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Drayton Hall: An Underwater Archeological Survey in the Ashley River

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DRAYTON HALL: AN UNDERWATER ARCHEOLOGICAL SURVEY
IN THE ASHLEY RIVER

by

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Research Manuscript Series 159

Prepared by the
INSTITUTE OF ARCHEOLOGY AND ANTHROPOLOGY
UNIVERSITY OF SOUTH CAROLINA
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The survey crew worked long hours, sometimes in foul weather, and always in adverse water conditions, but they were always enthusiastic and eager. The crew consisted of Steve Howard, boat operator, James A. Williams, Underwater Archeological Assistant, and Mary W. Edwards, volunteer records keeper.

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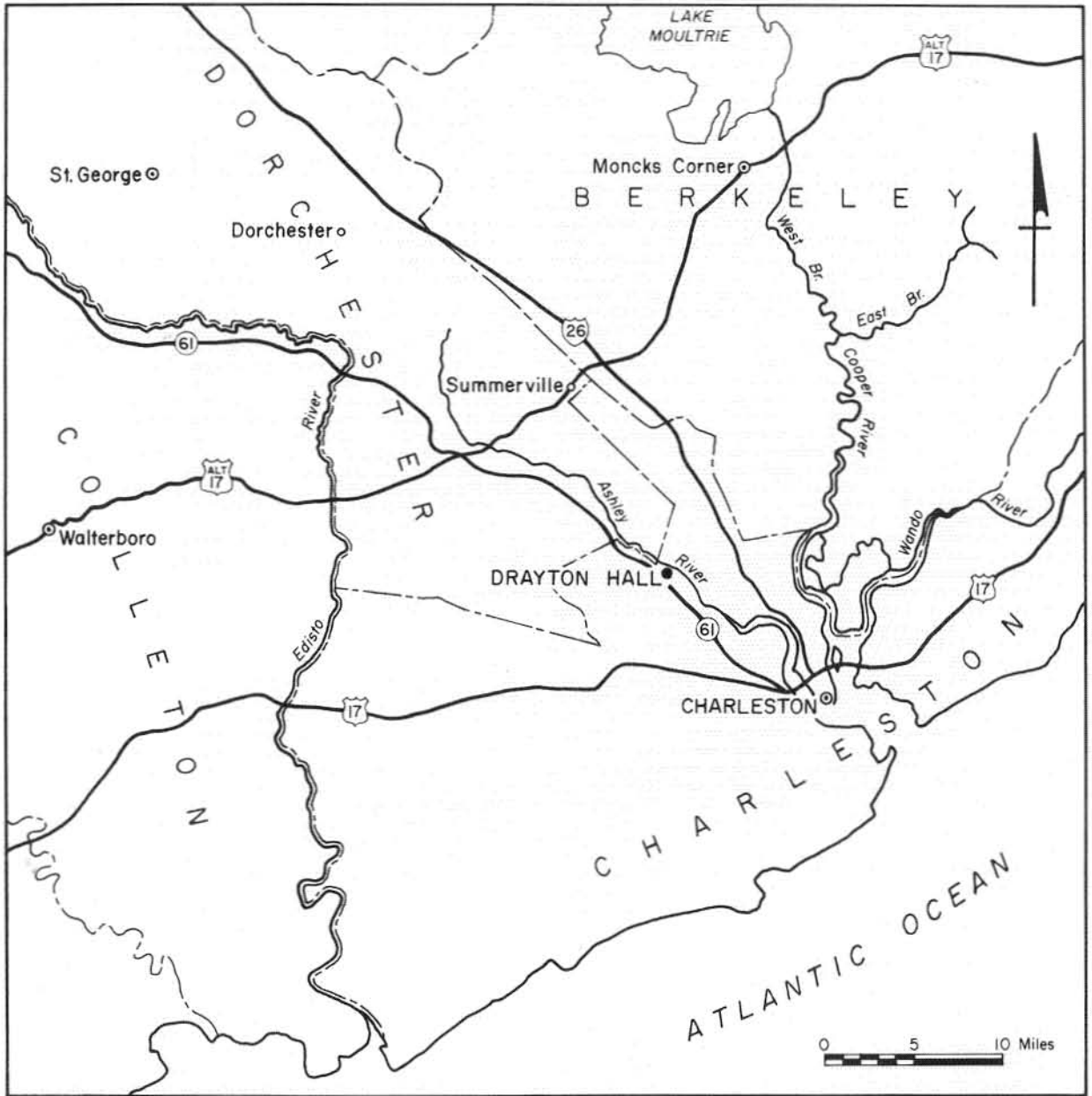
INTRODUCTION

