized flake tools, formal side and end scrapers, gravers, denticulates, hafted unifacial knives, and bifacial knives (Gardner 1979). There have been several finds of worked ivory (Goodyear 1999).

Overall population density during the Paleoindian period is often thought to have been fairly low. In the South, however, large numbers of sites in the late Paleoindian period, and evidence for territories discovered in several regions, indicates relatively rapid population evolutions (Gunn and Brown 1982). Climate and vegetation were changing rapidly at this time, as the continental ice sheets retreated to the north. Based on a decline in the numbers of projectile points between Clovis and full-fluted post-Clovis projectile point types (e.g., Cumberland), Anderson et. al. (2009) have suggested a population decline occurred during the initial Middle Paleoindian subperiod. Later in the Middle Paleoindian subperiod and continuing into the Late Paleoindian subperiod (and beyond), population appears to have increased, though.

In general, the Paleoindian Period is divided into three units: Early Paleoindian (11,500-11,000 BP), Middle Paleoindian (11,000-10,500 BP), and Late Paleoindian (10,500-9900 BP) (cf. Anderson 1990:201). The Early Paleoindian is marked by the presence of fluted projectile points, "very similar to the classic Clovis points of the West" (Ward and Davis 1999:29). Clovis projectile points have been found on sites ranging from Canada to the southern tip of South America, and variants of the Clovis projectile point have been found throughout much of the eastern United States (Justice 1987:17-23).

Beginning in the Middle Paleoindian, regional differentiation of point types becomes manifest, and these point types are often found in environmental zones that lack Early Paleoindian evidence, suggesting a movement beyond the initial staging points posited by Anderson (1990,

1996). Thus, various fluted types (e.g., Cumberland, Gainey, and Redstone), and later, unfluted types (e.g., Suwannee and Simpson), mark Middle Paleoindian occupations.

Dalton points (Goodyear 1982) and several varieties of the Dalton point type, such as the Hardaway-Dalton type—broad, thin, triangular bifaces with deeply concave bases and shallow side notches (Coe 1964:64)—are diagnostic markers of Late Paleoindian assemblages. The Hardaway complex, consisting of Dalton-like points and preforms, has been found in the lowest levels of the Hardaway and Haw River sites in the Piedmont of North Carolina (Claggett and Cable 1982; Coe 1964; Daniel 1998). It should be noted that stratigraphic mixing was present at both Hardaway and 31RH21 but was not the case at Haw River where the best stratigraphic context to date for the recovery of a Hardaway-Dalton component exists (Daniel 2021:57).

Although hundreds of Dalton points are known from surface contexts in North and South Carolina, the type is not appreciably more common than the earlier lanceolate Paleoindian forms. The Hardaway/Dalton complex is thought to represent "a regionalized technological modification of Paleoindian projectile point style" (Oliver 1985:197), possibly reflecting a change in adaptive strategies away from the hunting of megafauna and towards the utilization of small game and the increased collection of plant resources (McNett et al. 1977). Oliver (1985:199) has suggested that such an inference is supported by an apparent decrease in point size from the Hardaway/Dalton to subsequent Early Archaic Palmer projectile point forms.

Overall population density during the Paleoindian period is often thought to have been low. In the South, however, large numbers of sites in the late Paleoindian period, and evidence for territories discovered in several regions, indicates relatively rapid population evolutions (Gunn and Brown 1982). Climate and vegetation were changing rapidly at this time, as the continental ice sheets retreated to the north. Initial Paleoindian groups probably encountered a mixed coniferous forest/parkland vegetational mosaic, which was gradually replaced by northern hardwoods (summarized in Claggett and Cable 1982). The retreat of the glaciers coincided with a marked rise in sea level, resulting in the flooding of large areas of the Coastal Plain. In the early part of the Paleoindian period, the eastern edge of the Coastal Plain was at least a couple hundred miles further east, so many sites are now submerged (Phelps 1983).

Ward (1983:64) has suggested that the spatially restricted site distribution and the low density of cultural materials suggest a low level of sociopolitical information. However, fairly sophisticated information exchange and mating networks would have had to exist for such low-density populations even to remain reproductively viable, suggesting a greater complexity for these societies than is traditionally inferred (Anderson and Hanson 1985; Wobst 1974).

3.1.3 Archaic Period (ca. 10,000-3000 BP)

The Archaic period begins with the onset of Holocene post-glacial climatic conditions in the east. It exhibits an increase in the density and horizontal dispersal of archaeological remains. The Archaic, in general, is characterized by a reliance on both wild animal and plant resources, which became increasingly stabilized and broad based over time. The Archaic was a relatively

long and successful foraging adaptation, with subsistence based on hunting, fishing, and the collection of wild plant resources with minor horticultural gardening practiced in some locales in the Late Archaic. Group organization was presumed to still be fairly mobile, making use of seasonally available resources in different areas of the Southeast. Caldwell (1958) has termed the maximizing adaptation (scheduled hunter-forager) to the environment in the Eastern woodlands during the Archaic period "primary forest efficiency." Group size gradually increased during this period, culminating in a fairly complex society in the Late Archaic.

The Archaic has been subdivided into three sub-periods: Early (ca. 10,000-8000 BP), Middle (ca. 8000-5000 BP), and Late (ca. 5000-3000 BP). Diagnostic projectile points, including a variety of notched, bifurcate, and stemmed types, form the primary criteria used to identify and date these occupations. The technology of the Archaic peoples of the Southeast appears to have been progressively more diverse than that of Paleoindians. Over the course of the Archaic period, increasing numbers of artifact and tool types appear, such as groundstone implements (e.g., woodworking and plant processing tools), carved and polished stone bowls, axes, atlatl weights, and stone pipes and beads (Griffin 1967; Jennings 1975:127-129). Regional differentiation in projectile point and other artifact styles also occurs, suggesting the emergence and elaboration of local cultures or cultural traditions. This cultural variability is thought to be partially related to localized differences in environment and subsistence resources, and to an increasing regional population base, with a concomitant circumscription of group territories and mobility (Ford 1974).

The Early Archaic is subdivided into earlier Corner Notched (ca. 9550-8775 BP) and later Bifurcate (ca. 8775-8000 BP) traditions, named for the shapes of the projectile points used to recognize these occupations. Corner Notched tradition components are identified by the presence of Palmer and Kirk projectile points, while Bifurcate tradition assemblages are identified by a range of bifurcate-based forms, including the succeeding St. Albans, LeCroy, and Kanawha types (Chapman 1975; Coe 1964; Gardner 1974). In the initial Early Archaic, during the Palmer phase, end scrapers were much like earlier Paleoindian types—small and well-made. Later, during the Kirk phase, end scrapers were "more crudely made and [varied] greatly in size and form" (Ward and Davis 1999:55). Adzes, gravers, drills, and perforators were also added to the lithic tool kit during the Early Archaic. River cobbles were utilized for a variety of tasks, including as hammers and anvils for stone working as well as grinding implements for plant processing; although "ground-stone tools have rarely been found in an Early Archaic context (Coe 1964; Daniel 1994, 1998)" (Ward and Davis 1999:55).

During the Middle Archaic, the cool, moist conditions of the Early Holocene gave way to the warmer, drier climate of the mid Holocene Hypsithermal interval. This pattern may be reversed at higher altitudes. Extensive estuarine marshes and riverine swamps began to emerge in coastal regions as the sea level ceased its post-Pleistocene rise, perhaps as early as 8000 BP during a Middle Holocene sea level high stand, but certainly by 5000 BP. The northern hardwoods vegetational matrix was replaced by an oak-hickory forest, which was in turn replaced by a southern hardwoods-pine forest characterized by the species occupying the

region today (Carbone 1974; Delcourt and Delcourt 1983). Diagnostic projectile points from the Middle Archaic include Stanly Stemmed, Morrow Mountain, and Guilford I and II types (Coe 1964; Daniel 2021). In addition, an increase in ground stone tools and a more diverse tool kit is present on some Middle Archaic sites.

During the Late Archaic period, population appears to have grown markedly and to have concentrated in riverine and estuarine settings. Climatic conditions were warm, moist, and unusually stable. The sea level appears to have been relatively stable, rising to within ca. 6 to 13 ft (2-4 m) of its present stand; only minor fluctuations on the order of one to a few meters occurred (Colquhoun and Brooks 1987). Grinding implements, polished stone tools, and carved soapstone bowls become fairly common, suggesting even more increased use of plant resources, and possibly changes in subsistence strategies and cooking technologies. Some researchers suggest that it is during the Late Archaic when cooking techniques underwent a transition from indirect to direct cooking methods (Coe 1964:123; Ward and Davis 1999:65-66). This transition may be as early as 4900 BP in the Coastal Plain of North Carolina (Sanborn and Abbott 1999:13). Perforated soapstone slabs have been documented at several Late Archaic sites and are interpreted as stone boiling objects used for indirect cooking (Ward and Davis 1999:65-66). Conversely, the presence of soapstone bowls and fiber-tempered pottery (largely confined to coastal regions during the Late Archaic) are interpreted as used for cooking directly over a fire. Soapstone vessels are in use during the Late Archaic and in some areas, particularly along the Atlantic coast, pottery appears. Two early ceramic series at the Atlantic Coast have been well defined—Stallings and Thom's Creek. Two other series—Hamp's Landing and New River—may also have their beginnings in the Late Archaic; however, these two ceramic series have only been recently defined (Hargrove 1993a for Hamp's Landing) and/or recently refined in regard to temporal affiliations (Herbert 2002:299; 2003:180 for New River).

Diagnostic artifacts of the Late Archaic include the Savannah River Stemmed type—a large, broad-bladed, square stemmed point—appears ca. 5000 BP and lasts to ca. 3500 BP. The terminal Archaic/initial Woodland occupation, ca. 3500-2500 BP, is identified by the presence of smaller stemmed point forms such as Small Savannah River and Gypsy Stemmed (Oliver 1985).

3.1.4 Woodland Period (ca. 3000-400 BP)

Across the eastern United States, the Woodland period is marked by the appearance of widespread pottery use, a greatly increased role for horticulture in subsistence economies, and an elaboration of mortuary ceremonialism, including the appearance of burial mounds (Griffin 1967:180). In the greater Southeast, the Woodland period began with a transition from the Late Archaic that was marked by increasing sedentism and changes in food storage and preparation technologies. Subsistence strategies were a continuation of earlier hunter-forager ways, with an increased reliance on the cultivation of native plants. In general, subsistence practices gradually increased in the reliance of cultivated foods, but still relied heavily on hunting and gathering. Religious life, as evidenced by increased ceremonialism and the development of

burial mounds, became more sophisticated during the Woodland period. Triangular projectile points are diagnostic of the Woodland period. Ceramics became more refined and regional differentiation of wares, particularly with respect to temper, paste, and surface decoration, became manifest during the period. Settlement patterns slowly changed from dispersed hamlets to small, nucleated villages.

In the North Carolina Coastal Plain, it is during the Late Archaic and Early Woodland transition that cultural differences manifest themselves between the northern and southern regions (Phelps 1983:26). This begins shortly after the advent of fiber-tempered pottery (Stallings Island series) with the introduction of soapstone tempered Marcey Creek ceramics in the northern Coastal Plain and sand-tempered Thom's Creek/New River and limestone/marl tempered Hamp's Landing series in the southern Coastal Plain. Similarly, it is during the Early Woodland where a transition from stemmed to triangular projectile points is observed with the last gasp of small, stemmed points like Gypsy and Swannanoa being replaced by large triangular points like the Badin type. As the Woodland Period progresses, cultural differences between the two regions continued, and in some ways, intensified.

Stallings series ceramics (ca. 4500-3100 BP) are amongst the earliest produced in North America. Herbert's (2003:Figure 6.1) recent doctoral dissertation identified Stallings ceramics from as far north as the Sandhills and Tar River, southward to South Carolina. Coupled with the geographic limits presented by Phelps (1983:Figure 1.4), it appears as though Stallings ceramics are found throughout the North Carolina Coastal Plain from the Chowan River/Albemarle Sound southward (Herbert 2003:Figure 6.2). Stallings ceramics are fiber tempered and typically have plain surfaces. These vessels often exhibit punctate decorations (Phelps 1983:26-28; Ward and Davis 1999:76).

Thom's Creek ceramics (ca. 4000-3200 BP) are much like Stallings wares, except the tempering agent is sand instead of fiber (Herbert 2003:61-62; Phelps 1983:27-28). Further, while Stallings ceramics were often lump-molded, Thom's Creek ceramics were coil-constructed (Ward and Davis 1999:76). Aside from these few differences, Thom's Creek ceramics typically exhibit plain surfaces with reed punctate decorations often present (Herbert 2003:61-62).

Hamp's Landing ceramics (ca. 4000-2200 BP), also date to the transitional Late Archaic-Early Woodland timeframe (Herbert 2003:Figure 5.2). These ceramics are typically limestone- or marl tempered and exhibit net-impressed, cord-marked, simple-stamped, and plain surface treatments (Herbert 2003:55-57). Dating of this ceramic series is limited, though. Herbert (2003:180) reports three radiocarbon (^{14}C) and one thermoluminescence (TL) dates for the series. The former three all fall within the Late Archaic (ca. 4025-3890 BP), while the latter one is distinctly later in the Early Woodland (ca. 2470-1980 BP).

New River series ceramics (Loftfield 1976:149-154) have also been dated to the transitional Late Archaic-Early Woodland (Herbert 2003:5.2). Numerous ^{14}C and TL dates for New River pottery place its production between about 4000 and 2300 BP (Herbert 2003:Figure 5.2, 184), and Herbert (2003:184) refines this to roughly between 3200 and 2400 BP. New River series

sherds are coarse sand tempered ceramics, originally defined as having cord marked, fabric impressed, simple stamped, and plain surfaces (Loftfield 1976:145); Herbert (2003:69) has added paddle edge stamped to the surface treatment repertoire. Some researchers have argued that New River ceramics from the southern Coastal Plain and Deep Creek ceramics from the northern Coastal Plain should be considered the same series (cf. Phelps 1983). Recently, Herbert (2003:64) has done just that, and combined Lenoir (Crawford 1966) and Deep Creek (Phelps 1983) series ceramics of the central and northern Coastal Plain into the New River series, thus recognizing a single Early Woodland pottery type across the entirety of the North Carolina Coastal Plain.

In Phelps' summary of Coastal Plain prehistory, he noted that aside from ceramic types, "Little is known about settlement distribution or subsistence in the Early Woodland of the Coastal Plain" (1983:32). Over fifteen years later, Ward and Davis (1999:203) point out this lack of knowledge has not changed. No direct evidence of plant cultivation during the Early Woodland period has been found, leading many researchers to speculate that the rich estuarine environment lead to a later acceptance of cultivated plants (Phelps 1983:32; Ward and Davis 1999:203).

The Middle Woodland is usually characterized by an intensification of long-distance trade throughout the eastern Woodlands. However, evidence for direct participation of local groups in the classic Hopewell interaction sphere exchange network remains minimal to non-existent. Elsewhere, horticulture is thought to have become increasingly important, and the cultivation of maize may have been initiated at this time, although its importance was not realized until the subsequent Late Woodland period. At the current time, though, it is unclear whether agriculture was being practiced in coastal North Carolina during the Middle Woodland (Ward and Davis 1999:205). Gremillion (2002:Figure 22.4) argues that little to no agriculture existed in the Coastal Plain of North Carolina before the advent of maize agriculture, which so far has only been identified from Late Woodland Algonquin contexts in the Outer Coastal Plain region (cf., Daniel 1999; Jones and Espenshade 1997) and Late Woodland Iroquois (Cashie) contexts in the Northern Inner Coastal Plain region (cf. Byrd 1997; Millis 2003).

Two Middle Woodland ceramic series have been identified for the south Coastal Plain of North Carolina—Cape Fear and Hanover I (Phelps 1983; South 1960, 1976; Ward and Davis 1999). Yadkin series ceramics, more common to the west in the Piedmont of North Carolina, are found in the Sandhills region (Herbert 2003:Figure 6.14). Similarly, Deptford series ceramics, more common to the south in South Carolina and Georgia, can also be "found in the southernmost counties of North Carolina" (Herbert 2003:187) including the Sandhills (Herbert 2003:Figure 5.2). Other diagnostic artifacts of the Middle Woodland period in the North Carolina Coastal Plain are the Roanoke Small variety of triangular projectile points (Phelps 1983:33).

Like the Early Woodland period, we know little about Middle Woodland lifeways. Numerous large and small sites have been found dating to this period, suggesting periodic aggregation and dispersion, or some kind of a village/base-camp–specialized resource extraction station settlement dichotomy. Archaeological data suggests that a continuation of earlier Early

Woodland (or even Late Archaic) lifeways, characterized by high mobility and the dispersed settlement of small family groups, continued into the Middle Woodland with the only major change being the intensification of the use of ceramics (Herbert 2002:302).

In the Southeast in general, the period after about 1000 BP up to the time of early contact with European explorers is referred to as the Mississippian period. The Mississippian period is characterized by increased ceremonialism, as evidenced by more complex mortuary practices and more pronounced architecture in the form of platform mounds with associated religious complexes. The Coastal Plain region of North Carolina is located at the fringe of this generalized Southeastern Mississippian culture and adaptation. However, the late prehistoric occupations of the study area can be better characterized as reflecting a Late Woodland tradition, with an admixture of Mississippian cultural elements in some areas and on some sites. In other words, there is no true "Mississippian" period in the Coastal Plain, and what is traditionally thought of as the "Woodland" period extends to the time of contact with Europeans.

The southern Coastal Plain and Sandhills regions were most likely inhabited by Siouan-speaking groups during the Late Woodland. In Ward and Davis' summary of North Carolina prehistory, they state "The interior Coastal Plain south of the Neuse River is probably the least archaeologically understood region in North Carolina" (1999:226). In 1999, when Ward and Davis wrote their synthesis, little work had been conducted in the region and a "basic ceramic chronology" (Ward and Davis 1999:226) had not even been developed. Work by Joseph Herbert (cf. Herbert 1999, 2002, 2003) has addressed this general lack of information, particularly in regard to ceramic typologies and chronologies. In the Sandhills and South Coastal regions of the Coastal Plain, the Hanover series of the Middle Woodland extends throughout the Late Woodland period, although differences occur by about 1000 BP to warrant Hanover I (Middle Woodland) and Hanover II (Late Woodland) separation. The sand component of sand-and-grog tempering seen in Middle Woodland Hanover I series ceramics declines to the extent that only one-to-three percent of temper in Hanover II pottery is sand—the other 97-98 percent being clay/grog (Herbert 2002:314). Aside from tempering differences, the only other notable difference between Hanover I and II ceramics is the more widespread use of fabric impressing over cord marking in the later Hanover II series.

Although researchers such as Herbert have greatly added to our understanding of Woodland ceramics of the southern Coastal Plain over the last decade, our understanding of other elements of Woodland life in the Sandhills region is still rather limited, particularly in regards to settlement and subsistence patterns. Several coastal studies have documented Late Woodland Algonquin village occupations from south-central coastal North Carolina northward (cf. Daniel 1999; Jones and Espenshade 1997; Millis 2008).

While general settlement and subsistence patterns of the Late Woodland period in the Coastal Plain region is not thoroughly understood, one unique element of Woodland mortuary practices has recently been reevaluated by Irwin et al. (1999)—sand burial mounds. These mounds have been found in southeastern North Carolina south of the Neuse River, but not within South Carolina, as well as from the Sandhills region to the coast (Irwin et al. 1999:Figure 1, 59).

Originally, sand burial mounds were thought to be of Middle Woodland origin, even by researchers like MacCord (1966) who associated the McLean Mound with the Middle Woodland, despite a Late Woodland radiocarbon date of 1000 BP (Irwin et al. 1999:62). Recent reanalysis of McLean Mound materials, coupled with comparison to Wetmore's (1978) descriptions of materials from the Buie Mound, has lead Irwin et al. (1999:79) to argue that sand burial mounds are most likely of Late Woodland origin, although the data does not exclude a Middle Woodland association. The mortuary practices represented by the sand burial mounds in North Carolina further corroborate a settlement pattern of dispersed families seen in the site location data (Irwin et al. 2007:23). They also show a cultural group actively taking part in a complex mortuary system that features transport of the deceased to a ritual site as well as engaging in extra-regional interaction in the form of exotic grave goods.

3.1.5 Proto-Historic and Early Historic Period (ca. Post-460 BP)

The Contact Period in the northern Coastal Plain of North Carolina is well documented archaeologically. However, the same cannot be said about the southern Coastal Plain region. Two reasons partially explain this dichotomy. First, the northern Coastal Plain was the location of much more intensive colonization by European settlers, while the southern Coastal Plain saw few early colonial settlements, most of which only lasted a few years before being abandoned. Second, more concerted archaeological research has been focused on the entire prehistoric sequence in the northern Coastal Plain through the work of David Phelps (cf. 1983) and others (cf. Byrd 1997; Heath et al. 2008; Millis 2003) compared to the southern Coastal Plain (cf. Loftfield 1976).

Aboriginal lifeways of the Late Woodland period likely persisted into the early part of the Contact Period. It is believed that during this period, maize agriculture finally gained the importance for Native Americans of the Coastal Plain of North Carolina that this cultigen saw amongst Mississippian cultural groups further inland since ca. 1000 BP. Accounts by early explorers place significant Native American agricultural pursuits at least 40 miles up the Cape Fear River (Hilton 1967[1664]:72-79 as cited in Irwin et al. 2007:25). Given Late Woodland documentation of maize agriculture in both Algonquin and Iroquois contexts (e.g., Byrd 1997; Daniel 1999; Jones and Espenshade 1997; Millis 2003), it appears that such farming practices were well established by the seventeenth century.

As European settlement expanded and encroached upon Native lands, Native Americans quickly became victims of warfare, slavery, and epidemic diseases (Ward and Davis 1999:275). In 1663, a small group of Puritans from the Massachusetts Bay area established a settlement on the banks of the Cape Fear River near present-day Wilmington. "The Puritan settlement was short-lived and unpleasant" (Ward and Davis 1999:273). A year later, in 1664, English colonists from Barbados established a settlement that existed for a few years. As many as 800 inhabitants lived in the settlement; however, by 1667, it had been abandoned. From this time to the early 1700s during the Tuscarora War (in the central and northern Coastal Plain region) no significant settlement was present in the southern region of North Carolina since Charles Town

(now Charleston, SC) served the southern Carolina region adequately (Gray 1997:71; Lee 1971:5-6; Ward and Davis 1999:273).

3.2 HISTORIC BACKGROUND

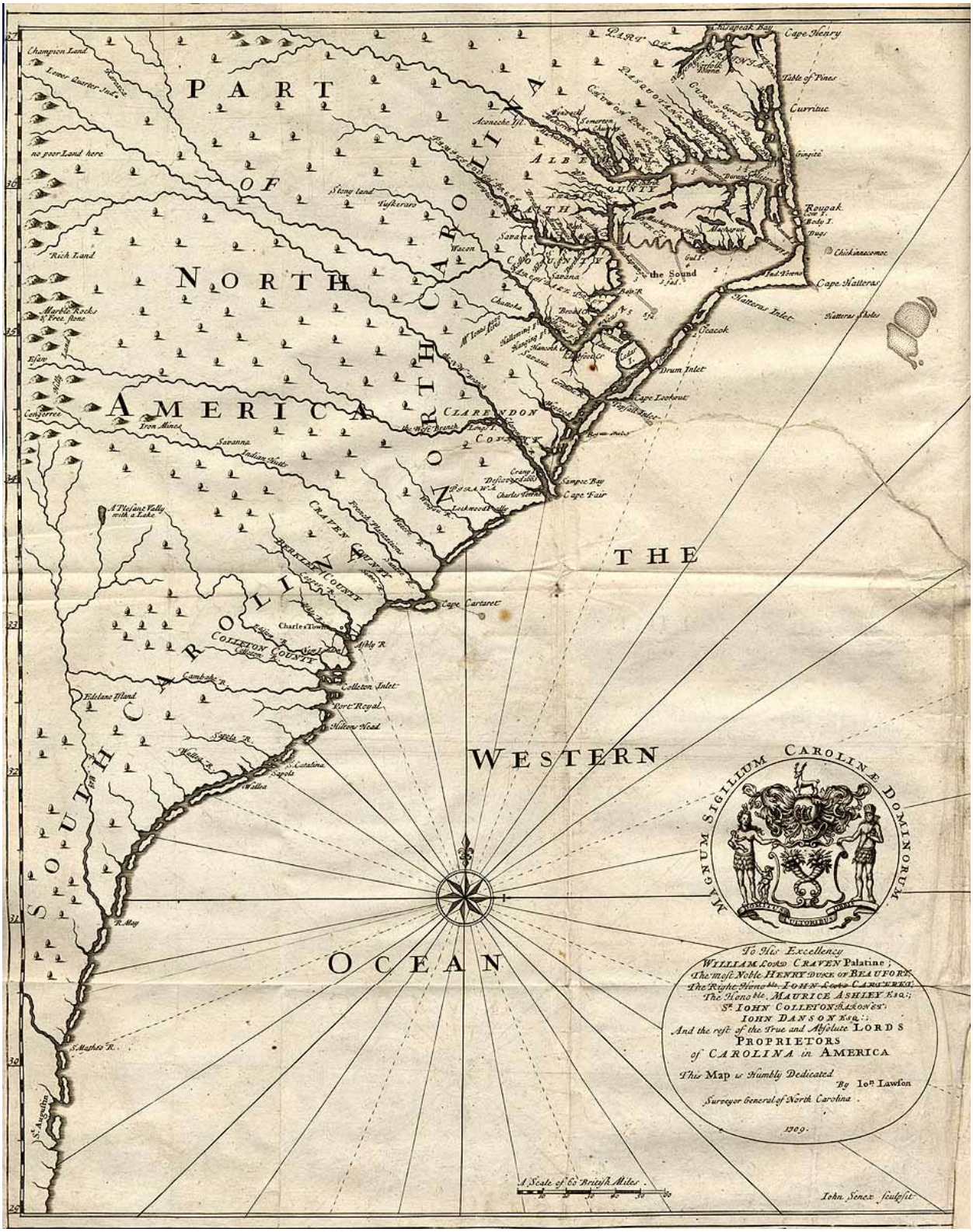
3.2.1 The Cape Fear River, Brunswick, and Wilmington in the Colonial and Early Republic Periods

Near the mouth of the Cape Fear River and the Atlantic Ocean, Spain likely attempted, and certainly failed, to plant a northerly New World settlement in 1526. Not until 1664 was the Lower Cape Fear River region settled, albeit it briefly, by a group of New Englanders and Barbadians (Lee 1955:8, 52-62). "Within two years," according to Lee, "the frame houses and cleared fields of the settlers were scattered along the west bank of the river" from its mouth to about 60 miles upstream. Within the settlement, which they named Clarendon, they raised crops, scoured the countryside and waters for native goods, and traded with local Indians. About 15 miles north of the Cape Fear's mouth, to the northwest of the confluence of the river and Old Town Creek in current Brunswick County, they established Charles Town or Towne, their trading center. With surprising accuracy and foresight into future developments, a 1666 advertisement of the settlement stated, (Anonymous 1666):

> Notes is hereby given to all ingenious and industrious persons that there is a New Plantation begun 2 yeers since on the main land between Virginia and the Cape of Florida at a place called Cape Feare in the Province of Carolina in the latitude of about 34 degrees. It is a climate most desirable for its temperature and fertility as those that are there have written and those lately come from thence doe testifie they have 2 crops of Indian wheate in one yeare and all graine plants and seeds that they commit to the earth do prosper exceedingly they have naturally growing abundance of most stately Timbers of most sorts in England but very many sorts not known to us as Cedar Pines Sassafras and other sweet woods Vines allso and Mulbury and Olives trees from whence come the rich commodys of wine Sylke and Oyle they have aboundance of deere Turkeys and other fowle in the woods and great store of Sturgeon Salmon and many sorts of other good eating fish both flat and round They have since planted and produced very Excellent tobacco, Indeco, Cotton and potatoes and other roots and fruits proper to Barbados Virginia and Barmoodos.

By 1667, however, they abandoned the settlement and more than half a century later, in 1725, the region was still a "lonely wilderness" (Lee 1955:63, 108).

Figure 4: Portion of Lawson map of 1709 with Cape Fear River at center running through Clarendon County (source: Lawson, *A New Voyage to Carolina*).



The Lower Cape Fear's first successful settlement was Brunswick Town, which grantee Maurice Moore established on the west bank of the Cape Fear, about 10 miles from its mouth, in 1725. He chose the location for its high ground above the river and its ability to support a harbor for the shipment of naval stores (Randall 1965:9-11). The port of Brunswick relied on naval stores which, to maximize profitability, were exported in large quantities on ships of at least 100 tons. According to Randall (1965:13-15), the production of stores at that scale required large landholdings and a large force of slave laborers. This promoted the establishment of "vast plantations" along the Lower Cape Fear River, up both the Northeast and Northwest branches of the river above current Wilmington, and along small streams such as Town Creek and Long Creek that fed into the Cape Fear. Many of the early planters came up the coast from South Carolina. When New Hanover was formed in 1729 from Clarendon County, Brunswick was designated its seat. The name Brunswick was again utilized when the county within which the town was located was carved out of New Hanover and Bladen counties in 1764 (Lee 1980:31-34).

Naval stores and timber—pitch, tar, turpentine, masts, yards—first supported the Brunswick settlers (Figure 5). Slave laborers built tar burners' huts and kilns in the piney woods, where they manufactured Carolina tar and pitch. By 1742 about 2,000 of the estimated 3,000 inhabitants of the region were black. In 1767 Brunswick County had 1,085 taxable black residents as opposed to but 224 taxable whites (Lee 1955:138-44, 164; Lefler and Newsome 1954:119).

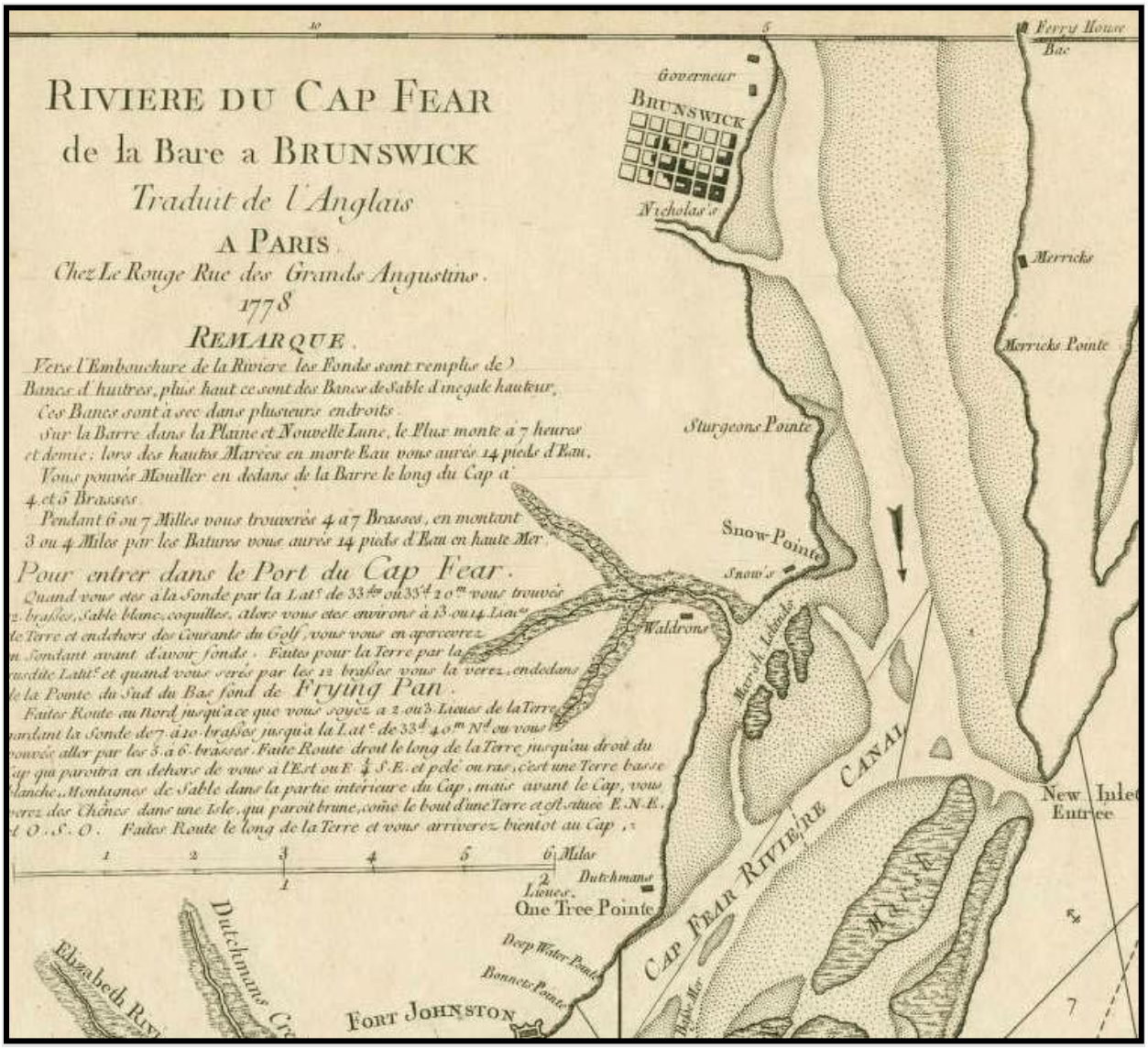
During the Colonial period, Brunswick was challenged and surpassed by a new settlement about 10 miles upriver on the opposite bank of the Cape Fear. Established as the village of Newton in 1733, it was incorporated as Wilmington in 1739-40 (Randall 1965:16, 19; Lee 1955:189, 203). Brunswick was not immediately supplanted, for its port, though inferior in many ways to Wilmington's, could handle large ships that could not travel farther upriver. This supported Brunswick but left it almost totally dependent on trade with Britain and the British West Indies, an Achilles' heel come the Revolution. The port of Wilmington, on the other hand, divided its trade between Britain and the North American colonies (Lee 1955:244) and steadily grew. It had about 400 residents in 1754 and in 1773 perhaps 200 houses stood in the town (Lee 1955:229).

The trade out of the ports of Brunswick and Wilmington during the Colonial period illuminates what the economic activities of the region were. Registers of incoming goods cast further light on the economic and social lives of the region's residents. Brunswick's most important outgoing shipments were tar, pitch, and turpentine followed by lumber, shingles, and staves. The latter items came from the reported 50 sawmills in operation in 1767 along the Cape Fear and its branches. Wilmington shipped pork, some beef, and occasional barrels of flour that originated upriver in the Cross Creek, later Fayetteville, area. Its lesser exports included furs and, to a much smaller extent, leather, indigo, hemp, flax, flax seed, bread, biscuits, venison hams, and rice (Lee 1955:253-56).

The relative importance of rice at this early period is unclear. According to Lee (1955:256), "Rice was grown in the Cape Fear section from the beginning, but never became an export of great

consequence." On the other hand, a legislative act of 1745 addressing piracy on the river and its effects upon Brunswick stated that "the Trade of Cape Fear River consists in Naval Stores, Rice and Lumber…." (quoted in Lee 1955:322). Clifton (1973:365), in his account of rice planting on the Lower Cape Fear, states that rice "seems to have occupied a strong secondary position in the economy there from the beginning." Whatever its importance was to the economy prior to the Revolution, rice was to become a consequential product along the Lower Cape Fear in the years after.

Figure 5: Upper half of Le Rouge map of Cape Fear River, 1778, with Brunswick town at top (Source: North Carolina Historical Collection).



Clothing, chiefly linen and wool was Brunswick's major import. Records from 1763 place other imports in the port, including hardware, nails, earthenware, pewter and tin ware, powder and lead, stationery, and haberdashery products. Lee breaks out the principal imports and their points of origin just prior to the Revolution. Slaves, salt, sugar, molasses, and rum flowed from

the British West Indies. Ships from England contributed cloth, shoes, hats, handkerchiefs and other wearing apparel, gunpowder and shot, household utensils and equipment, glass, tea, furniture, stationery, medical supplies, spices, salt, tobacco, beer, and hardware. From continental America, particularly Pennsylvania, came rum, bread, soap, furniture, bar iron, hay, hardware, and household utensils. As these lists of items suggest, the region imported the vast majority of its goods. Therefore, it is not surprisingly that by the end of the Colonial period Brunswick had no significant industry and Wilmington had but a tannery and a distillery (Lee 1955:259).

The residents of Brunswick, under threat by British ships near the onset of the Revolutionary War in February 1776, deserted the town and port. (Some accounts aver that the town was torched rather than abandoned.) With its near total dependence on British and British West Indies trade, Brunswick's fate was sealed. It was never fully reoccupied and was totally supplanted during the war by Wilmington (Lee 1955:322).

From the Revolutionary War until the last decade of the 19th century, Wilmington was, with the exception of a few years, North Carolina's most populous city. Largely due to its importance as a seaport, it grew even during the Civil War and the Reconstruction period. Except for the years of WW I and WW II, its growth slowed considerably during the first two-thirds of the 20th century. Following the mid-1960s, by which time its population had been greatly surpassed by a number of North Carolina cities, it began to steadily grow again (Randall 1965:ii).

During its first century, from about 1730 to 1830, the life and growth of Wilmington and its surroundings revolved around the Cape Fear River (Figure 6). In the next 30 years, a railroad network that further fed growth joined the Cape Fear lifeline. The Wilmington and Raleigh and the Raleigh and Gaston railroads were completed in 1840. The Wilmington, Charlotte and Rutherfordton Railroad and the Wilmington and Manchester Railroad also operated, although were not completed, by 1861. Further, the river's channel was improved, giving the port greater direct access to river trade. By 1861 Wilmington was North Carolina's leading seaport, as well as a major rail center. During the antebellum period the production of surplus agricultural crops increased in the region. Most of this surplus moved through Wilmington, by rail or ship, to markets outside of North Carolina (Randall 1965:1-2, 32-36; Tuther 1860:110-11).

3.2.2 The Antebellum Period and the Civil War

The South Carolina planters who came to the Lower Cape Fear beginning in the 1720s introduced rice, their former home's "golden grain." Naval stores, which brought "enormous immediate returns" on investment, remained their principal economic activity during the Colonial period. They viewed rice, however, figuratively and literally, as their growth crop (Clifton 1973:365). During the Colonial period, planters cultivated rice in a much wider area in the Cape Fear region than during the years between the Revolutionary and Civil wars (Figure 7). This was largely due to the simplified irrigation methods of the Colonial period, which utilized ponds and dammed-up streams.

Figure 6: "Looking Down the River," Wilmington and vicinity, ca. 1880 (Source: New Hanover County Public Library, Fales Collection; Photographers: C.W. Yates and A. Orr).

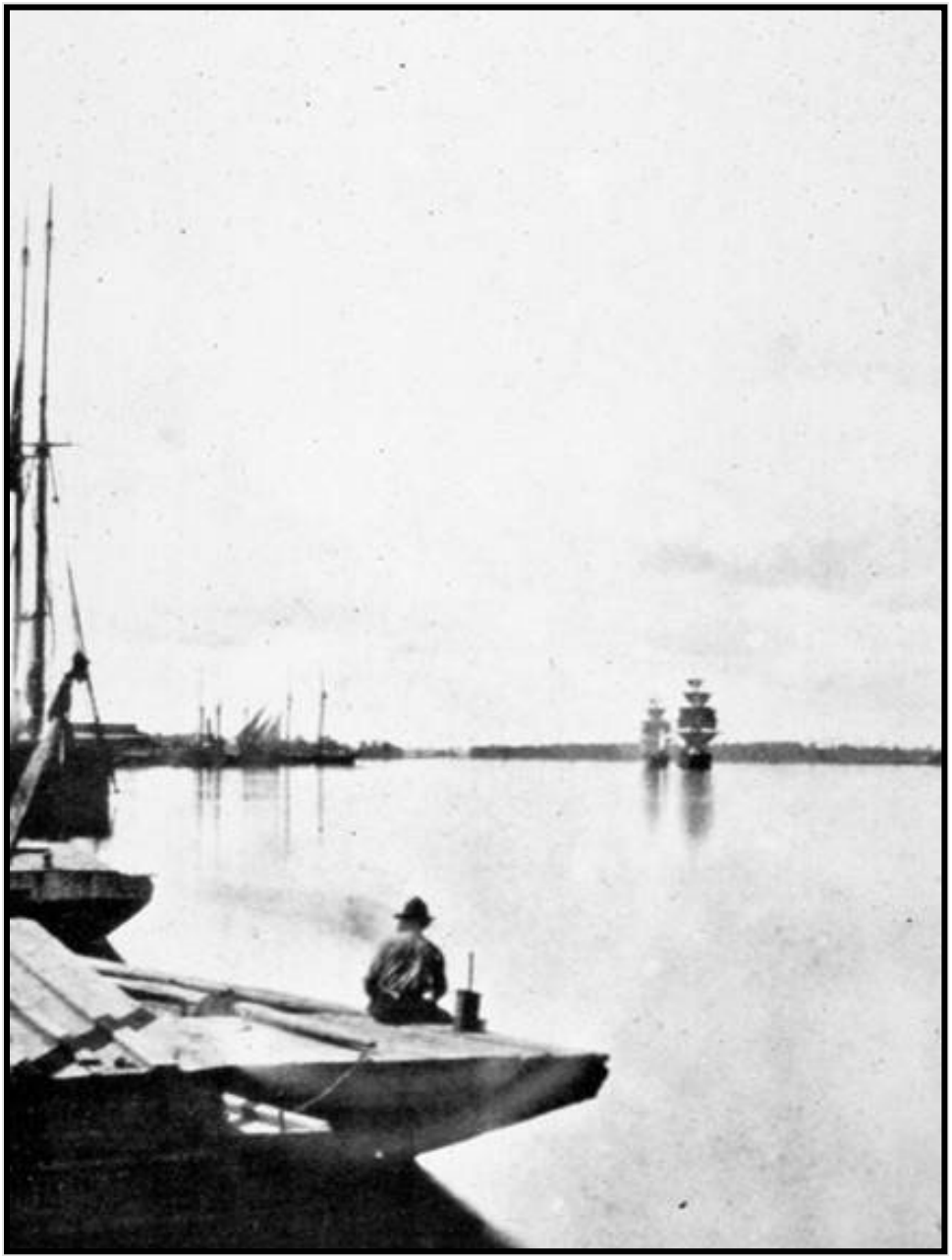


Figure 7: Original drawing of map of Colonial Cape Fear plantations included in Waddell's 1909 *History of New Hanover County* (Source: North Carolina Historical Collection; Creator: H. de W. Rapalje).

