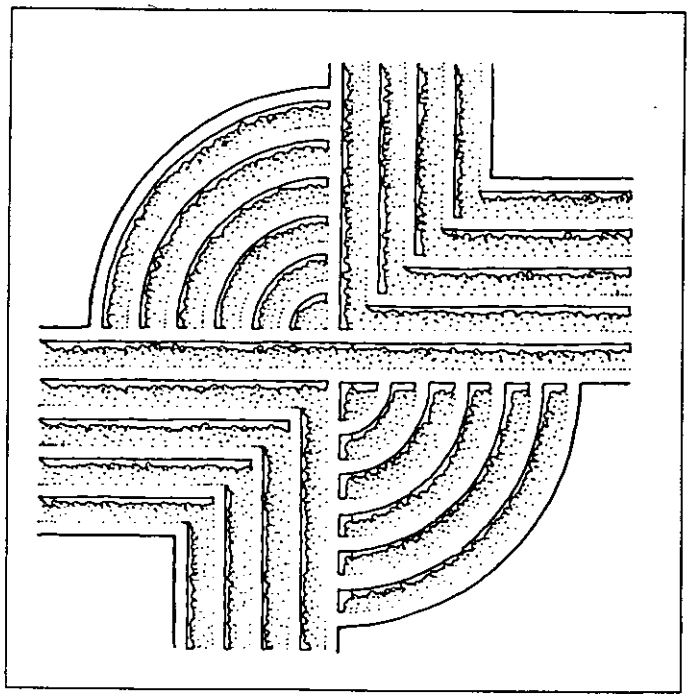
MANAGEMENT SUMMARY OF ARCHAEOLOGICAL DATA RECOVERY EXCAVATIONS AT 38BU861, HILTON HEAD ISLAND



CHICORA RESEARCH CONTRIBUTION 141

MANAGEMENT SUMMARY OF ARCHAEOLOGICAL DATA RECOVERY EXCAVATIONS AT 38BU861, HILTON HEAD ISLAND

Prepared for:
Mr. Frank Habit
The Habit Corporation, Inc.
Hilton Head Island, SC 29938

Prepared by:
Michael Trinkley

Chicora Research Contribution 141

Chicora Foundation, Inc.
PO Box 8664 ▫ 861 Arbutus Drive
Columbia, South Carolina 29202
803/787-6910

April 28, 1994

This report is printed on permanent paper ∞

ABSTRACT

This management summary describes the initial results of archaeological data recovery undertaken for The Habit Corporation at 38BU861 on Hilton Head Island in compliance with a Memorandum of Agreement (MOA) between The Habit Corporation and the South Carolina State Historic Preservation Office. The site consists of a series of discrete shell middens ranging from about 15 to 40 feet in diameter and dating from the Late Woodland period St. Catherines phase. The portion of site 38BU861 identified on the survey tract has previously been found eligible for inclusion on the National Register of Historic Places and a proposal for the research has likewise been previously submitted for review and comment.

In accordance with the MOA, this management summary includes a detailed description of the field methods used, information on the dates of the investigation and associated staff, site and feature plans and profiles, detailed descriptions of the uncovered features, and information concerning initial analytical efforts.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

Background

Site 38BU861 was initially identified by Chicora Foundation during a 1986 reconnaissance level survey for the Town of Hilton Head Island, conducted to assist in the long-range planning and preservation of the island's cultural resources. As a result of that survey the site, which was only recognized by a dispersion of shell and expectation that intact shell midden would be present, was recommended as "potentially eligible" (Trinkley 1987). An intensive archaeological survey of a development tract containing a portion of the site was conducted by Brockington and Associates, apparently in 1992, at which time 38BU861 was again recommended as "potentially eligible" (Jones n.d.). Chicora Foundation was contacted by the property's potential developer, The Habit Corporation, in September 1993 to conduct the additional testing necessary to determine if the archaeological site was eligible for inclusion on the National Register. A proposal for this testing work was approved by the Habit Corporation and the investigations were conducted by Natalie Adams and Michael Trinkley on October 4 through 6, 1993.