The National Trust for Historic Preservation, Washington, D.C., has proposed the construction of a revetment in the Ashley River adjacent to Drayton Hall Plantation located on S.C. Highway #61, Charleston County, South Carolina. The revetment will extend approximately 21 feet into the Ashley River (Fig. 1). The purpose of the 530 foot long stone revetment is to stabilize the eroding Drayton Hall riverbank.

The Statewide Inventory of Archeological Sites was consulted and indicated not only the well documented National Register site of Drayton Hall (38CH225), but also an underwater component to the site. Mr. Jack Williamson, a Hobby Licensed diver from Charleston, South Carolina, had reported in 1975 the recovery of submerged antiquities in the Ashley River adjacent to Site 38CH225.

The Hobby License mentioned above is one of three types of licenses for artifact recovery issued by the Institute of Archeology and Anthropology pursuant to Act 1301 of the State Legislature. The Hobby License allows small scale, hobby related, artifact collecting in South Carolina waters by amateurs. The licensee agrees to submit monthly reports on his artifact diving to the Institute. Mr. Williamson's report coupled with Ms. Lynne Lewis' statement (Lewis 1978: 8) that "unfortunately for archeologists, the Ashley River flows swiftly by less than 150 yards from the main house and no doubt served as a convenient garbage disposal," indicated that underwater reconnaissance survey should be conducted before the construction of the revetment.

The Institute of Archeology and Anthropology, University of South Carolina, conducted the underwater reconnaissance survey of the proposed revetment area on October 1-3, 1979. The purpose of this survey was to determine if there were significant concentrations of submerged cultural resources that would be adversely affected by the construction of the revetment.



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Figure 1: Locator map of Drayton Hall, Charleston County.

PHYSIOGRAPHIC SETTING

Drayton Hall on the Ashley River is approximately 14 miles by water from Charleston, South Carolina. The Ashley River is a small coastal plain stream having its origin in headwater swamps. The average fresh-water inflow from the Ashley is 261 cubic feet per second with a drainage area of approximately 350 square miles. Flowing generally southeastward, its lower reach forms the west shore of the peninsula of Charleston (U.S. Army Corps of Engineers 1977: 26).

The Ashley is navigable by small boat as high up as Bacon's Bridge, about thirty miles from the City of Charleston (Smith 1919: 3). The current velocity ranges from 1.3 knots to more than 3.5 knots during the month of October (Dept. of Commerce 1980: 86, 170).

In the Ashley River adjacent to Drayton Hall, visibility ranges from six inches to zero. During the survey all diving operations were conducted in zero visibility with methods established during a survey of Victoria Bluff, Beaufort County, South Carolina (Wright 1977).

HISTORIC BACKGROUND

The first permanent English settlement in South Carolina was Charles Towne, founded in 1670 on the Ashley River (South 1969: i). Expansion up the Ashley River occurred almost immediately, with grants of land up the river as early as the 1670s (Lewis and Hardesty 1979: 9). As the plantation industry grew, so did the need for a transportation system between Charleston and the plantations. As early as 1682, roads were being built by act of the South Carolina General Assembly. These roads were seldom used because of their poor state of repair and the danger of attack by Indians or Spaniards (Phillips 1968: 27). Thus the waterways developed as the main avenues of trade (Phillips 1968: 25). Very little research has been undertaken concerning the waterborn commerce inside South Carolina, except for very broad statements of importance. Research is currently being conducted by members of the Institute of Archeology and Anthropology and several individuals concerning the local shipping industry.