During this period the most important rice plantations were located not on the main river, but in inland swamps on its branches. Intensive labor was required to overcome the handicaps of the inland plantations. Woods had to be cleared. Dikes and ditches were quickly overrun by grass and weeds and had to be regularly maintained. Irrigation sources were irregular. Further, by the Revolution the swampy soils had been heavily depleted. During the war, with the loss of British subsidies and bounties, naval stores became less valuable and the growth of indigo, which the typical rice plantation produced in small quantities, disappeared. Planters found a solution in the regular rise and fall of river tides. After the Revolution they shifted to river swamp

lands, which could utilize these flows. This greatly circumscribed the rice-growing area but led to "the real beginning of a large-scale commercial rice industry on the Lower Cape Fear" (Clifton 1973:366-71).

Reclaiming tidal swamps was no less arduous than wrestling rice fields out of inland swamps. To establish a tidal plantation, slaves first had to erect a dike parallel to the river to hold back water. They then had to raise levees, which divided the temporarily drained lands into fields of about 20 acres each. Then they dug canals and drainage ditches with flood gates or trunk culverts edged by hanging doors that opened outwards. Then, within the 20-acre fields, they constructed yet smaller drains perpendicular to the large ditches, which quickened flooding and drainage. This effectively divided the 20-acre parcels into smaller one-acre plots. All of these efforts were ultimately fruitful, for the tidal flow and gravity regularly moved fresh water in and out of the fields and greatly held down the growth of grass and weeds. While fruitful, these efforts were also very expensive. According to Clifton (1973:372), the scarcity of tidal swampland, coupled with the vast amount of slave labor to improve it, made the fields "the most valuable land in the antebellum South."

Hard manual labor did not end with the creation of fields, as almost all steps in rice production were labor intensive (Figure 8 and Figure 9). The chief implement for working the fields was the hoe. By the late antebellum period, five or six slaves armed with hoes worked every one-acre plot. Slaves threshed most of the Cape Fear's rice by hand flail. Every plantation had winnowing houses in which laborers separated the chaff from the seed. Following winnowing, the rice was mechanically pounded, to remove the outer hull, and generally polished in polishing mills, either on the plantation or at the mill of a neighboring planter (Clifton 1973:373-77).

Toil in the rice fields was not only backbreaking. For much of the year it was underlaid by the threat of disease. Planters and their families had the luxury following the spring planting season of abandoning their big houses amidst the malarial fields. Only with the return of the killing frosts of fall did they return from the safety of the mountains, the foothills, or the beach. Overseers, not so fortunate, remained behind and directed slave foremen or drivers who in turn directed the slave gangs (Clifton 1973:377-78).

Clifton (1973:379) generalizes about the living conditions of the enslaved who never left the Lower Cape Fear's rice plantations: "The slaves lived in simple quarters some distance from the plantation house, generally double houses of wooden boards or shingles with a chimney in the middle and occupied by two families, along what was called the 'street'" (Figure 10 and Figure 11). Out of necessity, the street often included a "sick house." Planters issued clothing twice a year, in the late spring and the late fall. They also provided blankets. Weekly they distributed rations that consisted mostly of corn or rice, sometimes supplemented by bacon, potatoes, molasses, salt, or tobacco. Slave families were also generally provided with a piece of land for a garden.

Figure 8: Overall view of rice culture on the Cape Fear with Black man shooting at birds at top; slaves planting, threshing, and hoeing at center; and, from bottom left, a trunk gate, weeding, reaping, and a flood gate (Source: *Frank Leslie's Illustrated Newspaper*, October 20, 1866).

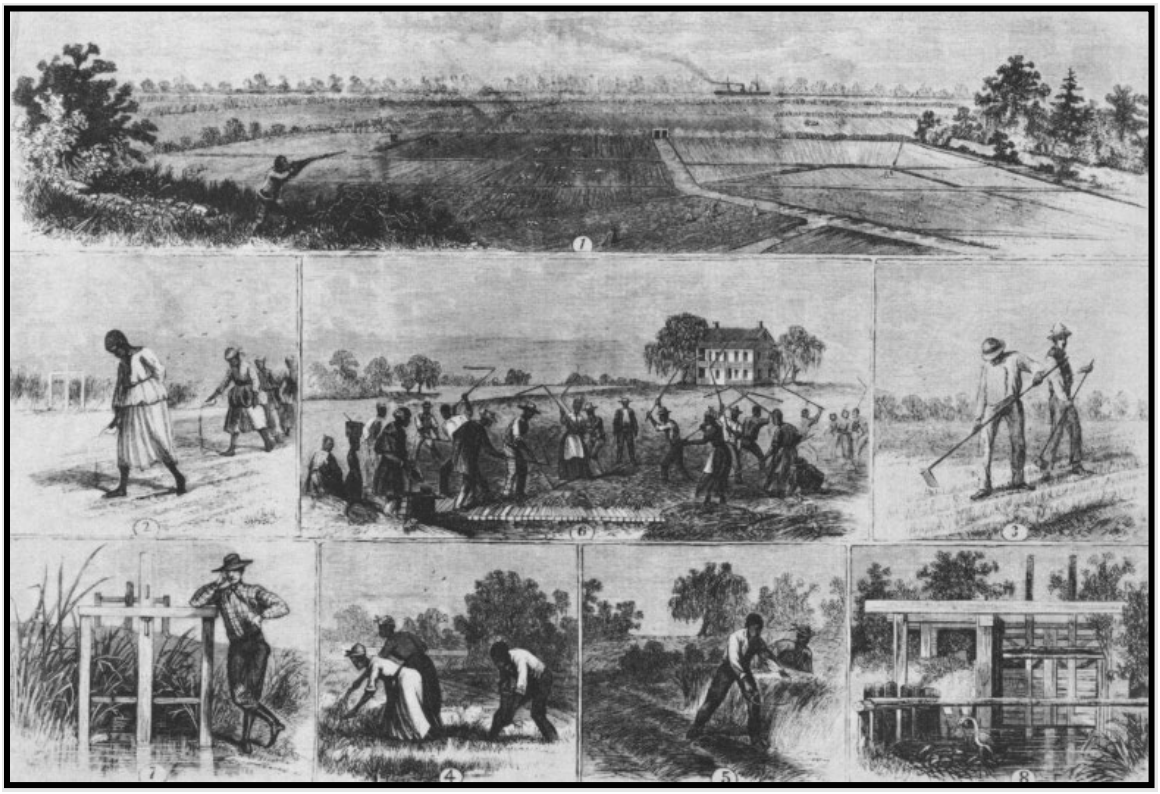


Figure 9: Threshing at an unidentified Cape Fear Rice Plantation (Source: *Frank Leslie's Illustrated Newspaper*, October 20, 1866).

Figure 10: Ca.1800 "View of Mulberry, House and Street," a South Carolina rice plantation on the Cooper River with slave houses likely of rammed earth (Source: Historic Charleston Foundation; Artist: Thomas Coram).

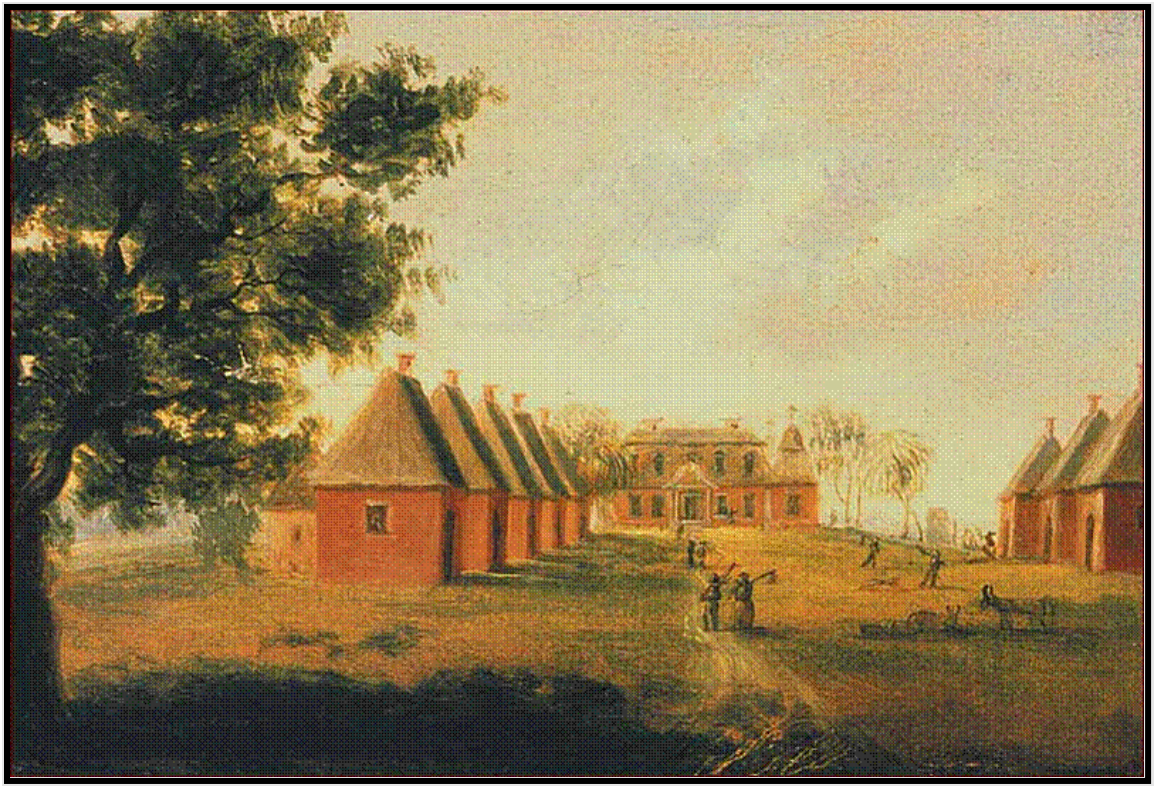


Figure 11: Friendfield Village slave cabins at Hobcaw Barony rice plantation, Horry County, South Carolina, ca. 1905 (Source: Georgetown County Digital Library).

In 1859 a mere 28 Lower Cape Fear planters—20 of whom were located in Brunswick County and eight in New Hanover—and their hundreds of slaves produced their largest rice crop ever. The 200,000 bushels, over nine million pounds, doubled the crop of 10 years before. The average improved acreage of the plantations—which ranged from a high of 556 to a low of 95—was 223.2 acres. Numbers of slaves varied as well, from a low of just 12 to a high of 160. The mean average stood at about 56 slaves per plantation (Clifton 1973:381).

According to Clifton (1973:382), no records survive from the Lower Cape Fear rice plantations, only scattered pieces of information. Indeed, the plantation houses themselves have disappeared, but for the brick Orton main house and perhaps another building or two (Figure 12). The core of Orton is likely the house described in 1734 as the brick seat of "the chief gentleman in all Cape Fear," Roger Moore, the son of South Carolina Gov. James Moore. By the eve of the Civil War, its antebellum owner Dr. Frederick Jones Hill—who had transmogrified it into a monumental, Greek Revival-style, temple-front mansion—owned a total of 9,000 improved and unimproved acres that produced a half-million pounds of rice (Bishir and Southern 1996:268; Knott, Jacobs, Osborn, and Hood 2013).

Figure 12: The big house at Orton Plantation, ca. 1919 (Source: New York Public Library).

Belvedere rice plantation was located on the east side of the Brunswick River, separated from Wilmington to its east by Eagles' Island and the Cape Fear River. It was described in 1831 as having a "comfortable and convenient two story dwelling house, and a building one and one half

story, with a kitchen, washhouse, stable, carriage house, smokehouse, &c." It also had a 110' x 40', two-story barn with threshing and other machines, and an overseer's house and kitchen (*Charleston Courier*, July 6, 1831). Unlike most of the other rice plantations, all of these buildings were of brick. The main house at Clarendon plantation, which overlooked the west bank of the Cape Fear, southwest of Wilmington, was also unusual in its use of brick. Marsden Campbell's 1834 notice of sale of the plantation stated:

> FOR SALE. THE RICE PLANTATION on which I reside in Brunswick County, five miles below Wilmington called CLARENDON. In situation and fertility it is surpassed by no place on the Cape Fear River. It contains by title Deeds, 335 acres of Tide Swamp, and 654 Acres of Upland. There are 220 Acres of low land in a high state of cultivation, which have averaged upwards of seventy-two bushels of Rice to the Acre. On the premises are a comfortable dwelling house &c. a brick barn with extensive framed Mill-houses attached, and two threshing Mills.—Negro quarters capable of containing one hundred hands, well built of brick, and covered with Dutch pantile,—a comfortable house for Overseer,—a grist Mill with a plentiful supply of Water and all other conveniences for such an establishment, which need not be described as those wishing will of course visit the Estate (*People's Press and Wilmington Advertiser*, April 2, 1834).

The sale also offered about 60 head of cattle, including ten yoke of oxen, 40 sheep, blacksmith's bellows with anvil, a gig, carts, plows, cultivators, hoes, reap hooks, and household furniture (*People's Press and Wilmington Advertiser*, November 12, 1834).

Rice was not the only source of great wealth in Brunswick on the eve of the war. Six of the county's 10 wealthiest men grew rice, but the other four were engaged in different enterprises, including the production of naval stores. Rice was, though, the Lower Cape Fear's great agricultural endeavor. According to Lawrence Lee (1980:103), "Aside from rice, there was little commercial agriculture in ante-bellum Brunswick County." Most of Brunswick's land, and presumably New Hanover's as well, remained wooded and most of its crops were grown for subsistence. The most common food crops were corn and sweet potatoes. Other crops included peas, beans, oats, rye, and orchard fruits. Cattle and hogs roamed free and additional food—game, fish, shellfish—came from the land, the river, and the ocean (Lee 1980:104).

Though less likely to produce vast fortunes than rice, the naval store industry remained vital to the Lower Cape during the antebellum period and beyond (Figure 13 and Figure 14). As late as the 1850s, North Carolina was responsible for two-thirds of the nation's naval store production. Much of the remaining third was produced in South Carolina and sold through Wilmington. During the decade the two states accounted for more than 95 percent of the country's naval stores (Evans 1995:36).

Figure 13: North Carolina Turpentine Distillery No. 3, no date (Source: New Hanover County Public Library, Fales Collection).

Figure 14: "In a great pine forest—collecting turpentine, North Carolina," 1904. (Source: North Carolina Collection, University of North Carolina at Chapel Hill).

Although naval stores and rice were the largest discrete economic engines of the economy of the Lower Cape Fear, they did not dominate the lives of most Lower Cape Fear residents. Most of the region's workers and their families labored and lived on small farms in rural surroundings (Figure 15). Of the 906 families in Brunswick County in 1860, 645 farmed holdings of more than three acres, but only 43 of these held more than 100 acres. The numbers broke down as follows: between three and 10 acres (208 families); from 10 to 49 acres (360 families); from 50 to 99 acres (34 families); from 100 to 499 acres (40 families); from 500 to 1,000 acres (two families); more than 1,000 acres (a single family). Unlike the rice planters, most Lower Cape Fear residents owned few if any slaves. Of Brunswick County's 258 slaveholders in 1860, only one owned more than 200 slaves, four between 100 and 199 slaves, and 30 between 20 and 99 slaves. The numbers skewed much more heavily toward few if any slaves. Forty one of the slaveholders owned between 10 and 19 slaves; 61 held five to nine; and 112 enslaved between one and four African Americans (Lee 1980:99).

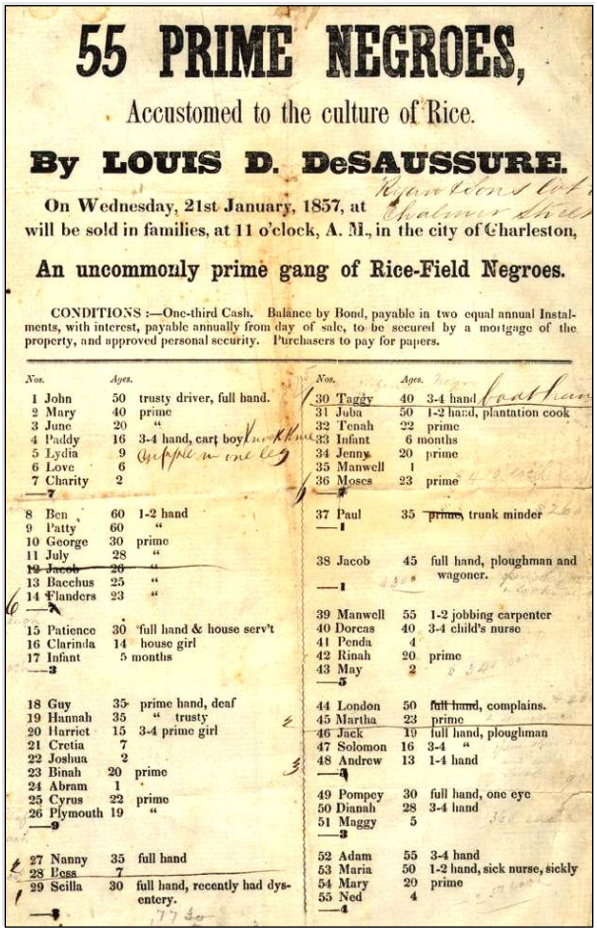
Slaves did not just labor in the fields and the piney woods. The following 54 occupations were listed for Cape Fear region slaves from the Colonial period through the Civil War: barber, blacksmith, boat builder, boatman, body servant, bricklayer, cabinetmaker, carpenter, chair maker, cook, cooper, distiller, ditcher, engineer, factory worker, farmhand, fireman, fisherman, hack driver, hammer man, harness maker, hostler, iron molder, mariner, mason, mechanic, midwife, miller, milliner, miner, musician, nurse, painter, pilot, plasterer, railroad hand, saddler, seaman, seamstress, servant, shipbuilder, shoemaker, spinner, swamp hand, tanner, timber hewer, tobacco hand, turpentine hand, wagon driver, waiter, washerwoman, weaver, well digger, and wheelwright. Advertisements for South Carolina rice-field slaves indicate the many jobs that slaves had on a rice plantation alone, including drivers, hands, cart boys, house servants, cooks, trunk minders, plowmen, waggoners, carpenters, nurses, engineers, ferrymen, gardeners, maids, and seamstresses (Brewer 1949:Appendix F) (Figure 16).

A report on Wilmington's port, completed in 1815 (Wilmington Chamber of Commerce 1872:5-10) shortly after the end of the War of 1812, identified an array of products that flowed out of the port and, in many instances, their points of origin. Ten items were of the "first importance"—tobacco, cotton, rice, flour, corn, tar, turpentine, flaxseed, lumber, and staves. The rice came from the immediate vicinity of Wilmington and the timber and naval stores were largely harvested and produced at no great distance. A few of the crops were designated as coming from the upcountry—Fayetteville and beyond—including tobacco, flour, and flaxseed. Reflecting the area's focus on the cash crops of rice and naval stores, corn was "seldom either plentiful or cheap in Wilmington. The country around does not produce it in sufficient quantity for exportation." The report identified about a dozen additional exports of minor importance: bacon; butter "chiefly from the mountains and back country"; apple and peach brandy; whiskies distilled from grains; beef of "sound, but lean and inferior" quality; pork bound for the West Indies; tallow, shipped in small quantities "coastwise"; deerskins and furs in limited numbers and of poor quality; peas, black-eyed and the like, "to provision crews of vessels, feed negroes, milch chows, &c."; livestock comprised of free-range hogs and "small and weakly" cattle, as well

as poultry in plenty; pitch burned down from tar; distilled rosin and spirits of turpentine and tar; and, at least during the war, local "Sound Salt" produced via evaporation.

Figure 15: Road on Eagle Island in Brunswick County just west of Wilmington ferry terminal, late 19th/early 20th century (Source: New Hanover County Public Library, Fales Collection).

Figure 16: Notices of sales of rice plantation slaves in Charleston, 1857 (Source: Duke University Libraries Digital Collections).



55 PRIME NEGROES,

Accustomed to the culture of Rice.

By LOUIS D. DeSAUSSURE.

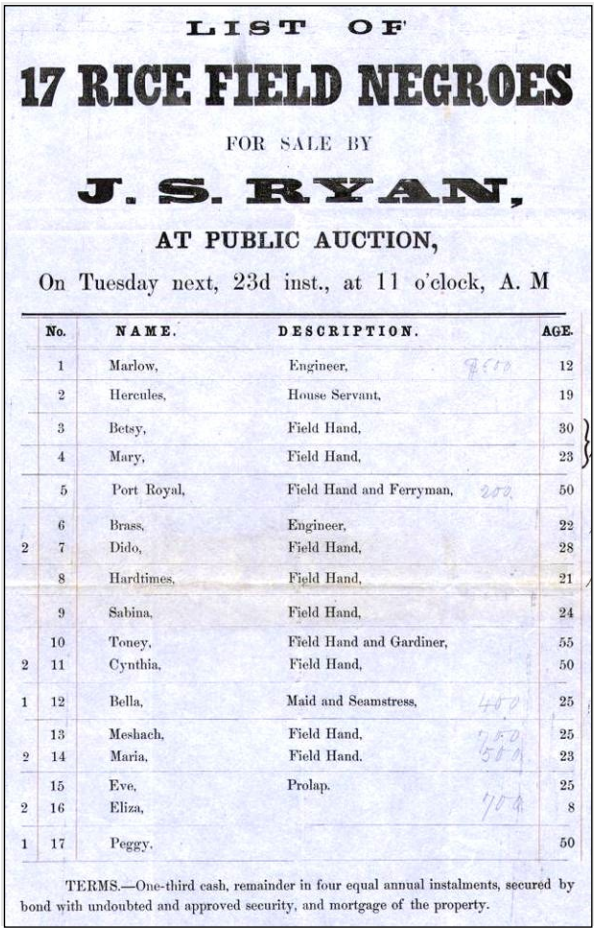
On Wednesday, 21st January, 1857, at Ryan's Lot, Chalmer Street will be sold in families, at 11 o'clock, A. M., in the city of Charleston,

An uncommonly prime gang of Rice-Field Negroes.

CONDITIONS :—One-third Cash. Balance by Bond, payable in two equal annual Instalments, with interest, payable annually from day of sale, to be secured by a mortgage of the property, and approved personal security. Purchasers to pay for papers.

Nos.		Ages.	
1	John	50	trusty driver, full hand.
2	Mary	40	prime
3	June	20	"
4	Paddy	16	3-4 hand, cart boy
5	Lydia	9	
6	Love	6	
7	Charity	2	
	—7		
8	Ben	60	1-2 hand
9	Patty	60	"
10	George	30	prime
11	July	28	"
12	~~Jacob~~	26	"
13	Bacchus	25	"
14	Flanders	23	"
	—7		
15	Patience	30	full hand & house serv't
16	Clarinda	14	house girl
17	Infant	5	months
	—3		
18	Guy	35	prime hand, deaf
19	Hannah	35	" trusty
20	Harriet	15	3-4 prime girl
21	Cretia	7	
22	Joshua	2	
23	Binah	20	prime
24	Abram	1	
25	Cyrus	22	prime
26	Plymouth	19	"
	—9		
27	Nanny	35	full hand
28	~~Rose~~	7	
29	Scilla	30	full hand, recently had dysentery.
	—3		

Nos.		Ages.	
30	Taggy	40	3-4 hand
31	Juba	50	1-2 hand, plantation cook
32	Tenah	22	prime
33	Infant	6	months
34	Jenny	20	prime
35	Manwell	1	
36	Moses	23	prime
	—3		
37	Paul	35	prime, trunk minder
	—1		
38	Jacob	45	full hand, ploughman and wagoner.
	—1		
39	Manwell	55	1-2 jobbing carpenter
40	Dorcas	40	3-4 child's nurse
41	Penda	4	
42	Rinah	20	prime
43	May	2	
	—5		
44	London	50	~~full hand~~, complains.
45	Martha	23	prime
46	Jack	19	full hand, ploughman
47	Solomon	16	3-4 "
48	Andrew	13	1-4 hand
	—3		
49	Pompey	30	full hand, one eye
50	Dianah	28	3-4 hand
51	Maggy	5	
	—3		
52	Adam	55	3-4 hand
53	Maria	50	1-2 hand, sick nurse, sickly
54	Mary	20	prime
55	Ned	4	
	—4		



LIST OF

17 RICE FIELD NEGROES

FOR SALE BY

J. S. RYAN,

AT PUBLIC AUCTION,

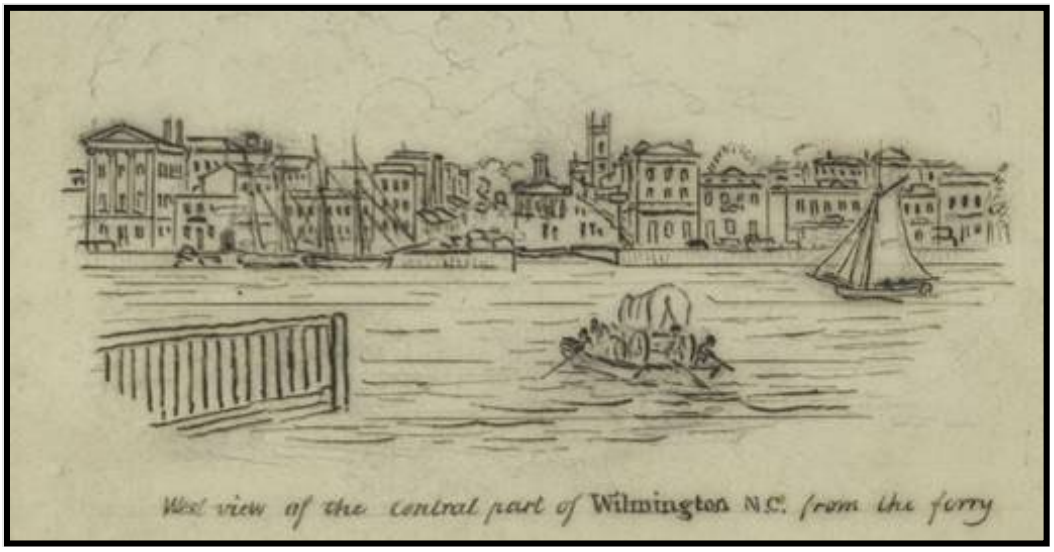
On Tuesday next, 23d inst., at 11 o'clock, A. M

	No.	NAME.	DESCRIPTION.	AGE.
	1	Marlow,	Engineer,	12
	2	Hercules,	House Servant,	19
	3	Betsy,	Field Hand,	30
	4	Mary,	Field Hand,	23
	5	Port Royal,	Field Hand and Ferryman,	50
	6	Brass,	Engineer,	22
2	7	Dido,	Field Hand,	28
	8	Hardtimes,	Field Hand,	21
	9	Sabina,	Field Hand,	24
	10	Toney,	Field Hand and Gardiner,	55
2	11	Cynthia,	Field Hand,	50
1	12	Bella,	Maid and Seamstress,	25
	13	Meshach,	Field Hand,	25
2	14	Maria,	Field Hand.	23
	15	Eve,	Prolap.	25
2	16	Eliza,		8
1	17	Peggy.		50

TERMS.—One-third cash, remainder in four equal annual instalments, secured by bond with undoubted and approved security, and mortgage of the property.

A follow-up report of 1843 (Wilmington Chamber of Commerce 1872:14-18), included a list of almost the same exports of first importance, not surprising since much of its language is identical to that of its predecessor. It did, however, note that the flour passing through the port came from the mills of Fayetteville and added two products: wheat, also from Fayetteville, and shingles of both cypress and juniper. One notable addition to the report is its declaration that "a *new route* is now established by the Wilmington and Raleigh *Rail Road*" through the northeastern counties of the state to Weldon and then on to Norfolk or Petersburg (Figure 17).

Figure 17: Wilmington and Cape Fear, late 1850s (Source: New York Public Library).



During the Civil War, Wilmington's port served the region and the broader Confederacy as well. It was the "most important blockade-running port in the Confederacy" and the last major Confederate port to be closed (Figure 18). According to Lefler and Newsome (1954:436):

> Nearly a hundred daring blockade-runners, over half of which were captured or sunk, made more than four hundred trips from Wilmington to Nassau and other West Indian ports and back, enriching their owners with huge profits and bringing in perhaps sixty-five million dollars' worth of necessary supplies for civilians and soldiers, without which the Confederacy must have collapsed earlier. Near the end of the war half the food for Lee's army came through the blockade to Wilmington and over the Wilmington and Weldon Railroad to the battlefields of Virginia.

The Cape Fear provided not only a route for blockade runners, but a path, at least late in the war, for fleeing slaves (Figure 19).

The war briefly reached Wilmington early in 1865. In January Fort Fisher, in New Hanover County on the Atlantic, fell to Union forces, who in the next month at last claimed the Lower Cape Fear. Behind earthen entrenchments in Wilmington—portions of which still remain southeast of Independence Boulevard and 17th Street Extension, near Jumpin' Run Creek—Confederate forces held off Union troops on February 20 and 21, before being ordered to retreat and accede to the fall of the city (Robinson 1994; Daniel 1997; Thuersam 2006).

Figure 18: Drawing of blockade runner aground near Fort Fisher, New Hanover County (Source: New Hanover County Public Library, Fales Collection).

Figure 19: "Fugitive Slaves Escaping to the Protection of our Army at Wilmington—Scene on the Cape Fear River" (Source: *Frank Leslie's Illustrated Newspaper*, June 17, 1865).

3.2.3 Agricultural and Industrialization Following the Civil War

The naval stores and lumbering industries recovered quickly after the Civil War (Figure 20). Not so the rice industry, on which the war exacted a heavy toll in the Lower Cape Fear region. As Evans (1995:36) describes the situation:

> Before the war the people of the Cape Fear country had depended primarily upon two industries, naval stores and rice. If the former suffered damage as a result of the war, the latter suffered almost total annihilation as a result of emancipation. No ante-bellum industry was more dependent upon compulsory labor than rice, with its heavy demand for backbreaking toil in disease-infested quagmires.

The rice industry suffered not just from labor costs, but from its dependence on "techniques of a bygone era." At the planting and harvesting stage, it utilized surprisingly primitive tools, mostly comprised of hoes, seed drills, and ox-drawn plows. Evans (1995:206) expands upon the reasons why planters abandoned the business after the war:

> A planter could no longer count his cost in terms of how much corn meal and fatback a prime field hand would eat in a year. Rather, he had to count his cost in terms of how many working days it would take to clean out a canal during a cold December or how many days to weed a crop by hand. The monstrous amount of work that was absorbed by rice production was no longer concealed by slavery, nor was the intensity of that work. It was work that had to be paid for at wages that would make his malaria, snake, and alligator-infested quagmires competitive with work on the railroads and in the forest industries.

Indeed, it was only former slaves, freed—at least legally—of their masters, who produced any rice in the decade following the war. The culture revived to some extent in the 1880s, and in 1894 a Wilmington newspaper announced that Clarendon plantation had exhibited "the first head of new rice" of the season (*The Messenger*, July 27, 1894 quoted in Jackson 1994). The last recorded Cape Fear crop, in 1909, amounted to but 7,800 bushels (Clifton 1993:386-93) (Figure 21).

Figure 20: Left, barrels of naval stores on the Cape Fear overlooking Wilmington, pre-1892; right, schooner loading tar, pitch, and rosin on the Cape Fear in Brunswick County, ca. 1900 (Source of both: New Hanover County Public Library, Fales Collection).

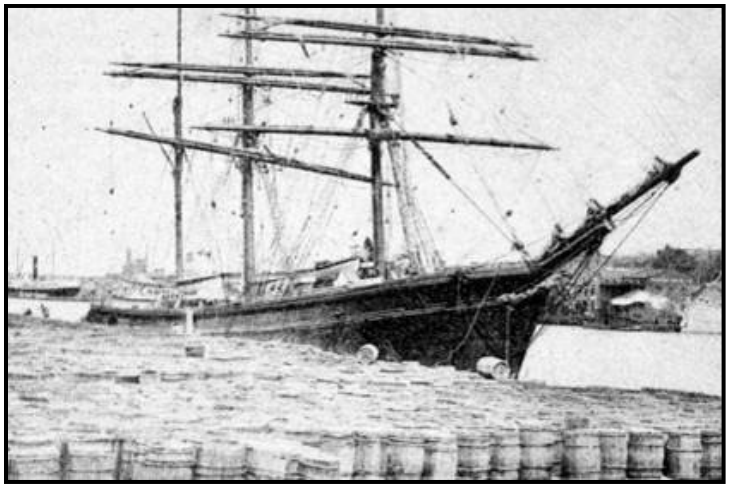


Figure 21: Planting rice, probably in North Carolina, late 19th century (Source: Vlach, "Cultural Landscape of the Plantation" Exhibition).

The collapse of rice cultivation and slavery, which were inextricably entwined, led to the dismantlement of the rice plantations and, ultimately, the loss of their buildings. Orton, the biggest of them all, was placed on the auction block for debts by order of the Brunswick County Superior Court on August 22, 1872. The auctioneer's handbill, which put the plantation's land and adjacent properties at 9,026 acres, stated in part (reproduced in Sprunt 1958:31):

> The Plantation is situated upon the West side of the Cape Fear River, 15 miles below this City (within 6 miles of the Ocean), and has a front of over two (2) miles upon Cape Fear River, COVERING 300 ACRES OF SUPERIOR RICE LAND, of which 225 acres have produced 16,300 bushels (these lands are unsurpassed for small Grain and Grasses), with 8,000 ACRES OF PINE, and a large assortment of LIVE OAK TIMBER.
>
> An immense WATER POWER, from a Pond 7 miles in length, 12 feet head of Water (*unfailing*), with many desirable sites for SAW MILLS, COTTON or other MANUFACTORIES, TURPENTINE DISTILLERIES, &c.
>
> The lands abound in Deer and other Game, the Pond is well stocked with Fish of the finest varieties, and is opposite and accessible to the New Inlet Fisheries.
>
> The Improvements consist of TWO STORY DWELLING HOUSE, containing 10 rooms, Brick Basement, with all necessary Out-Houses, extensive Barns, Stables, &c., with Houses detached for 200 HANDS.
>
> This extensive Plantation, the late Palatial Residence of Dr. F. J. HILL, deceased, valued prior to 1861 at $100,000 must be thoroughly viewed and examined in person to realize its value to the Agriculturist and Capitalist, as it will be sold at a great sacrifice (not one-third, probably, of its original cost) to satisfy the demands of creditors.

Evidence of the once-flourishing 18th, 19th, and early 20th-century naval stores and rice culture is now largely limited to archaeological remains (Klein et al. 1992:2-4).

The Civil War's disruption of the Lower Cape Fear's economy opened up some opportunities or at least potential opportunities. In 1869 an enterprise operating out of Raleigh and New York, called the North Carolina Land Company, announced that it had been "established for the transportation and location of Northern and European settlers in the State of North Carolina." It summarized, not without hyperbole, the advantages of the state's counties, including Brunswick and New Hanover. Its description of Brunswick included the following facts and affirmations. The county had a population of 8,000 and 385 farms. Its improved lands encompassed 18,500 acres; those unimproved totaled 247,600 acres. Its annual products included corn, sweet potatoes, cotton, wool, rice, lumber, and tar, pitch, and turpentine. Horses, mules, cattle, sheep, and hogs comprised its livestock. Its green and cypress swamps abounded in timber. Its industrial activity was limited to a reported 50 tar and turpentine manufactories. Perhaps the most telling and booster-driven statement was: "200,000 acres of

the best lands are for sale, and offer splendid openings for capital, labor and skill" (North Carolina Land Company 1869).

The land company pegged New Hanover County's population at 25,000. It had 650 farms, almost 53,000 improved acres, and just under 400,000 unimproved acres. Its livestock included horses, mules, cows, other cattle, sheep, and hogs. Its agricultural products, more diverse than those of Brunswick, included wheat, rye, corn, oats, rice, wool, peas, Irish potatoes, sweet potatoes, peanuts, lumber, turpentine, spirits of turpentine, tar, and fish. Its industrial base was also broader than Brunswick's, extending to sawmills, planing mills, turpentine distilleries, tar factories, gristmills, and two shipyards. The company did not specify the amount of land for sale. Perhaps the lion's share of it was not on the market, as they claimed with Brunswick. But they emphasized a few particular opportunities to be had in New Hanover: "The lands are well adapted to truck farming. The pea-nut is more extensively cultivated than in any county in the State and is very profitable. Cotton and corn do well, and the rice lands are productive" (North Carolina Land Company 1869). The North Carolina Land Company does not appear to have had much success in either county, although in the early 20th century some agricultural colonies of northern and western Europeans were established in New Hanover County north of Wilmington and elsewhere in the region.

The debilitated production of New Hanover, Brunswick, Cumberland and other counties that fed Wilmington's port is much more accurately portrayed in the Wilmington City Directory of 1871, which reproduces export figures for the years 1860 and 1870 (Haddock 1871:19) (Table 2).

Table 2. Wilmington City Directory of 1871.

ARTICLES	Coastwise		Foreign	
	1860	1870	1860	1870
Spirits Turpentine, barrels	127,562	68,966	20,400	32,889
Crude Turpentine, barrels	52,175	12,929	23,548	3,258
Rosin, barrels	440,132	483,546	57,425	26,127
Tar, barrels	43,056	54,090	6,120	6,107
Pitch, barrels	5,498	4,624	784	190
Cotton, bales	22,851	51,617	-	-
Cotton yarn, bales	1,561	72	-	-
Cotton sheeting, bales	1,750	547	-	-
Peanuts, bushels	99,743	124,296	-	-
Lumber, ft	9,126,176	11,515,123	9,882,078	8,378,861
Timber, ft	22,600	290,789	20,000	85,400
Shingles	730,880	4,804,890	2,776,870	2,339,334
Staves, cypress	-	482,253	-	-
Staves, oak	94,723	-	10,000	-

The directory notes the fall of virtually all naval stores, but also the heavy increase in cotton. "This is due, mainly," it states, "to the fact that during the past year, and in the country supplying this city, every interest was made subservient to the culture of cotton. Even the production of turpentine…" (Haddock 1871:20). What it does not note, but what is glaringly apparent, is the total absence of rice shipments from the port.

By the opening of the 20th century, Wilmington's port traffic began to shift to larger ports with equal or better railroad connections. After WW I the city began to lose its dependence on its port and assert itself in a smaller arena as a regional center for southeastern North Carolina (Randall 1965:1-2) (Figure 22). The area broadened its agricultural production—Brunswick County had always been rural and agricultural—and Wilmington widened its industrial base, processing local materials and, in some instances, materials brought into the port. It still remained largely rural, though, and retained, as it had historically, a population of both white and Black residents (Figure 23).

By 1902 the Navassa Guano Company (established in 1869 to process transform foreign guano into fertilizer for soil-depleting crops such as cotton) had erected two large factories across from Wilmington in Brunswick County. The Cape Fear Lumber Company, established in the early 1890s in Wilmington, claimed the capacity to process 24,000,000 board ft annually. Much of its timber came on the river or on trunk lines from the 80,000 acres of woodland it owned in North and South Carolina. A large peanut dealership had opened in 1901 to serve a regional product that had first surfaced in Wilmington around the 1850s. Wholesale grocers and cotton factors served the region from offices in the city. Added to the factories that continued to process naval stores were such facilities as the Delgado textile mill, opened in 1899, and the Willard Bag and Manufacturing, Co., incorporated in 1893 on Front Street in Wilmington (Chamber of Commerce 1902).

Truck farming had finally taken root after years of promotion (Figure 24). On farms near Wilmington, such products as strawberries, lettuce, radishes, asparagus, and celery were produced and shipped to northern markets in refrigerated railcars. Locally caught fish, fresh and salted, were shipped from Wilmington and its surroundings. According to the Wilmington Chamber of Commerce: "Immense quantities of mullets…salted and packed in Wilmington and…dispatched to all parts of the country" were joined by shad, black fish, trout, sea bass, rock fish, pig fish, flounder, croakers, spots, sturgeon, catfish, drum, whiting, snapper, red mouth, herring, blue fish, bream, sheephead, and striped bass. "Oyster gardens and beds, a few miles from Wilmington," largely served local demand (Chamber of Commerce 1902).