Chicora's testing program found that the site could address a broad range of questions, including intra-site patterning, midden research, artifact research, and ecofact research (Trinkley and Adams 1993:25-28). Based on these findings, the site was recommended eligible for inclusion on the National Register of Historic Places. This eligibility recommendation was accepted by the S.C. State Historic Preservation Office (February 10, 1994 letter from Mr. Lee Tippett to Dr. Michael Trinkley). Consequently discussions between the developer and the State Historic Preservation Office were initiated to determine whether green spacing was possible or if data recovery would be necessary. It was determined that the best means for preserving the research potential of the site was data recovery and a Memorandum of Agreement to that effort was drafted by the involved parties.

A research design and proposal for data recovery excavations was prepared on February 16, 1994 and submitted to the State Historic Preservation Office for review and comment. Our office was verbally informed that the proposal was acceptable without modification and, at the request of the developer, the field investigations were scheduled for March 7 through 14 and March 17 through 20 for a total of 13 field days. Trinkley was the Principal Investigator for the project and was on-site for 12 of the 13 days. Ms. Natalie Adams was the Field Director. Field Archaeologists included Ms. Lynn Roberts, Ms. Jennifer Schmidt, and Mr. Ryan Borea.

Site Environs

Site 38BU861, known as the Old House Creek site, is situated on deep, well-drained sandy soils overlooking the marshes of Old House Creek, now situated about 1300 feet to the north of the site (Figure 1). The site specific topography is generally level, gently sloping inland from a marsh elevation of about 7 feet MSL to a high elevation of about 11 feet MSL. While the site extends off the survey tract to the east, the western boundary is a small slough at the western edge of the parcel, which represents a remnant fresh water spring. It is this spring which may account for the occupation at this specific site along the Old House Creek marsh edge.

The site is associated with a point of land, similar to a number of other Hilton Head sites