The building of Drayton Hall by John Drayton between 1738 and 1742, and the subsequent history of the plantation, have been thoroughly researched by the National Trust for Historic Preservation. Ms. Lynne Lewis published some of this information in her book Drayton Hall, Preliminary Archeological Investigation at a Low Country Plantation.

The research for this project was directed towards the use of the river by the plantation. Although no documentation was located to indicate any dock structures in the survey area at Drayton Hall, two plats from the McCrady Collection did indicate usage of the area immediately upstream of the end of the proposed revetment. McCrady Plat Collection #5869, an undated plat, indicated a public landing in the area. Plat #789, dated June 1907, surveyed by James O'Hear, entitled "Plan of Drayton Hall in St. Andrews Parish, South Carolina, showing areas of overburden, thickness and tonnage per acre of Stratum of Phosphate Rock," indicated that in the same area as the public landing, there had been a railroad bed and was undoubtedly extensively used during the late nineteenth and early twentieth centuries.

The Drayton family had been the continuous owners of Drayton Hall from the 1730s until it was obtained by the National Trust for Historic Preservation and the Historic Charleston Foundation in 1973. Archeological investigations of the property began in 1974 and are continuing under the direction of National Trust Historical Archeologist Lynne G. Lewis.

SURVEY METHODS

The survey of the proposed revetment area at Drayton Hall was conducted using two types of electronic remote sensing equipment and visual underwater survey methods. The survey strategy was designed to provide a uniform intensive examination of the project area. The remote sensing equipment, utilized before the visual phase, provided necessary information to plan a thorough visual investigation by Institute divers.

Side Scan Sonar

The available records of a previous survey funded by the South Carolina Department of Archives and History were consulted to determine if there were any major variations in the river bottom adjacent to the survey area. A Klein Moden 520 Hydroscan, a dual channel side scan sonar, in conjunction with a Model 521 Recorder and a towfish, were used in the survey. These were leased from Klein Associates, Inc. of Salem, New Hampshire.

Side scan sonar systems utilize a towed device which emits high intensity pulses of high frequency sound to either side of a moving ship. The pulses echo off objects and features on the sea floor and return to the towed vehicle. They are then converted to electrical signals and are sent up the cable to a special graphic recorder. This recorder has two channels which make a continuous permanent strip chart recording of the echoes (Klein and Jolly 1971: 288).

The charts indicated one anomaly in the survey area. The anomaly was a tree that had washed out of the bank and is partially exposed above high water.

Fathometer

A Ross Sportsman Straight Line recorder was used to chart depth profiles of the survey area. The fathometer survey was conducted parallel to the 530 foot bank area using 30 foot lane spacing, for a distance of 120 feet from the Drayton Hall bank. Six transects to the river were also charted to profile the contours of the river. Each of these transects was made to a survey station established on the west bank.

The parallel and perpendicular transects gave the survey crew an idea of the bottom contours they would encounter in the visual survey. There was also the possibility of locating new anomalies that the side scan may have missed or that may have only recently been deposited in the area.

The fathometer showed that in and adjacent to the survey area was a marl slope dropping to a maximum depth of 16 feet at Station 5, while only eleven feet at Station 1. The fathometer also showed a slight ledge at a depth of 11 feet that ran the entire length of the survey area.

Visual Survey

The visual survey consisted of three types of recognized underwater search patterns: circle and vector searches from a known subsurface datum point and random uncontrolled collections, both in the survey area and in water adjacent to the survey area.