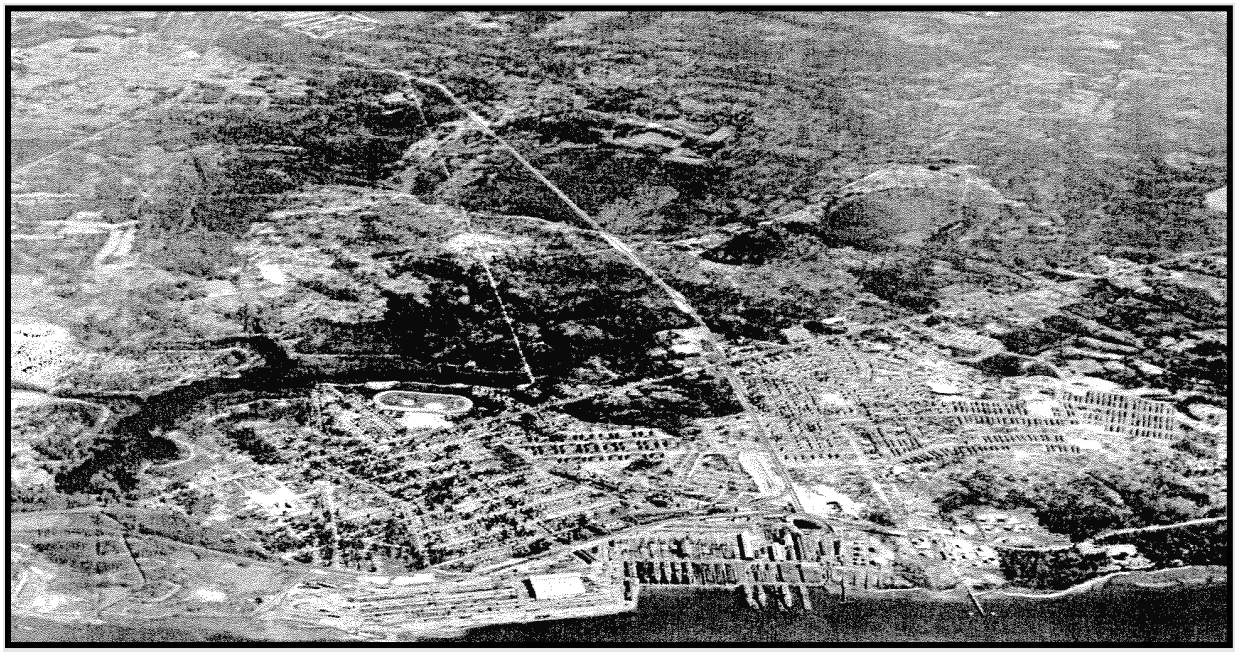
Figure 22: Picnicking near Wilmington, ca. 1900-10 (Source: North Carolina Collection, University of North Carolina at Chapel Hill).

Figure 23: "A Sewing Lesson in the Oak Grove School, Brunswick County," 1913 (Source: New York Public Library).

Figure 24: Left, picking strawberries near Wilmington, 1902; right, lettuce truck farm at Castle Hayne north of Wilmington, ca. 1902 (Source: New Hanover County Public Library, Fales Collection).

During WW I Wilmington produced concrete Liberty ships for the war effort and shipyards in both Brunswick and New Hanover counties continued to build vessels. WW II brought a tremendous number of jobs and concomitant growth to Wilmington. From February 1941 to October 1946, the North Carolina Shipbuilding Company built 243 vessels for the navy, the Maritime Commission, and private lines. About 21,000 labored at the shipyard in the city during its peak in 1943 (New Hanover County Public Library 2006:Part V; Knapp 2003). Many of these employees and their families lived in sprawling public housing project erected for them near the shipyard (Figure 25). Following the end of World War II, suburban development surged south of the center of Wilmington to the shipyard and public housing nearby it.

Figure 25: North Carolina Shipbuilding Company at bottom center along river (Source: *Wilmington Then and Now*).



The population of the Lower Cape Fear, particularly in Wilmington and its immediate surroundings, continued to grow during the last third of the 20th century, most notably in the 1990s. The city's population of 55,000 in 1990, its largest ever, soared to over 90,000 in 2000, an increase of 63 percent. During the same decade, New Hanover County's population increased by one-third and Brunswick's by 45 percent. Growth in Wilmington leveled off at about five percent between 2000 and 2005, but New Hanover's population rose nearly 10 percent during the period and Brunswick's by over 16 percent (City Planning Division 2004; Development Services Department 2006). As the area has remained little developed beyond Wilmington and its suburbs, most of this growth in the two counties has occurred on rural property that was once farmed or timbered or that had previously resisted development due its swampy terrain. The tidal rice lands of Brunswick County, however, largely continue to be inhospitable to the growth of anything other than rice.

3.2.4 Point Peter History

The themes common to the Cape Fear and Wilmington area—rice production and plantations, slavery, naval stores, timber, industrialization—are also those of Point Peter's history. Point Peter is located in New Hanover County at the point of land formed by the confluence of the Northwest and Northeast branches of the Cape Fear River, and also more generally, north up the peninsula from the point (Figure 26). To its southeast is the historic core of Wilmington and, to the south, Eagles' Island. The point is named for Col. Peter Mallett who in 1777, with Arthur Magill, acquired it from "King" Roger Moore of Orton Plantation, along with about 3,000 acres extending north up the peninsula between the river branches. The deed stated that the land was "well known by the name of Negroe head Point" (Rose 1988:543; New Hanover County Deed Book U/Page 51). This name and the even more unpalatable "Nigger Head Point" appear in various late 18th, 19th, and early 20th-century sources (see, for example, *Wilmington Advertiser* March 18, 1841; *Wilmington Morning Star* October 2, 1877; *Wilmington Sun* March 28, 1879; and *Wilmington Messenger* August 19, 1892).

The Mallett Family Rice Plantation

A description of the Point Peter plantation is first found in the diary of Susan Edwards Johnson, who in January 1801 visited, via stage from Fayetteville, "Mr. Mallet's plantation opposite Wilmington." (She had spent Christmas with Peter and Sarah Mallett at their home in Fayetteville.) Johnson stayed with the Malletts in Point Peter for four weeks. She walked the plantation's grounds and wrote: "The house small but comfortable. Kept by a trusty negro woman with great neatness—situated in the center of the rice ground, it is pleasant; but in summer very unhealthy" (Johnson quoted in Cecelski 2018b). During her stay, Johnson visited Wilmington. Presumably she crossed the river on the ferry marked on the 1781 map of the Cape Fear. That ferry was associated with Mallett's plantation, which is named, with others, on a 1798 Cape Fear map (Figure 27).

Figure 26: Lodge and Bew's 1781 "Cape Fear River with the counties adjacent" map, with Point Peter ferry location circled in red (Source: North Carolina Historical Collection).

Figure 27: Barker, Price, and Strother's 1798 "Map of Cape Fear River and its Vicinity" with Point Peter location circled in red (Source: North Carolina Historical Collection).

Sarah Johnson left Point Peter, again by stage, in February and traveled north until the road met the Black River between Wilmington and Fayetteville. She then walked to the 16,500-acre timber plantation that her husband, Samuel, was developing with Mallett (Cecelski 2018c; *Wilmington Advertiser* July 30, 1805).

The statewide North Carolina maps of Stone and Brown (1808) and MacRae and Tanner (1833) depict the stage roads, including the one from Point Peter. According to the more-detailed Burr and Arrowsmith 1839 postal map of North and South Carolina, the route from Point Peter north to a point between Long Creek and Moore's Creek was a two-horse, mail stage, coach road. Between the two creeks it joined the four-horse, mail post, coach road connecting Wilmington with Fayetteville (Figure 28).

Peter Mallett was the scion of an extremely wealthy family. He owned merchant vessels, some of which he mastered, that traded along the Atlantic coasts of Europe, Africa, and North America, as well as the Caribbean. His goods included printed linens, rum, and enslaved Africans. He came to Wilmington in 1770 at the invitation of Judge Roger Moore, the brother of Roger Moore from whom he acquired his plantation (see letter of Peter Mallett in Mallett 1895:18-28; also Troxler 1991). According to a recent account (Cecelski 2018a):

> Peter Mallett (1744-1805) was the kind of man that often flourished in North Carolina's early days. He was rapacious, an opportunist, an adventurer and a risk taker, adept at navigating colonial wars, trade embargos and tariffs in order to make a profit.
>
> In and out of debt and often on the edge of bankruptcy, he eventually accumulated a small fortune in plantations, mercantile business and slaves.
>
> Like most of the state's early planters and merchants, he was also a man who took for granted that his success would be grounded in the buying, selling and owning of other human beings.

At his death Mallett had extensive holdings in North Carolina, many of which his executors put up for sale at his dwelling house in Fayetteville and at the Point Peter plantation. They included multiple houses, lots, and a warehouse in and around Fayetteville; two tracts "well suited to the cultivation of Rice" on both branches of the Cape Fear near Point Peter in New Hanover County, as well as a lot on the Cape Fear in Wilmington; three tracts in Sampson County; and 300 acres in Orange County along with a grist mill on the Eno River in Hillsborough. The estate also put up for sale his "Stage Establishment" between Fayetteville and Wilmington, which included two stagecoaches, horses, and the three slaves who drove the coaches (*Wilmington Gazette* May 7, July 2, and August 13, 1805).

Figure 28: 1808 Stone and Brown, 1833 MacRae and Tanner, and 1839 Burr and Arrowsmith North Carolina maps (left to right), with Point Peter marked with red dot and stage road heading up to the northwest (Source of all three: North Carolina Historical Collection).

The sale notices do not include the Point Peter plantation. This accorded with Mallett's 1804 will, which specifically exempted some of his holdings from sale, including "point Peter, [and] the Negroes thereon" (Cumberland County Will Book A/Page 72). The family retained all or part of the property until at least 1827, when Wilmington's *Cape-Fear Recorder* (April 11, 1827) reported on an apparently new enterprise of two of Mallett's sons:

> On Point Peter, opposite the upper end of the Town, and at the confluence of the North West and North East Branches of the Cape-Fear, is situated, the Steam Saw Mill of Messrs. *Charles & Peter Mallett*. The Mill House is about 86 feet long, and 26 wide; and has a large projection at the north western or back part, forming an engine room of thirty-four by twenty-four feet in dimensions, in the rear of the Mill. The engine we have reason to believe, possesses a power fully equal to the expectations of the proprietors. The product cannot now be precisely estimated, but it is supposed that it will saw from 12 to 15,000 feet per day.

The Potter Family Rice Plantation and Mill

In 1832 multiple Mallett heirs competed a transfer of the property—which the deed said was "known as the Negro Head or Point Peter tract"—begun by a prior agreement in 1823, to Lemuel H. Whitfield (New Hanover County Deed Book U/Page 495). The final transfer included many hundreds of acres, but apparently excluded a small tract at the point of the confluence of the two branches. That same year Whitfield sold the large tract to Samuel Potter (New Hanover County Deed Book U/278). It remained in the Potter family until 1904 (Rose 1998:561, 564; New

Hanover County Deed Book 39/Page 232). The large rice plantation tract is addressed immediately below. An account of the property at the tip of Point Peter then follows.

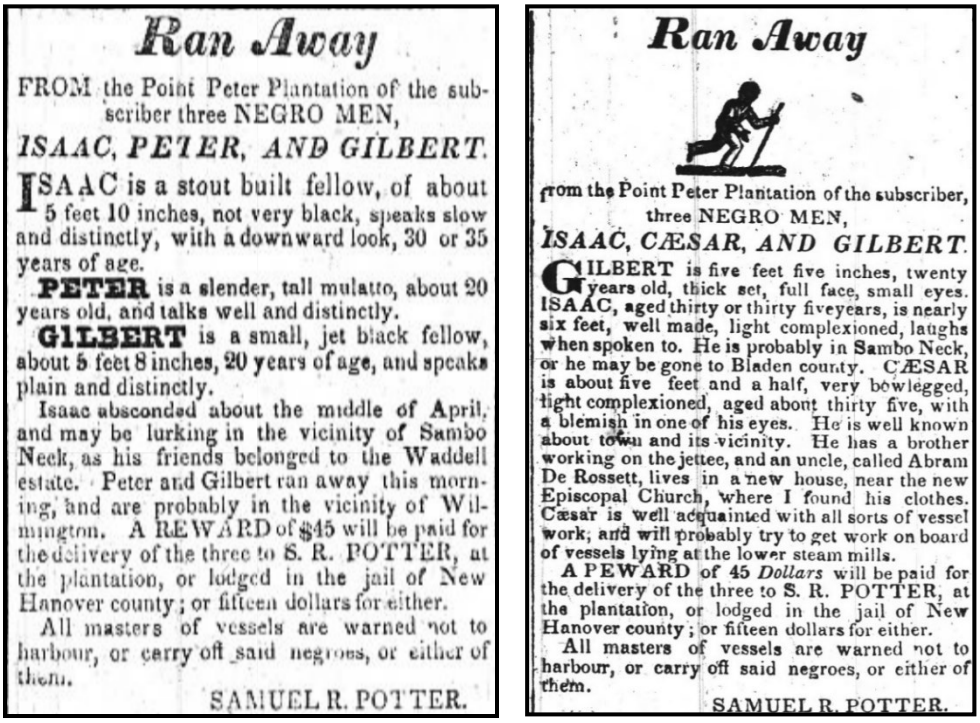
Samuel Potter and his son, Samuel R. Potter, had cattle on the property, kept the "Point Peter Ferry" running—although they did not possess that point of land—and owned slaves. In 1836 Samuel Potter offered a reward for six cattle that had strayed or been stolen from the "Point Peter Plantation" (*Wilmington Advertiser* April 8, 1836). In 1837 he placed a notice that the "Point Peter Ferry" will be shortly re-established" (*Wilmington Advertiser* October 20, 1837). In 1838 Samuel R. Potter placed multiple notices offering rewards for the return of four slaves—Isaac, Peter, Caesar, and Gilbert—who had run from the Point Peter Plantation (see *Wilmington Advertiser* May 18 and May 25, 1838) (Figure 29).

In 1840 Samuel Potter (ca. 1780-1847) was living in Southport in Brunswick, rather than New Hanover, County. The census identified him and a white female in his household, as well as 27 slaves (U.S. Federal Census 1840). The 1850 census recorded son Samuel R. Potter (1811-1856) in Wilmington, where he lived with his wife and their three children. He identified himself as a "planter" and his estate had the prodigious value of $40,300 (U.S. Federal Census 1850). Much of this number was derived from the value of his 68 slaves, to whom the census assigned no names. The census left these individuals anonymous, but they were likely the same, or almost entirely the same, slaves as the 68 that Samuel R. Potter had purchased from the Everitt, Baker, Talley, and Potts families in 1847. These people were named in estate records, as follows: Peter, Dias, Polly, Arie, Mary Ann, Matilda, Emily, Andrew, Thomas, Samuel, Hillard, Boston, Joe, Austin, Frank, Qua, Cesar, Khidie, Bill Usher, Jim, Schach, Bill Jury, Ned, Gilbert, Robert Beesly, Ulie, Little Bob, Dick, James, Cudjo, Silas, Peter, John, Joe, Sandy, Josh, Charles, Fortune, Austin, Mary, Eliza, Charles, Fred, Peggy, Joney, Laura, Maria, Priscilla, Betsy Hatch, Child, Lydia, Brunetta, Ellen, Margaret, Harry, Austin, Polly Moore, Little Polly, Phoebe, Molly, Nancy, Louis, Joe, Unnamed, Old Peggy, Betty Moore, Unnamed (New Hanover County Deeds of Enslaved People). It appears likely that at least Peter, Gilbert, and Caesar/Cesar been captured and returned to bondage after their 1838 escape.

New Bern's *Weekly News* on March 19, 1853, dispassionately and unintentionally highlighted the dangers of servitude on a Cape Fear rice plantation:

> Samuel R. Potter, Esq., of this place has lost in the course of a few weeks ten valuable young negro fellows at Point Peter…. They were taken sick in succession, and died after a brief illness. The negroes were hearty and healthy up to the contracting of the disease which hurried them off.

Figure 29: Rewards offered for return of slaves who ran from Point Peter Plantation (Source: *Wilmington Advertiser* May 18, 1838, at left, and May 25, 1838, at right).



Ran Away

FROM the Point Peter Plantation of the subscriber three NEGRO MEN,

ISAAC, PETER, AND GILBERT.

ISAAC is a stout built fellow, of about 5 feet 10 inches, not very black, speaks slow and distinctly, with a downward look, 30 or 35 years of age.

PETER is a slender, tall mulatto, about 20 years old, and talks well and distinctly.

GILBERT is a small, jet black fellow, about 5 feet 8 inches, 20 years of age, and speaks plain and distinctly.

Isaac absconded about the middle of April, and may be lurking in the vicinity of Sambo Neck, as his friends belonged to the Waddell estate. Peter and Gilbert ran away this morning, and are probably in the vicinity of Wilmington. A REWARD of $45 will be paid for the delivery of the three to S. R. POTTER, at the plantation, or lodged in the jail of New Hanover county; or fifteen dollars for either.

All masters of vessels are warned not to harbour, or carry off said negroes, or either of them.

SAMUEL R. POTTER.

Ran Away

from the Point Peter Plantation of the subscriber, three NEGRO MEN,

ISAAC, CÆSAR, AND GILBERT.

GILBERT is five feet five inches, twenty years old, thick set, full face, small eyes. ISAAC, aged thirty or thirty fiveyears, is nearly six feet, well made, light complexioned, laughs when spoken to. He is probably in Sambo Neck, or he may be gone to Bladen county. CÆSAR is about five feet and a half, very bowlegged, light complexioned, aged about thirty five, with a blemish in one of his eyes. He is well known about town and its vicinity. He has a brother working on the jettee, and an uncle, called Abram De Rossett, lives in a new house, near the new Episcopal Church, where I found his clothes. Cæsar is well acquainted with all sorts of vessel work, and will probably try to get work on board of vessels lying at the lower steam mills.

A REWARD of 45 *Dollars* will be paid for the delivery of the three to S. R. POTTER, at the plantation, or lodged in the jail of New Hanover county; or fifteen dollars for either.

All masters of vessels are warned not to harbour, or carry off said negroes, or either of them.

SAMUEL R. POTTER.

A book published in 1854 describes Point Peter (which it called "Negro-head Point"):

> At present it is the site of a steam rice-mill, whose spacious front painted white, and whose tall chimney belching forth dense columns of smoke, curling and expanding as they rise into the air and floating off in graceful detachments, present an aspect by no means unpleasant. The area beyond, containing several hundred acres, is now the rice farm of Samuel R. Potts [sic], Esq (Caruthers 1854:365).

A rice mill was located at the Potter plantation by 1852, when the county court named an L. Mallett "Inspector of Rice at Point Peter" ([Wilmington] *Weekly Commercial* March 12, 1852).

Samuel F. Potter (1838-1881) was only 18 when his father died in 1856. In 1860 he was living with his stepmother, Marion Fotterall Potter, and one of his siblings. Though only 22 and still at home, he was a self-identified "farmer" with real estate valued at $50,000 and a personal estate in the same amount (U.S. Federal Census 1860). Perhaps his slaves were held in the name of a trustee, for he is not identified as owning any. The successor to the family plantation, he was sufficiently successful in 1862 to offer 500 bushels of rice toward the proposed building of an iron-clad gunboat for the Civil War defense of Wilmington (*Fayetteville Semi-Weekly* April 3, 1862).

In 1867 "Potter & Paddison" opened a dairy at the Point Peter Plantation. Two years later William F. Potter (1846-1878), Samuel F.'s brother, put the rice plantation up for auction. The property was described as "the widely known POINT PETER PLANTATION containing 4,900 acres of land,

of which 404 are cleared rice lands, 180 acres being now planted in rice, and promising well… The place has all necessary dwellings, negro quarters, straw shed &c., &c. Good well of water. The large and extensive RICE MILLS on this Plantation are too well known to need description."

The 1869 James and Brown map of New Hanover County depicts the Point Peter peninsula with building locations and a name. It includes two locations. The one labeled "S. Potter," is the Potter family's Point Peter rice plantation. The unnamed one closest to the point is likely associated with the ferry and the activities along the river opposite Wilmington (Figure 30).

The 1869 auction was not successful, for in 1877 William F. Potter again put the plantation up for sale or lease. The notice describes it as including 400 acres of cultivated rice land, 4,000 acres of swamp and woodland, a dwelling house, a barn, rice mills, a threshing machine, and "Out-Buildings for Fifty Hands," presumably former slave houses ([Wilmington] *Morning Star*, November 2, 1877). This auction failed as well.

Following the deaths of the brothers, the property remained in the family until 1904, when it was sold to W.J. McCall (New Hanover County Deed Book 39/Page 232; see also Rose 1998:561, 564).

Figure 30: James and Brown's 1869 "Map of New Hanover County," with "S Potter" labeled (Source: North Carolina Historical Collection).

<u>Tip of Point Peter Sawmill</u>

The term Point Peter was used to describe the tip of land at the confluence of the Cape Fear branches, from which the ferry ran across to Wilmington, and also the Mallett and Potter

plantation located on the larger peninsula above the point. An 1854 sales notice indicates that numerous slaves lived at the point in a plantation-like arrangement:

> POINT PETER FOR SALE. This well known property, situated opposite the town of Wilmington, at the confluence of the North-east and North-west branches of Cape fear River, and containing upwards of six acres of land, can be purchased on reasonable terms. There are, on both rivers, about 1800 feet of water front, and about 500 feet of good wharf; and the water privilege of both rivers, for a quarter mile from the Point, is annexed to this tract. The water on all sides is sufficiently deep for any purpose. There are on the property a Steam Saw-Mill, negro houses for the accommodation of 25 hands, two dwelling-houses, (one of them very good,) a store-room, sick-house, blacksmith shops, and a new warehouse 60 by 40 feet *(Fayetteville Observer* (June 5, 1854).

The owner was a William Neilson of Philadelphia, who had acquired the property from Lemuel H. Whitfield the previous year *(*[Wilmington] *Daily Journal* (July 12, 1854); New Hanover County Deed Book KK/Page 399 (1853). In January 1856 Bennet Flanner purchased the property for $11,000 (New Hanover County Deed Book M/Page 300 (1856). Fire destroyed the uninsured sawmill three months later. The mill's proximity to the water is supported by the supposition in the newspaper story that the blaze was started by a spark from a steamboat ([Fayetteville] *North-Carolinian* April 26, 1856). Wharves at Point Peter appear on maps of 1863 (Gilmer and Turner) and 1870 (James and Brown) (Figure 31).

Figure 31: Left, Gilmer and Turner Wilmington entrenchments map of 1863 and, right, James and Brown's 1870 "Map of Wilmington" showing wharves at the confluence of the rivers (Source: North Carolina Historical Collection).

Some rice continued to be produced on the Point Peter peninsula at least through the 1880s. In 1883 the "Point Peter and Forks" plantation raised 6,500 bushels on 180 acres. The Point Peter Plantation finally sold in 1887 and its buyers, William Larkin and Andrew Flanner, announced plans to repair the old Potter rice mill ([Wilmington] *Morning Star* September 17,

1887). Three turpentine stills were also located on the peninsula around this time (Sprunt 1883:153). People continued to reside at and near the point: an 1888 U.S. Coast and Geodetic Survey map depicts three clusters of buildings there. Another individual building is located a short distance to the northwest, likely at what was by this time the terminus of the old stage road and the location of the Potter plantation house (Figure 32).

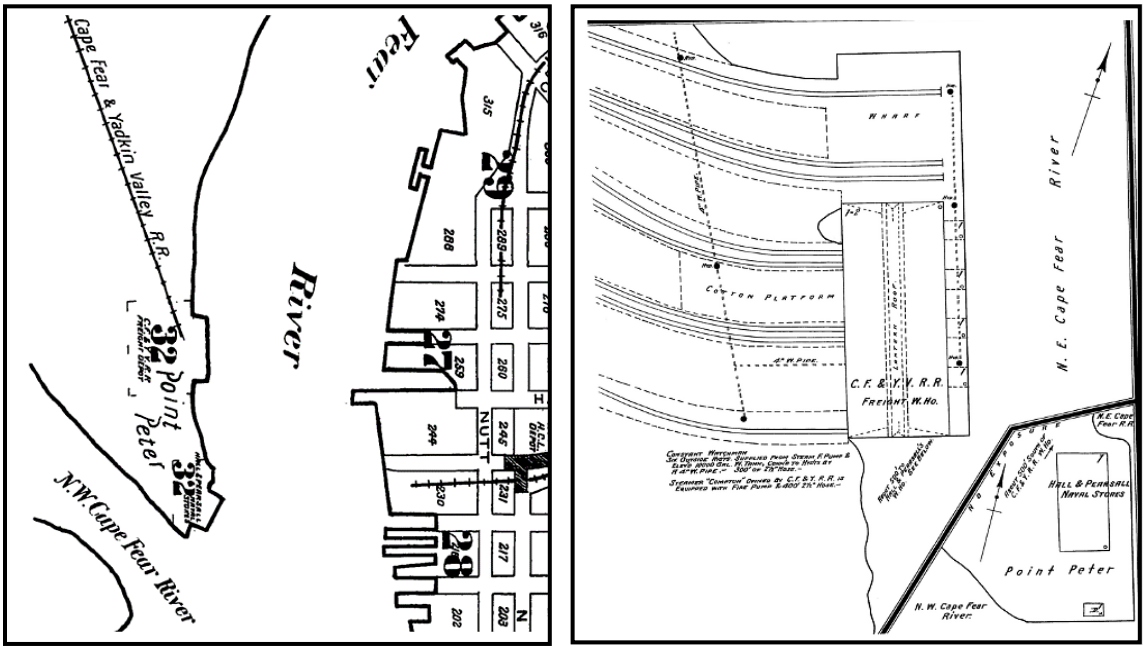
Figure 32: 1888 U.S. Coast and Geodetic Survey of the Cape Fear River from Reeves Point to Wilmington (Source: North Carolina Historical Collection).

The area at and near the point, however, was transformed by the arrival of the Cape Fear & Yadkin Valley Railway (CF&YVR) beginning at the close of the 1880s. In 1889 the CF&YVR was constructing wharves at Point Peter. In 1890 it completed the 82-mile extension of its line from Fayetteville to a terminus at the point opposite Wilmington (Cape Fear and Yadkin Valley Railway Company 1899:17, 25-26). According to a contemporary account (Sprunt 1896:XLIX), "The Company immediately made their terminal facilities at Point Peter first-class, with ample accommodations for the handling of freight and passengers to the city wharves of the

Company." The 1893 and 1896 Sanborn-Perris Company maps depict the facility, which included a monitor-roofed freight warehouse with a cotton platform served by five sets of tracks (Figure 33). An additional three sets of tracks immediately to the warehouse's north terminated at the edge of the wharf, for direct loading and unloading from the river. By 1896 Hall & Pearsall, a Wilmington mercantile firm, had opened a "large storage depot" on Point Peter for the receipt of naval stores and produce. The 1896 Sanborn-Perris map depicts it just south of the CF&YVR facility (Sprunt 1896:XLIV). Also in 1896 work began on a steam saw and planing mill "on the site of the old Potter rice mill at Point Peter" ([Wilmington] *Morning Star*, January 21, 1896).

Not only was there industrial activity. Excursion groups began to arrive by train at Point Peter, from which they took steamers to Wilmington and the coast (see, for example, *Wilmington Messenger* August 19, 1890). Just one steam-powered ferry boat—the *Compton*, owned by the CF&YVR—carried more than 41,000 passengers between the railroad's wharves on the point and in the city (*Fayetteville Observer* January 19, 1893).

Figure 33: 1896 Sanborn-Perris Company maps; sheet 1, at left, and detail sheet 32, at right (Source: NCLive).



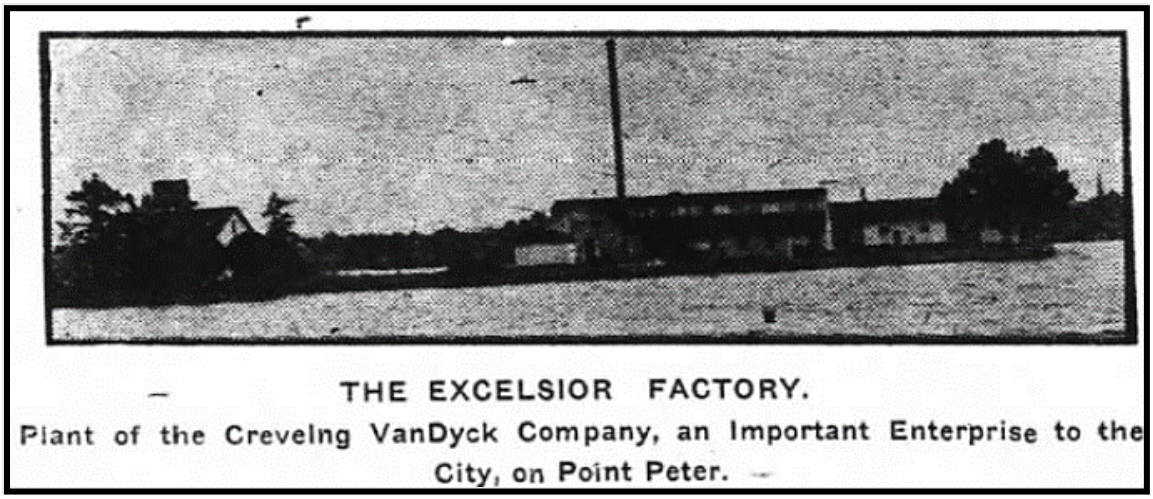
This activity was short-lived, however. In 1899 the CF&YVR was split. The Atlantic Coast Line Railroad acquired the section that ran to Point Peter and quickly routed its traffic over a bridge across the Northeast Cape Fear, about a mile to the north (North Carolina Railroads n.d.). The Point Peter freight warehouse was abandoned and by 1904, when the Sanborn map was updated, was in poor condition. By that year the Sanborn map depicts the Hall & Pearsall warehouse occupied by the Hall and Tyer Lumber Co., which had added a small one-story dwelling near the end of the point. At the close of 1905 (Sanborn Map Company) a factory for the production of excelsior—fine curved wood shavings used for packaging—was nearing

completion. It expanded upon or completely supplanted the earlier warehouse and added additional buildings as well (Figure 34). The facility still stood in 1910, according to the Sanborn Map Company map, but was not in operation due to a fire (Figure 35). The 1915 (Sanborn Map Company) map showed it in place, still vacant. The 1951 update of the 1915 map (Sanborn Map Company) included the site, which retained two small houses (Figure 35). The Sanborn Map Company's 1955 republication of its Wilmington maps dropped the site entirely from its recordation.

One additional map captures the changes to Point Peter. A plat map drawn in 1929, it depicts various irregular property lines, powerlines, and bulkheads, but no buildings other than one house (Figure 36).

In the 20th century the USACE has used Point Peter as a dredge spoil deposition area. Further, the original bridge that was replaced by the Cape Fear Memorial Bridge was demolished and the debris was dumped in this area (Lt. Garris, Jr. 2021, personal communication). As a result, at the time of fieldwork asphalt, concrete, and mixed sand and shell fill dominated the eastern portion of the APE that was not tidal marsh (see terrestrial results chapter below).

Figure 34: Wilmington Excelsior Co. (Source: [Wilmington] *Morning Star* December 31, 1905).



THE EXCELSIOR FACTORY.

Plant of the Creveling VanDyck Company, an Important Enterprise to the City, on Point Peter.

Figure 35: 1910 Sanborn Map Company map, sheet 2, at left, 1951 update of 1915 Sanborn Map Company, sheet 2, at right (Source: NCLive).

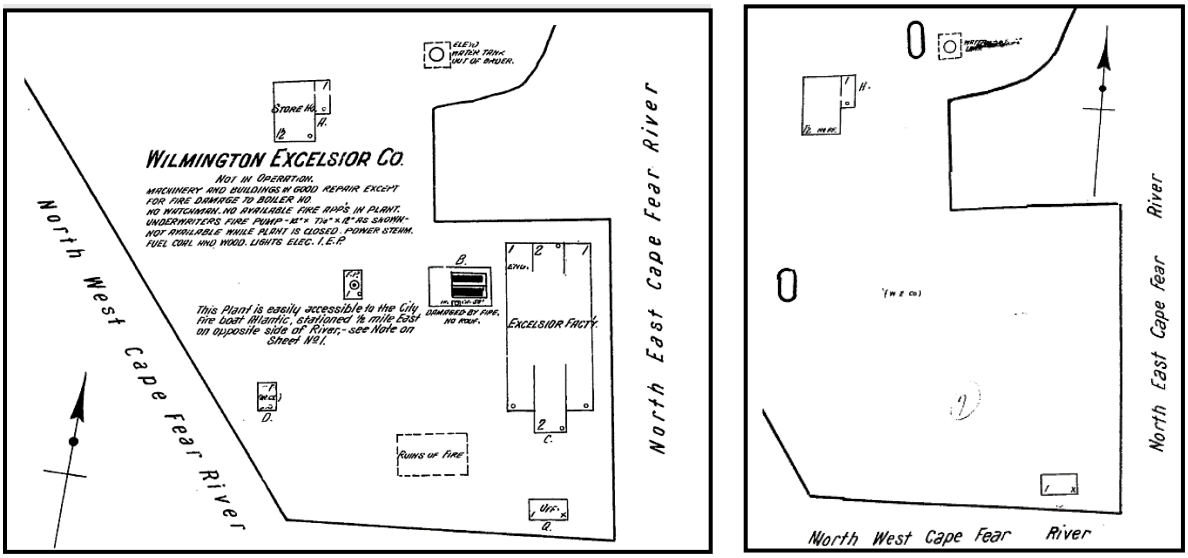
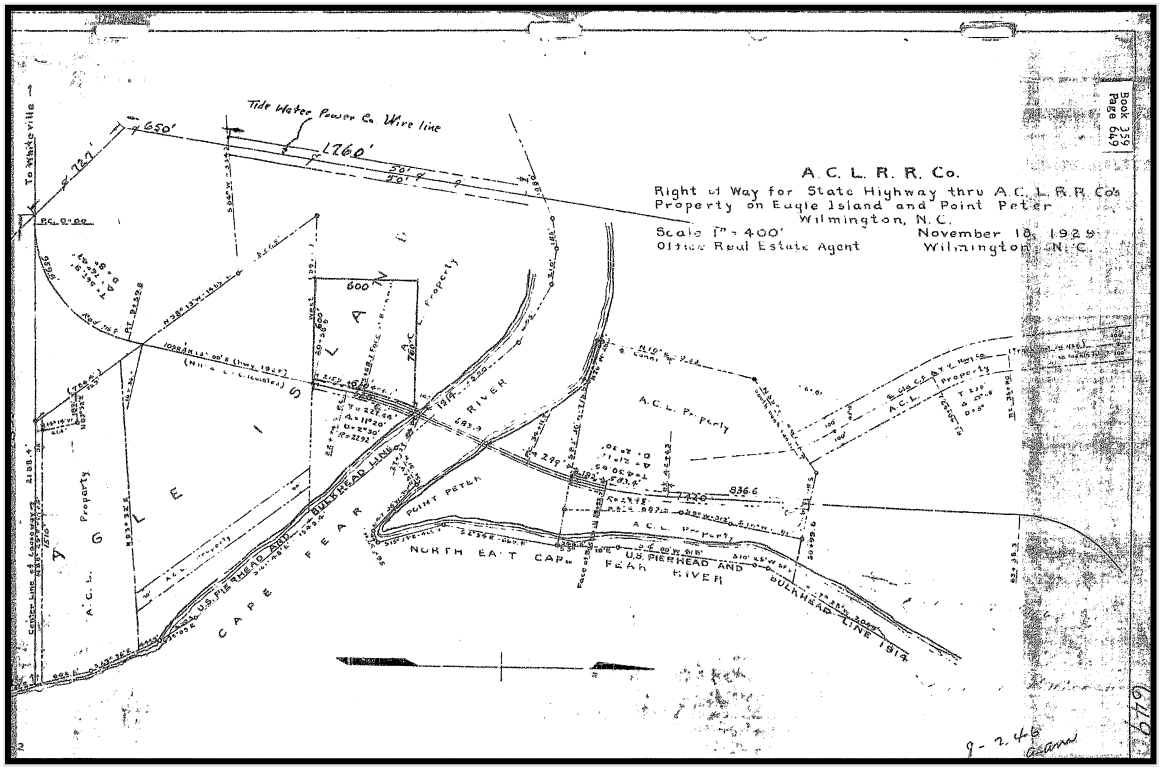


Figure 36: Point Peter at the confluence of the rivers, 1929 (Source: New Hanover County Plat Map 350/Page 649 (1929).



3.2.5 Eagles Island History

By and large, the history of Eagles Island is part and parcel of the regional context presented above. However, its relatively unique ecological setting also creates some distinct differences.

Primarily, the presence of vast expanses of tidal marsh makes for somewhat uninhabitable land, at least without extensive human modification such as the built up causeways for roads and railroads historically crossing the island. Angley (1989), Hall (1980), Jackson (1996), and Waddell (1909) present details about Eagles Island to help establish its related-yet-distinct historic context, and these resources are used for the following discussion.

Eagles Island is named for Richard Eagles. Eagles was a native of England who came to Charles Town (Charleston) South Carolina, and from there, came to the region of Eagles Island in 1734. In 1737 he received a grant for 640 acres and purchased additional land in 1738, which included land on Eagles Island. By the close of the 18th century the Eagles family had come to own over 6,500 acres in the region including over 900 acres on the island.

Beginning in the 1750s rice cultivation shifted from upland production methods (where impounded streams sourced water into the rice fields) to the, at the time, modernized method of tidal rice fields. The lack of lucrative naval stores on the island, the upland growth of rice, and Wilmington not gaining importance until the mid-18th century, it is unlikely the Eagles did much with Eagles Island during the first half of the century. However, with the advent of tidal rice growth, coupled with the burgeoning port at Wilmington attracting inland naval stores products for export, Eagles Island likely became an important asset to the Eagles in the latter half of the 18th century.

In addition to the Eagles family, portions of Eagles Island were owned by Judge Alfred Moore and part of his Buchoi plantation on the west bank of the Brunswick River, across from Eagles Island. Other plantations and landholders with stakes on Eagles Island included Glastonbury Plantation owned by Frederick J. Lord, Belvidere Plantation owned by Col. William Dry then Governor Ben Smith, as well as three plantations on the east side of the island—Hallett, Osawatomie, and Bleak House. These plantations likely had some development on the island, particularly around the perimeter close to the river channels, but most of the land holdings were likely rice fields and the associated infrastructure to support them (e.g., canals, dikes, trunks).

Throughout the latter part of the 18th century, Eagles family members married and expanded their investment in the local region. For example, Richard Eagles, Jr. was married to Margaret Henrietta Bugnion and operated The Forks plantation to the north of Eagles Island. His son, James Eagles, inherited the plantation as well as lots in Wilmington upon the death of Richard Eagles, Jr. in 1769. Richard Jr.'s daughter, Susanna, married Judge Alfred Moore, who owned Buchoi Plantation. Susanna also inherited one-third of Richard Jr.'s land holdings on Eagles Island as well as lots in Wilmington. Upon his death in 1791, James Eagles owned 3,060 acres on Eagles Island and lots in Wilmington. James died without a will, however, leading to a legal battle between the Eagles and Moore (James' sister Susanna) families that was settled in the North Carolina Supreme Court in 1809. The Forks was sold at public auction in 1803.

The 19th century saw continued use of Eagles Island for plantations. Sterling B. Everitt of Brunswick County acquired much of the former Eagles land holdings as well as those of Maurice Moore, son of Judge Alfred Moore. In the late-1850s, Everitt no longer owned The

Forks or Asperne Plantations. These two plantations, plus Buchoi, were owned by Thomas C. McIlhenny. McIlhenny sold The Forks and Buchoi in 1880, including upwards of 200 acres between the two plantations of rice fields on Eagles Island.

The 19th century also saw the expanded development and use of the eastern side of Eagles Island given its proximity to Wilmington across the river. Warehouses, turpentine stills, and lumber mills began to crop up on the east side of the island in the late-18th century, but truly expanded through the 19th century (Figure 37). Shipbuilding and ship repair also became significant industries along the east side of the island during this time. These industries continued into the earlier portions of the 20th century (Figure 38) but had largely moved off the island or ceased operations by the mid-1900s. A significant remnant of these activities is archaeologically known today as the Eagles Island Ships' Graveyard (see discussion of Seeb [2007] below).

3.2.6 Wilmington Ship Channel Dredging History

The Cape Fear River has an extensive dredging history beginning at least by 1829 (Hartzer 1984). Much of the early channel maintenance dredging work has occurred below Wilmington to the mouth of the river. In particular, the bar at Bald Head Island, approximately 28 miles downriver of Wilmington and the APE, was a great concern for shipping as shifting sands often filling in the channel, cutting off deeper drafted vessel from entering the river. It was not until the 1880s that attention was given to the Upper Cape Fear River, when in 1882, crews began removing snags between Fayetteville and Wilmington. In 1885, Congress approved channel depths between the two cities to depths of up to 4.0 ft (1.2 m) for small watercraft. Efforts to create a deeper channel continued and was later realized between 1902 and 1917 as a series of locks and dams were constructed between Fayetteville and Wilmington, including a deeper channel up to 8.0 ft (2.4 m) deep (Hartzer 1984). Improvements have continued and the last major project was the Wilmington Harbor, North Carolina Navigation Improvement Project, completed in 2013. Within the APE, the project deepened the shipping channel from 38 ft (11.6 m) to 42 ft (12.8 m) below Wilmington, up to the Cape Fear Memorial Bridge. Channel improvements above the Cape Fear Memorial Bridge were deferred due to marginal cost-benefit ratios (USACE 2020).

Figure 37. 1889 Sanborn Map (pg. 14) Showing East Side of Eagles Island.