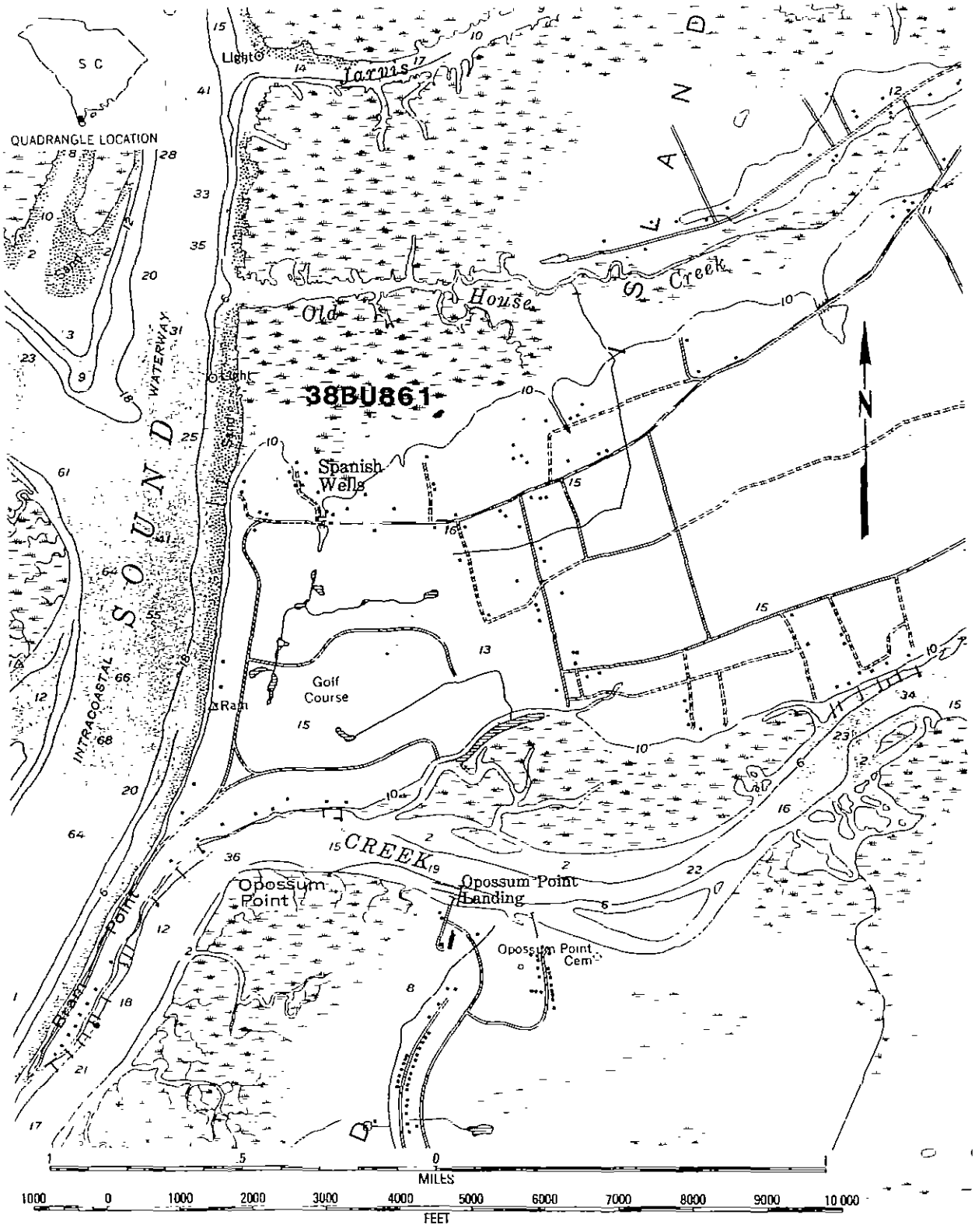


Figure 1. Location of 38BU861 on Hilton Head Island (base map is USGS Bluffton 1956PR71).

and fitting the informal model proposed on the basis of Chicora's 1986 survey (Trinkley 1987:57). Erosion along Old House Creek is limited to periods of high seasonal tides and storms. Consequently, site boundaries were approximated during the initial reconnaissance survey.

Vegetation on the site was dense during the testing phase, consisting of several large live oaks interspersed among more recent second growth vegetation. The understory was moderately thick and consisted of palmetto, wax myrtle, and poison ivy. Once the site had been bush hogged (as an initial stage in the data recovery excavations), it became more obvious that portions of site evidenced more established vegetation while other portions were clearly in second growth forest.

Research Questions

The site testing report by Trinkley and Adams (1993) touched on a wide range of research questions that 38BU861 was likely able to address, including issues associated with intra-site patterning and organization, the artifacts present at the site, and the ecofacts primarily associated with the middens.

Intra-Site Patterning

It seems unlikely that the placement of middens is totally random. Their absence on the poorly drained soils bordering the tract to the west offers the clearest example of this patterning -- based at least on topographic position. However, it is impossible to determine the complete nature of the patterning, much less its meaning, without an effort to plot the location of individual middens. Consequently, one research goal will be to identify the shell middens present on at least a portion of the property under investigation. It seems likely that expanding the existing auger test grid to the east and south, incorporating an area of 200 feet east-west by 200 feet north-south (the equivalent of about one acre) will allow an adequate sample of the site to be explored.[1] The previous investigations have revealed that an auger test interval of at least 20 feet, and possibly as close as 10-feet, will be necessary to achieve this goal. It is also clear from our previous studies that the site is sufficiently intact to reveal individual midden locations.

This level of auger testing will most likely not be adequate to base any substantive conclusions on the cultural associations of the middens, or the nature of their associated ecofacts. Consequently, these will not be major research orientations of this phase of the work, although the data will be collected, and evaluated, where present. More significant sources of information will be shell weight, gross artifact counts, and topographic elevation.

The auger testing will allow a series of three middens to be selected for more intensive investigation (described below). Of equal importance, it will offer a view of a major site area, allowing estimates of total middens, distance from each other, distance from the marsh, and orientation (if they are not circular). For the first time it will be possible to estimate, based on a realistic sample, total middens and probable relationships. In the past the location of discrete middens composing the larger site complex have not been explored; consequently this research offers a unique perspective which refocuses the discipline on the concept of Bruce Trigger's (1978:176) community layout or organization. Trigger points out that the investigation of such

---

[1] Although this represents perhaps only 10% of the total site area, it will represent approximately 50% of the estimated site area within the study tract. The large sample size is recommended on the basis of Dennis O'Neil's work at southern California shell middens where a sample size of 40 to 50% was found essential for something approaching a clear understanding of chronology and activities at the site (O'Neil 1993:527-528).

community layouts is essential if the archaeologist wishes, as we presume the discipline does, to understand the total cycle of settlement patterning based on complementary distributions.

Midden Research

Site 38BU861 offers the potential to extend research topics at the midden level through more detailed radiocarbon dating tied to specific middens with specific cultural remains, through larger excavation areas incorporating both midden and non-midden areas, and by careful control of artifact and ecofact recovery.