For this phase of the operation, survey stations, approximately an equal distance apart, were established on the river bank. Thirteen stations were established and the river bottom at each station was surveyed using either a circle or vector search. (Fig. 2).

For a circle or vector search, subsurface datum points were established at the base of the slope using heavy anchors. Each sub-surface datum point was opposite the previously established shore station and was approximately 30 feet from the eroding river bank. A diver would then attach a premeasured length of line to the anchor and crawl very slowly in a circle or straight line (vector) as the situation dictated around the anchor. In each of the 60 foot diameter subsurface stations, a hundred percent sample of diagnostic artifact was collected. The exceptions were in the upstream sections where a small john boat (Station 8), and some wreckage from a probable steam powered vessel (Station 12) were located and in the area of Station 13 where a set of train wheels were observed. This strategy allowed a thorough coverage of the primary survey area and a secondary area that could potentially be impacted by construction of the revetment.

When the station searches were completed, random searches were made up and down the slope from Stations 1 to 12. The slope was covered at six foot intervals from low water to the bottom of the slope, approximately 30 feet from the existing bluff.

As a final check, random searches were conducted to approximately the middle of the river. Several artifacts were found but all were outside of the primary impact areas.

The eroding face of the bank at Drayton Hall was also surveyed for cultural remains. Every six feet a profile was cleared. The only artifacts recovered were brick fragments probably spilled over from the ruin site of the orangery located approximately 15 feet from the bank.

ARTIFACT ANALYSIS

One hundred nine artifacts were recovered during this survey. Of these, 68 were glass (62.39%), 16 were ceramic (14.68%) and 5 were paleontological remains (4.59%). There appear to be four areas that can be combined in discussion: Collection Units 1-7, Units 8-12, Unit 13 and Unit 14 (Fig. 2). Table 1 presents the type and number of artifacts for each analysis area.

Analysis Area 1

Analysis Area 1 (Collection Units 1-7) was located along an area of the river bank that apparently had no major occupation. Twenty-five artifacts were recovered from this area, including 17 (68%) of glass, 2 (8%) ceramic, 1 (4%) representing paleontological material, 3 (12%) brick fragments, 1 (4%) unidentified metal rod, and 1 (4%) piece of modern debris (bank deposit bag).

The major diagnostic artifacts in this area were glassware items. The eighteenth century was not represented. Seven (28%) glassware artifacts from the nineteenth century, and 10 (40%) from the twentieth century, were recovered. This area would have the highest potential for garbage disposal because it is located directly behind the main plantation house. The survey, however, failed to locate any major concentration of eighteenth or nineteenth century artifacts. The analysis indicates that either the river in this area was not used as a dump or that the garbage settled in deeper water outside the survey area.

Analysis Area 2

Analysis Area 2 represents Collection Units 8-12 which were grouped because of their proximity to the ruins of what Lynne Lewis refers to as the "orangery." This eighteenth century ruin is located approximately 15 feet from the existing eroding bank near the middle of these five collection units. In this area 43 artifacts were recovered and 2 wrecks were observed; 26 (60.47% of total in this area) were glassware artifacts, 4 (9.3%) were ceramic, 3 (6.97%) were paleontological remains, 5 (11.63%) were wreck parts, 3 (6.97%) were brick fragments, 1 (2.33%) was an unidentified piece of metal, and 1 (2.33%) was a small piece of coal that could possibly be from the upstream wreck. The grouping again indicates the possibility that the river was not used as a dump, at least not in the eighteenth or nineteenth centuries. The glassware from the eighteenth century represents 4.65% of the total 43 artifacts collected in this area, the nineteenth century 2.33%, and the twentieth century 53.49%. The usage or at least discard in this area was predominately in the twentieth century.