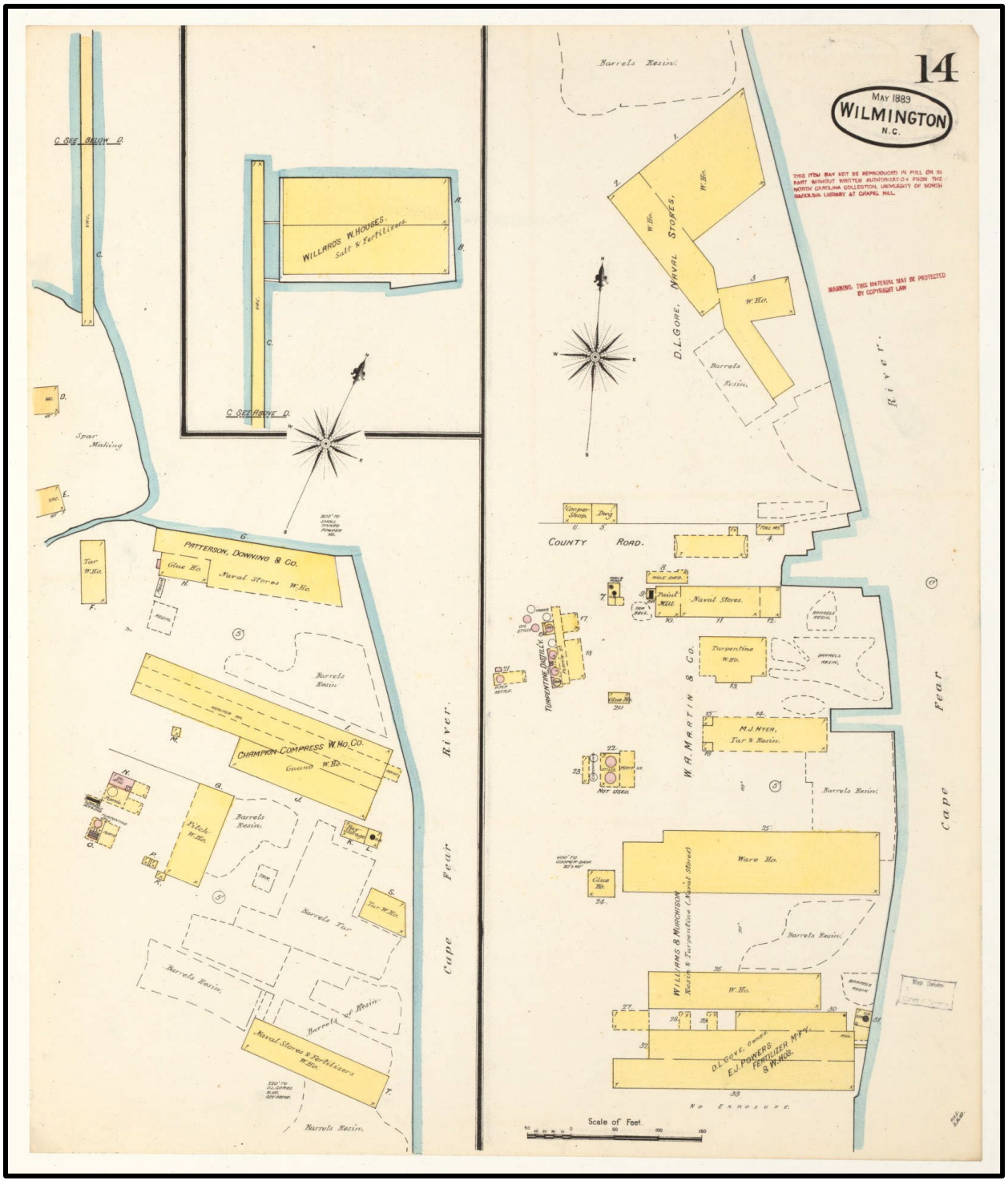
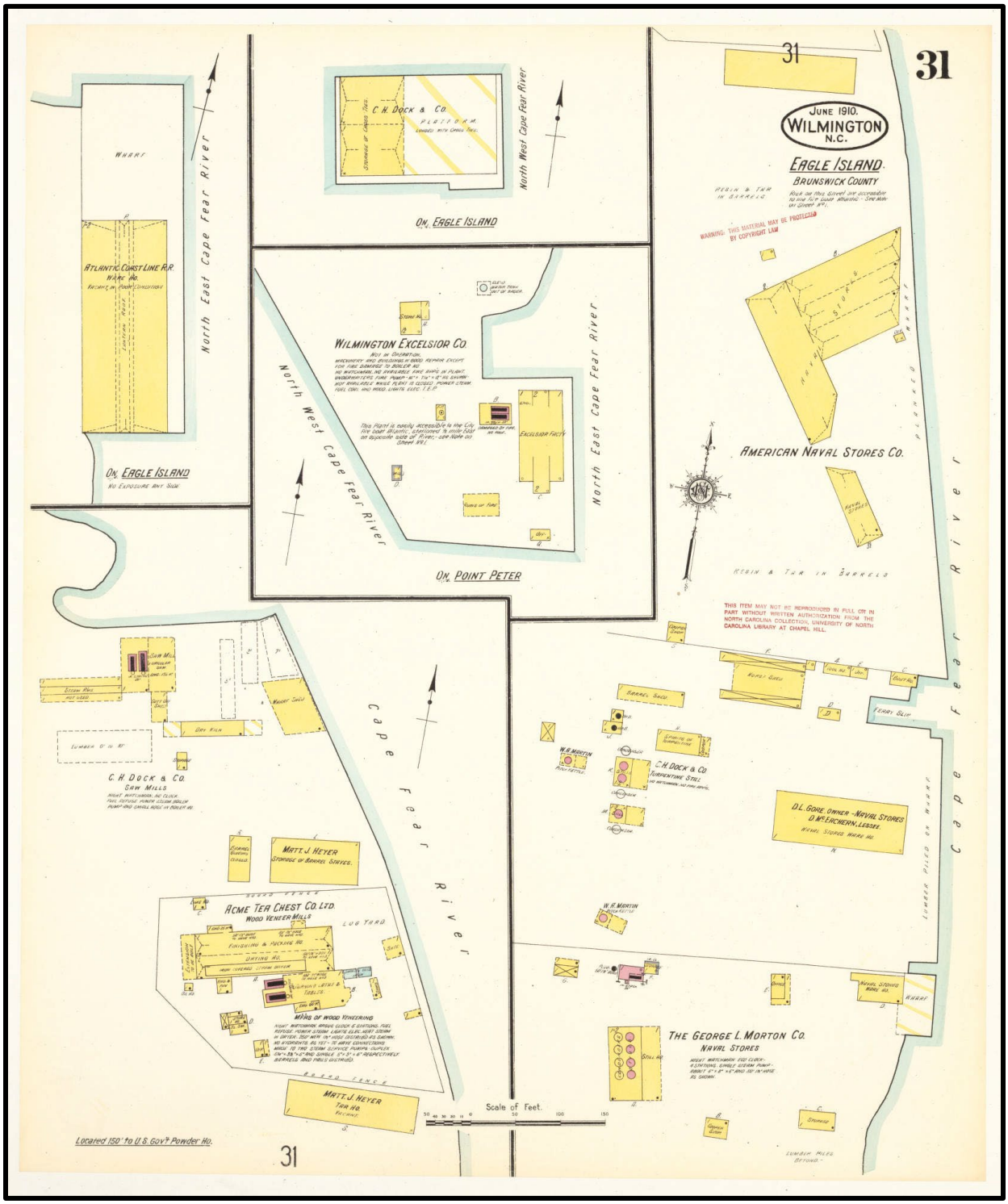


Figure 38. 1910 Sanborn Map (pg. 31) Showing East Side of Eagles Island.



3.3 ARCHAEOLOGICAL BACKGROUND OF WRR PROJECT

3.3.1 Introduction

During early environmental studies for the WRR project AECOM Senior Archaeologist Matthew Jorgenson, RPA requested background information from the North Carolina Office of State Archaeology (OSA) and received site location data as well as site forms from the OSA in August 2020. This data was utilized to produce a Technical Report for the project detailing resources in or near the various alternatives (AECOM 2021). A predictive model was also generated for the project to evaluate various alignments for potential impacts to high versus low archaeological probability. Another request was submitted in June 2022 and additional data was provided by the OSA, particularly with regards to marine resources and reports. Other resources, such as online reports and academic masters theses, were also obtained to expand on our understanding of the archaeological history and state of the WRR project's vicinity.

The Wilmington Historic and Archaeological District (historic resources NH0003 and NH2548) was listed on the National Register of Historic Places in 1974 and was expanded in 2003. The 2003 expansion document contains over 200 pages that list 779 contributing and 255 non-contributing resources within the district (North Carolina Historic Preservation Office [NC HPO] 2022). However, archaeological resources are not listed in the nomination form, so archaeological context has to be drawn from other resources.

3.3.2 Previous Archaeological Studies

Few compliance-related archaeological studies have been conducted within a mile of the WRR project (cf. Hall 2004, 2008; Watts 1998, 2000). Research for academic studies (cf. Bera 2010; Cooper 2010; Howe 2010; Seeb 2007) and research performed by the state (cf. Lawrence 1985; Overton and Lawrence 1996) have also identified and evaluated archaeological resources in the region.

Data in the OSA's GIS database depicts six environmental review polygons within the one-mile study area for the WRR, but two of those are related to the current WRR project. A screenshot of map data depicts other environmental review polygons not contained within the GIS data, but no details were provided on those older reviews. Two of the four review areas in the GIS are in downtown Wilmington and include rehabilitation of a gravity sewer along 5th Avenue between Greenfield Street and Princess Avenue, and the North 3rd Street bridge between Campbell Street and Hanover Street. Archaeological surveys for these two projects were not requested by the NC HPO or OSA. One of the review areas is for a multi-county broadband fiber-optic cabling project along US 74 including the section of the highway that crosses Eagles Island. The NCDOT and NC HPO are consulting on sensitive segments of this project that may require archaeological surveys, but much of the route has been previously surveyed or heavily disturbed (Lindsay Ferrante 2022, personal communication). The fourth review is for a roughly 30 acre housing development at the confluence of the Cape Fear and Northeast Cape Fear Rivers, right where Point Peter is historically and archaeologically documented. The NC HPO

and OSA requested an archaeological survey of this project back in December 2021; however, to date, the studies do not appear to have been carried out.

In 1974 archaeological excavations were performed at the Hilton House in north downtown Wilmington (Thompson 1974). It was hoped that evidence of the various uses of this site between the mid-1700s and early-1900s could be studied. Unfortunately, no intact deposits were identified, and the project was terminated early due to a lack of results (Thompson 1974:1).

In 1989 work by Carolina Archaeological Services of Columbia, SC tested the proposed United Carolina Bank property in downtown Wilmington at the southwest corner of Chestnut and Third Streets (Drucker and Jackson 1989). This work documented archaeological site 31NH684, a portion of a city block that historically contained several structures from the 19th century. This limited work (limited by inaccessibility due to complete pavement coverage of the lot) identified numerous historic features including a line of post holes along the western edge of the property, a brick foundation at the western edge of the property, trenches in the southwestern portion of the property, and a brick cistern in the north-central portion of the property (Drucker and Jackson 1989:17). Based on the presence of intact archaeological features, coupled with the fact that preservation in place was untenable, data recovery was recommended for the site (Drucker and Jackson 1989:38).

Subsequent to the 1989 work at 31NH684, Brockington and Associates performed the data recovery investigations prior to bank construction (Elliott 1990). The cistern identified during the first stage of work was investigated, resulting in discovery of a second adjacent cistern. Deed research coupled with artifact data suggested the cisterns were built simultaneously, likely between 1875 and 1890 by then owner J.F. King (Elliott 1990:i). The investigations also suggested that the cisterns were used as such into the early-20th century and abandoned and filled post-1918 (Elliott 1990:73).

Between 1993 and 1994 the Underwater Archaeology Unit (now Underwater Archaeology Branch) of the OSA performed preliminary studies for channel improvements along the Cape Fear River (Overton and Lawrence 1996). This would be the first of numerous studies for the channel improvements over the next decade. Interestingly, the area of the Eagles Island Ships' Graveyard (see Seeb 2007 discussion below) was not a priority area for these early studies, because the focus of them was on areas with high potential for impacts during the undertaking (Overton and Lawrence 1996:30-31). Despite this gap in high-priority areas, the vast majority of the eastern side of Eagles Island was studied, along with numerous other areas between Smith Creek in the north and the mouth of the Cape Fear in the south. Remote sensing of the areas was performed followed by diver investigations on 102 targets. Several historically significant shipwrecks were recorded including two Civil War ironclads, *North Carolina* and *Raleigh*, the blockade-runner *Kate*, and an early 20th century schooner barge, identified as *Belfast*. These studies ultimately resulted in assessment of NRHP eligibility for numerous resources and recommendations for their protection (Overton and Lawrence 1996:iii).

In 1997 and 1998, Watts (1998) performed archaeological reconnaissance of the Wilmington Harbor and Northeast Cape Fear River for the USACE. Ten resources were investigated: *A.P. Hurt* (0003CFR), *John Knox* (0016CFR), *Blanchard* (0002CFR), Skinner's Dock Wreck (0022CFR), Workboat 2 (0062CFR), work barge (0063CFR), modern steel barge (0038NER), Walker Barge (0068CFR), Hilton Bridge Wreck (0037NER), and *Spray* (0009CFR). Three of these sites, *A.P. Hurt*, Workboat 2, and Hilton Bridge Wreck, were located within the APE for the proposed improvements while the other seven were outside the APE. *A.P. Hurt* and Workboat 2 were subsequently avoided by design modifications leaving the Hilton Bridge Wreck as the only resource eligible for the NRHP threatened by the project; mitigation of adverse effects was recommended (Watts 1998:i, 58).

In 1998, Watts (2000) conducted archaeological excavations on the *A.P. Hurt* (0003CFR), *John Knox* (0016CFR), and *Blanchard* (0002CFR) wrecks. These excavations were performed in conjunction with channel improvements by the USACE Watts studied in the late 1990s. While these resources were shown in 1998 to be outside the APE, it was subsequently determined that direct *and indirect* impacts were possible, so data recovery was implemented prior to disturbing dredging activities. The work adequately documented the wrecks and determined that they represented a stern wheel steamer (*A.P. Hurt*), a gas screw (*Blanchard*), and a double-ended gas ferry (*John Knox*).

In the early 2000s, Hall (2004, 2008) conducted remote sensing and diver survey followed by data recovery for the USACE for navigation channel improvements in the Cape Fear River. These studies were focused on the river north of the Cape Fear Memorial Bridge, much the same area that was studied by Watts in 1998 and 2000. The remote sensing work was located outside the southern WRR river crossing, but the turnaround area for the remote sensing work did extend slightly south of the bridge into the current APE (Hall 2004:80-81). The remote sensing portion of the work documented 17 targets, of which three were subjected to diver investigations (Hall 2004). In addition, diving on the previously recorded *A.P. Hurt* and Hilton Bridge Wreck sites was performed to assess their condition. Hall (2004:115) found *A.P. Hurt* to be in "the same condition as the wreck was found in the 1998 and later 2000 surveys." Subsequently, mitigation and/or further documentation was performed on 11 targets and two known wrecks (Hilton Bridge Wreck and *Spray*) (Hall 2008). Four of these were subjected to mitigation and the remaining nine were determined not significant or could not be relocated. The four mitigated resources included Wilm1-B (remains of Market Street ferry flat), Wilm2-C (> 100' long 19th-20th century wooden sailing barge), Wilm2-F (70' long wooden flat top barge, badly deteriorated), and the Hilton Bridge Wreck (0037NER, which was completely excavated and raised/removed from the river).

Seeb (2007) performed work on the Eagles Island Ships' Graveyard for a Master's Thesis in Maritime Studies at East Carolina University. During this work, 32 vessels were investigated (Seeb 2007:Table 6.1). These vessels, as a whole, represent "a microcosm of the cultural, economic, and technological characteristics and changes of Wilmington and Southeastern North Carolina" (Seeb 2007:i). Investigated resources included barges, tugboats, skiffs, and

other unidentified vessel functions, as well as one dry dock. Four of the vessels appeared to be truly wrecked, likely at their dock/moorings, but most represented either abandonment (intentionally or with the intent to reuse later that never happened) or re-use in secondary non-vessel roles such as creation of bulkheads along the shoreline. Noticeable stages of abandonment were noted by Seeb (2007:161-177) including: 1884-1909, 1910-1921, 1922-1934, 1935-1945, 1946-1959, and 1960-1963. Seeb (2007:180) ultimately concluded, "…signatures of use-life and deposition among the remains…elucidates the behaviors associated with those stages of the abandoned vessels' life cycle. Comparing the behaviors to the contemporaneous historical conditions allows for a deeper understanding of the incentives and local, regional, and national and international forces driving human decision making."

East Carolina University students conducted a number of surveys in the northeastern portion of Eagles Island in 2010 (Bera 2010, Cooper 2010, Howe 2010). A 46-acre survey was performed in 2010 on three tax parcels immediately south of USS *North Carolina* (BB-55) (Howe 2010). None of the parcels fronted the river, but rather were located west of Battleship Road NE and south of USS North Carolina Road. A few areas of modern trash and concrete and asphalt dumps were noted, but no bone fide archaeological resources were recorded as a result of this work. As stated in the conclusions of the report, "Stated briefly, the [survey area] is almost entirely unbuildable and undesirable land. Covered in deep swamp or salt marsh…" (Howe 2010:37). Although Howe did not report any archaeological resources, it appears that subsequent to this survey site 31NH847 was reported to the state in 2017.

Cooper (2010) performed a survey of 53 acres to the north and west of US 74. The WRR APE does not traverse this project's area but does run in close proximity just to the west. During this survey a segment of a historic road causeway was identified. The causeway was largely a raised berm in the otherwise marshy area that measured between 20 and 30 ft wide (6 to 9 m; Cooper 2010:27-28). Portions of the feature were paved while others were disturbed, particularly at the west end (closest to WRR APE) and only exhibited stone or brick rubble used to construct the berm (Cooper 2010:28-30). This survey, unlike the Howe (2010) survey noted above, did identify an archaeological resource. However, given the study was academic related, no assessment of the causeway's integrity was provided, and based on OSA site GIS data, the causeway's location was never recorded with the state.

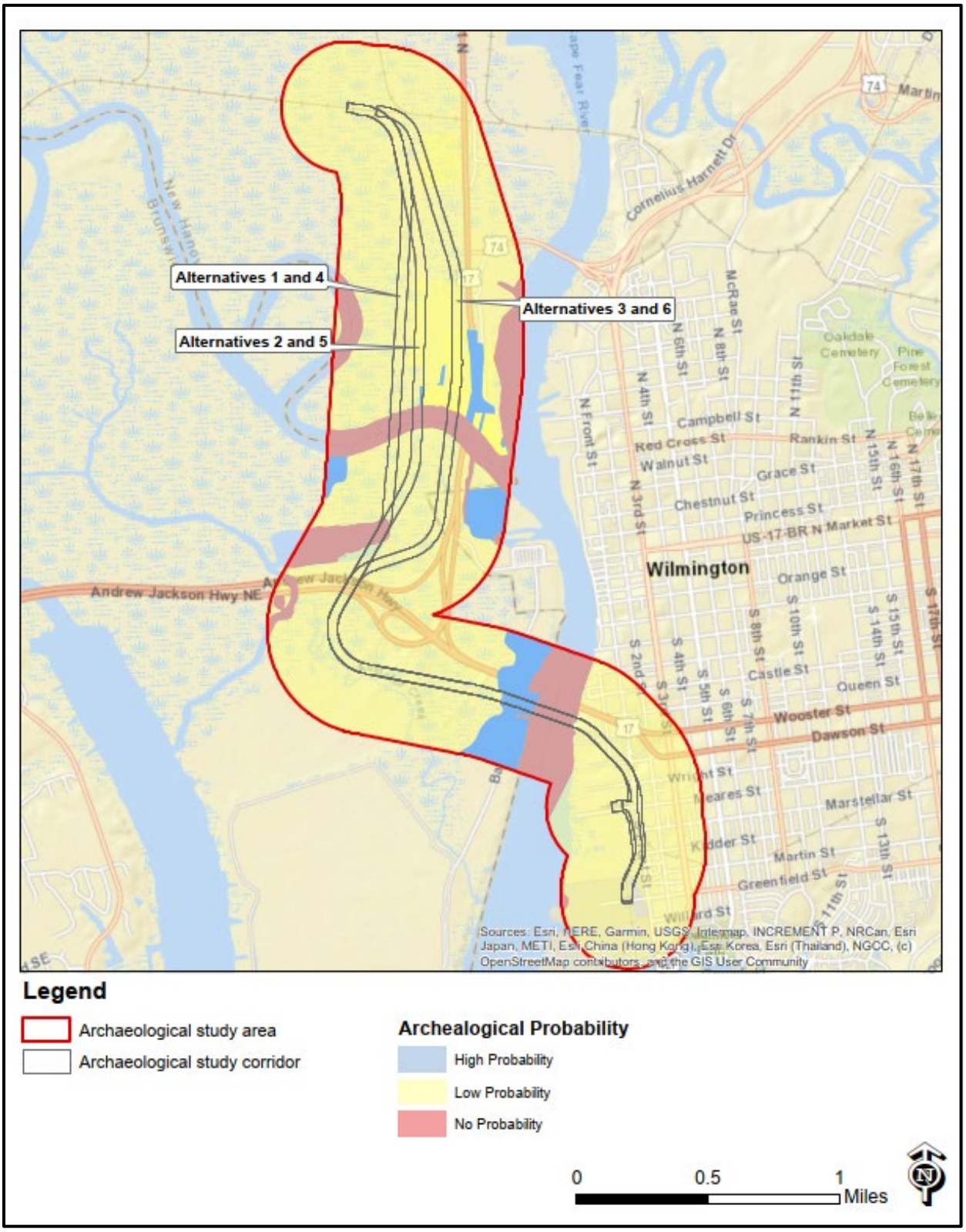
Bera (2010) conducted survey on another parcel on Eagles Island, one through which the WRR APE crosses. This parcel is located adjacent to (west of) US 74, extending northward to front the Cape Fear River and extending westward through the WRR APE. Bera (2010:13-20) only reports finding an "overwhelming" (Bera 2010:13) tangle of timbers at the river's edge. This was investigated further and determined to contain the remnants of railroad ties, railroad trestle beams, large iron girders, rail track, the frame of a box car, and metal scaffolds from the United States Light House Service. These items were considered to be more or less related to ownership of the land by the railroad and dumping of materials at this location. Much like the two East Carolina studies summarized above, the "wooden bonanza" (as Bera [2010:13] endearingly terms it) was not recorded with the state as an archaeological resource.

In 2011 researchers with Environmental Services, Inc. (ESI) prepared an environmental and cultural context for Eagles Island (Smith et al. 2011). This document, prepared for the New Hanover Soil and Water Conservation District, among others, was designed to "explore the rich natural and cultural history of Eagles Island with an emphasis on how human use of the island through history has reshaped Eagles Island into the landscape that we see today" (ibid:v). Much of the report was dedicated to the natural resources and conditions of Eagles Island, but a brief prehistoric and historic context (ibid:Chapter 3) and discussion of significant events and activities including archaeological remains (ibid:Chapter 5) were also included. This study was not an archaeological investigation per se, but rather, a comprehensive detailing of ecology, history, and archaeological data that could be used as a research design and guide preservation activities on the island.

An East Carolina University Master's Thesis by Robert Minford (2012) was obtained as part of the earlier WRR background studies. Minford's work recorded 59 potential cultural resources on Eagles Island. Not all of these are within one mile of the Preferred Alternative. Little detail was provided aside from a name and latitude/longitude coordinates. Based on the names, not all represent archaeological resources. Further, 24 are associated with archaeological sites recorded with the OSA, and likely simply represent elements of those sites. Discounting the 24 associated with known archaeological sites, 18 are mapped within a half-mile of the Preferred Alternative. Three of these are mapped in close proximity (32 to 492 ft [10 to 150 m]) to the Preferred Alternative. These are listed by Minford (2012) as: timber with bolts (flotsam), mound (high point), and brick scatter. None of the 59 resources in Minford's (ibid) Master's Thesis were reported to the state as archaeological resources. Based on the names provided, many probably do not qualify as archaeological resources due to lack of age or because they were deposited in these locations by flooding (i.e., not in primary or even secondary contexts). None of the resources were evaluated for NRHP eligibility.

As part of the overall WRR project, a terrestrial archaeological predictive model was created and presented in a technical study of known resources in the region (Figure 39) (AECOM 2021). The model was created on an area extending a quarter-mile on either side of all alternatives. This archaeological predictive model was based on an earlier predictive model from the region created for the Cape Fear Skyway (now Cape Fear Crossing) project. Some of the variables used in the Cape Fear Crossing model did not apply to the WRR project, so the variables of soil drainage, developed/disturbed areas, and historic maps were used to construct the WRR model. Comparison of the six build alternatives revealed very little difference between each alignment. The Preferred Alternative exhibited 1.41 percent of the studied area as high probability. Specifically, acreage for the Preferred Alternative included 8.60 acres of no probability (water crossings, considered no probability for a *terrestrial* predictive model), 89.39 acres of low probability, and 1.41 acres of high probability.

Figure 39. Terrestrial Predictive Model Results for WRR Project (AECOM 2021:Figure 7).



In summary, the above information depicts the vicinity of the WRR project as one of extensive human activity adjacent to the river channels with less extensive occupation of the interior areas. This is not surprising given much of the historic context depicts the same thing—extensive activities along the riverbanks and relatively undeveloped interiors marked by tidal marsh and/or rice fields. In other words, this very generalized picture of the archaeological potential of the region is likely real and not just perceived (and in error) based on archaeological survey biases.

3.3.3 Previously Recorded Archaeological Resources

The Preferred Alternative for the WRR project intersects one previously recorded archaeological site. Fifty-five other previously recorded archaeological resources are within one mile of the centerline of the WRR project (Table 3).

The Preferred Alternative for the WRR project intersects previously recorded site 31NH686. 31NH686 was originally recorded by the Ft. Fisher branch of the OSA in 1992. This site was described as consisting of a railroad causeway and an approximately 50' diameter brick-walled turntable. The site had been impacted by previous hurricane and looting activities. Site 31NH686 was determined not eligible for the NRHP. The site was revisited and studied during the current project, and the results of this work can be found below in Chapter 5.

Three additional sites, two mapped as point features (31NH593 and 31NH595) and one as a polygon (31NH597), are in relatively close proximity (131 to 394 [40 to 120 m]) to the preferred alignment but not directly intersected by it, and therefore warrant additional information beyond the data in Table 3. Site 31NH593 is plotted in the OSA data as a point feature approximately 265 ft (80 m) east of the Preferred Alternative. The site was recorded as a remnant of a brick railroad-related building and vestiges of track bed adjacent to it. A sketch map and details included in the site form for 31NH593 depicts the structure as approximately 15-ft by 140-ft (4.5 m by 43 m) oriented north-south, with the former tracks located about 20 ft (6 m) to the east. A modern gun range has been constructed at the location of 31NH593. It is likely the construction activities associated with this facility have significantly disturbed or even destroyed 31NH593. Site 31NH593 has not been evaluated for NRHP eligibility. Site 31NH595 lies about 365 ft (110 m) east of the Preferred Alternative. No information about the site is provided on its site form. Likewise, no information is included in the metadata appended to the GIS point aside from its classification as a historic site. It is presumed the site has not been evaluated for NRHP eligibility.

Site 31NH597 represents the archaeological signature of historic Point Peter. Details on the historic context of Point Peter were presented above. In general, the strategic location of this site, in conjunction with the known artifact assemblage, links the site through multiple uses including residence, warehouse, ferry accommodation, railroad facility, possible cemetery, turpentine distillery, barrel-making plant, lumbering, and shipping activities. From an archaeological resource perspective, the site was recorded with the OSA in April 1979 as a

historic site with an artifact assemblage that included historic ceramics, slate shingles, rosin deposits, and ballast stones. The site was not evaluated for NRHP eligibility.

The above four resources are the most critical in terms of the current survey as they represent the ones most likely to be encountered within the WRR APE. However, all 56 previously recorded resources within a mile of the project provide a robust dataset upon which to (a) gauge the types of resources one might find within the WRR APE and (b) provide resources that the NRHP eligibility of any identified resources within the APE can be evaluated against.

Table 3. Archaeological Site Data for Sites Within One Mile of WRR Centerline.

Site #	Site Type	Distance to CL (mi/m)	NRHP Eligibility	Comments
31NH500	H	0.56/901.2	U	cemetery
31NH501	H	0.48/772.5	U	Colonial and 19th century artifact scatter
31NH593	H	0.08/128.7	U	Point feature; likely destroyed by sheriff's shooting range
31NH595	H	0.1/160.9	U	Point feature
31NH597	H	0.05/80.5	U	Point Peter (archaeological polygon)
31NH684	H	0.85/1,367.9	DE	Point feature; mitigated and subsequently destroyed
31NH686	B	intersects CL	NE	re-documented during current project, see results chapter
31NH832	H	0.49/788.6	U	Fanning House Cistern
31NH837	H	0.72/1,158.7	U	Plotted as Pythian Hall footprint; site is beneath it.
31NH845	H	0.46/740.3	U	Gore Naval Stores/Dunn Bros. Importers
31NH846	H	0.34/547.2	U	Williams Lumber/Wilmington Marine Railway
31NH847	H	0.38/611.6	U	20th century roadside dump
31NH849	H	0.08/128.7	U	Little Barge (CFR0025)
31NH850	H	0.08/128.7	U	Government Barge (CFR0026)
31NH851	H	0.12/193.1	U	Barge 2 (CFR0005)
31NH852	H	0.14/225.3	U	Waccamaw (CFR0001)
31NH853	H	0.16/257.5	U	Barge 1
31NH854	H	0.17/273.6	U	Iron Rudder Wreck
31NH855	H	0.19/305.8	U	Bulkhead Tug
31NH856	H	0.2/321.9	U	Bulkhead Barge
31NH857	H	0.21/338.0	U	Bulkhead Barge (CFR0007)
31NH858	H	0.22/354.1	U	Hamme Marine Slipways
31NH859	H	0.27/434.5	U	Steam Crane Barge 3 (CFR0074)
31NH860	H	0.27/434.5	U	*Isco* (CFR0041)
31NH861	H	0.28/450.6	U	Barge 4 (CFR0008)
31NH862	H	0.28/450.6	U	Steam Crane Barge 2 (CFR0042)
31NH863	H	0.29/466.7	U	Steam Crane Barge 1 (CFR0009)
31NH864	H	0.3/482.8	U	Barge (CFR1006)
31NH865	H	0.32/515.0	U	Stone Drydock (CFR0021)
31NH866	H	0.34/647.2	U	Stone 5 (CFR0010)
31NH867	H	0.35/563.3	U	Stone 4 (CFR0028)
31NH868	H	0.35/563.3	U	*Cherokee* (CFR0033)
31NH869	H	0.36/579.4	U	*Dolphin* (CFR0011)

continued on next page

Table 3 (cont'd).

Site #	Site Type	Distance to CL (mi)	NRHP Eligibility	Comments
31NH870	H	0.36/579.4	U	*Atlantic City* (CFR0012)
31NH871	H	0.36/579.4	U	Wright Barge (CFR0032)
31NH872	H	0.35/563.3	U	*H. G. Wright* (CFR0027)
31NH873	H	0.39/627.6	U	*Minnesota* (CFR0013)
31NH874	H	0.4/643.7	U	Stone 3 (CFR0014)
31NH875	H	0.41/659.8	U	*Argonauta* Barge (CFR0031)
31NH876	H	0.42/675.9	U	*Argonauta* (CFR0015)
31NH877	H	0.46/740.3	U	Stockpile 1 (CFR1001)
31NH878	H	0.46/740.3	U	Barrel Boat (CFR1004)
31NH879	H	0.46/740.3	U	Work Barge (CFR0063)
31NH880	H	0.46/740.3	U	*John Knox* (CFR0016)
31NH881	H	0.8/1,448.4	SL	Bellamy Mansion (historic resource NH0024)
31NH889	H	0.58/933.4	U	Jacoby Hardware
31NH890	H	0.39/627.6	U	317 S. 2nd St.
31NH901	H	0.53/853.0	U	Zebulon Latimer House (historic resource NH0128)
31NH902	H	0.25/402.3	U	no information, no report
31NH903	H	0.19/305.8	U	no information, no report
31NH904	H	0.18/289.7	U	no information, no report
31NH905	H	0.17/273.6	U	no information, no report
0009NER	H	0.74/1,190.9	U	Point feature in NE Cape Fear River channel
0014NER	H	0.79/1,271.4	U	Point feature in NE Cape Fear River channel
0037NER	H	0.72/1,158.7	U	Point feature in NE Cape Fear River channel
0040-44CFR	H	0.18/289.7	U	Point feature in Cape Fear River channel off State Port

Of the 56 resources within one mile of the WRR centerline, four are recorded as point features within the Northeast Cape Fear River and Cape Fear River and were assigned marine site numbers instead of the traditional trinomial archaeological site number type. Another 32 resources were assigned trinomial site numbers but are marine-related in nature, largely abandoned ships but also a few drydocks and slipways. These 36 marine-related sites represent almost two-thirds (64.3 percent) of the 56 known resources. Further, 39 of the 56 resources are in close proximity to one another along the east side of Eagles Island to the north of the US 17 Cape Fear Memorial Bridge and to the south of USS *North Carolina*. Most of these are the Eagles Island Ships' Graveyard (see Seeb [2007] discussion above), although a handful related to past commercial enterprises are recorded just inland from the shoreline.

Non-maritime archaeological sites include several downtown Wilmington historic sites, several terrestrial historic sites just west of the Eagles Island Ships' Graveyard, and a scattering of other historic sites related to residential or railroad functions. Only three of the 56 sites have been evaluated for NRHP eligibility based on the metadata in the OSA GIS information; however,

many of these are likely NRHP-eligible but were never assessed as such given their documentations were not related to compliance archaeology work. Site 31NH684, discussed above in the archaeological projects section, and the Bellamy Mansion are both determined NRHP eligible, and study listed, respectively; however, it is likely that 31NH684 has been destroyed by the bank construction that prompted its identification and mitigation. Site 31NH686 was originally recommended as not eligible for the NRHP; work at the site during the current project also recommended the site as not eligible (see results chapter below).

3.3.4 Previously Recorded Shipwrecks

In addition to identifying previously recorded archaeological sites, AECOM also performed a review of several shipwreck databases to determine what has been observed within 0.62 miles (one kilometer) of the marine portion of the APE. Table 4 details those resources which were identified from the following resources: NOAA's Automated Wreck and Obstruction Information System (AWOIS), NOAA's Electronic Navigational Charts (ENC), and the Global Marine Wrecks Database (GMWD). AECOM identified 10 resources in addition to the archaeological resources discussed above.

Table 4: Reported Shipwrecks Within 0.6 Mile of the Marine Portion of the APE

ID Source(s)	Associated Marine APE	Distance to APE (mi/m)	Description	Additional Comments
GMWD 60418	Southern	0.53/853.0	Debris	Foul Ground
GMWD 35052	Southern	0.33/531.1	Unknown Wreck	
GMWD 35051	Southern	0.05/80.5	Unknown Wreck	
GMWD 35050; AWOIS 14068; ENC 4443	Southern	0.09/144.8	Unknown Wreck	Dangerous to surface navigation; visible from surface between 1969-1972.
AWOIS 14066	Southern	0.22/354.1	Obstruction	Sunken Piling
GMWD 35056	Northern	0.31/498.9	Unknown Wreck	
GMWD 53471	Northern	Inside APE	Unknown Obstruction	
ENC 4425	Northern	0.57/917.3	Unknown Wreck	Visible from surface
GMWD 34970; ENC 4457	Northern	0.31/498.9	Unknown Wreck	Visible from surface
GMWD 34969; ENC 4437	Northern	0.40/643.7	Unknown Wreck	Visible from surface

4.0 RESEARCH METHODOLOGY

4.1 BACKGROUND RESEARCH

Throughout the life cycle of this project, extensive background research was conducted. Research repositories consulted during the project included the North Carolina Office of State Archaeology, libraries at the University of North Carolina at Chapel Hill, and AECOM's own Cultural Resources library and files.

4.2 TERRESTRIAL FIELD METHODS

The scope of work for the Wilmington Railroad Realignment archaeological project detailed the field methods to be used (AECOM 2021). In general, field tasks to address the survey and evaluation of the Wilmington Road Realignment project area consisted of shovel testing and test unit excavation as described below.

The AECOM survey began with a reconnaissance of the project area to evaluate the terrain and surface conditions. The reconnaissance was followed by systematic Phase I survey. During the reconnaissance, areas that presented constantly wet conditions, such as immediately adjacent to creek drainages and marshes, were subjected to pedestrian survey and visual reconnaissance coupled with photo documentation. Most of the project area was comprised of brackish marsh along the Cape Fear River, thus greatly limiting the amount of land that could be tested for terrestrial archaeological resources.

Distinct survey areas were assigned a letter code (e.g. A, B). Within the project area, two locations were able to be tested via terrestrial archaeological methods. These areas were determined to be the previously identified site 31NH686 and the newly identified site 31H895, which was located on the New Hanover County Sheriff's Department Firing Range. Where the land was able to be tested, one or multiple transect of shovel test pits (STPs) were employed in each survey area depending on the amount of testable land available. Site 31NH686 had a total of three transects measuring north to south. Due to the shape of the terrain, the STP testing at Site 31NH895 consisted of one transect running east to west, one transect running from north to south, and two judgmental STPs. STPs along each transect were assigned a sequential number. Numbers started over at the beginning of each new survey area. This system provides a unique trinomial provenience for each individual STP within the project consisting of Area, Transect, and STP (e.g., A-B-10, B-B-3).

All landscapes were subjected to shovel testing unless clearly disturbed through modern land use, situated on steep slope, or contained persistently wet conditions. Transects were placed along the center line and then 100 ft (30 m) off the centerline to the east and west. All STPs excavated at 100-ft (30-m) intervals. Radial shovel testing was conducted at 50-ft (15-m) intervals in a cruciform pattern surrounding positive STPs based on cardinal directions. When transects were not possible to implement due to accessibility, judgmental STPs were implemented.

Shovel Test Pits (STPs). STPs were round, approximately 11.8 inches (in; 30 centimeters [cm]) in diameter and excavated at least 3.9 in (10 cm) into sterile subsoil using a long-handled shovel. The total depth of the test pits varied, depending on the soil type and setting, but was usually between 9.8 and 39.4 in (25 and 100 cm) and did not exceed 39.4 in (1.0 m). If the water table was reached within a STP, the test was terminated. STPs were excavated by natural soil horizons and all soils excavated were sifted using quarter-inch mesh for uniform artifact recovery. Once excavated, the walls of each STP were inspected for artifacts, features, and other indications of an archaeological site. After documentation was established, the STPs were backfilled.

Artifacts and Field Notes. Artifacts were collected in Ziploc bags, which were labeled with provenience and other pertinent site information. Standardized data for each STP were collected on forms; information included on the STP forms consisted of the unique designation of each STP, thickness, texture, and Munsell soil color for each soil stratum, and the number and type of each artifact encountered if applicable.

Scaled sketch maps were made of site areas and shovel test transects, as needed. In addition to STP forms, the field director kept a daily log in which additional information pertinent to the project was recorded. This information included (but was not limited to) which area(s) were worked in, general results, photo logs, field site log, small sketch maps, etc. Representative photographs of the project area were taken in digital format to document the general topography, vegetation, and general conditions at the time of the fieldwork. These photographs included at least one photograph of each site encountered and at least one photograph of most of the areas surveyed regardless of the presence/absence of site(s).

Global Positioning System Unit. An Arrow 100® GNSS receiver and an iPad running on ArcGIS Collector were used to record the geographic location of STPs, archaeological features, and sites. Using a satellite-based augmentation system (SBAS), the unit provides 60-centimeter real-time accuracy. Field data was further post processed for accuracy. Global Information System and Computer Assisted Drawing compatible data will be provided to the City of Wilmington as a deliverable of this project.

4.3 UNDERWATER FIELD METHODS

4.3.1 Remote Sensing Survey Equipment

The remote sensing tools chosen for this investigation were the magnetometer (to detect ferrous materials), side-scan sonar (to create images of the bottom), and the subbottom profiler (to reconstruct the structure of the underlying sediment beds). Locational control was conducted with DGPS technology. Analysis of the data was conducted with Hypack and SonarWiz (described in detail below).

4.3.2 Differential Global Positioning System

The primary consideration in the search for any submerged item is positioning. Accurate positioning is essential during the running of survey tracklines, and it is essential in returning to recorded locations for remote sensing refinement or diver investigations. Positioning was accomplished on the project using two Trimble DSM12/212 Global Positioning System (GPS) and antennae; one was used for the subbottom, and one split to the navigation/magnetometer computer and to the side-scan (Figure 40).

The DSM12/212 GPS attains sub-meter precision with a dual-channel Minimum-Shift Keying (MSK) differential beacon receiver. This electronic device combines data from satellites and shore-based differential beacon stations, which increase the precision of the satellite data alone. Differential Global Positioning System (DGPS) positions were updated at 1-second intervals, the same rate as the magnetic data were recorded (Trimble Navigation Limited 1998:1-2).

The project was planned in NAD83 North Carolina State Plane East, U.S. survey feet, and all side-scan, subbottom, and magnetometer target data have been converted to this datum and projection. The DGPS data streams are in geographic format, WGS84 (i.e., latitude, longitude), and converted in real time by the navigation software.

Navigation was conducted with a Capaccino Twister PC computer using Hypack Max for navigation, which was written and developed by Coastal Oceanographics, Inc. specifically for marine survey applications. The magnetometer data were acquired with this program as well.

All positioning coordinates are based on the position of either of the two DGPS antennae. Layback for each of the remote sensing devices was noted and used in the target location determination (Figure 41). This layback information is critical for accurate positioning of targets in the data analysis phase and to relocate any targets for additional investigations.

4.3.3 Magnetometer

Magnetometers measure the intensity of magnetic forces with a sensor that measures and records the ambient (background) magnetic strength and deviations from the ambient background (anomalies) caused by ferrous and some other sources (Breiner 1973). These measurements are recorded in nanoteslas (nT), the standard unit of magnetic intensity.

Figure 40. Trimble Navigation DSM 12/212 Global-Based Positioning System Used During the Investigation.