The goal of the radiocarbon dating will be to determine the range of occupation dates from several discontinuous middens. A site occupied for only a short period of time should evidence dates falling within at least one or two sigma deviations of each other. A site occupied by a number of groups over a longer period of time will exhibit a greater range of dates. The radiocarbon dating can cross-check conclusions drawn from detailed analysis of the cordage associated with the pottery (discussed below).

The goal of incorporating both midden and adjacent non-midden areas into the excavation is to explore the settlement at a micro-community level, approaching that of an individual household, or episodal level. Obvious questions include the distribution of artifacts around and in the midden and the dispersion of shell which might suggest reoccupation of the site. The former is useful to identify specific activity areas and reconstruct various activities or actions (such as the breakage and scattering of a vessel), while the latter is useful to explore the deposition and growth of the midden.

The goal of controlling artifact and ecofact recovery is obviously to maximize data return. This can be achieved by appropriate use of the most cost-effective recovery techniques which are adequate to address the questions outlined. Specifically this would include ¼-inch dry screening of midden soil followed by water screening subsamples through ⅛ or 1/16-inch mesh; excavation of at least a sample of features; and collecting a wide range of potential (but thus far largely unexplored) data sets, such as pollen samples.

The presence of carbonized materials in the midden indicates that radiocarbon dating can be pursued on charcoal, rather than on what we believe to be less reliable shell.[2] Consequently, the research goal of additional dating is achievable at 38BU861. Likewise, the site exhibits few, if any, areas lacking integrity. Consequently, it should be possible to examine adjacent midden and non-midden areas virtually anywhere on the site. However, the close interval auger testing provides additional assurances that areas of disturbance will not accidently be incorporated. Finally, the testing also demonstrated that ⅛-inch mesh water screening is feasible (there is a source of water and it can be adequately transferred to the site) and prudent (if it were not for the fine screening, **no** fish remains would have been recovered.

Artifact Research

Since the primary artifact present at the site is pottery it stands to reason that ceramic analysis should be thorough and comprehensive. Recent investigations by Chicora Foundation in

---

[2] Obviously another research goal could be the comparison of shell and charcoal dates, in order to verify and control differences, or alternatively to demonstrate that no statistically significant differences occur during this period. It seems appropriate to address substantive issues of temporal dating prior to moving on to methodological questions.

Florence at 38FL249 reaffirm the potential of ceramic analysis to offer new and fresh information about seemingly traditional sites (Trinkley et al. 1993). One specific research topic includes an intensive investigation of ceramic fabric or paste using macro-analytic techniques[3] for information on typological refinement, correlation with radiocarbon dating, and functional interpretation of the pottery vessels. Perhaps the most valid typological question is whether the St. Catherines ware can be convincingly separated from the other grog, clay, and sherd tempered wares such as Wilmington and Hanover, or whether a type-variety system as suggested by David Anderson is the most appropriate and logical means of bringing order to the existing typological constructs.[4] Other questions, however, involve the function of the vessels, based on the presence of interior or exterior smudging and carbon deposits, a clear understanding of exactly what is being dated, and any possible typological associations with seemingly earlier or later wares.

Associated with this is an equally intensive investigation of the cordage elements found on the pottery. Using the techniques of cordage twist, angle of twist, and tightness of twist, it is possible to document the manufacture and use of fabric materials no longer present in the archaeological record. Other researchers have argued that cordage may be distinct by ethnic, social, or kin groups, perhaps suggesting that the diversity observed in the archaeological record may reflect social organization. At 38BU861 it is appropriate to conduct such studies for comparison within individual middens, between middens, and to other sites.

The presence of ceramics, principally St. Catherines and almost entirely cord marked, ensures that these research goals can be addressed by the data likely present at 38BU861. Although the quantity of pottery is not exceptionally great in those areas tested, adequate samples should be obtainable for the various studies and levels of comparison suggested.[5]

Ecofact Research

The research goals for the faunal collection includes documentation of species used, biomass, seasonality, diversity, and equitability. These represent research goals essential to our understanding of prehistoric subsistence strategies. Too often faunal studies of similar sites have offered relatively modest conclusions, failing to identify fish by species, or failing to incorporate diversity studies. Of course some of the problems are associated with the unavoidably small sample sizes, yet others reflect nothing more than a failure to obtain the greatest amount of information possible from the resources at hand.