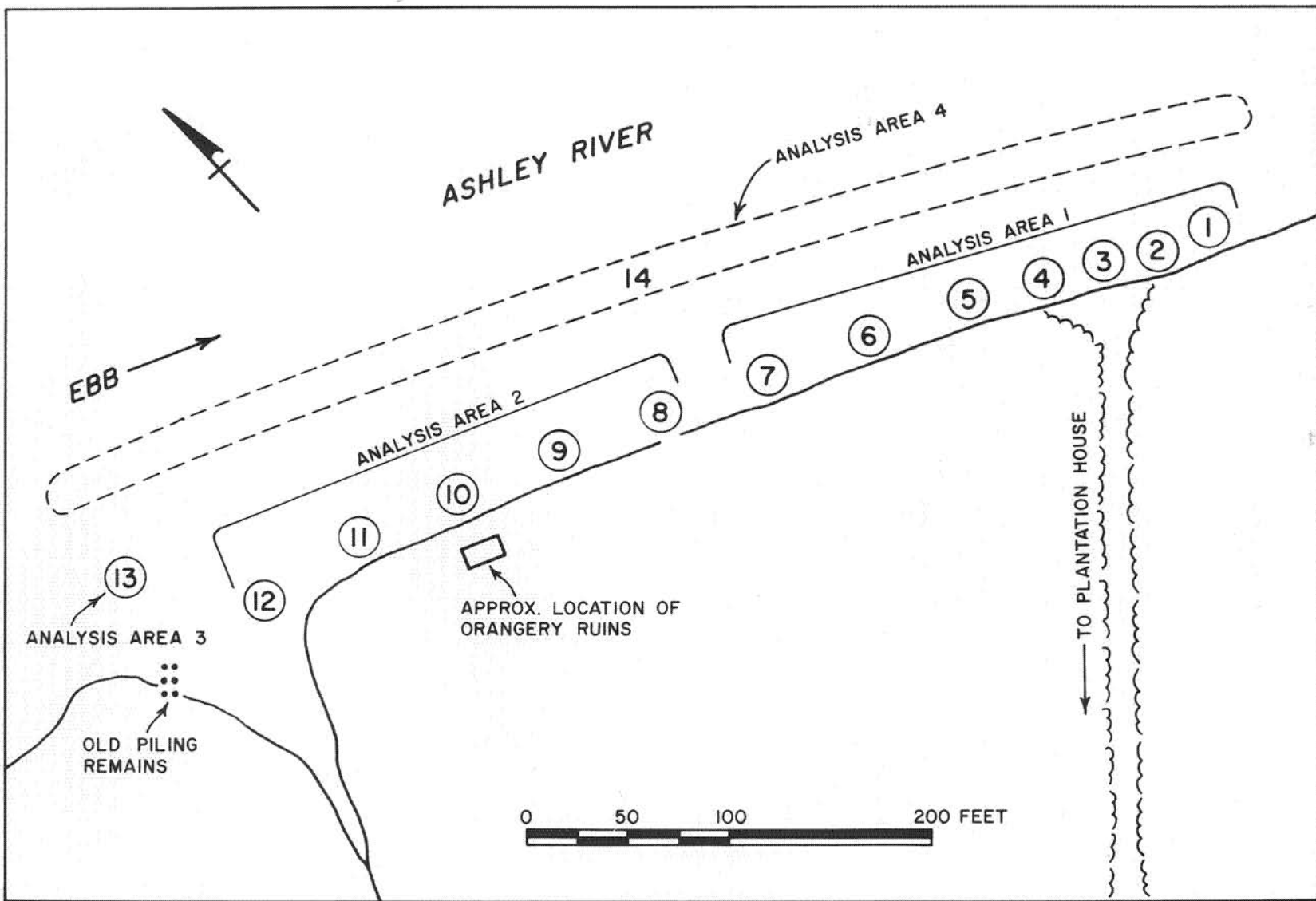


Figure 2: Plan view of Drayton Hall showing survey and analysis areas.