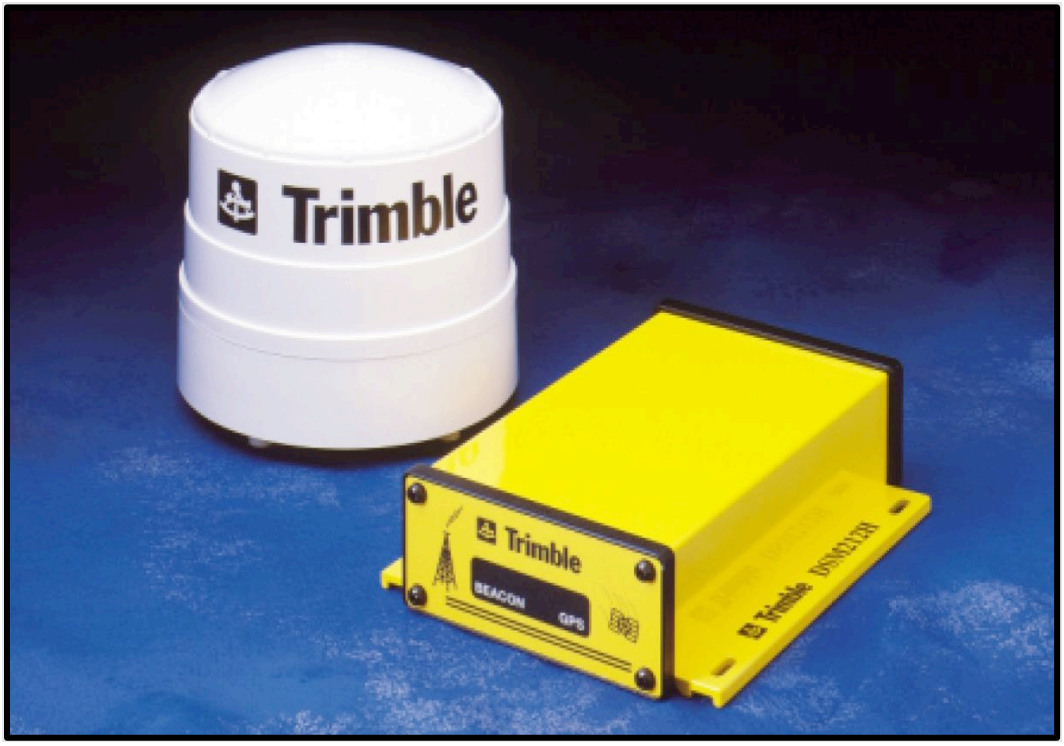
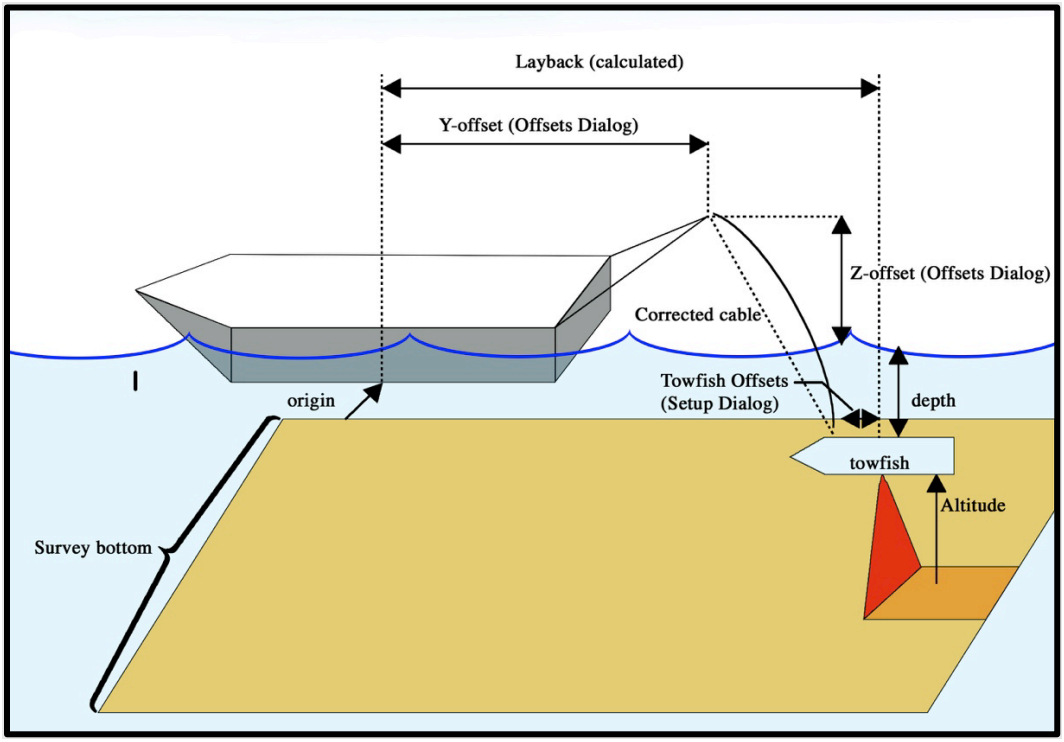


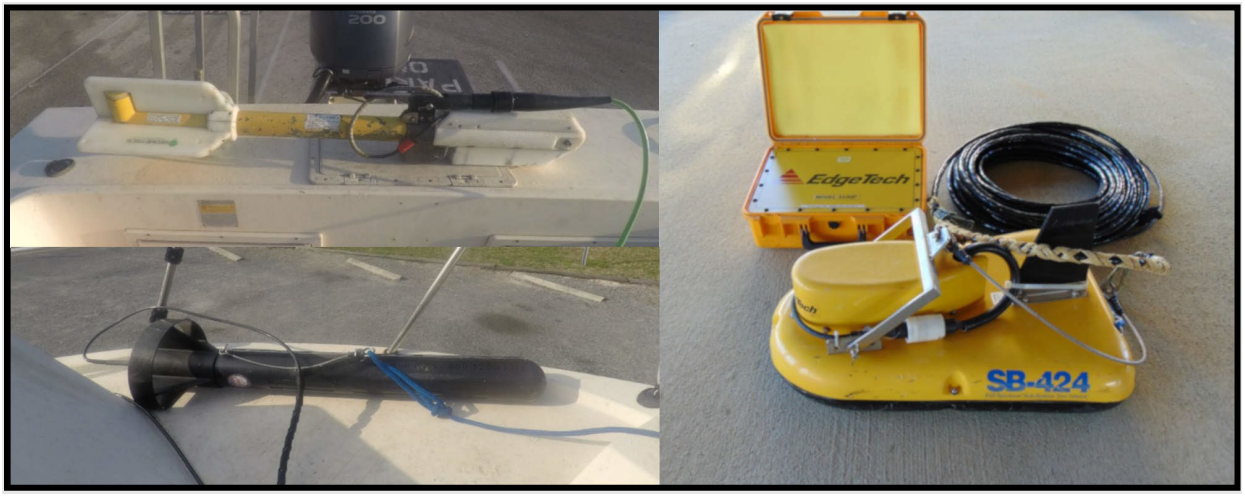
Figure 41. Equipment Schematic Illustrating Layback (courtesy of Coastal Oceanographics, Inc.).



The success of the magnetometer to detect anomalies in local magnetic fields has resulted in the instrument being a principal remote sensing tool of maritime archaeologists because of anomalies that can be components of shipwrecks and other historic debris or objects hazardous to dredging or navigation. While it is not possible to identify specific ferrous objects from the magnetic field contours, it is occasionally possible to approximate shape, mass, and alignment characteristics of wrecks or other structures based on complex magnetic field patterns. In addition, other data (historic accounts, use patterns of the area, diver inspection), which overlap data from other remote sensing technologies, such as the side-scan sonar and prior knowledge of similar targets, can lead to an accurate identification of potential targets. Finally, it must be noted that other sources of magnetic field variation can overwhelm any smaller objects. These include: electrical magnetic fields that surround power transmission lines, underground pipelines, navigation buoys, or bridges and dock structures, which can be quite extensive when the feature is massive.

There are three types of commercially available marine magnetometers available: proton precession; cesium; and Overhauser. Over the course of the project the survey employed a Geometrics 882 cesium vapor magnetometer (Figure 42). Data were stored in the navigation computer and archived. The Geometrics 882 is capable of sub-second recordation for precise location control, and data were collected at 10 hertz, providing a record of both the ambient field as well as the character and amplitude of the anomalies encountered. A 110-volt gasoline powered generator powered all survey devices.

Figure 42. Survey Instruments Employed During the Investigation Included (clockwise from top left) the Magnetometer, the Subbottom Profiler, and Side-Scan Sonar.



4.3.4 Side-Scan Sonar

Side-scan sonars produce images by "pinging" the water column with acoustic energy (sound), and then they determine distance and reflective strength of objects from the echoed returns. Under ideal circumstances (low energy wave and current conditions), they are capable of providing near-photographic images of submerged bottomland, on either side of a trackline of

a survey vessel. A portion of the record from directly below the vessel is absent due to the physics of the system and depth of the water under the towfish.

The remote sensing instrument used to search for physical features on or above the ocean floor was DC&A's Marine Sonic Technology (MST) HDS side-scan sonar system (see Figure 42). The side-scan sonar is an instrument that, through the transmission of dual fan-shaped pulses of sound and reception of reflected sound pulses, produces an acoustic image of the bottom. Under ideal circumstances, the side-scan sonar is capable of providing a near-photographic representation of the bottom on either side of the trackline of a survey vessel.

The Sea Scan PC has internal capability for removal of the water column from the instrument's video printout, as well as correction for slant range distortion. This side-scan sonar was utilized with the navigation system to provide manual positioning of fix or target points on the digital printout. Side-scan sonar data are useful in searching for the physical features indicative of submerged cultural resources. Specifically, the record is examined for features showing characteristics such as height above bottom, linearity, and structural form. Additionally, potential acoustic targets are checked for any locational match with the data derived from the magnetometer and the subbottom profiler.

The MST HDS side-scan sonar was linked to a towfish that employed a 900/1200-kilohertz power setting and a variable side range of 20 m-per-channel (131 ft) on each of the survey lines. The 20-m-per-channel setting was chosen to provide detail and 100% overlapping coverage with the 50-ft (15 m) line spacing to insure full coverage of the survey area. The power setting was selected in order to provide maximum possible detail on the record generated; 900 kilohertz was the preferred frequency.

4.3.5 Subbottom Profiler

Employed to determine the character of near-surface geologic features over the survey area, subbottom profilers generate low frequency (0.5 to 30 kilohertz) sound pulses capable of penetrating the seabed and reflecting off sediment boundaries or larger objects below the surface. The data are then processed and reproduced as cross sections based on two-way travel time (the time taken for the pulse to travel from the source to the reflector and back to the receiver). This travel time is then interpolated to depth in the sediment column by calculating at 4,921 ft(1,500 m)-per-second (the average speed of sound in water).

Subbottom profilers have different ranges of sound wave frequency (sparkers, boomers, pingers, and chirp systems). Sparkers and boomers operate at low frequency (5 hertz to 2 kilohertz) and afford deep geologic penetration and low resolution, useful for deep geologic time. Pingers (3.5 and 7 kilohertz) are more useful to penetrate late Pleistocene- and Holocene-aged deposits or paleolandscape features of interest to prehistoric archaeologists. CHIRP systems sweep multiple frequency ranges and are the most precise and accurate of the subbottom profiler systems, and they operate at ranges of between 3 to 40 kilohertz. The

resolution can be on the order of 3.9 in (10 cm) depending on sediment type and the quality of the acoustic return.

For the survey, an EdgeTech 3100 CHIRP subbottom profiler system with a topside power unit, laptop processor and SB-424 towfish was employed. The device was operated at a setting of 4 to 16 kilohertz, the lowest setting of the device, for maximum penetration.

Seismic cross sections reconstruct the shapes and extents of reflectors such as facies in channel sediments, rock/sediment interfaces, marine sand bed cover, and so forth. In addition to subbottom profiling, and depending on the density of data points, the first bottom return data can be used for high-resolution bathymetry. Shipwrecks can be studied with subbottom profilers once their location is known. Finding shipwrecks with subbottom profiler survey is less useful.

High and low amplitude reflectors (light and dark returns) distinguish differences of sediment characteristics such as particle size and consolidation (Stevenson et al. 2002). Facies contacts can be identified by discontinuities in the extent, slope angle, or shape of the reflector returns. This latter fact is important when identifying the sinusoidal shapes of drowned channel systems and other relict and buried fluvial system features (e.g., estuarine, tidal, lowland, upland areas around drainage features). Parabolic-shaped reflectors indicate individual objects of sufficient size and consolidation. The parabolic shape is the result of sound propagating outwardly from the item. There are also five types of signals that may cause misinterpretation in the two-dimensional records: direct arrivals from the sound source; water surface reflection; side echoes; reflection multiples; and point source reflections. Judicious analysis is required to identify them.

Peats tend to reflect strongly, as do other fine-grained or muddy sediments. Sand and shell deposits are less reflective, and difficult to penetrate without lower seismic frequencies such as those employed by the profiler system used here.

4.3.6 Survey Vessels

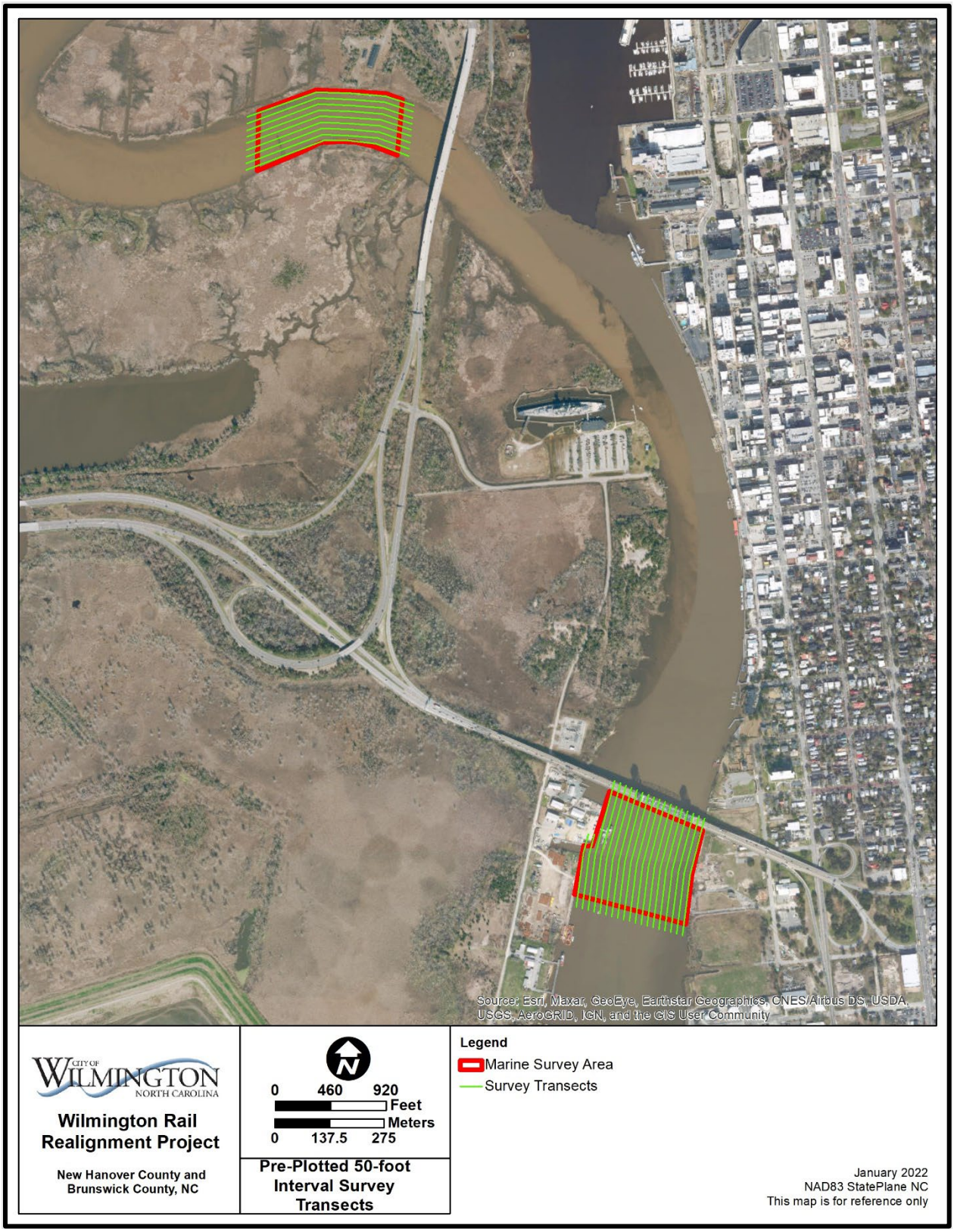
The vessel employed during both the remote sensing survey was DC&A's 25-foot Parker 2520-XL *Haley Ann* (Figure 43) a modified "V"-hulled motor vessel powered by twin 125-horsepower Yamaha outboards. Perfect for both survey and diving, the vessel has numerous davits with electric winches for deploying survey instruments as well as an excellent dive ladder. The vessel has a covered cabin and an ample, covered-deck area for the placement and operation of the necessary remote sensing equipment. The vessel conformed to all U.S. Coast Guard specifications, according to class, and had a full complement of safety equipment. It carried all appropriate emergency supplies, including lifejackets, a spare parts kit, a tool kit, first-aid supplies, a flare gun, and air horns.

Figure 43. Dial Cordy and Associates, Inc.'s 25-foot *Haley Ann* Employed for the Marine Survey.

4.3.7 Marine Survey Procedures

Spaced at 50-ft (15 m) intervals as per state requirements, nine survey transects lines were planned for the northern area while 19 survey transects lines were planned for the northern area (Figure 44). The magnetometer, side-scan, subbottom profiler, and DGPS were mobilized, tested, found operational, and thus, the trackline running began. The helmsman viewed a video monitor, linked to the DGPS and navigational computer, to aid in directing the course of the vessel down the survey tracklines. The monitor displayed the pre-plotted trackline, the real time position of the survey vessel, and the path of the survey vessel. The speed of the survey vessel was maintained at approximately 3 to 4 knots for the uniform acquisition of data. As the survey vessel maneuvered down each trackline, the navigation system monitored the position of the survey vessel relative to the tracklines every second, each of which was recorded by the computer. Event marks delineated the start and end of each trackline. The positioning points along the traveled line were recorded on the computer hard drive and the magnetic data were also stored digitally.

Figure 44. Planned Survey Lines for the Marine Survey Areas.



4.3.8 Data Analysis

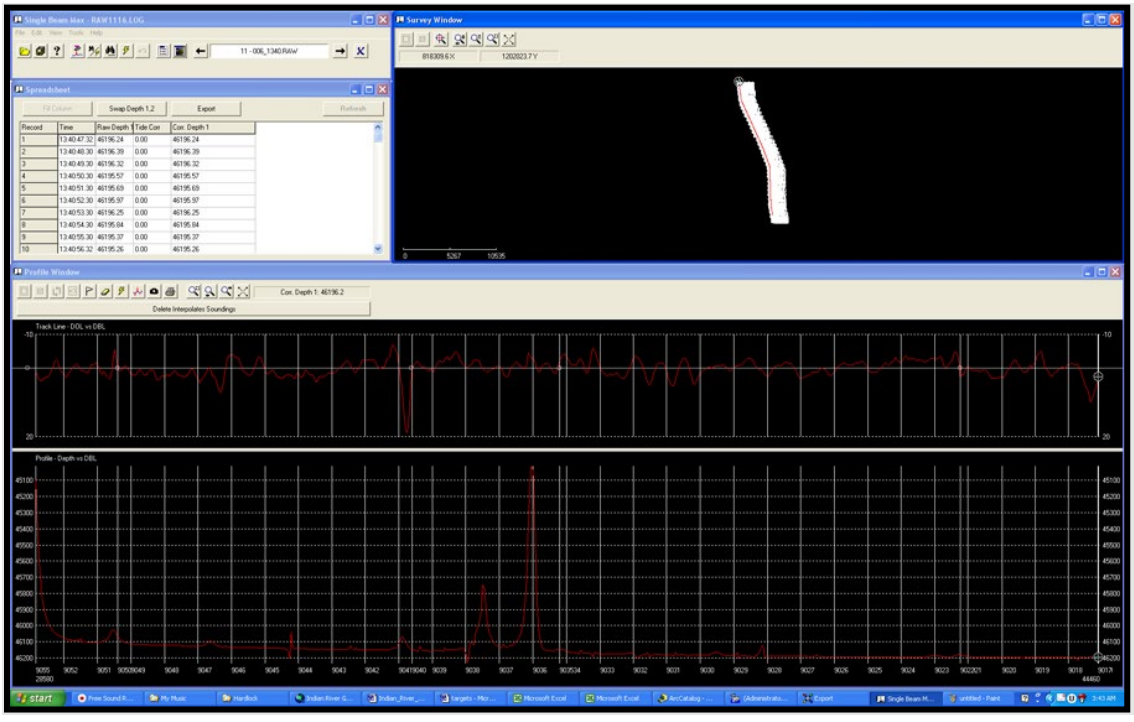
DATA PROCESSING

Once collected, marine survey data are processed and analyzed using an array of software packages designed to display, edit, manipulate, map, and compare proximities of raster, vector, and tabular data. These packages include SonarWiz for mosaicing side-scan sonar and subbottom profiler data, mapping target extents and generating target reports, figure details, and GIS layers; Hypack Single Beam Editor, Hypack TIN Modeler, and Hypack Export for tabulating anomaly characteristics and contouring magnetic data and generating GIS data layers. ESRI ArcMap and ArcView are used to display the data on background charts, to conduct a "proximity analysis" for each of the three types of targets (e.g., see which magnetometer, side-scan, and subbottom profiler anomalies are near each other and may explain each other) and to create maps and figures for this report.

MAGNETIC DATA COLLECTION AND PROCESSING

Data from the magnetometer are collected using Hypack Max. The data are stored as *.RAW files by line, time, and day. Raw data files are opened, and layback parameters are set. Contour maps are produced of the magnetic data with the TIN Modeler. The DXF file is saved and exported into the combined GIS database. The contour maps allow a graphic illustration of anomaly locations, spatial extent, and association with other anomalies. Magnetic data are reviewed by the Hypack Single Beam Editor (Figure 45), and the location, strength, duration, and type of anomaly are transcribed to a spreadsheet along with comments.

Figure 45. Hypack Single Beam Editor magnetic data display of a section of a survey line.



SIDE-SCAN SONAR DATA COLLECTION AND PROCESSING

Post-processing of side-scan sonar is accomplished using SonarWiz, a product that enables the user to view the side-scan data in digitizer waterfall format, pick targets and enter target parameters including length, width, height, material, and other characterizations into a database of contacts. In addition, SonarWiz "mosaics" the side-scan data by associating each pixel (equivalent to about 3.9 in [10 cm]) of the side-scan image with its geographic location determined from the DGPS position (layback rectified) and distance from the DGPS position (Figure 46). SonarWiz is the industry standard for mosaicing capability, and the results are exported as geo-referenced TIFFs for importing to the GIS database of the project. SonarWiz can generate target reports in PDF, Word, or Excel format. CHG utilizes the Word format for reports (Figure 47).

SUBBOTTOM PROFILER DATA PROCESSING AND ANALYSIS

Post-processing of subbottom profiler data, like the side-scan data, is done with SonarWiz, which in this case enables the user to view the subbottom data in a planar, trackline format. The user may view the data in a digitizer window as a waterfall format, allowing the digitizing of subbottom features of interest, linear extent, depth, and type. SonarWiz batch processes waterfall images to *.JPG formats in order to generate figures (Figure 48).

GEOGRAPHIC INFORMATION SYSTEMS ANALYSIS

A project GIS database is constructed using geo-referenced images and layers generated during the magnetometer, side-scan, and subbottom data analyses. Other layers can be added, such as orthophoto quads or navigation charts. Several important things are accomplished by GIS compilation. Data was collected beyond the survey areas along survey transects in order to ensure adequate coverage and GIS analysis allows researchers to clip out extra data to focus on the data in the marine APEs. First, the collected data are compared to one another and evaluated for accuracy and consistency of the positioning information. Secondly, magnetic, side-scan, and other remote sensing targets are compared for relationship (proximity analysis). Employing the data in GIS, one can easily zoom in to further analyze spatial relationships as well as magnetic signature characteristics.

Figure 46. SonarWiz Sonar Mosaic of the Marine Survey Areas.

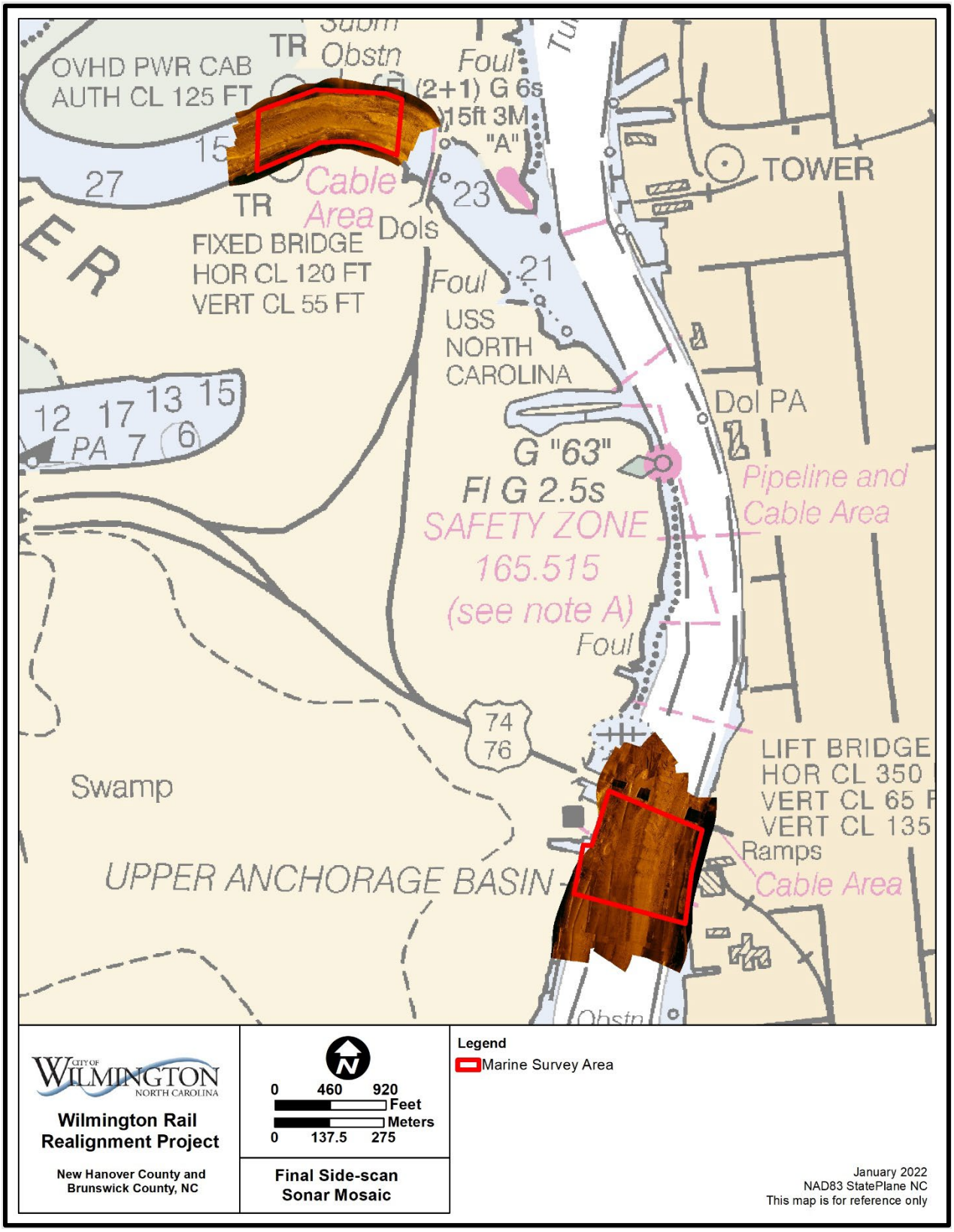


Figure 47. SonarWiz Sonar Contact Data Automatically Generated in Tabular Format. The below example is Contact S.0003 from the Northern Marine Survey Area.

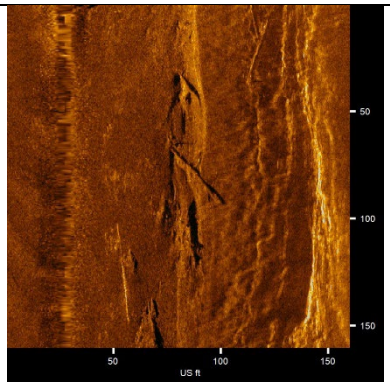
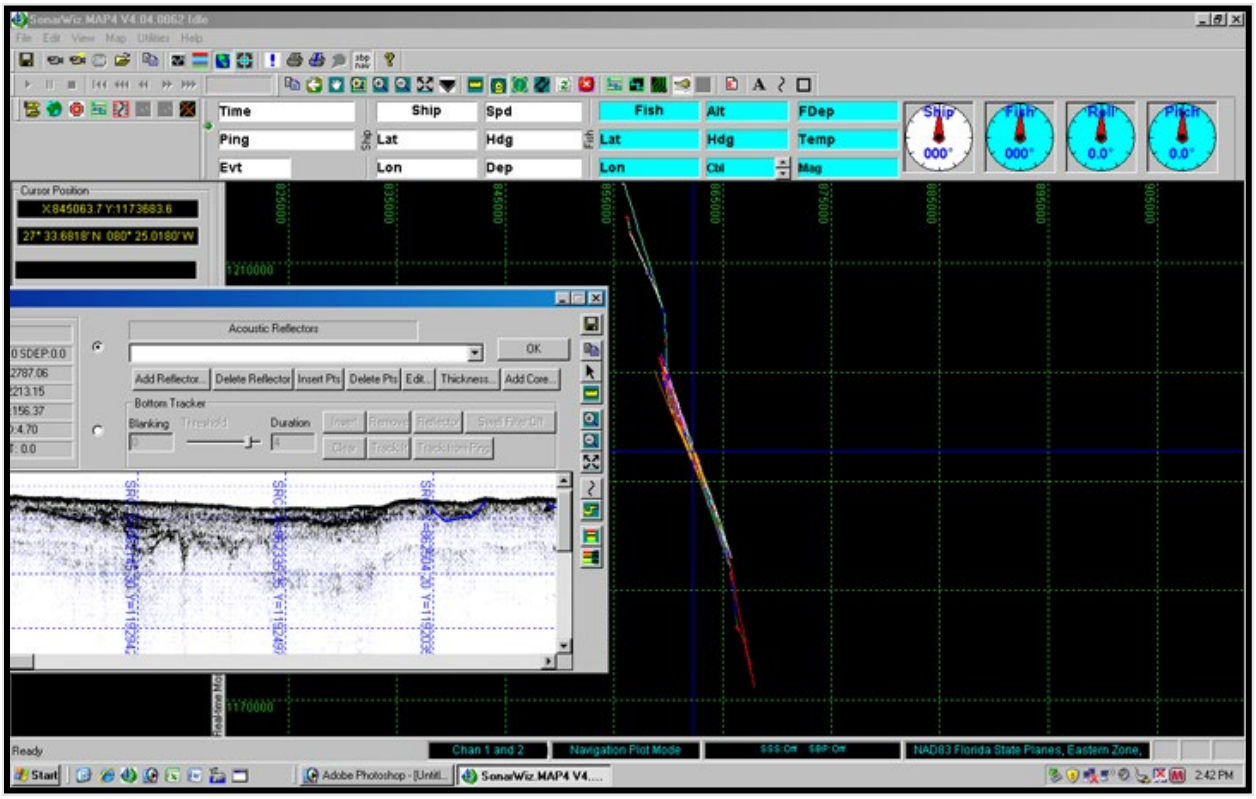
	S.0003 ● Sonar Time at Target: 1/11/2010 4:04:00 PM ● Click Position 34.2433670973 -77.9619970944 (WGS84) (X) 2313720.15 (Y) 181205.54 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:\Users\justi\OneDrive\Desktop\UW_0117\Raw\SS Raw\NORTH\NS_3.jsf	Dimensions and attributes ● Target Width: 48.34 US ft ● Target Height: 1.06 US ft ● Target Length: 169.05 US ft ● Target Shadow: 3.14 US ft ● Mag Anomaly: M.004 ● Avoidance Area: ● Classification1: debris ● Description: Linear debris scatter

Figure 48. SonarWiz Subbottom Waterfall Image Example Showing the Seismic Profile-Digitizing Window (the blue cross hairs in the background chart show the location of the cursor, which at the time of the image was directly over the peak of the positive relief feature shown).



4.4 MARINE DATA ANALYSIS: CRITERIA, THEORY, AND COMMENTARY

The remote sensing survey of the marine portions of the APE intended to locate and identify the presence or absence of potentially significant submerged cultural resources which may be adversely affected by the proposed development plans. The interpretation of remote sensing data, obtained from both magnetometer and side-scan sonar "relies on a combination of sound scientific knowledge and practical experience" (Pearson et al. 1991). The evaluation of remote sensing targets (comprised of both magnetic anomalies and side-scan sonar contacts) and whether or not those targets represent submerged cultural properties, such as shipwrecks, depends on several factors. These factors include the detected characteristics of individual targets such as magnetic declination, magnetic strength and duration, magnetic contour characteristics, and side-scan imagery. Additionally, magnetometer and side-scan datasets must be correlated to each other in order to determine their relationship to each other or association to other observable features in the built landscape, such as channel buoys, pilings, or pipeline crossings.

4.4.1 Magnetometer

Interpretation of datasets collected by magnetometer instruments presents the most problematic with regards to the identification of submerged cultural resources. Previous research discussing the relationship between magnetic theory and its relationship to archaeological resources, specifically submerged resources, guided the analysis and interpretation of the magnetic datasets (Garrison et al. 1989; Pearson et al. 1991; Gearthart 2004, 2011). Magnetic anomalies are evaluated by several criteria, including their magnetic declination, total strength above or below the Earth's ambient magnetic field, amplitude ratios, and magnetic gradient.

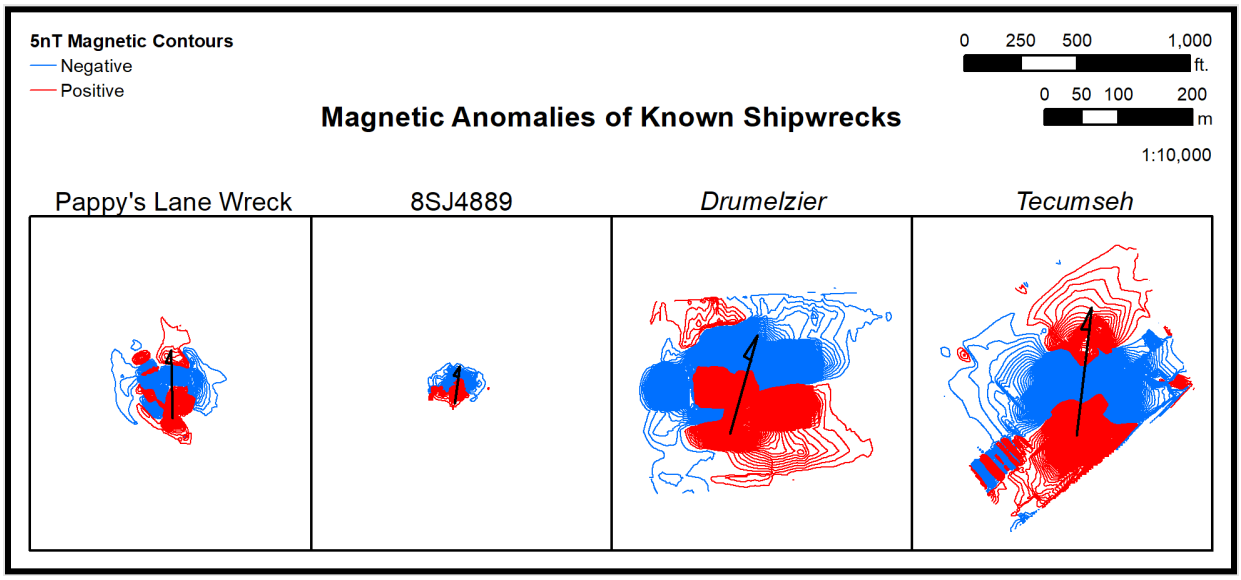
The largest issue concerning magnetic datasets in differentiating between anomalies representing debris, pipeline crossings, or culturally insignificant targets, such as derelict fishing equipment. In particular, shipwrecks represent a complex arrangement of ferromagnetic signatures, each with their own permanent magnetism. However, when taken as a composite, each of these signatures tends to cancel each other out. This leaves a shipwreck creating a general dipolar pattern based on the weaker induced magnetism created by the Earth's magnetic field (Gearhart 2011). The premise of using induced magnetism to determine culturally sensitive anomalies versus non-cultural single source signatures was suggested by Garrison et al. (1989) and later demonstrated through verified data by Gearhart (2011).

Gearthart's (2011) observations of the magnetic signatures of verified shipwrecks and debris sources, demonstrates because shipwreck features are based on induced magnetism, their polar axis will be aligned to the Earth's magnetic field. Thus, a shipwreck's dipolar signature is illustrated in contours as having a negative lobe in the northern hemisphere and a positive lobe in the southern hemisphere. Further, Gearhart's observations noted that the polar axis (as measured from the highest positive amplitude peak to the lowest negative amplitude peak) of cultural features was aligned within ±26 degrees of magnetic north. Gearhart concludes by stating that "the most important parameter to consider when interpreting anomalies based on their magnetic induction is the direction of magnetic moment [polar axis]" (Gearhart 2011:106) and that "deviation from the northerly magnetic moment direction, common to all inducted anomalies, has proven to be the single most powerful discriminator between simple-source anomalies and complex-source anomalies, including shipwrecks" (Gearthart 2011:102).

Several examples from recent CHG projects further demonstrate the validity of this model (Figure 49). While not an exhaustive review, CHG found these principles apply with no deviation from Gearthart's findings and leads to the conclusion that identifying and categorizing the polar axis of an induced anomaly does allow researchers the ability to differentiate between a large percentage of debris source anomalies and potentially culturally significant resources during analysis. A case in point is the recent diver investigation of 13 magnetic anomalies in the Skyway Gulf Intracoastal Waterway (James et al. 2011). Employing the above criteria of polar axis declination, of the 13 anomalies investigation, seven had polar axis orientations that did not meet the characteristics of complex-source anomalies. Subsequent diver investigation

showed that the anomalies represented debris and were not culturally significant. The remaining six anomalies were also represented by debris; however, this is not unexpected, as this method does not rule out complex-source debris or all simple-source anomalies, just a much larger percentage than would have been ruled out if the method were not employed.

Figure 49. Magnetic Contour Maps of Four Wreck Sites Documented During Recent CHG Projects (black arrows indicate the inclination of the magnetic anomaly's field. *Note that the inclination of all fields tend to orient within 20 degrees of magnetic north).



In addition to the polar alignment and induced magnetism of anomalies, their complexity must also be examined. Surveys which decrease sensor-to-source distance will produce higher magnetic signatures. Thus, a shipwreck signature, while demonstrating the general dipolar signature, with also include numerous smaller dipoles and monopoles in the signature, created by individual components. This is particularly true for wooden shipwrecks with numerous iron fasteners, weaponry, or machinery. Further, if a shipwreck is found in dynamic seabed conditions, such as a surf zone or channel, the wreck may become disarticulated and become a discontinuous site. Depending on the level of disarticulation and distribution, such shipwreck sites may not demonstrate a principal dipole (Muckleroy 1978:196). Monopoles, or signatures where only one of the fields of magnetism are detected by the sensor, typically represent non-cultural anomalies, such as petroleum wells or single source debris.

Garrison et al. (1989) indicate that a shipwreck signature will cover an area between 107,640 to 538,195 square ft (sq ft; 10,000 and 50,000 sq m). Pearson et al. (1991) used this model to develop characteristics of magnetometer anomalies most likely to represent shipwrecks. The report states that "the amplitude of magnetic anomalies associated with shipwrecks varies considerably, but in general, the signature of large watercraft or portions of watercraft range from moderate to high intensity (greater than 50 nT) when the sensor is at distanced of 20 ft (6 m) or so" (Pearson et al. 1991:70). Employing a table of magnetic data from various sources as

baseline data, the report goes on to state that "data suggests that at a [sensor] distance of 20 ft (6m) or fewer, watercraft of moderate size are likely to produce a magnetic anomaly… greater than 80 or 90 ft (24 to 27 m) across the smallest dimension…" (Pearson et al. 1991:70). The data led to the conclusion that shipwrecks should produce signatures measuring at least 50-nT and measuring at least 80 ft (24 m) dimensions.

While this is a good general rule, Gearhart (2011) critiqued this approach. In his compilation of data, he states that such criteria ignore both small watercraft and the oldest watercraft which may be seen in the archaeological record. The oldest historical shipwrecks would not have extensively used iron in their construction. Small watercraft, due their size, also would not have used large amounts of iron in their construction. This is evidenced by the Emanuel Point II shipwreck, sunk in 1559 with a magnetic strength of only 40 nT (Greg Cook, personal communication 2011). While larger shipwrecks are easier to determine due to their magnetic fields visible over several transects, smaller cultural anomalies would be inherently ignored by the 50-nT/80-ft (24 m) rule.

Gearhart (2004) instead offers other characteristics to distinguish shipwreck-source anomalies. These include the negative-to-positive amplitude ratio and the peak-to-peak amplitude gradient. Again, using data from verified shipwrecks, Gearhart demonstrated that shipwreck magnetic signatures possess an amplitude distribution between their poles (ratios of negative to positive amplitudes) of less than 1:4, suggesting higher positive amplitudes overall compared to negative amplitudes. Wooden-hulled sailing vessels possess gradients between their poles from 4.5 to 9.0 nT/ft (15 to 30 nT/m) while examples of iron or steel-hulled vessels, and/or those powered by steam or gasoline, possess gradients above 30 nT/ft (98 nT/m).

Lastly, a magnetic signature should be assessed with its relation to contacts found within the side-scan sonar record or built features in the landscape such as channel markers, buoys, docks, pipelines, bridges, and power lines. In particular, power lines, bridges (as conduits for power lines), and pipelines, have the potential of masking culturally sensitive magnetic signatures due to their high energy output affecting surrounding magnetic fields. Their presence is evident magnetic contour maps and easily separated from shipwreck signatures by their very high intensity.