Species identification is of particular concern since an overall goal of this research should be to incorporate all of the ecofact research into an environmental perspective. It is obviously essential to identify faunal materials to the species level if we are going to fully understand the environmental implications of the assemblage. Simply put, there is a big difference between

---

[3] While a variety of chemical and compositional analysis techniques are both appropriate and useful, it seems reasonable to first "wring" as much data as possible from less costly approaches such as fabric analysis first -- thus the approach suggested for the study of 38BU861.

[4] One approach toward resolving this issue will be to determine whether neutral outside researchers are able to distinguish the various wares. Such a test would involve sending selected colleagues samples of Hanover, Wilmington, and St. Catherine's type materials and asking them to sort the wares using type descriptions synthesized from published sources.

[5] If necessary to assure adequate samples, all of the pottery recovered (not just those sherds over 1-inch in diameter) will be subjected to the analysis.

predatory fish found singly and schools of small fish feeding on algae. These differences influence methods of capture, areas being exploited, preparation techniques, and scheduling of time and resources.

Our level of ethnobotanical sophistication is not as great, but careful analysis of collections can still yield important data on tree types associated with the site area and seasonality based on food remains present. Continued identification of hickory nutshells may serve as an indicator of site type, season, and/or scheduling to maximize resource use. While no major questions are posed for the ethnobotanical materials, their collection not only allows secondary questions to be addressed, but also ensures the availability of materials suitable for radiocarbon dating.[6]

A wide range of research questions are appropriate to the shellfish and other invertebrates present at the site. The most common question, of course, is seasonality of the remains. Issues of over-exploitation and environmental niche are equally important, as are questions concerning collection methods and evidence of preparation. What should be done at this site, however, is to combine these questions into an assemblage wide approach. While oyster may be the most common shellfish, and offer the greatest body of previous research, the other species should also be incorporated. The entire assemblage likely represents materials gathered by the prehistoric occupants in the course of some rational, organized effort. Consequently, the assemblage should be examined for the evidence it can contribute to that collection effort. The collection should be examined from the perspective of new collection techniques and what they can contribute to our understanding of subsistence strategies.

This represents a refocused effort to examine the collection from a solid environmental footing. Where researchers having expertise with a particular species can be identified, they will be used, where no experts can be immediately identified the scientific literature will be reviewed for information which may be relevant. Where no such literature exists, the goal of this research will be to highlight the need for further inter-disciplinary investigation. It may be appropriate to involve individuals in the research with a broad background in coastal and marsh ecology to provide a synthetic overview.[7]

It is clear from the testing phase that each of these research goals can be addressed by the data sets at 38BU861. The testing documented the presence of faunal materials, ethnobotanical remains, and shellfish.

---

[6] We have traditionally selected carbonized hickory nutshell for radiocarbon dating in order to control additional variables, such as the affect of different wood species on the dating, as well as to minimize the chance that non-cultural wood charcoal was being incorporated in the material being dated.

[7] To that end, we are currently exploring the possibly have having, minimally, one or two such individuals serve as peer reviewers.

FIELD METHODS AND FINDINGS

In order to achieve the research goals established by the testing (Trinkley and Adams 1993) and the research proposal, a relatively detailed methodology was established. This section of the management report will review the proposed strategy, describe the implemented strategy, and then discuss the preliminary findings.

Proposed and Implemented Methodology

The first activity at the site, prior to any archaeological investigations, was to be a light bush hogging of the study area (measuring about 200 by 200 feet or approximately one acre) by the property owner or his agent. This would allow easy access to all parts of the site and, of greatest importance, would permit easier gridding and topographic mapping -- essential aspects of the data recovery plan. The bush hogging was accomplished by the developer, although we modified the area of investigations from a 200 by 200 foot square to a somewhat irregular rectangle measuring approximately 260 feet east-west by 140 feet north-south. This modification was undertaken to maximize our ability to explore marsh edge features and minimize the inclusion of plowed and/or low density remains as identified during the testing phase. The total acreage investigated remains essentially 1 acre.

The site would be tied into a permanent grid to provide both horizontal and vertical control. In order to maintain consistency, the grid used during the testing phase was re-established, allowing horizontal control to be tied to the S.C. State Plane Coordinate System and vertical control tied to a mean sea level survey datum. As initially proposed the minimal excavation unit was a 5 by 5 foot unit, and the 10 by 10 foot units used for the investigation of middens (discussed below) were consistently divided into quadrants for additional control of artifact distribution.