TABLE 1

TYPE AND NUMBER OF ARTIFACTS FOR EACH ANALYSIS AREA

	<u>Analysis Area 1</u>		<u>Analysis Area 2</u>		<u>Analysis Area 3</u>		<u>Analysis Area 4</u>	
	Number of Artifacts	% of Area Total Artifacts	Number of Artifacts	% of Area Total Artifacts	Number of Artifacts	% of Area Total Artifacts	Number of Artifacts	% of Area Total Artifacts
Bottles and Jars								
18th Century			2	4.65%				
19th Century	7	28%	1	2.33%	12	70.59%	4	16.66%
20th Century	10	40%	23	53.49%	3	17.65%	6	25.00%
Total Glass	17	68%	26	60.47%	15	88.24%	10	41.66%
Ceramics								
18th Century							2	8.33%
19th Century			1	2.33%	2	11.76%	3	12.50%
20th Century								
Non Datable	2	8%	3	6.97%			1	4.17%
Prehistoric							1	4.17%
Total Ceramics	2	8%	4	9.30%	2	11.76%	7	29.17%
Paleontological Remains	1	4%	3	6.97%			1	4.17%
Brick Fragments	3	12%	3	6.97%				
Unidentified Metal	1	4%	1	2.33%				
Wreck Artifacts			5	11.63%				
Coal			1	2.33%				
Rocks							3	12.50%
Modern Debris	1	4%					3	12.50%
TOTAL Artifacts per Area	25	100%	43	100%	17	100%	24	100%
% of Total Site Artifacts		22.93%		39.45%		15.60%		22.02%

The two wrecks in this area are both outside of the primary impact area. The downstream wreck is that of a small, probably modern wooden bateau approximately 12 feet long. The bateau is resting upside-down in 16 feet of water slightly upstream and offshore of Collection Unit 8. The other wreck is in approximately 16 feet of water directly off the center of the creek mouth on the extreme upstream end of the survey area. Judging from the recovered remains, this was a small wooden vessel, probably steam powered, with copper sheathing attached to the hull. This sheathing was used in an attempt to prevent, or at least slow down, the attack of marine borers, primarily Teredo navalis, which attack wood and eventually destroy it by eating numerous channels. This not only causes a decrease in the wood's structural integrity, but accelerates the deterioration of the wood. A propeller, 15 inches in diameter, still attached to the drive shaft, was observed but left in place.

Our ability to properly evaluate the wreck was hampered by the lack of visibility in the area. Everything was done by touch. The fact that loose engine parts were recovered suggests that some salvage had been attempted on this vessel after she sank. Little other wreckage was observed, which may indicate that most of the vessel had been salvaged or had deteriorated to such a state that only the bilge area remains, this being covered by overburden.

Analysis Area 3

Analysis Area 3 consists of Collection Unit 13. This area is between the center of the upstream creek mouth and the upstream end of the piling and debris area that has been documented as having been associated with a public landing (McCrary Plat #5869 undated) and in the late nineteenth and early twentieth centuries with phosphate mining in the area of Drayton Hall. In this area 17 artifacts were recovered. There were 15 (88.24%) glass and 2 (11.76%) ceramic items recovered. The nineteenth century artifacts represent 82.35% of the total number, 12 (70.59%) glass and 2 (11.76%) ceramic. Glassware from the twentieth century accounts for the remainder of the artifacts, three (17.65%) being bottles. Located in this area, but not recovered, was a set of train wheels attached by a three foot axle. These are probably associated with phosphate transportation on the spur line railroad that ran to the Ashley River during the late nineteenth century (McCrary Plat #789, June 1907).