4.4.2 Side-Scan Sonar

Side-scan sonar imagery presents fewer issues than magnetic datasets, in that the sensor produces an image of the sea or riverbed. Contacts, such as isolated sections of pipe and derelict fishing equipment can generally be discarded as insignificant, while large areas of above-sediment wreckage and some paleofeatures (such as rock outcroppings) are generally apparent. The chief factors considered in analyzing side-scan sonar data, with regard to shipwrecks, include: linearity (cultural sites generally are generally detected by straight lines, which do not occur naturally in significant numbers), height off the bottom sediments, size, associated magnetics, and environmental context.

Side-scan and magnetic datasets must be correlated to each other. While the majority of historic shipwrecks will have associated magnetic signatures, it is possible that older, smaller, or disarticulated wrecks may not show significant signs of magnetic influence. In other cases, targets with no associated magnetic signatures are items such as rocks, logs, and other non-historic debris of no interest. Finally, the lack of a side-scan sonar contact in association with a magnetic anomaly is not grounds for dismissal, as the source of the anomaly may be buried.

4.4.3 Clustering

Since an archaeological remote sensing survey involves the collection of several different types of data, each of which has the potential to locate significant cultural resources, attention must be given to groups of targets. These groupings, referred to as clustering, occur when a target exists that produces both a side-scan sonar return and a magnetic signature. In addition, a magnetic source that extends across several survey lines will produce an anomaly on each line, and since these anomalies are related they will form a cluster. Previously discovered archaeological sites will also be considered as an aspect of clustering. Although criteria used to determine a cluster is somewhat subjective, anomalies, side-scan targets, and previously identified archaeological sites will generally be included in a cluster if they lie within 30 ft (9 m) of one another.

4.4.4 Subbottom Profiler Analysis

Subbottom profilers generate low frequency acoustic waves that penetrate the seabed and reflect off boundaries or objects located in the subsurface. The data are then processed and reproduced as a cross section using two-way travel time to determine depth (the time taken for the pulse to travel from the source to the reflector and back to the receiver by a constant). The shapes, relationships, and extents of reflectors are used to infer bottom and subbottom geomorphological characteristics.

In general, high and low amplitude linear reflectors (light and dark lines) distinguish between sediment beds; parabolic reflectors indicate point-source objects with sound propagating out from them; and erosional or non-depositional contacts can be identified by discontinuities in extent, slope angle, and the shape of the reflector morphology. This latter fact is important when identifying buried and drowned channel systems and other relict and buried fluvial system features (e.g., estuarine, tidal, lowland, and upland areas around drainage features).

There are five types of spurious signals that may cause confusion in the two-dimensional records that specialists recognize: direct arrival from the sound source; reflection multiples; water surface reflection; side echoes; and point-source reflections. Judicious analysis is required to identify these sound underwater imagery phenomena. In all cases, precise inference of a sediment bed or other anomaly from the subbottom profiler data would necessitate coring.

In analysis, seismic impedance contrast returns indicating positive relief features such as possible mounds and negative relief features as a probable paleochannel or other fluvial feature with margins and sediment beds indicate high potential for prehistoric remains. Other features of interest are buried surface continuations.

Positive relief features on subbottom records are predictable phenomena, given that piles of erosion resistant material of differential character than the surrounding sediments should be perceivable with sound underwater imagery (e.g., subbottom profiler), and therefore, they have long drawn submerged prehistoric archaeologists as potentially identifiable features to find in places that have otherwise impossibly similar images to search (Stright 1986).

4.5 Archaeological Diving Investigations

The Cape Fear River within the marine survey areas is characterized by shallow to moderate water depths that vary depending on tidal flow. Additionally, submerged obstructions such as trees or debris, low visibility, and water temperatures at the time of the investigations posed hazards to the scientific divers. AECOM used dry suits for thermal protection and Ocean Technology Systems (OTS) Guardian full face masks (FFMs) with integrated, wireless underwater communications to mitigate potential hazards and perform the work safely (Figure 50). Divers were in constant communication with both their dive partner and topside personnel at all times while in the water.

Figure 50. OTS Guardian FFM, underwater communications, and underwater metal detector used during diving investigations.

All dive operations were conducted under the American Academy of Underwater Sciences (AAUS) standards (AAUS 2019). This includes the appropriate level of diver's certifications,

current Cardiopulmonary Resuscitation (CPR), First Aid, and Oxygen Administration certifications; a current diver physical signed by a licensed physician; and the requisite experience and training consistent with AECOM scientific diving standards. All dive equipment used by AECOM during the dive operations is maintained according to manufacturer standards.

Archaeological dive operations were performed from DCA's *Lucy*, a 23-ft (7.0-m) Parker V-hull motor vessel powered by a single Yamaha 250-horsepower outboard engine (Figure 51). The vessel conformed to all U.S. Coast Guard specifications, according to class, and carried a full complement of safety equipment. Safety equipment included a marine radio, air horns, life jackets, first aid kit, diver down flags, floating backboard, portable AED, and an emergency oxygen kit. The dashboard provided a stable platform to set up and deploy the topside communications box and transducer for communication with the divers.

Target locations were entered into *Hypack* navigation software and electronically interfaced with DCA's Trimble DSM12/212 differential global positioning system (dGPS). The dGPS allowed for sub-meter accuracy when relocating each target positions, and *Hypack* allowed the dive team to navigate to and visually mark each target with a buoy. Following buoy deployment, AECOM anchored the vessel up current of from each target location so that divers could float to the buoy.

Figure 51. DCA's 23-foot *Lucy* Employed for the Archaeological Diving.

AECOM's dive team consisted of five members: Two primary divers, a standby/rescue diver, a topside supervisor with audio communication with all divers, and the vessel operator. Prior to each dive, the topside supervisor gave a pre-dive briefing to each working diver for the dive objectives. Following the briefing, primary divers prepared and donned their equipment, and the standby diver donned their dry suit and prepared their equipment for immediate use, if necessary.

After entering the water, divers descended and performed circle searches at each target location. Circle searches were performed at 5.0-ft (1.5-m) radials up to 15 ft (4.6 m). This ensured a complete search diameter of 30 ft (9.1 m), which encompassed the entire peak-to-peak distance for all targets determined from magnetic data alone. The only exception to this was Target S.3 where divers used 10-ft (3.0-m) radials to investigate exposed material identified in acoustic imagery; the target was identified in after completing two radials. One working diver would act as the central pivot and ensure each radial sweep was completed before communicating to the other working diver to extend to the next radial. The second working diver used a Garrett Sea Hunter Mark II underwater metal detector to identify potential ferrous sources (see Figure 50). Additionally, a 4.0-ft (1.2-m) T-Handle probe was used to assist in identifying buried targets.

AECOM completed a dive log each time a diver entered and exited the water. Dive logs identify the duty of each personnel member and dive objective (**Appendix B**). The divers communicated environmental conditions to the topside supervisor during each dive, including water depth, water temperature, current, visibility, and any potential metal detector returns and/or exposed materials. The dive log recorded each diver's time in, time out, air in (psi), air out (psi), and maximum water depth. Diver observations and notes allowed AECOM marine archaeologists to make recommendations for all seven dive targets.

4.6 Laboratory Methods

The artifacts were returned to the AECOM laboratory facility, where they were washed, labeled, identified, and catalogued. Artifacts were washed, labeled, and catalogued in accordance with the 2017 Curation Guidelines of the North Carolina Office of State Archaeology (OSA 2017). Before cleaning, each artifact was inspected to determine its condition (i.e., fragility, material composition). Artifacts were then cleaned in a manner appropriate for their raw material. Most were washed in clean water and air-dried. Each artifact was individually catalogued including its site provenience and analyzed by a variety of categories including, but not limited to, class, material, type, variety, technology, size, date, and comments. A complete catalog is presented in Appendix A.

Initial prehistoric lithic analysis focused on sorting artifacts into tool and debitage classes and tabulating them by raw materials (e.g., various rhyolites, quartz, quartzite). Detailed analysis of lithics commenced after preliminary sorting of the assemblage by raw material and tool/artifact class had been completed. Debitage analysis focused on identification of flake type and recording of basic size attributes. Flakes are identified by their place in a reduction sequence

(e.g., unspecialized, biface thinning, shatter, and flake fragment categories) as well as to the amount of cortex exhibited on the surface (primary = 80%+, secondary = 1-80%, tertiary = 0%). The data can be quantified to represent reduction stages present (within any one lithic raw material group) for each site, or component within a site. Bifaces and other lithic tool categories were described by raw material and form/function. Other classes of lithic artifacts (e.g. cores, scrapers, hammerstones) were described by the raw materials from which they were manufactured. Diagnostic projectile points were identified based on established typologies for the region (e.g., Coe 1964; Oliver 1985).

Information about the artifacts, along with associated provenience data, was entered into a Microsoft *Access* database. Rather than coding the results of the initial analyses on paper forms and then entering them into a database, AECOM material specialists directly enter their observations into the computer database. They periodically print out data entry results for record-keeping purposes, and files are backed up on a daily basis to minimize the risk of computer malfunctions. This effort eliminates two steps in the artifact analysis process—recording on paper forms and having a non-material specialist enter the information on the forms into the database. This procedure also reduces errors in data entry, since the individuals who analyzed the artifacts input the data directly into the database.

After cleaning and analysis, all diagnostic artifacts were labeled to record site number and catalog number. Special care was taken to ensure that important features like edge wear and surface decorations were not obscured during the labeling process. The labeling procedure consisted of an Acryloid B-72 (an archivally safe clear lacquer) undercoat, site number and catalog number written in black or white archivally safe indelible ink, and a topcoat of Acryloid B-72 to seal the label.

All artifacts were bagged individually or by type in four mil thick self-sealing polyethylene bags. The bags containing the artifacts were labeled with all the provenience, date, and excavator information recorded on the field bag. In addition, a provenience tag was enclosed in each individual/type artifact bag. This tag lists the provenience, description, and count for the contents. This laboratory methodology assists future researchers in identifying specific artifact types from the original analysis.

Project materials are currently being housed at AECOM facilities. All project materials will be transferred to the OSARC for permanent curation upon completion of the project. A complete catalog for the artifacts recovered during this project can be found at the end of the report in Appendix A.

4.7 Assessment of Significance

A site's significance is determined by its ability to meet one of four criteria established for determining the eligibility of a property for listing on the National Register of Historic Places (NRHP), as established in 36CFR60.4. These criteria include:

A. The resource is associated with events that have made a significant contribution to the broad pattern of history.

B. The resource is associated with the lives of persons significant in the past.

C. The resource embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, possesses high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction.

D. The resource has yielded or is likely to yield information important to history or prehistory.

To be considered eligible for the NRHP, an archaeological site must have physical and cultural integrity and also must have been shown to contain data significant in history or prehistory. Typically, this means most significant archaeological sites will be considered significant under Criterion D; however, it is possible for archaeological sites to be considered significant under Criteria A, B, or C.

The determination must be justified with reference to specific comparative data and within the context of previous research. In addition, a resource also must possess integrity (i.e., retain some of its original setting, possess features that distinguish the resource and permit its association with a particular criterion). Glassow (1977) provides a guide for the assessment of the significance of archaeological sites. Sites possess five properties that can be evaluated to determine significance. These properties include the *variety* of remains encountered within a specific resource, the *quantity* of remains, the *clarity* of archaeological deposits, "the *integrity*" (e.g., state of preservation or completeness of an assemblage) of archaeological deposits, and the environmental *context* of a particular locale. Each of these properties of a particular resource can be assessed to determine whether the resource possesses historical significance and sufficient integrity to be eligible for listing on the National Register of Historic Places.

5.0 RESULTS OF TERRESTRIAL ARCHAEOLOGICAL SURVEY

5.1 SURVEY AREA DESCRIPTIONS

The northern-most portion of the APE where the project ties into the existing CSX rail line was marked by low-lying marsh with standing water. This area was subjected to photo documentation and no subsurface testing was performed (Figure 52 and Figure 53).

Survey Area A is located near the northern portion of the APE, and is concentrated around previously recorded archaeological site 31NH686, which is described in detail later in the report. Area A is comprised of a relatively narrow north-south oriented rise in the landform surrounded by low-lying wet marshy areas on either side (Figure 54 and Figure 55). The area is depicted as an elevated rise on 20th century topographic maps, and soils observed in the survey area suggest this is a natural landform (Figure 56). Specifically, shovel testing revealed natural soil stratigraphy consisting of an A-horizon which measured approximately 0-35 cm, an E-horizon which measured between 40-90 cm in depth, and a B-horizon which measured approximately 90-100 cm in depth. Local informants and information on the 31NH686 site form indicate this linear landform contained a railroad spur historically; 19th century maps also depict the rise as being the location of a road or track. A total of 18 STPs were excavated in Area A which were all deployed in conjunction with the delineation of Site 31NH686 (Figure 57).

Immediately south of Area A the APE consists of a narrow, raised, and gravel-lined driveway to a modern house surrounded by marsh (Figure 58). This area was subjected to pedestrian reconnaissance and photo documentation and was not subjected to systematic shovel testing.

Survey Area B is located approximately 1,100 ft (335 m) south of Area A in the northwest corner of a tax parcel owned by New Hanover County and used by the Sherriff's Department as a training area. Area B is a series of very narrow and linear rises surrounded by low-lying marsh (Figure 59). While these narrow linear rises may have some historic origin, the USACE also created artificial dikes around this property for depositing dredge spoil in the 1960s (Lt. Garris 2021, personal communication).

In coordinating access to the property, conversations with Lieutenant W. L. "Lee" Garris, Jr. (2021, personal communication) indicated the presence of a historic site in the northwestern corner of the property. His knowledge of the site was based on having collected artifacts associated with it in 2016. Shovel testing efforts during the current project at the reported location of the finds corroborated the presence of an archaeological site (Site 31NH895). Site 31NH895 is a historic domestic site with a prehistoric isolated find situated on a manmade rise in the landscape (Figure 60). It is unclear if the manmade berm was formed as a road depicted on the 1888 U.S. Coast and Geodetic Survey map or a railroad berm from the late-19th and 20th century. However, the information provided by Lt. Garris suggests it is likely the USACE disturbed this area creating dikes for spoil basins. A total of eight STPs were excavated in Area B. In addition, documentation of an unidentified metal object was photographed (Figure 61). Site 31NH895 will be described in further detail below.

Figure 52. General Overview of Marsh in Northernmost Portion of APE, View North.

Figure 53. Inundated Marsh in Northernmost Portion of APE.

Figure 54. General Overview of Area A within Site 31NH686 Boundary, View North.

Figure 55. General Overview of Marsh South of Area A, View West.

Figure 56. USGS Rocky Point, NC 1947 Quadrangle with Railroad Line through Site 31NH686.

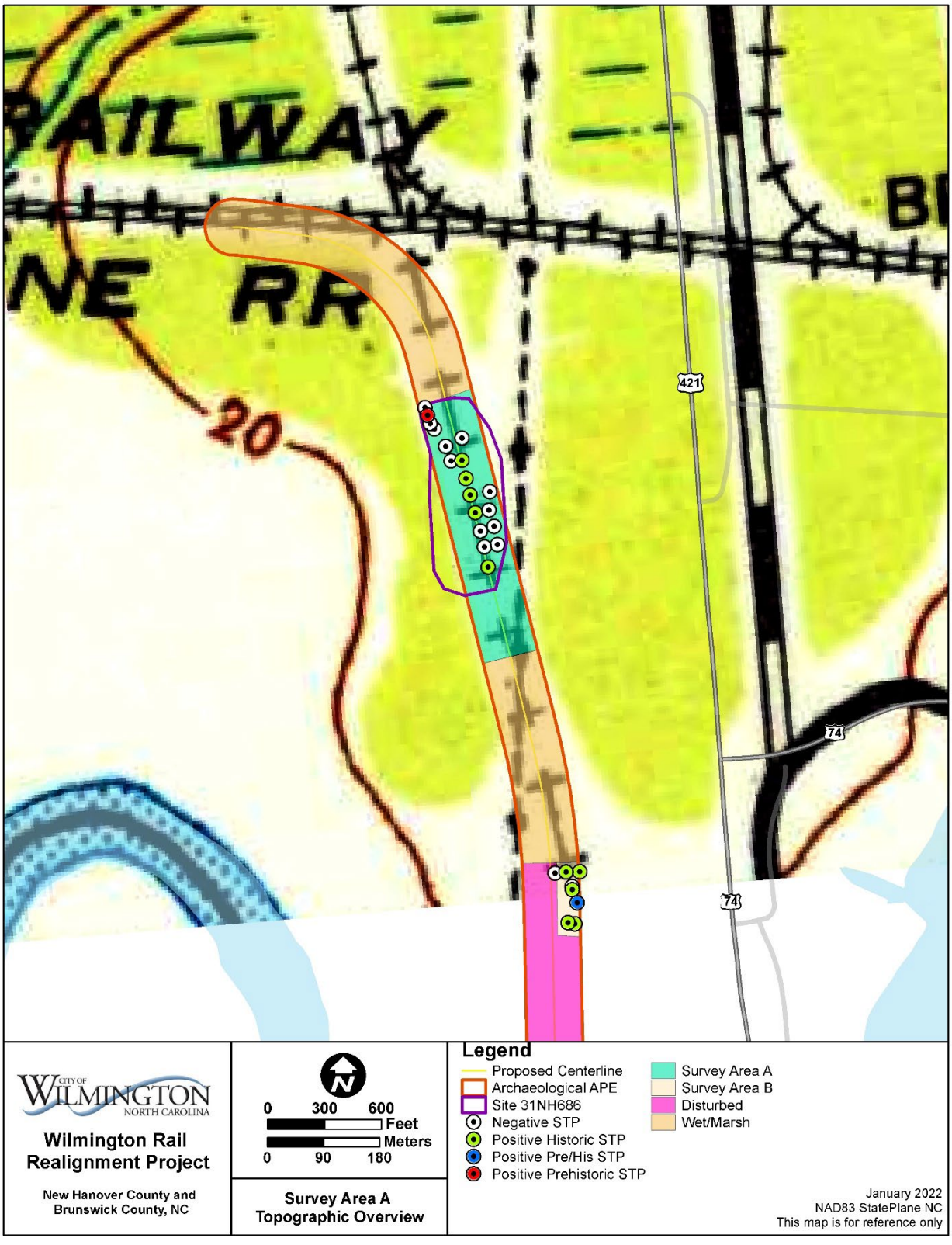


Figure 57. Shovel Test A-B-1 in Progress, View South.

Figure 58. General Overview of Gravel Driveway South of Area A, View South.

Figure 59. Tidal Marsh Surrounding Site 31NH895, View West.

Figure 60. General Overview of Narrow Rise in Area B, View West Showing Shovel Testing in Northern Edge of Site 31NH895.

Figure 61. Unidentified Metal Object Recovered from Ground Surface at Site 31NH895.

South of Area B is the bulk of the New Hanover County Sherriff's facility and an undeveloped property adjacent to the Cape Fear River owned by Brick Investment Corporation of Hollywood, CA. The facility and property to its south occupies a large area artificially raised by dredge spoil the USACE deposited here in the 1960s and is also marked by construction of gun range berms and associated shooting platforms within the New Hanover County owned portion of the proposed APE (Figure 62 through Figure 65). The western two-thirds of the APE in this portion of the project occupies tidal marsh with only the eastern edge of the APE situated on tall fill dikes and dredge spoil.

Also, in the section south of Survey Area B and north of the Cape Fear River data from the OSA maps three previously recorded sites outside and to the east of the APE. These sites include two point features (31NH593 and 31NH595) and a polygon feature (31NH597) along the river's edge associated with historic use of Point Peter. The point features are approximately 280 ft (85 m) (31NH593) and 377 ft (115 m) (31NH595) east of the APE. Further, Site 31NH593 lies within the Sherriff's Department shooting range that has been graded down and covered in gravel, so has likely been significantly disturbed if not entirely destroyed. The western edge of Point Peter (31NH597) is approximately 147 ft (45 m) east of the APE. Although outside the APE, the western end of 31NH597 was visually inspected and is confirmed to be situated on dredge spoil and other fill that includes asphalt, concrete, and mixed sands with shell fragments (see Figure 64). Based on data from this study, it appears (a) these sites are located outside of the current WRR APE, and (b) may very well represent redeposited materials from dredge spoil and fill deposition rather than primary (or even secondary) deposits associated with historic activity.

Figure 62. General Overview of Marsh in APE South of Area B, View West from Fill/Dike at Eastern Edge of APE.

Figure 63. Dredge Spoil and Fill at Shooting Range South of Area B, View Northwest.

Figure 64. Remnant Dredge Spoil Near Point Peter (Site 31NH597), View Southeast.

Figure 65. General Overview of WRR APE Cape Fear River Crossing, View West from Outside APE towards APE (beyond second timber mooring in midground).

South of the Cape Fear River the APE crosses a long expanse of tidal marsh on Eagle's Island, a man-made pond or infilled borrow pit, then crosses the disturbed US 74/ US 17 freeway. South of the freeway the APE curves eastward and traverses more expansive tidal marsh followed by an industrial area immediately adjacent to the Cape Fear River. Here, the APE crosses at a boat yard and manufacturing facility (Figure 66). This portion of the APE was subjected to photo documentation due to the presence of tidal marsh and disturbed/destroyed development which did not warrant shovel testing. In a review of an earlier draft of this report the SHPO commented about a need for archaeological investigations along the portion of the WRR project on Eagles Island (May 5, 2022 letter to Amanda Murphy, FRA from Ramona Bartos, Deputy State Historic Preservation Officer). In a meeting between the FRA, Wilmington, AECOM, and OSA on June 10, 2022, it was agreed that access to the specific area of higher ground vegetation on Eagles Island is (a) generally inaccessible and (b) traditional shovel testing methods may not be adequate to evaluate the presence/absence of archaeological remains. Therefore, it was agreed this item would be best addressed at a later time in the design process but well in advance of construction to adequately address any findings. This commitment would be stated in the Environmental Assessment for the Project.

East of the southern Cape Fear River crossing the WRR APE crosses back onto land where a series of extant industrial facilities are present west of South Front Street and encompasses the areas on both sides of Surry and Dawson Streets. From here the APE turns southerly to parallel South Front Street through existing industrial facilities which crosses Wright, Meares, Marstellar, and Martin Streets and ends at a tie-in with the existing rail line at Greenfield Street. The entirety of this portion of the APE east of the southern Cape Fear River crossing exhibits a mix of heavily disturbed soils, existing roadways, and industrial facilities. Further, the alignment follows former (and in some places still extant) rail track. As such, this portion of the APE was subjected to pedestrian reconnaissance and photo documentation (Figure 67 through Figure 70).

Figure 66. General Overview of Boat Manufacturing Facility on West Side of Cape Fear River, View East.

Figure 67. General Overview of WRR APE on East Side of Cape Fear River, View West.

Figure 68. General Overview of Disturbed Soils Southern Portion of APE, View West.

Figure 69. Holding Tanks at Industrial Facility within Southern Portion of APE, View North.

Figure 70. General Overview of Disturbed Area at Southern End of WRR APE, View South.

5.2 SITE DESCRIPTIONS

5.2.1 Site 31NH686

Cultural Period(s) and Site Type: Prehistoric [Middle Woodland] and Historic [Late-19th to Early-20th century]; Prehistoric ceramic isolate and historic railroad causeway
Dimensions (N-S by E-W) and Size (based on GIS site boundary polygon): 1,043 ft x 390 ft; 362,496 sq ft (318m x 119m; 33,677 sq m)
Elevation: 2 ft (0.6 m) AMSL
Setting: Coastal Plain marsh
Soil Type: Dorovan soils (DO)

Site 31NH686 was first recorded in 1992 by Dr. Mark Wilde-Ramsing from the OSA underwater archaeology division. The site was originally recorded as a 19th-to-20th century causeway and turntable associated with the Cape Fear and Yadkin Valley Railroad. The turntable was described as "a circular brick-walled structure approximately 50 ft (15 m) in diameter" (31NH686 Site Form). In the explanation of recommendations portion of the site form, it was stated that "the site is not archaeologically significant, but rather significant as a historic structure or the focal point for the local region to showcase their history". No artifacts were recovered at the time. The site was recommended not eligible for the NRHP.

During the current fieldwork the site was subjected to photographic documentation, pedestrian survey, and shovel testing. A total of 18 STPs were excavated in and around the recorded site boundaries within the study area (Figure 71 through Figure 73). Of these, six produced cultural materials from the first stratum to a maximum depth of 48 cm. Despite the efforts of the survey, no evidence of the turntable recorded during the 1992 survey was able to be identified. This feature may have been destroyed in the intervening years, submerged by high water at the time of the current survey, or may be located outside the APE within the tidal marsh area of the site (the site form was not clear about specifically where the turntable was located within the site). Evidence of the site being associated with the railroad included a single railroad spike in a tree (Figure 74) and a single granite rock with drill holes through it (Figure 75). During fieldwork, the northwestern portion of the site (approximately 15,392 sq ft [1,430 sq m]) was extended to incorporate the space surrounding a positive STP that produced a single prehistoric artifact.

Soils at the site generally revealed four stratigraphic layers. Stratum I exhibited light brownish gray (10YR 6/2) sand mottled with very dark grayish brown (10YR 3/2) medium coarse sand which measured approximately 20 cm below ground surface (cmbgs) underlain by Stratum II with very dark grayish brown (10YR 3/2) medium coarse sand which extended to approximately 30 cmbgs. Stratum III exhibited yellowish brown (10YR 5/6) medium coarse sand to a depth of 90 cmbgs which was underlain by Stratum IV with yellow (10YR 7/8) medium coarse sand which extended beyond 100 cmbgs. Historic artifacts were recovered from Strata I and II between 0 and 30 cmbgs. The prehistoric ceramics were recovered from Stratum III between 31-48 cmbgs.

Figure 71. Aerial Overview of Site 31NH686.

Figure 72. General Overview of 31NH686, View North.

Figure 73. General Overview of 31NH686, View West (Note Inundated Marsh in Background).

Figure 74. Railroad Spike Embedded in Tree at 31NH686, View Northeast.

Figure 75. Stone with Drilled Holes (note half-hole on edge at bottom of picture) Documented on Ground Surface at Site 31NH686, View South.

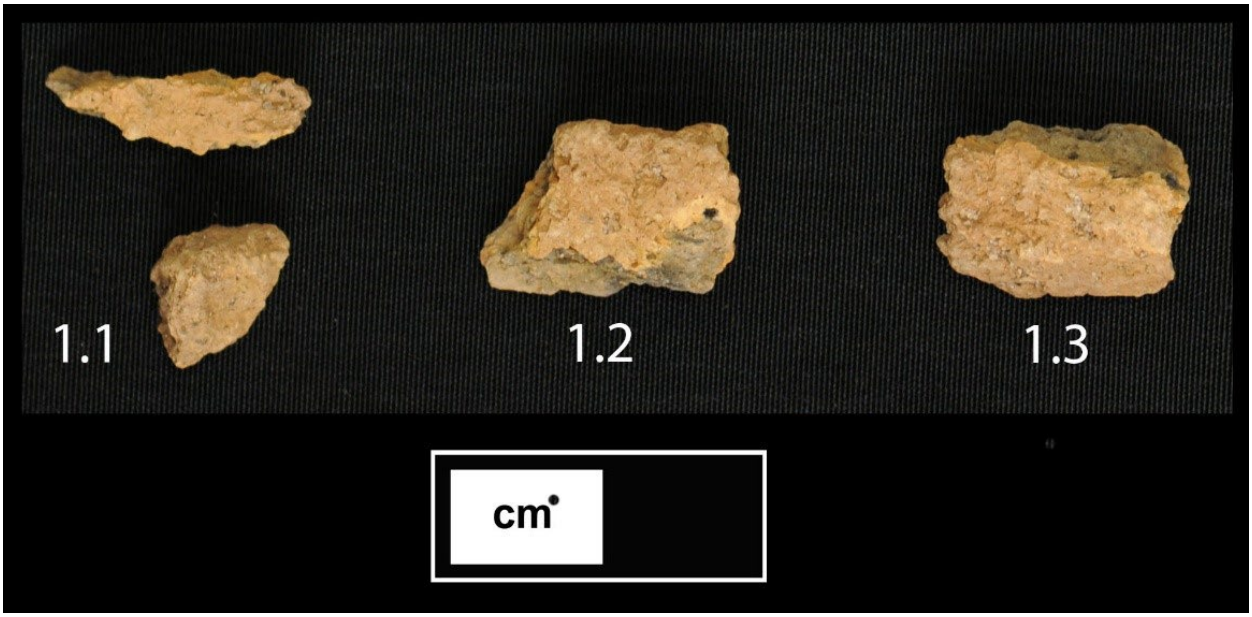
The six positive STPs produced a total of 33 artifacts (Table 5). The prehistoric assemblage at 31NH686 is comprised of five total ceramic sherds. Two of the sherds are diagnostic Middle Woodland Cape Fear rim sherds which exhibit sand tempering with a fabric impressed exterior and smoothed interior (Figure 76). The remaining three prehistoric ceramics are residual sherds. All ceramics were recovered from Stratum III between 31 and 48 cmbgs. The historic assemblage consisted of nine architectural items, 12 fuel fragments, and seven indeterminate items. Architectural items include eight window glass fragments and one brick fragment. Artifacts from the fuel category are comprised of two cinder and 10 coal fragments. The remaining indeterminate items includes four slate fragments, one glass fragment, one lead fragment, and one small piece of pink granite. All historic items were recovered from Strata I and II to a maximum depth of 30 cmbgs.

Site 31NH686 was previously recommended as not eligible for the NRHP (31NH686 Site Form:2). The current data supports this previous evaluation. While 31NH686 has been expanded to include a prehistoric component, the overall variety and quantity of artifacts is still limited. In addition, the clarity, integrity, and context of the site is limited. Therefore, we concur with the original recommendation that Site 31N686 is not eligible for the NRHP. Additionally, no further work is recommended in conjunction with the WRR project.

Table 5. Artifacts Recovered from Site 31NH686 by Stratum.

Context	Group	Class	Object	I	II	III	TOTAL
Historic	Architectural	Ceramic	Brick Fragment		1		1
Historic	Architectural	Glass	Window Glass	3	5		8
Historic	Fuel	Lithic	Cinder	2			2
Historic	Fuel	Lithic	Coal Fragment	10			10
Historic	Indeterminate	Glass	Indeterminate		1		1
Historic	Indeterminate	Lithic	Slate Fragment	2	2		4
Historic	Indeterminate	Metal	Lead Fragment	1			1
Prehistoric	Storage/Cooking	Ceramic	Pottery Sherd			2	2
Prehistoric	Storage/Cooking	Ceramic	Residual Sherd			3	3
Unknown	Indeterminate	Lithic	Pink Granite Frag		1		1
			TOTAL	18	10	5	33

Figure 76. Cape Fear Pottery (FS 1.2 and 1.3) and Representative Residual Sherds (FS 1.1) from Site 31NH686.



5.2.2 Site 31NH895

Cultural Period(s) and Site Type: Prehistoric and Historic [Mid-19th to Early-20th century]; Prehistoric ceramic scatter, historic building foundation, and historic artifact scatter
Dimensions (N-S by E-W) and Size (based on GIS site boundary polygon): 328 ft x 121 ft; 23,734 sq ft (100 m x 37 m; 2,205 sq m)
Elevation: 2 ft (0.6 m) AMSL
Setting: Coastal Plain Marsh; Historic Rice Plantation; Berm
Soil Type: Dorovan soils (DO)

Site 31NH895 was recorded during the current survey as a multicomponent Late Woodland prehistoric site and mid-to-late-19th Century Historic Domestic site. The site was initially identified in 2016 by Lt. Garris of the New Hanover County Sheriff's Office Support Services Division who manages the shooting range property where the site is located (Lt. Garris 2021, personal communication). In coordinating access to the property, conversations with Lt. Garris indicated the presence of a historic site in the northwestern corner of the property. Subsequently, Lt. Garris showed the AECOM archaeology team an assemblage of artifacts he collected in 2016 and that are stored at the training center's offices. The site is believed to have been occupied in the mid-to-late 19th century likely after the landowner Peter Mallett's estate transferred the property to Lemuel H. Whitfield by 1832 at which time a large tract was sold to Samuel Potter who owned it until 1904 (see Point Peter History portion of Historic Background [Chapter3.2]) . The site also correlates to a structure depicted on an 1888 map of the Cape Fear River up to Reeves Point (U.S. Coast and Geodetic Survey 1888) (Figure 77). In addition to the artifacts and site location, Lt. Garris informed the AECOM archaeology team of a rectangular

brick foundation he observed at the site during his 2016 visit; however, this remnant was not relocated by AECOM in the field. What was observed in the field was several brick piles, some with linear alignments, and two that formed an "L" shape.

Shovel testing efforts at the reported location of the finds corroborated the presence of the site, which was assigned site number 31NH895 (Figure 78). AECOM archaeologists were given access to the previously collected artifact assemblage and took photographs of the artifacts and note tags from a preliminary analysis of the assemblage conducted by employees of the Cape Fear Museum of History and Science (CFMHS). Through this documentation and the expertise of AECOM's laboratory personnel, the artifact assemblage was entered into the current project's artifact catalog and will be presented in the artifact assemblage discussion below.

Figure 77. 1888 USCG Reeve's Point Map Indicating a Structure Within Vicinity of Site 31NH895.

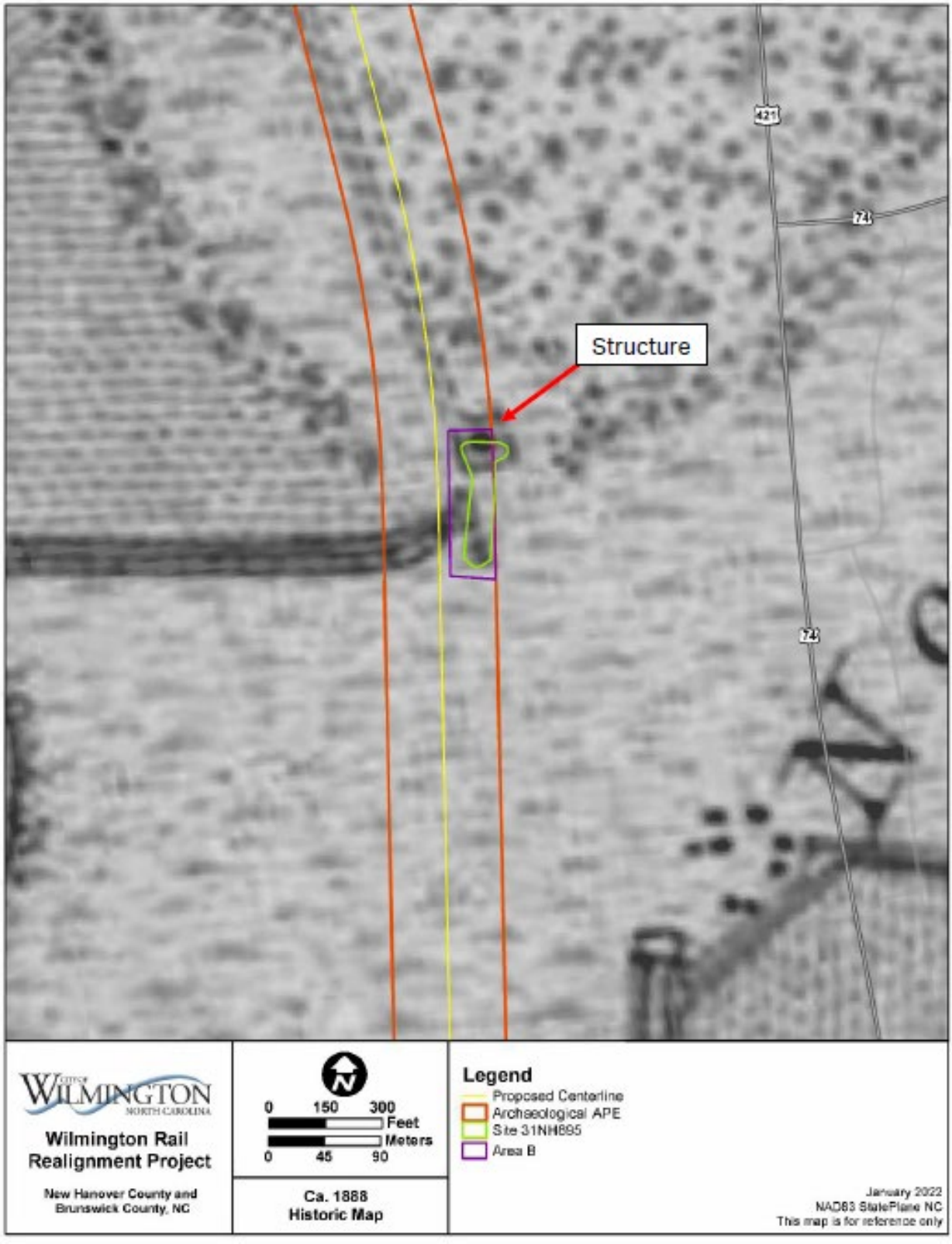
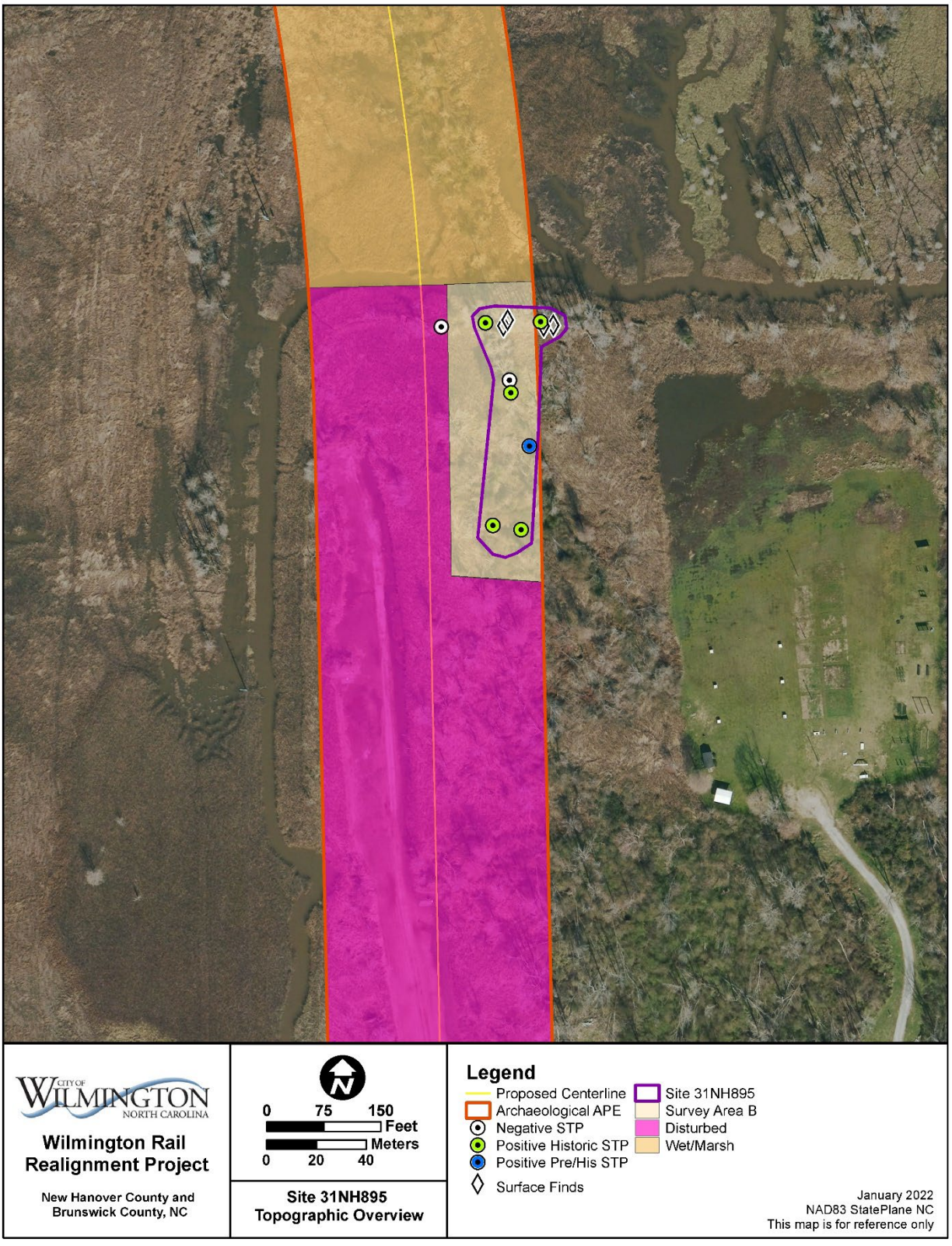


Figure 78. Site Map of 31NH895.



The site boundary is based on a combination of shovel testing and surface artifact results and further defined by the raised portions of the landform, which is formed by a "T" shaped series of dikes. The southern portion of the site is situated on a low north-south oriented rise, likely a remnant of the road depicted in the 1888 map, while the north end is a higher east-west oriented manmade dike (Figure 79). The site is surrounded by tidal marsh and river cane. As such, STPs were placed judgmentally on the highest portions of the landform and through the area where surface artifacts were also noted.

During current field survey efforts at 31NH895 a total of eight STPs were excavated where the narrow landform allowed. Six of the STPs were positive producing 63 artifacts.

As part of the STP excavation and general survey of the site location, it appears the berm is man-made from historic fill where numerous whole and partial bricks were observed within the matrix of the berm soil. The berm is interpreted as a control system for the 1960s USACE dredge spoil operations, although a historic origin related to rice plantation operations cannot be ruled out, particularly for the north-south oriented portion that generally corresponds to the depicted roadway in the 1888 geodetic map (see Figure 77).