Analysis Area 4

Analysis Area 4, Collection Unit 14, is the random deep water area, which encompasses the entire length of the survey area. This collection was obtained from approximately the center of the river. Twenty-four artifacts were recovered, the largest number from any single collection unit. Ten (41.66%) glass artifacts were recovered, four (16.66%) being nineteenth century and six (25%) being twentieth century. Two (8.33%) eighteenth century ceramic fragments were recovered. Three (12.50%) nineteenth century ceramics, one (4.17%) undatable ceramic, and one (4.17%) prehistoric ceramic were also recovered in this area. Ceramics account for 29.17% of the total artifacts in this analysis.

area. Three (12.50%) rocks, two slate and one chert, and three (12.50%) modern skeets were also recovered.

The fact that Collection Unit 14 accounted for the highest artifact count of any single collection unit is interesting because the least amount of time was allotted to surveying this area, the rationale being that only minimal impact would occur this far from the primary impact area. This area allowed a chance to test the hypothesis that garbage was indeed dumped into the river and settled in deep water. Although a substantial number of artifacts of various categories were collected, the artifact count indicates that the river was probably not used as a disposal area. This sample may not be totally accurate, considering the small amount of time required to recover these data. Only a more intensive underwater survey of the Ashley River adjacent to Drayton Hall will confirm or disconfirm Lynne Lewis' hypothesis of garbage disposal in the river.

Four of the 109 artifacts recovered during this survey were eighteenth century, 30 were nineteenth century and 46 were twentieth century. Of the remaining 29 artifacts, 5 were paleontological remains, 1 was an undatable prehistoric sherd, and 24 were historic artifacts that were undatable. This indicates an increasing use of the river from prehistoric time until the twentieth century. Analysis Areas 1 and 2 are the primary indicators of twentieth century activity. Analysis Areas 3 and 4 indicate a decrease in usage from the nineteenth to the twentieth century. This could be attributed to the decline of phosphate production at Drayton Hall and the increase of leisure time activities, e.g., fishing, etc., in the near shore areas around the eroding bank.

The analysis shows that an important function of underwater archeology is to indicate terrestrial areas of artifact concentration and time periods that the adjacent land was used. This, in turn, can aid the archeologist in establishing research designs and in narrowing the area of intensive survey.

Drayton Hall was a good area in which to undertake such research because it is well documented and the area of human occupation is already well defined. The artifact concentrations indicated by the survey did show two areas of fairly intensive usage: Area 2 and Area 3. Had this not been a well documented site, and the ruins of the orangery and public landing not so prominent, Underwater Areas 2 and 3 would indicate that the adjacent land was worthy of more archeological investigations.

RECOMMENDATIONS

The Institute of Archeology and Anthropology survey and the corresponding analysis supports Mr. Albright's letter of November 1, 1979 to Miss Leticia Galbraith stating that the proposed revetment at Drayton Hall would not adversely affect any submerged cultural resources (Albright 1979).

There is, however, one area that should be called sensitive. This is the area round Collection Unit 12 (Fig. 2). The wreckage of a probable steam powered vessel is in a secondary impact area. The wreckage is outside of the primary 21 feet needed for the stone revetment, but probably is located in the area needed by cranes and barges for anchoring during construction. For this reason it is recommended that the construction company hired to build the revetment be made aware of this sensitive area, and that the Institute be notified when construction in this area will start so that we can place buoys on the wreckage area to allow the contractor to avoid anchoring on the wreck. Avoidance of the wreckage area should be the best alternative, and can be complied with easily by all parties.

APPENDIX

ARTIFACT INVENTORY

Collection Unit 1

- 1-Clear glass ½ pint pharmaceutical bottle
- 1-Light green soda bottle, crown closure, round bottom
- 1-Modern, clear glass pharmaceutical bottle, embossed letters
"Groves Tasteless Chill Tonic"
- 1-Modern clear glass quart bottle
- 1-Green glass cylindrical quart bottle no rim
- 1-Clear glass food jar, modern

Collection Unit 2

- 2-Parts to ceramic planter or gate ornament

Collection Unit 3

- 1-Clear glass modern bottle
- 1-Metal rod with lead on one end

Collection Unit 4

- 3-Brick fragments

Collection Unit 5

- 1-Blue cloth bank deposit bag
- 1-Brown glass blob top bottle
- 1-Green glass, molded, cylindrical type bottle base
- 1-Clear glass, 2 quart Atlas mason jar
- 1-Light green quart wine bottle
- 1-"Wampoo Bitters" brown four-sided bottle fragment (base and sides)

Collection Unit 6

- 1-Fossilized Dugong rib fragment

Collection Unit 7

- 1-Green glass modern bottle
- 1-Clear glass "No Return" bottle
- 2-Clear glass modern liquor bottles
- 1-Modern soda bottle

Collection Unit 8

5-Clear glass modern liquor bottles
1-Fossilized rib fragment
1-Unidentifiable piece of metal
1-Fossilized Dugong rib fragment
1-Green glass modern Coca Cola bottle fragment
1-Green glass "No Return" bottle
1-Modern soda bottle
1-Quart wine bottle, modern
1-Green glass bottle fragment of case bottle
1-Clear glass modern bottle
1-Clear glass modern food jar
1-Clear glass modern soda bottle fragment
1-Green glass, modern wine bottle

Collection Unit 9

1-Brown, ceramic door knob

Collection Unit 10

1-Green glass embossed liquor bottle
1-Brown glass crown closure, modern bottle
1-Clear glass modern liquor bottle
1-Green glass bottle base
1-Clear glass "No Return" bottle
1-Ceramic, unglazed red earthenware fragment

Collection Unit 11

2-Clear glass modern liquor bottles
1-Clear glass modern bottle fragment
1-Clear glass modern bottle with handles
1-Small coal fragment
1-Ceramic unglazed red earthenware fragment

Collection Unit 12

3-Brick fragments
1-Fossilized joint fragment
1-Ceramic, green alkaline glazed stoneware fragment
1-Clear glass, modern liquor bottle
1-Green glass, modern soda bottle
1-Green glass, modern wine bottle
1-Steam valve embossed "Gray Motor Co"
1-Rubber and metal strap or belt fragment
1-Metal wheel embossed "Gray Motor Co"
2-Boards with cooper sheathing and copper tacks

Material Observed But Not Recovered

1-Propeller and shaft from wreck

Collection Unit 13

- 1-Green glass, modern soda bottle
- 1-Clear glass, modern liquor bottle
- 3-Green glass, blob top, round bottom, soda bottles
- 1-Green glass, free blown bottle base
- 1-Brown glass bottle neck
- 1-Green glass bottle neck
- 1-Brown glass, applied lip bottle neck
- 1-Aqua glass, applied lip bottle neck
- 1-Ceramic, ironstone plate fragment
- 1-Green glass wine bottle
- 2-Green glass Civil War type beer bottles
- 1-Green glass Civil War type beer bottle fragment
- 1-Clear glass modern, pharmaceutical bottle
- 1-Ceramic cuspidor, 50% intact, Rockingham style glaze

Material Observed But Not Recovered

- 1-Set of railroad wheels attached to a 3 foot axle

Collection Unit 14

- 1-Ceramic mug, earthenware fragment, ironstone, whiteware, marked "Semi Granite," "Cook & Hancock"
- 1-Clear glass, ½ pint liquor bottle embossed "Angelo Myers, Phila"
- 1-Brown glass, liquor bottle shoulder fragment
- 3-Clay skeet
- 2-Slate rocks
- 2-Ceramic, saltglazed stoneware fragment nineteenth century
- 1-Ceramic, undetermined prehistoric fragment
- 2-Ceramic saltglazed stoneware fragments "British Brown"
- 1-Ceramic, wheel turned or coil manufactured fragment
- 1-Fossil unidentifiable
- 1-Small piece of chert
- 4-Clear glass modern fragments
- 2-Brown glass modern fragments
- 1-Clear glass bottle neck fragment
- 1-Green glass bottle base

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