Soils at the site were variable based on the taller east-west dike versus the lower north-south rise. STPs excavated on the higher dike exhibited a Stratum I of light grayish brown (10YR 6/2) medium coarse sand to a depth of approximately 50 cmbgs. In this portion of the site numerous bricks were noted on the surface and the extent of them was recorded with the GPS unit to help define the site boundary (Figure 80). One STP (B-JUD-1) was particularly dense with numerous bricks throughout its depth (Figure 81). STPs excavated on the lower rise adjacent to the tidal marsh exhibited a Stratum I with very dark brown (10YR 2/2) sand measuring approximately 15 cmbgs underlain by Stratum II, which similarly consisted of very dark brown (10YR 2/2) wet loamy sand to approximately 50 cmbgs. This was in turn underlain by Stratum III of grayish brown (2.5Y 5/2) wet sand to at least 60 cmbgs, with water table encountered at about 50 cm in depth. In both cases the soils do not appear natural and appear to be redeposited. For example, in STP B-C-3 a prehistoric ceramic sherd was recovered from Stratum I while historic artifacts from the same STP were recovered from Stratum II below it. Artifacts at 31NH895 were recovered from Surface, Stratum I, and Stratum II contexts between 0 and 60 cmbgs.

Figure 79. General Overview of 31NH895, View North.

Figure 80. Bricks Identified On Ground Surface at Site 31NH895, View East.

Figure 81. Remnant Bricks Within Fill Matrix of Berm at Site 31NH895, View North.

The artifact assemblage at Site 31NH895 consists of two separate collections. One assemblage is owned by, and in possession of, Lt. Garris and is stored at the New Hanover Sheriff's Department offices. The other artifact assemblage is associated with the current survey efforts by AECOM archaeologists during the 2021 survey. Each of these sub-assemblages are described below.

The 2016 artifact assemblage collected by Lt. Garris includes over 100 individual items; however, the AECOM team photographed and analyzed a representative sample of 54 specimens (numerous unidentifiable rusty metal fragments, small container glass fragments, and a large bag of nails were not entirely enumerated during this effort) (Table 6). The assemblage resulting from the 2016 collection is comprised of an array of artifacts consistent with a domestic and/or residential site. With regards to the glass artifacts, the assemblage includes mouth blown bottle fragments with applied patent finishes (1850 to 1895) and applied double ring finishes (1840 to 1895), mouth-blown mold specimens with a patinated finish, and olive mouth blown bottle base shards with a prominent mamelon or "kick-up" (possible wine bottles). Iron artifacts include an axe head, a thick ring measuring four inches in diameter, a square nail, a bolt, a spike (possibly a railroad spike), hinge, and an "S" hook. Lt. Garris described finding the axe head leaning against a brick structure as if it had been put there and forgotten about.

Table 6. Site 31NH895 Garris' 2016 Artifact Assemblage.

Context	Group	Object	TOTAL
Historic	Household	Stoneware, holloware fragment with gray salt glaze exterior	**1**
Historic	Household	Stoneware, holloware fragment with brown salt glazed exterior and unglazed interior	**1**
Historic	Household	Stoneware, Holloware fragment with white Bristol-type slip glaze and light brown slip or glaze	**1**
Historic	Household	Stoneware, holloware fragment with brown salt glaze exterior and light brown wash on interior	**2**
Historic	Household	Yellowware, holloware fragment with paneled body with molded decoration under exterior rim	**2**
Historic	Household	White Granite, plate fragments	**5**
Historic	Household	Whiteware, plate fragments with shell edge and painted blue decoration	**3**
Historic	Household	Pearlware/Whiteware, plate fragment with shell edge (even scalloped, curved lines) and painted blue decoration	**1**
Historic	Household	Pearlware, plate fragment with shell edge (embossed rim) and blue painted decoration	**1**
Historic	Household	Whiteware, plate fragment with indeterminate printed blue decoration	**1**
Historic	Household	Pearlware, plate fragment with Old Blue-General printed blue decoration	**1**
Historic	Household	Whiteware, plate fragments with shell edge (even scalloped, curved lines) and painted blue decoration	**2**
Historic	Household	Colorless glass bottle, fragment (mouth blown, general) with patent finish	**1**
Historic	Household	Aqua glass bottle, fragment (mouth blown, general) with applied double ring finish	**4**
Historic	Household	Olive glass bottle, fragment (mouth blown, general)	**5**
Historic	Household	Amber square glass bottle, fragment (mold blown, mouth) with sunken panel(s)	**1**
Historic	Household	Olive glass bottle, fragment (mouth blown, genera), with kick-up	**2**
Historic	Household	Aqua square glass bottle, fragment (mold blown, mouth) with sunken panels	**1**
Historic	Tool	Axe Head, Iron	**1**
Historic	Architectural	Square Nail, Iron	**4**
Historic	Architectural	Spike, Iron Railroad	**1**
Historic	Hardware	Bolt, Iron	**1**
Historic	Hardware	Hinge, Iron	**1**
Historic	Hardware	Hook, Iron "S"	**1**
Historic	Indeterminate	Ring, Iron	**1**
Historic	Fauna	Bone, Fragment (large mammal)	**2**
Historic	Fauna	Leather, Fragment	**2**
Historic	Indeterminate	Indeterminate, possible building materials (mortar?)	**5**
		TOTAL	**54**

The ceramic assemblage includes stoneware sherds with a gray/buff body and a salt glaze decoration, stoneware sherds with a white Bristol-type slip decoration (1880 to 1960), and yellowware sherds with a paneled body and molded decoration under exterior rim (1829 to 1940) (MAC Lab 2012). A diverse range of ceramic plate fragments include at least three stoneware plates (one with a molded rim), two whiteware plates that have an unscalloped shell

edge with impressed repetitive designs and blue painted decoration (1840 to 1870), one whiteware plate with an un-scalloped and unmolded shell edge and blue painted decoration (1860 to 1900), and two whiteware and one pearlware plate with an even scalloped shell edge with curved designs and blue painted decoration (1800 to 1840). One pearlware plate fragment had a shell edge with an embossed rim, painted blue decoration, and an undercut footring (1820 to 1835). Two plate fragments had a printed blue pattern: a whiteware shard with an indeterminate design (1815 to 1915) and a pearlware sherd with an old blue-general design (1815 to 1840). Some pieces of possible shoe leather, animal bone fragments (one likely being the rib of a cow with a notable cut mark that would possibly indicate butchering), and possible mortar were also part of the assemblage collected by Lt. Garris.

The 2021 artifact assemblage collected by AECOM includes items from surface contexts and shovel testing efforts. A total of 63 artifacts were recovered which includes 61 historic items and two prehistoric items (Table 7). The prehistoric artifacts included one Late Woodland Hanover II Fabric Impressed sherd with smoothed interior, and one residual sherd too small for proper identification (Figure 82). The historic assemblage is comprised of 37 architectural items, 15 household items, two personal items, and 12 indeterminate items.

Architectural items include three complete bricks, 30 brick fragments, three nails, and one railroad spike. The three whole bricks are handmade and appear to be manufactured from a local clay source based upon the inclusions (Figure 83). One brick contains a lime mortar (opposed to Portland cement) adhered to the exterior (FS 15.4). Though lime mortar was used past the 1870s in building construction, it is considered inferior to the much harder Portland cement that was put into mass manufacture by 1872 (Graymont 2021). As such, this mortar supports the overall *terminus post quem* which places the historic occupation of the site between the mid-19th and early-20th century. Another whole brick exhibits an irregular form and contains fragments of other brick adhered to it (FS 14.1), which may indicate that this brick is a kiln waster (failed ceramics that were at times used within kilns to distribute heat and prevent firing accidents). Some glaze is present which was probably because of over-firing.

The household items include nine ceramic sherds, three bottle glass shards, and three container glass shards. The ceramics recovered included one sherd of Chinese export porcelain holloware with painted blue indeterminate decoration, four indeterminate whiteware sherds (1815 to present), two yellowware sherds with white banded dipt decoration (1845 to 1920), one sherd with red bodied refined earthenware with blue and brown double glazed dipt bands on the exterior (1770 to 1920) (FS 12.6), and one pearlware sherd with round tooled foot ring (FS 7.1). Personal items recovered include one complete hard paste four-holed Prosser porcelain dish-type pressed button (1840 to 1960) (FS 6.1) and one partial leather shoe sole (10.6). The 12 indeterminate items are heavily rusted metal objects. Representative artifacts are pictured below in Figure 84.

Table 7. Artifacts Recovered from Site 31NH895 by Stratum (November 2021 Survey).

Context	Group	Class	Object	Surf. Coll.	I	II	TOTAL
Historic	Architectural	Ceramic	Brick Complete	1	3		**4**
Historic	Architectural	Ceramic	Brick Fragment	2	27		**29**
Historic	Architectural	Metal	Nail		3		**3**
Historic	Architectural	Metal	Railroad Spike			1	**1**
Historic	Household	Ceramic	Hollowware		4		**4**
Historic	Household	Ceramic	Indeterminate	1	4		**5**
Historic	Household	Glass	Bottle			3	**3**
Historic	Household	Glass	Container Glass		2	1	**3**
Historic	Indeterminate	Metal	Indeterminate		4	8	**12**
Historic	Personal	Ceramic	Button	1			**1**
Historic	Personal	Fauna	Shoe Leather			1	**1**
Prehistoric	Storage/Cooking	Ceramic	Pottery Sherd		1		**1**
Prehistoric	Storage/Cooking	Ceramic	Residual Sherd		1		**1**
			TOTAL	**5**	**49**	**14**	**68**

Figure 82. Hanover II Pottery Recovered from Site 31NH895 (FS 9.2).

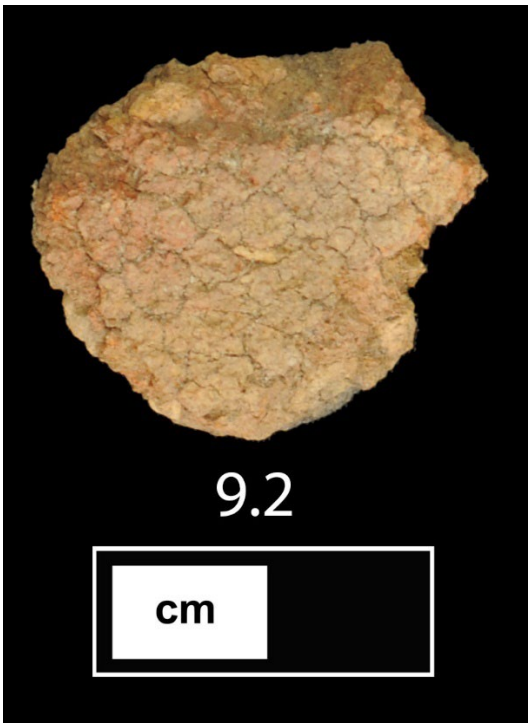


Figure 83. Whole Bricks Collected at 31NH895 (Note Lime Mortar on FS 15.4).

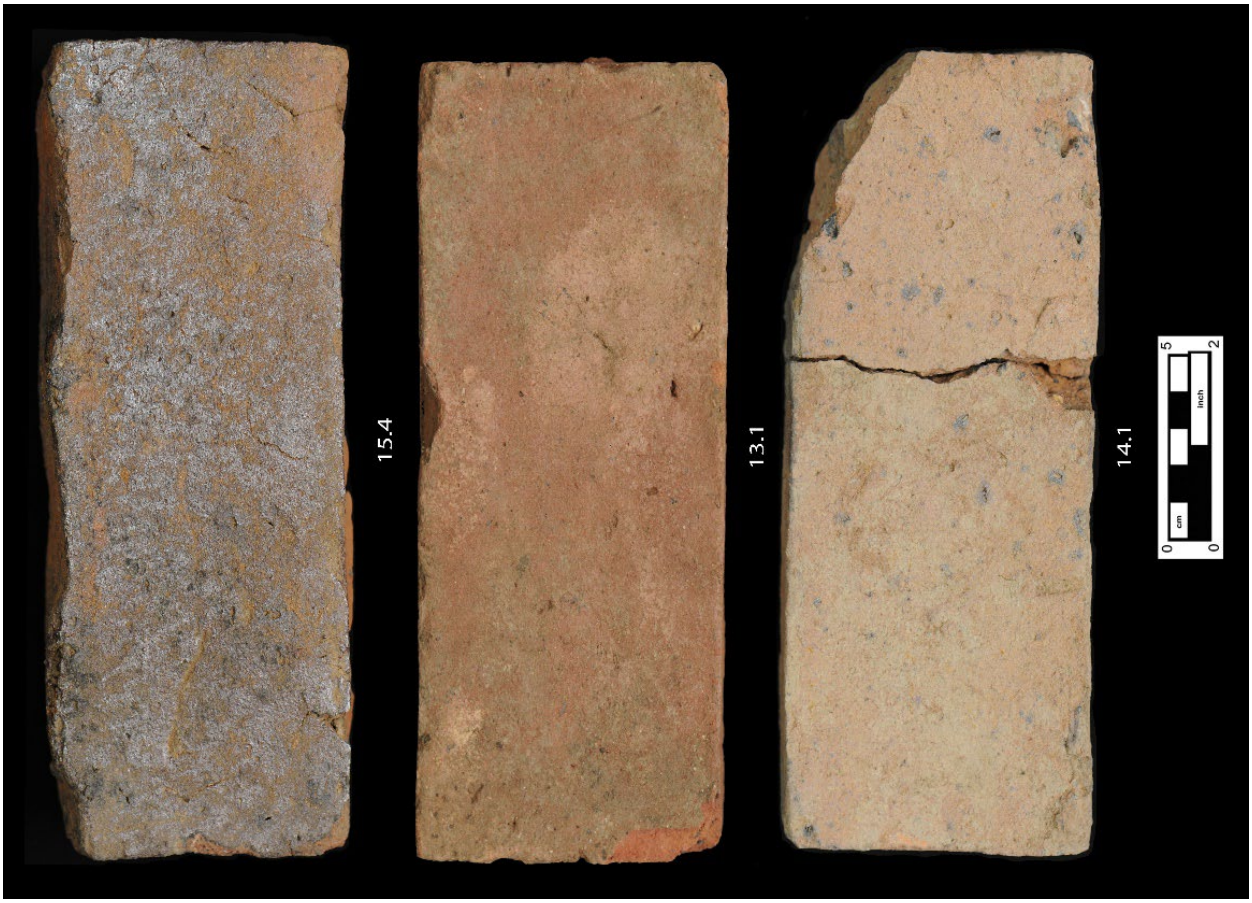


Figure 84. Diagnostic Historic Artifacts Recovered from Site 31NH895.

Site 31NH895 exhibits a moderate variety and quantity of artifacts. The overall late-19th century artifact assemblage and correlation to a structure depicted on late-19th century maps provides context. However, the site appears to lack the clarity and integrity necessary to provide significant data about the historic past. The soils and recovery contexts of various artifacts suggests that much of the site is disturbed, including the lower north-south rise likely stemming from a 19th century roadway where a prehistoric ceramic was recovered from Stratum I overlying historic artifact-producing Stratum II. It appears subsequent alterations to the landscape, primarily 1960s USACE dredging, has thoroughly destroyed the integrity of this site. As such, 31NH895 is recommended not eligible for inclusion in the NRHP and no further work is recommended in conjunction with the WRR project.

6.0 Results of Underwater Archaeological Survey

6.1 Survey Area Descriptions

The marine archaeological survey covered two areas within the Cape Fear River, opposite the City of Wilmington (Figure 85 and 86). The remote sensing survey was performed on November 16, 2021, by marine archaeologists from AECOM, CHG, and Dial Cordy. Survey conditions were clear with the only impediment being strong tidal flows, which made navigation around bridge footings difficult. Both survey areas extended from shoreline to shoreline, and both contained shoreline infrastructure, which directly influenced magnetometer readings.

6.2 Northern Marine Survey Area

The northern marine survey area is located in New Hanover County, immediately upriver and west of the Highway 17 Bridge. The survey area is relatively free of infrastructure except for an abandoned dock facility/barge terminal along the northern shoreline, in the approximate center of the survey area. The facility includes steel sheet metal along the shoreline, a large wooden dock, and piling dolphins for barge docking (Figure 87). A large concentration of pilings was present on the southern shore, opposite the dock facility, in the approximate center of the survey area (Figure 88). Along the western boundary, a transmission cable passes over the river, creating an electrical field causing several magnetic disturbances (Figure 89). Lastly, the entire eastern half of the survey area up to the Highway 17 Bridge is labelled as a cable area in NOAA Chart 11537 (Figure 90).

Figure 85: Marine Survey Areas on NOAA Navigational Chart (RNC 11537).

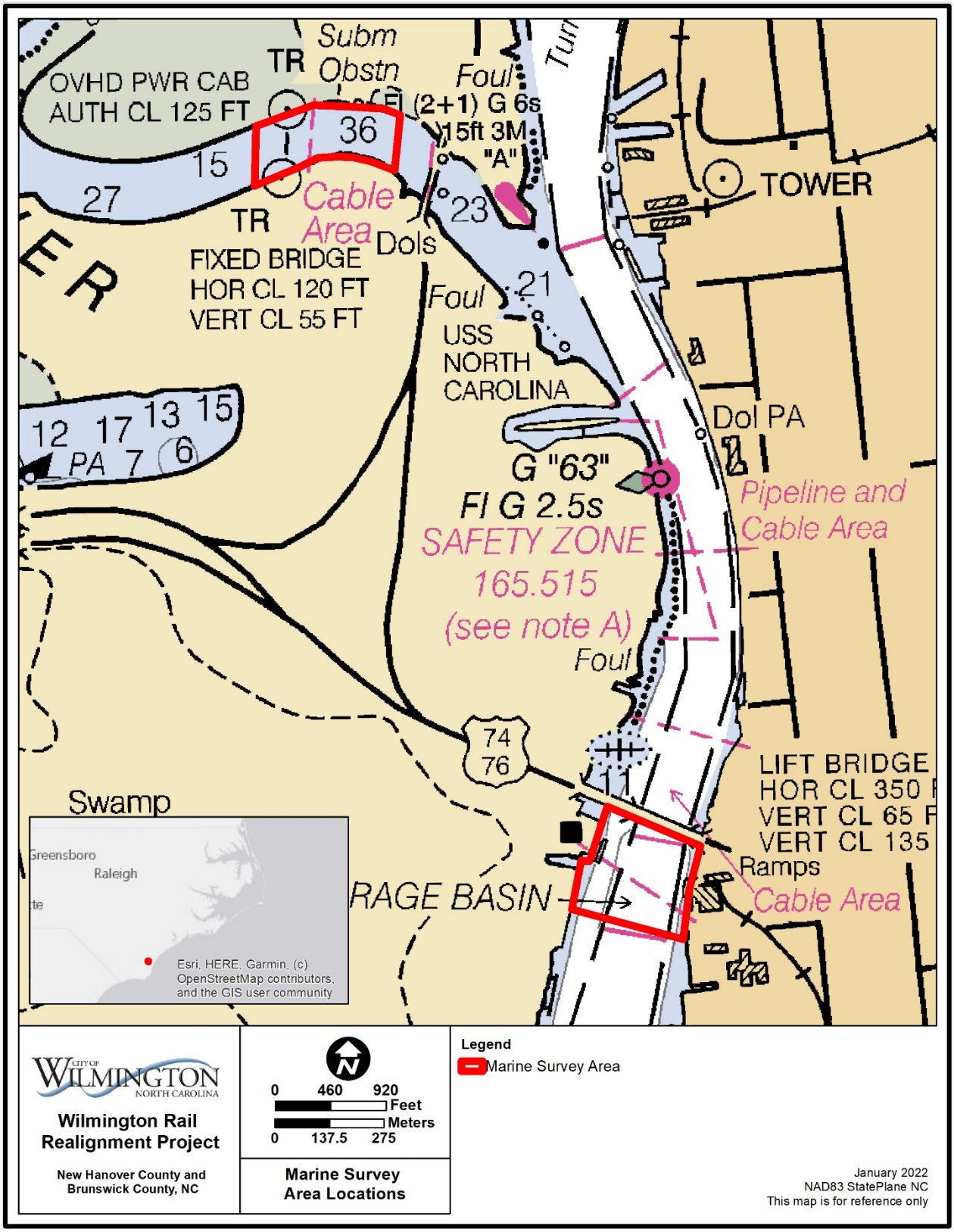


Figure 86: Marine Survey Areas on Recent Aerial Imagery.

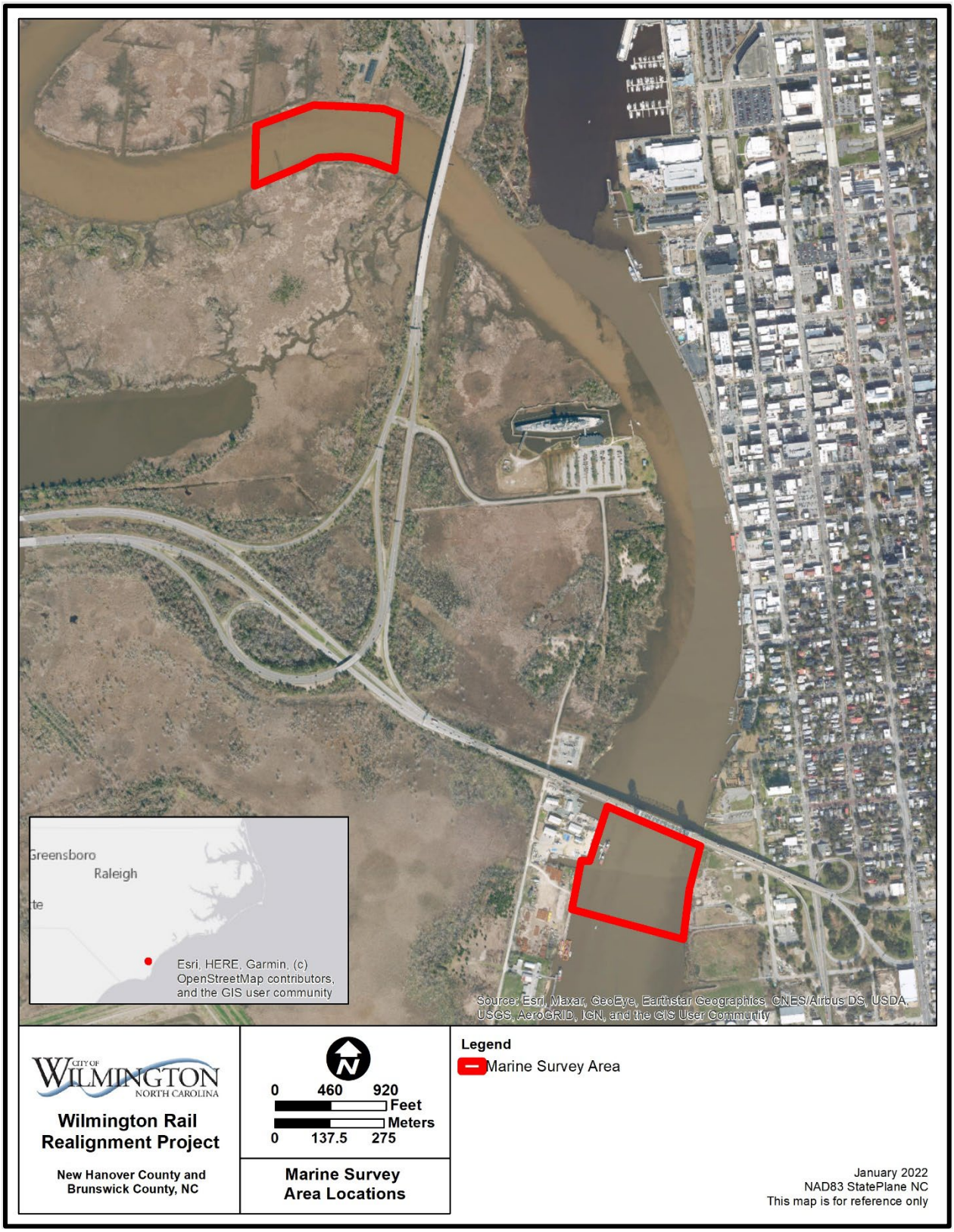
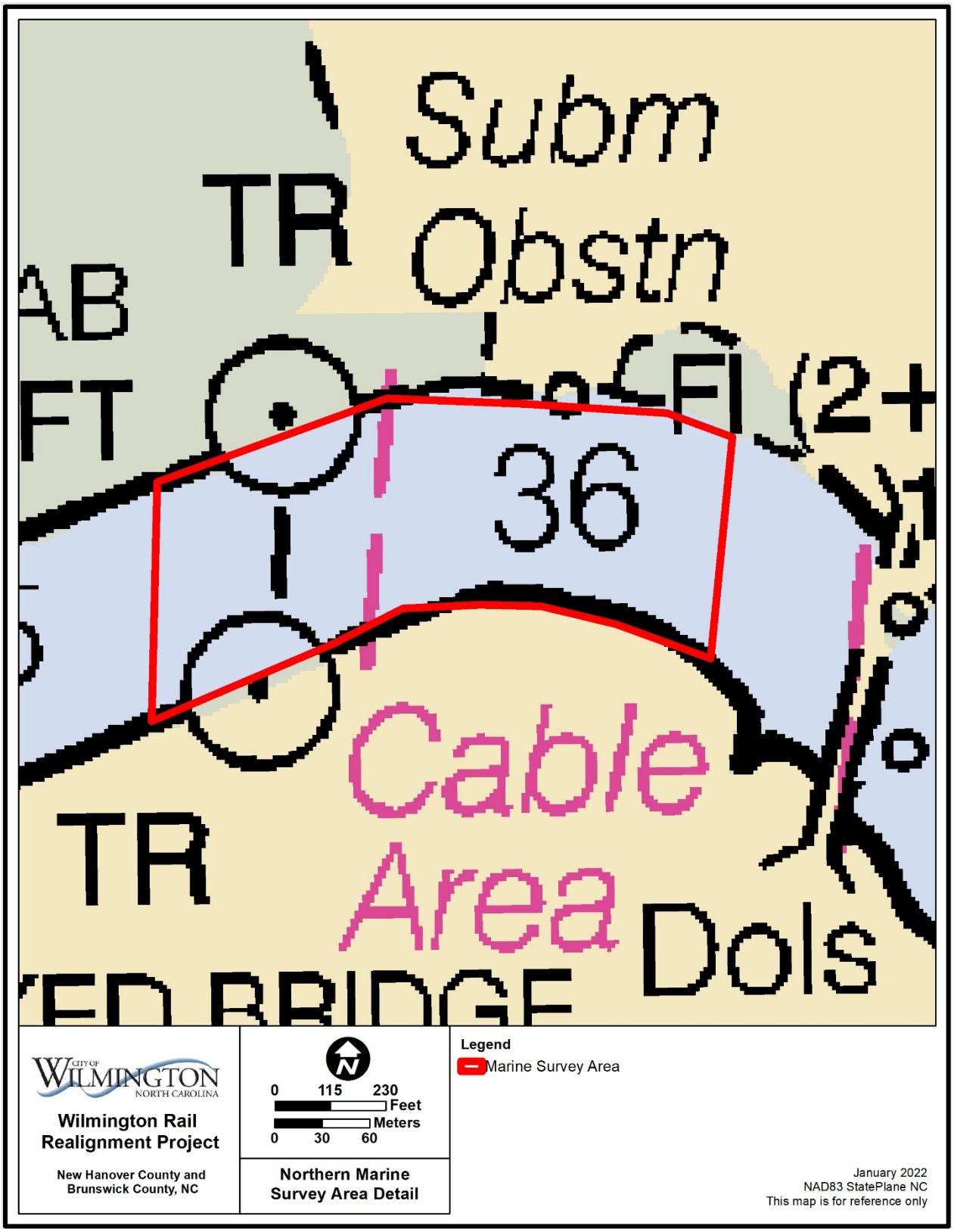


Figure 87: Northern Marine Survey Area with Abandoned Dock Facility/Barge Terminal on Northern Bank (Note the steel sheet metal along the bank, wooden dock, and piling dolphins). Facing North.

Figure 88: On the Center of Southern bank in the Northern Marine Survey Area is a Concentration of Pilings Projecting into the River. Facing East.

Figure 89: Large Transmission Line Crossing River Bordering the Western Boundary of the Northern Marine Survey Area (Note the electrical field caused heavy magnetic interference in this portion of the survey area). Facing South.

Figure 90: Detail of the Northern Marine Survey Area Depicting an Active Cable Area.



6.2.1 Magnetometer Results

A total of 37 magnetic anomalies were identified in the northern marine survey area. Table 8 presents the magnetic anomalies and the variables considered during evaluation, including the anomaly name, coordinates, total nanotesla (nT) reading (after removing the Earth's ambient magnetic field), total negative field reading, total positive field reading, distance from peak-to-peak, magnetic declination bearing, amplitude ratio (ratio of negative to positive amplitudes), peak-to-peak amplitude gradient, and associated side-scan sonar contacts. These variables were gathered from the contour map created from magnetometer data collected during the survey (Figures 91 and 92).

Table 8: Magnetic Anomalies Identified in the Northern Marine Survey Area.

Anomaly	Easting	Northing	Total Residual Strength (nT)	Negative Field Strength (nT)	Positive Field Strength (nT)	Peak-to-Peak Amplitude Distance (ft)	Declination (degrees)	Amplitude Ratio	Amplitude Gradient (nT/ft)
M.001N	2314638	181254	1000	-120	880	15.0	2.34	1:7.33	66.67
M.002N	2314669	181151	160	-30	135	20.1	20.39	1:4.5	7.96
M.003N	2313952	181033	145	-35	110	24.7	12.69	1:3.14	5.87
M.004N	2313864	181165	250	-155	95	14.5	356.37	1.63:1	17.24
M.005N	2314414	181014	160	-140	20	10.3	221.35	7:1	15.53
M.006N	2313686	181009	320	-125	295	37.4	248.16	1:2.36	8.56
M.007N	2313643	181042	305	-85	220	19.3	3.84	1:2.59	15.8
M.008N	2313761	181172	840	-60	780	22.0	171.03	1:13	38.18
M.009N	2313911	181291	755	-640	115	13.9	270.00	5.57:1	54.32
M.010N	2314176	181251	7395	-250	7685	22.5	190.64	1:30.74	328.67
M.011N	2314253	181210	500	-90	410	11.1	320.22	1:4.56	45.05
M.012N	2314273	181152	455	-230	225	14.0	271.81	1.02:1	32.5
M.013N	2313543	181112	855	-460	395	15.8	238.74	1.16:1	54.11
M.014N	2313616	181120	145	-10	135	14.1	277.75	1:13.5	10.28
M.015N	2313858	180969	65	-55	10	50.0	123.03	5.5:1	1.3
M.016N	2314067	181263	295	-15	280	20.9	172.38	1:18.67	14.11
M.017N	2314495	181263	1925	-310	1615	31.4	153.16	1:5.21	61.31
M.018N	2314548	181247	945	-745	200	15.3	207.06	3.73:1	61.76
M.019N	2314603	181207	100	-100	0	N/A	N/A	N/A	N/A
M.020N	2314380	181195	55	-5	50	20.3	284.21	1:10	2.71
M.021N	2314190	181057	90	-25	65	9.9	319.77	1:2.6	9.1
M.022N	2314166	181072	95	-60	35	10.8	315.33	1.71:1	8.8
M.023N	2313946	181193	25	0	25	N/A	N/A	N/A	N/A
M.024N	2314141	181156	10	0	10	N/A	N/A	N/A	N/A
M.025N	2313654	180934	175	-140	35	16.0	149.19	4:1	10.94
M.026N	2313686	180879	85	-10	75	31.3	152.11	1:7.5	2.72
M.027N	2314471	181186	30	-15	15	15.7	270.00	1:1	1.91
M.028N	2314551	181130	50	-10	40	14.8	281.2	1:4	3.38
M.029N	2314526	181029	40	-15	35	41.2	355.21	1:2.33	0.97
M.031N	2313671	181144	345	-35	310	14.0	272.34	1:8.86	24.64
M.032N	2313665	181190	80	-80	0	N/A	N/A	N/A	N/A
M.033N	2314170	181179	10	-10	0	N/A	N/A	N/A	N/A
M.034N	2313944	180977	65	-30	35	29.7	63.06	1:1.17	2.19
M.035N	2314141	181038	2065	-130	1935	26.1	125.36	1:14.89	79.12
M.036N	2314012	181158	25	-10	15	7.4	273.75	1:1.5	3.38

M.037N	2314631	180956	130	-130	0	N/A	N/A	N/A	N/A

Figure 91: Magnetic Contours in the Northern Marine Survey Area

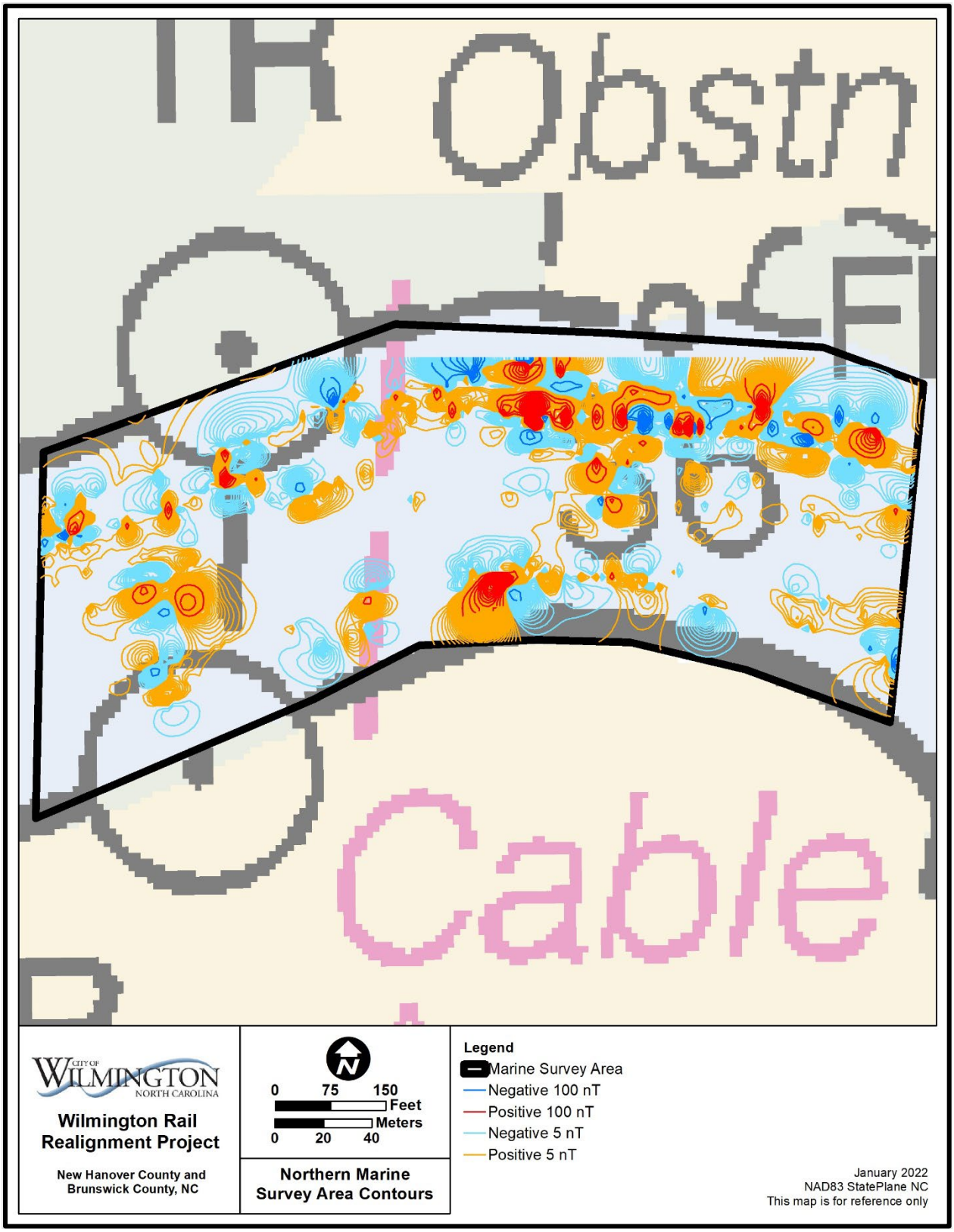
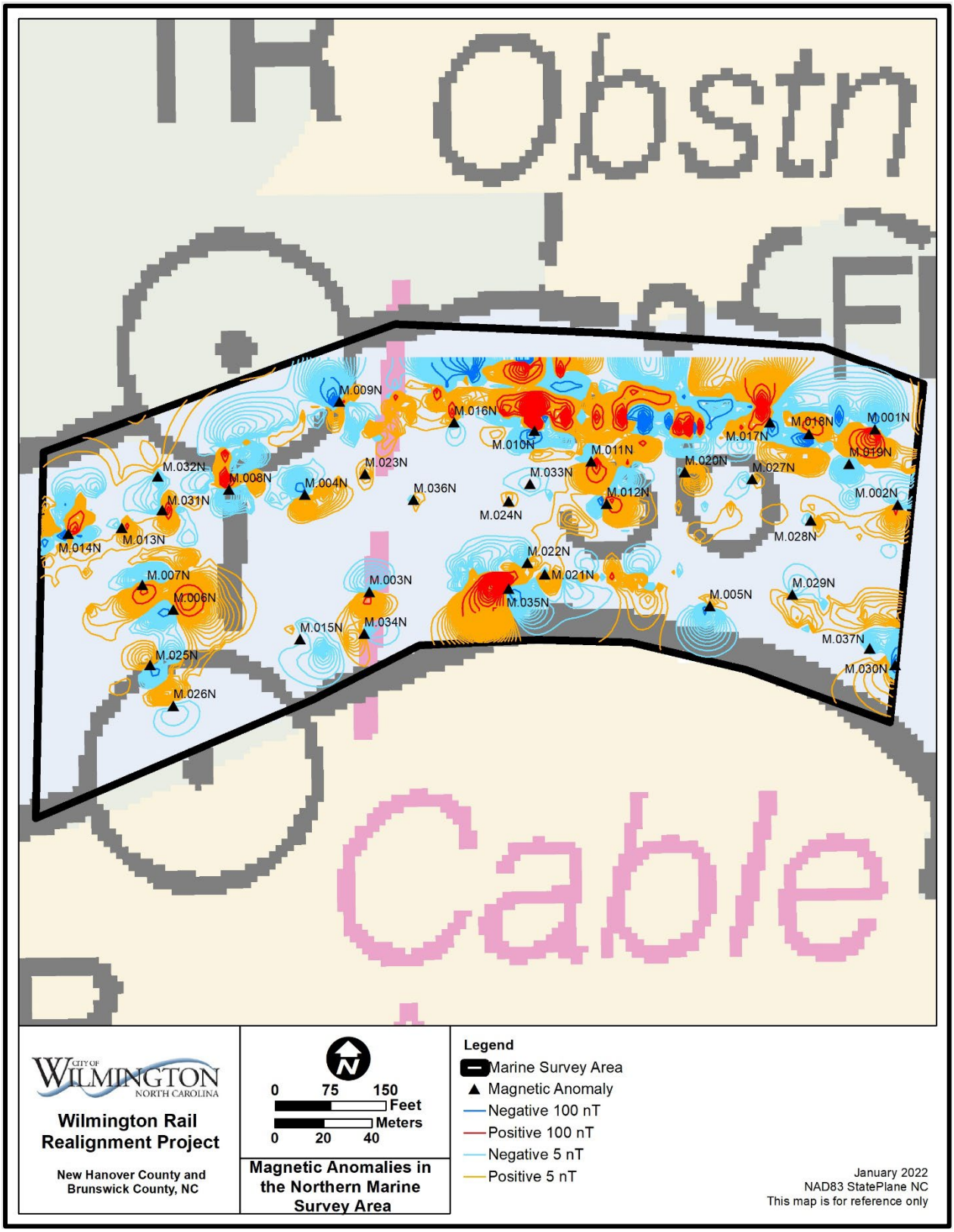


Figure 92: Magnetic Anomalies in the Northern Marine Survey Area.



Of the 37 anomalies, 15 were eliminated as containing interference from shoreline infrastructure or the electrical field created by the transmission cable on the survey area's western boundary. These include anomalies M.001N, M.006N, M.007N, M.008N, M.009N, M.010N, M.013N, M.0014N, M.016N, M.017N, M.018N, M.025N, M.026N, M.031N, and M.032N. Of these 15 targets, 13 had magnetic declinations well outside the ±26-degree orientation from magnetic north. Anomaly M.001N had a magnetic declination of 2.3 degrees; however, its amplitude ratio (1:7.33) and amplitude gradient (66.67 nT/ft) are not indicative of magnetic characteristics related to shipwrecks. Anomaly M.007N had a magnetic declination of 3.84 degrees; M.007N is located within close proximity to the transmission cable along the western boundary of the APE, indicating it is a false positive signature created by the transmission cable's electric field.

Of the remaining 22 anomalies, 18 do not meet the criteria to be evaluated as potential submerged cultural resources:

- Six anomalies, M.019N, M.023N, M.024N, M.030N, M.033N, and M.037N, are monopole signatures, indicating single-source debris and culturally insignificant materials.
- Nine anomalies, M.005N, M.012N, M.015N, M.020N, M.027N, M.028N, M.034N, M.035N, and M.036N, had magnetic declinations well outside the ±26-degree orientation from magnetic north.
- One anomaly, M.004N had a magnetic declination of 356.4 degrees and is within the magnetic declination parameters; however, its amplitude ratio (1.63:1) indicates a higher negative field signature, inconsistent with previously identified shipwrecks.
- One anomaly, M.011N, had a magnetic declination of 320.2 degrees. While this is outside the ±26-degree orientation from magnetic north parameter, it is close enough to be evaluated by other criteria. Its amplitude ratio (1:4.56) meets characteristics consistent with previously identified shipwrecks; however, its amplitude gradient (45.05 nT/ft) would represent an iron or steel-hulled shipwreck. No side-scan sonar contact is associated with the anomaly, and thus, it is unlikely that anomaly M.011N represents a shipwreck or other culturally sensitive site.
- One anomaly, M.022N, had a magnetic declination of 315.3 degrees. While this is outside the ±26-degree orientation from magnetic north parameter, it is close enough to be evaluated by other criteria. Its amplitude ratio (1.71:1) indicates a higher negative field signature, inconsistent with previously identified shipwrecks.

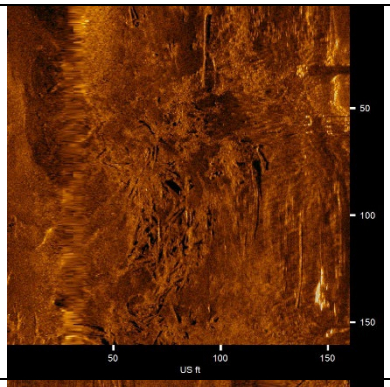
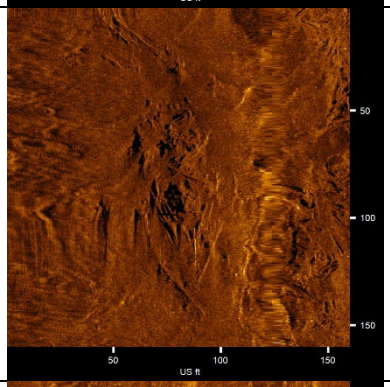
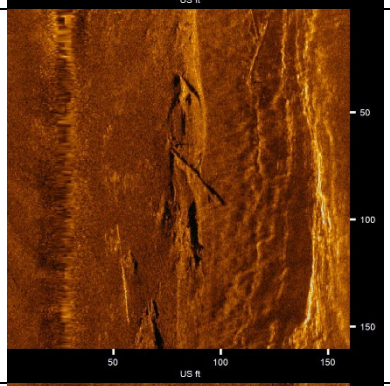
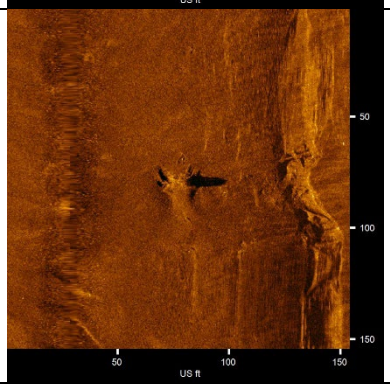
The remaining four anomalies, M.002N, M.003N, M.021N, and M.029N, all have characteristics similar to previously identified shipwreck magnetic sources. They are discussed individually in Section 6.4.

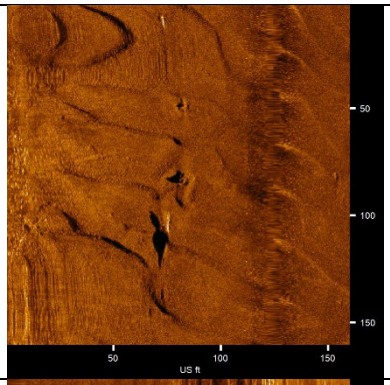
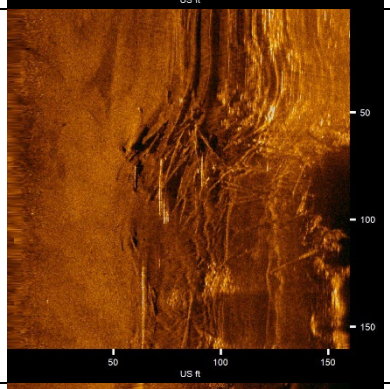
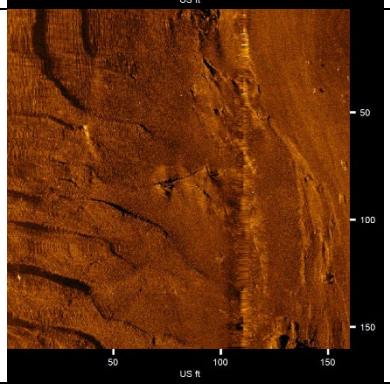
6.2.2 Side-Scan Sonar Results

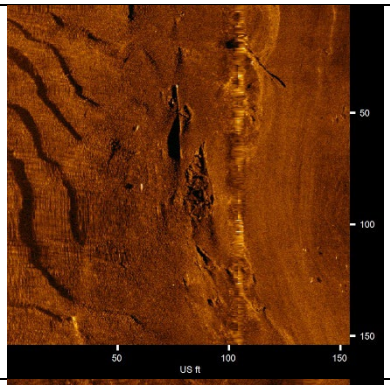
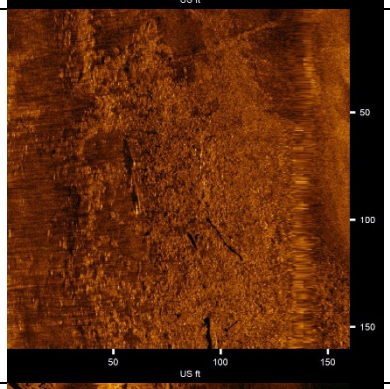
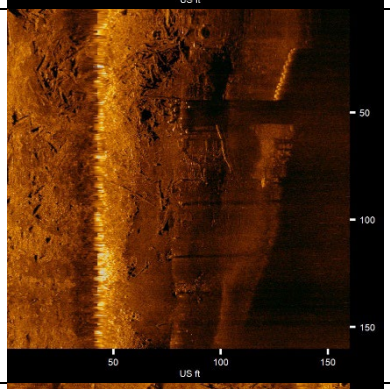
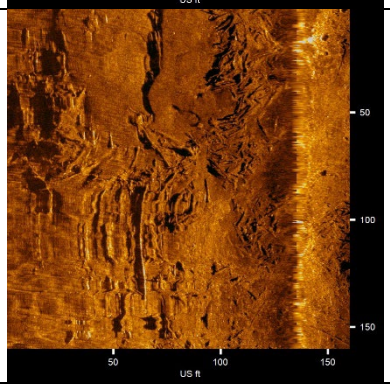
A total of 13 side-scan sonar contacts were recorded in the northern marine survey area (Table 9, Figure 93). These include Contacts S.0001 to S.0013. Of these, five are in close proximity (within 30 ft [9 m]) to magnetic anomalies:

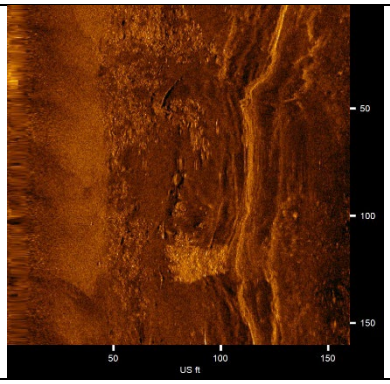
- Contact S.0002 is associated with anomaly M.020N (Table 9), located approximately 9.0 ft (2.7 m) southwest of the anomaly. Acoustic imagery depicts a debris scatter made up of several linear objects with low to moderate reflective properties compared to bottom sediments. The general shape of the contact potentially indicated a submerged cultural resource, such as a disarticulated shipwreck site. Magnetic data do not indicate a culturally resource, however, and Contact S.0002 does not exhibit any other characteristics that may indicate a disarticulated shipwreck. The acoustic imagery likely represents derelict pilings or natural linear objects, such as logs.
- Contact S.0004 is associated with anomaly M.008N (Table 9), located approximately 16.8 ft (5.1 m) northwest of the anomaly. Before further discussion, it must be noted that these estimates are based on georectified images. The recorded position of Contact S.0004 is located 43.2 ft (13.2 m) east of the anomaly. This is due to inherent differences in survey conditions. While sonar contacts may be observed on several different transects, variables such as vessel speed, may impact the position of the contact on each transect in acquired data as the sonar "views" it from different vantage points. The factors stated, Contact S.0004 does not exhibit characteristics that may indicate a shipwreck. Magnetic data do not suggest a culturally significant resource, and acoustic imagery likely represents a partially buried unidentifiable piece of debris.
- Contact S.0005 is associated with anomaly M.006N (Table 9), located approximately 20.2 ft (6.2 m) north of the anomaly. Acoustic imagery depicts a debris scatter oriented in a discontinuous linear arrangement with variable reflective properties compared to bottom sediments. The contact does not exhibit characteristics that may indicate a shipwreck. Magnetic data do not suggest a culturally significant anomaly, and acoustic imagery likely represents sections of exposed pipe and other miscellaneous or unidentifiable debris.
- Contact S.0008 is associated with anomaly M.014N (Table 9), located approximately 30.1 ft (9.2 m) west of the anomaly. Acoustic imagery depicts a linear object with moderate reflective properties compared to bottom sediments. The contact does not exhibit characteristics that may indicate a shipwreck. Magnetic data do not suggest a culturally sensitive resource, and acoustic imagery likely indicates iron/steel cable.
- Contact S.0009 is associated with anomaly M.0031N (Table 9) and is located approximately 24.6 ft (7.5 m) north-northwest of the anomaly. Acoustic imagery depicts one major linear feature and a small scatter located immediately adjacent to the southeast with moderate to high reflective properties compared to bottom sediments. The acoustic imagery does not exhibit characteristics that may indicate a shipwreck. Magnetic data do not suggest a culturally sensitive anomaly, and acoustic imagery likely represents and exposed section of pipe and nearby natural point features, such as rocks.

Table 9: Side-Scan Sonar Contact Records in the Northern Marine Survey Area.

Target Image	Target Info	User Entered Info
	**S.0001** ● Sonar Time at Target: 1/11/2010 4:02:12 PM ● Click Position 34.2435478447 -77.9595969953 (WGS84) (X) 2314444.82 (Y) 181278.91 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_0117¥Raw¥SS Raw¥NORTH¥NS_3.jsf	**Dimensions and attributes** ● Target Width: 70.08 US ft ● Target Height: 1.69 US ft ● Target Length: 163.28 US ft ● Target Shadow: 2.83 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter
	**S.0002** ● Sonar Time at Target: 1/11/2010 4:02:22 PM ● Click Position 34.2433060572 -77.9598400331 (WGS84) (X) 2314372.29 (Y) 181190.15 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_0117¥Raw¥SS Raw¥NORTH¥NS_3.jsf	**Dimensions and attributes** ● Target Width: 43.92 US ft ● Target Height: 2.56 US ft ● Target Length: 135.56 US ft ● Target Shadow: 4.08 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter
	**S.0003** ● Sonar Time at Target: 1/11/2010 4:04:00 PM ● Click Position 34.2433670973 -77.9619970944 (WGS84) (X) 2313720.15 (Y) 181205.54 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_0117¥Raw¥SS Raw¥NORTH¥NS_3.jsf	**Dimensions and attributes** ● Target Width: 48.34 US ft ● Target Height: 1.06 US ft ● Target Length: 169.05 US ft ● Target Shadow: 3.14 US ft ● Mag Anomaly: M.004 ● Avoidance Area: ● Classification1: debris ● Description: Linear debris scatter
	**S.0004** ● Sonar Time at Target: 1/11/2010 4:13:35 PM ● Click Position 34.2433006341 -77.9617232052 (WGS84) (X) 2313803.18 (Y) 181182.21 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_0117¥Raw¥SS Raw¥NORTH¥NS_4.jsf	**Dimensions and attributes** ● Target Width: 4.67 US ft ● Target Height: 4.52 US ft ● Target Length: 7.72 US ft ● Target Shadow: 16.51 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Debris

	**S.0005** ● Sonar Time at Target: 1/11/2010 4:14:03 PM ● Click Position 34.2428839416 -77.9621243987 (WGS84) (X) 2313683.51 (Y) 181029.30 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥NORTH¥NS_4.jsf	**Dimensions and attributes** ● Target Width: 5.97 US ft ● Target Height: 2.24 US ft ● Target Length: 100.77 US ft ● Target Shadow: 6.28 US ft ● Mag Anomaly: M.001; M.004 ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter
	**S.0006** ● Sonar Time at Target: 1/11/2010 4:08:24 PM ● Click Position 34.2429462914 -77.9607590201 (WGS84) (X) 2314095.92 (Y) 181056.31 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥NORTH¥NS_6.jsf	**Dimensions and attributes** ● Target Width: 57.49 US ft ● Target Height: 1.05 US ft ● Target Length: 90.36 US ft ● Target Shadow: 3.77 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Linear debris scatter; possible logs
	**S.0007** ● Sonar Time at Target: 1/11/2010 3:58:11 PM ● Click Position 34.2429039213 -77.9602481618 (WGS84) (X) 2314250.48 (Y) 181042.51 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥NORTH¥NS_7.jsf	**Dimensions and attributes** ● Target Width: 53.06 US ft ● Target Height: 0.72 US ft ● Target Length: 85.54 US ft ● Target Shadow: 1.09 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Linear debris scatter
	**S.0008** ● Sonar Time at Target: 1/11/2010 2:09:14 PM ● Click Position 34.2431142804 -77.9624428847 (WGS84) (X) 2313586.38 (Y) 181112.12 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥NORTH¥N_2.jsf	**Dimensions and attributes** ● Target Width: 12.88 US ft ● Target Height: 1.10 US ft ● Target Length: 25.13 US ft ● Target Shadow: 4.07 US ft ● Mag Anomaly: M.009; M.012 ● Avoidance Area: ● Classification1: debris ● Description: Linear debris scatter

	**S.0009** ● Sonar Time at Target: 1/11/2010 2:08:50 PM ● Click Position 34.2432335160 -77.9622332053 (WGS84) (X) 2313649.30 (Y) 181156.18 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥NORTH¥N_2.jsf	**Dimensions and attributes** ● Target Width: 21.09 US ft ● Target Height: 1.43 US ft ● Target Length: 73.26 US ft ● Target Shadow: 5.65 US ft ● Mag Anomaly: M.012; M.013 ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter
	**S.0010** ● Sonar Time at Target: 1/11/2010 4:24:27 PM ● Click Position 34.2432191683 -77.9587776339 (WGS84) (X) 2314693.71 (Y) 181161.89 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥NORTH¥NS_5.001.jsf	**Dimensions and attributes** ● Target Width: 43.84 US ft ● Target Height: 1.83 US ft ● Target Length: 107.77 US ft ● Target Shadow: 3.80 US ft ● Mag Anomaly: M.005 ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter
	**S.0011** ● Sonar Time at Target: 1/11/2010 2:06:03 PM ● Click Position 34.2437516627 -77.9601430783 (WGS84) (X) 2314279.01 (Y) 181351.35 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥NORTH¥N_2.jsf	**Dimensions and attributes** ● Target Width: 1.70 US ft ● Target Height: 4.81 US ft ● Target Length: 92.90 US ft ● Target Shadow: 36.29 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: infrastructure ● Description: Dock structure
	**S.0012** ● Sonar Time at Target: 1/11/2010 2:05:35 PM ● Click Position 34.2434532519 -77.9600493590 (WGS84) (X) 2314308.47 (Y) 181243.05 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥NORTH¥N_2.jsf	**Dimensions and attributes** ● Target Width: 147.19 US ft ● Target Height: 1.41 US ft ● Target Length: 170.72 US ft ● Target Shadow: 5.07 US ft ● Mag Anomaly: M.007; M.003 ● Avoidance Area: ● Classification1: debris ● Description: Linear debris scatter



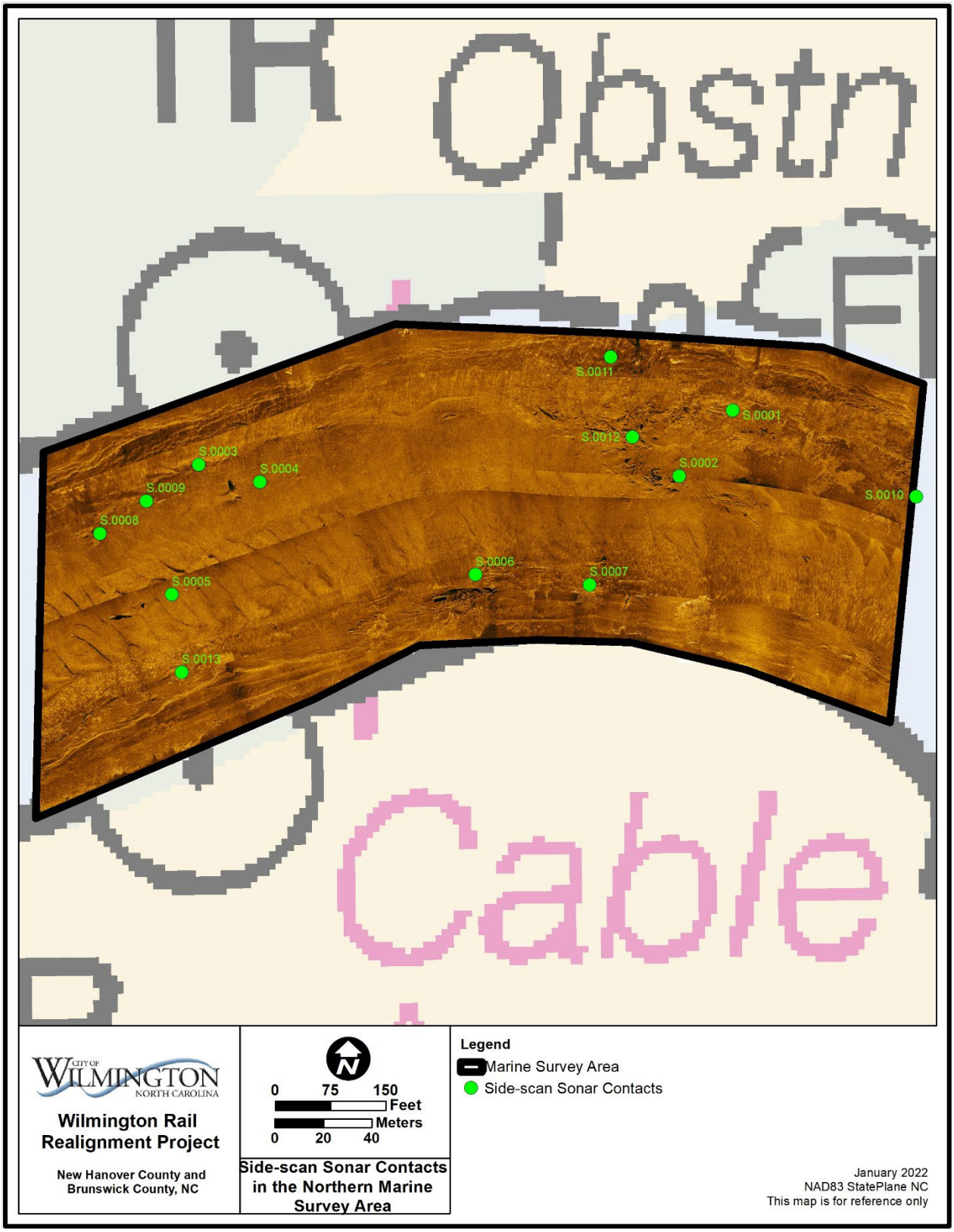
S.0013

- Sonar Time at Target: 1/11/2010 4:07:13 PM
- Click Position 34.2425944815 -77.9620826862 (WGS84) (X) 2313697.22 (Y) 180924.09 (Projected Coordinates)
- Map Projection: NC83F
- Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_0117¥Raw¥SS Raw¥NORTH¥NS_6.jsf

Dimensions and attributes

- Target Width: 32.98 US ft
- Target Height: 0.42 US ft
- Target Length: 102.07 US ft
- Target Shadow: 1.26 US ft
- Mag Anomaly: M.001; M.004; M.011
- Avoidance Area:
- Classification1: debris
- Description: Debris scatter

Figure 93: Side-Scan Sonar Contacts in the Northern Marine Survey Area.

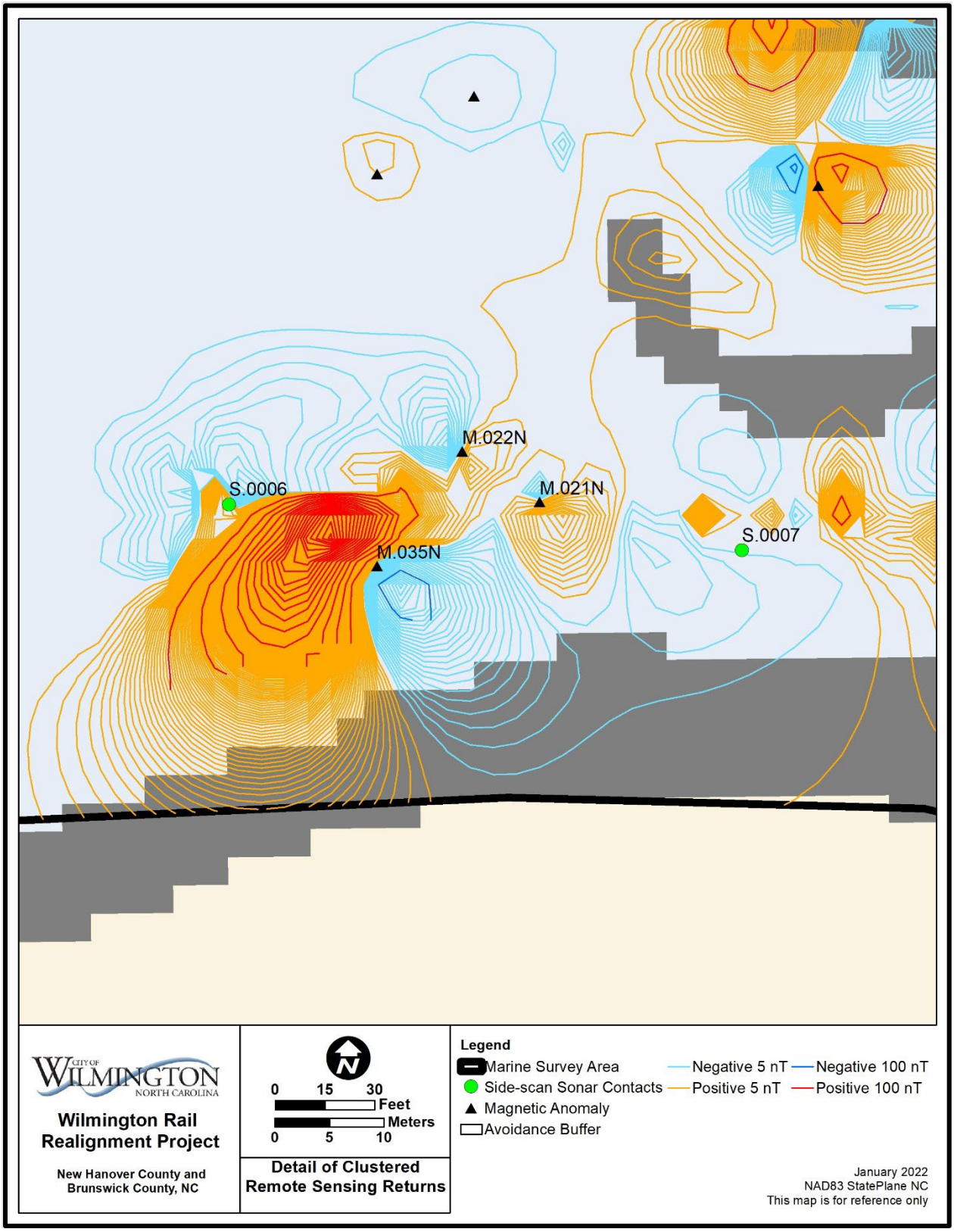


Acoustic imagery of six of the remaining contacts represent culturally insignificant artifacts. None are associated with magnetic sources and represent debris sources:

Contacts S.0001, S.0003, S.0011, S.0012, and S.0013 represent debris scatters, including linear objects, which do not exhibit characteristics that may indicate shipwreck resources. They likely represent sections of pipe or natural linear objects, such as logs. Contact S.0010 likely depicts a similar debris scatter; however, because of its close association with anomaly M.002N, it will be discussed further in Section 6.4.

Two contacts, S.0006 and S.0007, represent debris scatters adjacent to the shoreline and the concentration of pilings located along the southern shoreline, in the center of the northern survey area. While not associated immediately adjacent to anomalies M.021N, M.022N, and M.035N (all located in a cluster within a 50-ft (15 m) diameter of each other) (Figure 94), Contact S.0006 is located 48.3 ft (14.7 m) north-northwest from anomaly M.021 and Contact S.0007 is located 62.7 ft (19.1 m) east of anomaly M.021N. While associated with a significant cluster of magnetic anomalies, neither contact exhibits characteristics associated with known shipwrecks. Magnetic data do not suggest a culturally sensitive anomaly, and acoustic imagery likely represents derelict pilings or natural linear objects, such as logs.

Figure 94: Detail of Magnetic Anomalies and Side-Scan Sonar Contacts Located Near the Concentration of Derelict Pilings Along the Southern Shoreline.



6.3 SOUTHERN MARINE SURVEY AREA

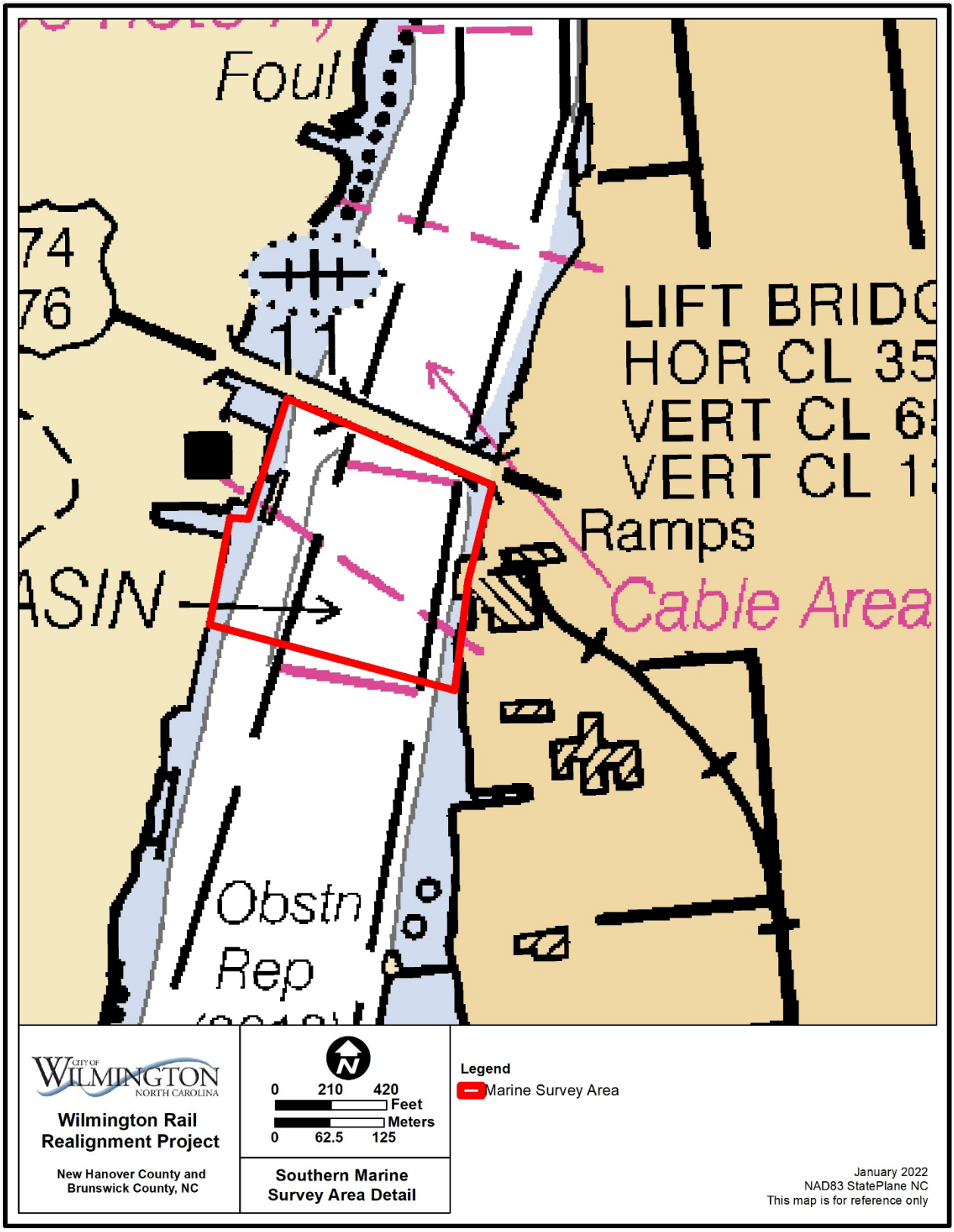
The southern marine survey area is located in Brunswick County immediately south and downriver of the Cape Fear Memorial Bridge. The bridge bounds the northern border of the survey area. The survey area is located along the western boundary of the City of Wilmington. As such, both shorelines are heavily developed with infrastructure, which directly affected the magnetometer readings (Figures 95-97). The northern half of the survey, up to the Cape Fear Memorial Bridge, is labelled as a cable area in NOAA Chart 11537 (Figure 98).

Figure 95: The Southern Marine Survey Area is Bordered on its Northern Boundary by the Cape Fear Memorial Bridge Creating Heavy Magnetic Interference. Facing Southwest.

Figure 96: The Southern Marine Survey Area is Bordered on its Northern Boundary by the Cape Fear Memorial Bridge. Facing West.

Figure 97: Eastern Riverbank with Extensive Shoreline Infrastructure. Facing East.

Figure 98: Detail of the Southern Marine Survey Area Depicting Active Cable Area Within the Project Boundaries.



6.3.1 Magnetometer Results

A total of nine magnetic anomalies were identified in the northern marine survey area. Table 10 presents the magnetic anomalies and the variables considered during evaluation including the anomaly name, coordinates, total nanotesla (nT) reading (after removing the Earth's ambient magnetic field), total negative field reading, total positive field reading, distance from peak-to-peak, magnetic declination bearing, amplitude ratio (ratio of negative to positive amplitudes), peak-to-peak amplitude gradient, and associated side-scan sonar contacts. These variables were gathered from the contour map created from magnetometer data collected during the survey (Figures 99 and 100).

Table 10: Magnetic Anomalies in the Southern Marine Survey Area.

Anomaly	Easting	Northing	Total Residual Strength (nT)	Negative Field Strength (nT)	Positive Field Strength (nT)	Peak-to-Peak Amplitude Distance (ft)	Declination (degrees)	Amplitude Ratio	Amplitude Gradient (nT/ft)
M.001S	2316476	174934	200	-170	30	35.4	11.74	5.67:1	5.65
M.002S	2316315	174890	1170	-540	630	15.9	22.72	1:1.17	73.58
M.003S	2316307	174719	445	-195	250	21.3	356.46	1:1.28	20.89
M.004S	2316847	174891	45	-5	40	13.1	359.15	1:8	3.44
M.005S	2316825	174779	20	-20	0	N/A	N/A	N/A	N/A
M.006S	2316637	174652	40	-40	0	N/A	N/A	N/A	N/A
M.007S	2316976	174778	285	-120	165	64.0	18.94	1:1.38	4.45
M.008S	2316483	175020	80	-35	45	7.0	3.57	1:1.29	11.43
M.009S	2316325	174953	2325	-1475	850	15.6	62.5	1.74:1	149.04

Magnetic interference from both the bridge and the cable area were very prevalent in the northern half of the survey area. Therefore, discrete magnetic anomalies that may indicate the presence of potential submerged cultural resources were masked, and the only line of evidence for their presence is side-scan sonar imagery. Additionally, magnetic interference from shoreline infrastructure was prevalent along both shorelines. Of the nine recorded magnetic targets, two were eliminated from further evaluation for cultural sensitivity due to the interference from shoreline infrastructure. These included anomalies M.002S and M.007S.

Of the six remaining anomalies, three do not meet the criteria to be evaluated as potential submerged cultural resource:

- Two magnetic anomalies, M.005S and M.006S, are monopole signatures, indicating single-source debris and culturally insignificant materials.
- One magnetic anomaly, M.009S, had a magnetic declination well outside the ±26-degree orientation from magnetic north. Additionally, this anomaly was in close proximity to magnetic interference from shoreline infrastructure.
- One anomaly, M.001S, had a magnetic declination of 11.7 degrees and is within the magnetic declination parameters; however, its amplitude ratio (5.67:1) indicates a higher negative field signature, inconsistent with previously identified shipwrecks.

- One anomaly, M.004S, had a magnetic declination of 359.15 degrees, is within the magnetic declination parameters, and has an amplitude gradient (3.44 nT/ft) consistent with verified shipwreck sources. However, its negative field exhibited a weak return, and the anomaly appears almost to be a monopole with an amplitude ratio (1:8) inconsistent with previously identified shipwrecks.

The remaining two anomalies, M.003S and M.008S, have characteristics similar to previously identified shipwreck magnetic sources. They are discussed individually in Section 6.4.

6.3.2 Side-Scan Sonar Results

A total of 12 side-scan sonar targets were recorded in the southern marine survey area. These include sonar contacts S.0014 to S.0025 (Table 11, Figure 101). Of these, three are in close proximity (within 30 ft [9 m]) to magnetic anomalies:

- Contact S.0020 is associated with anomaly M.009S (Table 11), located approximately 21.3 ft (6.5 m) northeast of the anomaly. Acoustic imagery depicts a debris scatter with moderate to high reflective properties compared to bottom sediments. The debris scatter does not exhibit characteristics that may indicate a disarticulated shipwreck. Magnetic data do not suggest a culturally sensitive anomaly, and acoustic imagery likely represents iron/steel cables, brick, and other miscellaneous or otherwise unidentifiable debris.
- Contact S.0023 is associated with anomaly M.005S (Table 11), located approximately 21.2 ft (6.5 m) north of the anomaly. Acoustic imagery depicts a linear object with low reflective properties compared to bottom sediments. The linear object does not exhibit characteristics that may indicate a shipwreck. Magnetic data do not suggest a culturally sensitive anomaly, and acoustic imagery likely represents a partially buried section of pipe.
- Contact S.0025 is associated with anomaly M.001S (Table 11), located approximately 29.6 ft (9.0 m) north-northeast of the anomaly. Acoustic imagery depicts a linear object with high reflective properties compared to bottom sediments. The linear object does not exhibit characteristics that may indicate a shipwreck. Magnetic data do not suggest a culturally sensitive anomaly, and acoustic imagery likely represents an exposed section of pipe.

Acoustic imagery of seven of the remaining contacts represent culturally insignificant artifacts. None are associated with magnetic anomalies and represent debris sources:

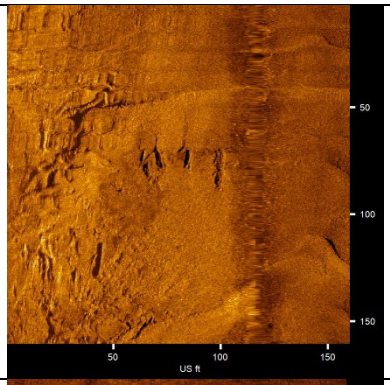
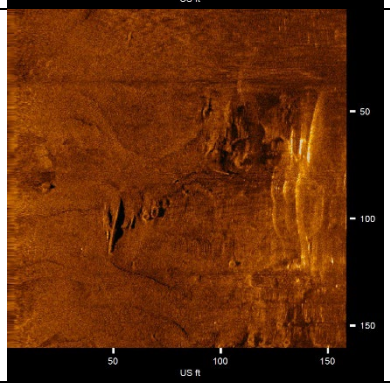
- Contacts S.0016 and S.0024 depict circular objects and are not associated with magnetic anomalies. They do not exhibit characteristics of known shipwrecks. They likely represent debris such as tires. Contact S.0019 also depicts a circular object resembling a tire, but is located outside the APE.
- Contacts S.0014, S.0015, and S.0022 represent debris scatters, including linear objects that are not associated with magnetic anomalies, and do not exhibit characteristics that may indicate shipwreck resources. They likely represent sections of pipe or natural linear objects, such as logs.

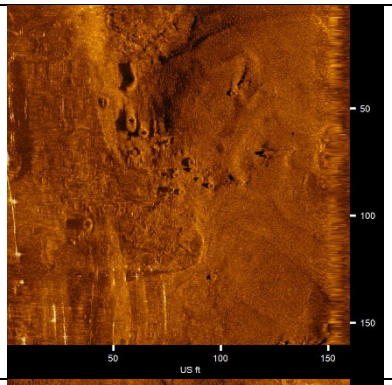
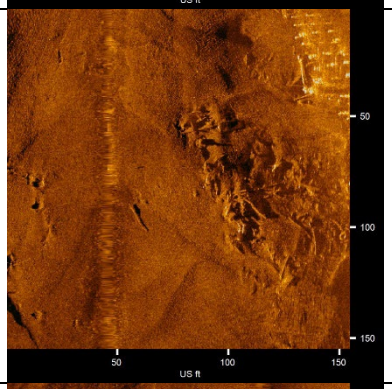
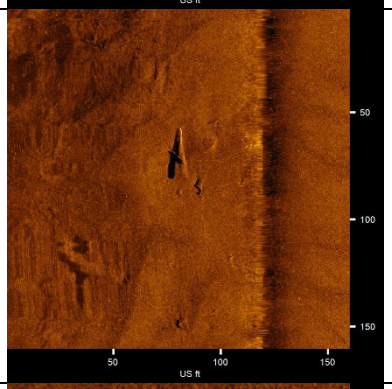
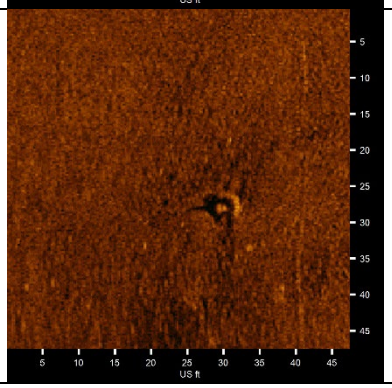
- Contact S.0018 depicts a linear object and is not associated with a magnetic anomaly. It rises above the riverbed by 1.2 ft (0.4 m) and has a pronounced acoustic shadow. It does not exhibit other characteristics of known shipwrecks. It likely represents a derelict piling or natural linear object, such as a log.

Contact S.0021 represents a remnant dock and debris scatter adjacent to the shoreline and a dock facility. The linear objects making up the scatter are located approximately 155 ft (47.2 m) north-northeast of magnetic anomaly M.007S, and they are not associated with the anomaly. However, its general shape required additional evaluation, as it appeared to be a potentially disarticulated wreck. Historic aerial imagery depicts the dock as previously extending further into the river (Figure 102). Between 2008 and 2011, the dock was subject to partial submersion. Between 2011 and 2012, sections of the dock were removed, and by January 2013, the partially submerged portion of the dock had been removed, with several pilings or logs positioned at the end of the dock in the 2013 imagery. Historic imagery suggests Contact S.0021 is associated with the removal of the dock structure and is not culturally significant.

The remaining contact, S.0017, shares characteristics with previously identified shipwrecks and may represent a potential submerged cultural resource. It is discussed individually in Section 6.2.4.

Table 11: Side-Scan Sonar Contact Records in the Southern Marine Survey Area.

Target Image	Target Info	User Entered Info
	**S.0014** ● Sonar Time at Target: 1/11/2010 10:34:38 AM ● Click Position 34.2270775731 -77.9521350670 (WGS84) (X) 2316763.26 (Y) 175308.74 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥SOUTH¥S_10.jsf	**Dimensions and attributes** ● Target Width: 18.11 US ft ● Target Height: 1.20 US ft ● Target Length: 39.62 US ft ● Target Shadow: 2.20 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter
	**S.0015** ● Sonar Time at Target: 1/11/2010 10:20:48 AM ● Click Position 34.2269547605 -77.9529654459 (WGS84) (X) 2316512.72 (Y) 175261.39 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥SOUTH¥S_12.jsf	**Dimensions and attributes** ● Target Width: 37.70 US ft ● Target Height: 1.23 US ft ● Target Length: 98.46 US ft ● Target Shadow: 4.71 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter

	**S.0016** ● Sonar Time at Target: 1/11/2010 10:13:50 AM ● Click Position 34.2265635383 -77.9532185973 (WGS84) (X) 2316437.70 (Y) 175118.21 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥SOUTH¥S_13.jsf	**Dimensions and attributes** ● Target Width: 68.82 US ft ● Target Height: 0.99 US ft ● Target Length: 68.98 US ft ● Target Shadow: 3.45 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Tires
	**S.0017** ● Sonar Time at Target: 1/11/2010 9:48:45 AM ● Click Position 34.2275408648 -77.9531799155 (WGS84) (X) 2316445.64 (Y) 175474.01 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥SOUTH¥S_16.jsf	**Dimensions and attributes** ● Target Width: 92.62 US ft ● Target Height: 1.20 US ft ● Target Length: 107.55 US ft ● Target Shadow: 4.71 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter
	**S.0018** ● Sonar Time at Target: 1/11/2010 9:57:55 AM ● Click Position 34.2258537009 -77.9535496602 (WGS84) (X) 2316340.35 (Y) 174858.83 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥SOUTH¥S_15.jsf	**Dimensions and attributes** ● Target Width: 17.28 US ft ● Target Height: 1.20 US ft ● Target Length: 34.10 US ft ● Target Shadow: 3.45 US ft ● Mag Anomaly: ● Avoidance Area: ● Classification1: debris ● Description: Debris scatter
	**S.0019** ● Sonar Time at Target: 1/11/2010 9:56:57 AM ● Click Position 34.2252672297 -77.9537803107 (WGS84) (X) 2316272.87 (Y) 174644.67 (Projected Coordinates) ● Map Projection: NC83F ● Acoustic Source File: C:¥Users¥justi¥OneDrive¥Desktop¥UW_011 7¥Raw¥SS Raw¥SOUTH¥S_15.jsf	**Dimensions and attributes** ● Target Width: 3.96 US ft ● Target Height: 0.70 US ft ● Target Length: 4.04 US ft ● Target Shadow: 3.37 US ft ● Mag Anomaly: M.023 ● Avoidance Area: ● Classification1: debris ● Description: Debris