The excavations were to be by the natural soil zones -- anticipated to be the shell midden, non-shell A horizon, and possibly areas of old A horizon preserved by the middens. The excavations revealed that these zones were essentially correct, although we failed to identify preserved A horizon soils underlying the middens (in each case the midden was founded on and extended into yellow subsoil). Some areas of the site (essentially the more eastern tests) were found to be plowed. Consequently, throughout the site there was Zone 1 (which may be either plowed or intact A horizon development), Zone 1a (shell midden) and subsoil. Some of the eastern units exhibited thin lenses of intact Zone 1a shell midden underlying the Zone 1 plowed soils. We found, however, that it was consistently possible to identify plowed midden through a combination of plow scars, erosion of surface details on the associated shells, and fragmentation of the shell.

Excavation was to be by hand with all fill dry-screened through ¼-inch mesh to ensure the recovery of cultural materials. A third of all ¼-inch screened material would also be water screened through ⅛-inch mesh for recovery of floral and faunal material. A third of all ⅛-inch waterscreened material will also be waterscreened through 1/16-inch mesh for the recovery of small snails useful in seasonal dating. The waterscreening was to be accomplished using a water supply to be provided by the property owner or his agent. The only modification of this approach was undertaken at the request of our shellfish consultant (Dr. David Lawrence) who requested that

we ***not*** screen the soil through 1/16-inch mesh for his use. Instead, we developed a method of collecting a 5-gallon volume of soil, screened only through ¼-inch mesh. He would then be responsible for the fine screening necessary for the recovery of the impressed odostome (*Boonea impressa*). In all other respects, however, the methodology was consistently employed.

Flotation samples (typically 5 gallons in size) were to be collected from areas which exhibited a high potential for the recovery of ethnobotanical remains. The mechanical water flotation would be conducted in the field -- maximizing the opportunity for the recovery of additional fill if necessary. A 5% sample of shell midden from each excavation unit would be collected for information on species diversity, midden density, and shellfish analysis. The remaining shell would be weighed, and discarded, in the field. This methodology was accomplished with only one modification. Because of the reduced numbers of volunteers present for this project, it was not possible to accomplish all of the work necessary *and still conduct the flotation in the field*. It was decided that the range of data being collected over-road the importance of field flotation. Consequently, the flotation was conducted at Chicora's laboratories in Columbia within a week of the conclusion of the field investigations (allowing only enough time for the soil samples to thoroughly dry). To maximize the amount of charcoal from the samples we have also refloated the heavy fraction using a method recommended by Dr. Gail Wagner with excellent success.

Each unit was to be troweled at the top of subsoil, photographed in b/w and color slide film, and have profile and plan views drawn. Drawings and/or photographic documentation would occur more frequently if conditions warranted. This was accomplished without modification.

Features encountered during the excavations would be plotted and photographed. Features, or samples of redundant features, would be bisected to provide profiles, photographs, and drawings. All feature fill would be screened through 1/8-inch mesh. Samples retained would minimally include a soil sample and flotation sample. This aspect of the investigations was also accomplished. The only modification was that all features, and not simple samples, were investigated.

Excavations were to be backfilled at the conclusion of the project through the use of heavy equipment to be provided by the client. During the project excavation units would be roped off for security and will be covered with black plastic. We have notified the developer that the site may be backfilled at his convenience and that we will be happy to oversee this work. In addition, site security was maintained without incident.

Site Specific Methodology

To achieve the proposed research goals at 38BU861 it was necessary to complete the following detailed field tasks.

Auger Testing. Once the site area had been bushed hogged and the grid re-established, a 200 by 200 foot area would be gridded to allow detailed auger tests at 20 foot intervals. This grid was to be laid "over" the work previously accomplished, so that only approximately 120 new auger tests will be required. The decision to decrease the interval to 10-feet was to be made in the field, based on the time available. In other words, the auger testing interval would be decreased for at least a portion of the study area *if there was sufficient field time to do so.*

As previously discussed, the grid coverage was changed to allow greater exploration of near creek areas, although the sample size was not dramatically affected. In addition, the previous grid and current grid were tied together, allowing easy integration of the data from the testing and

data recovery phases. We found that there was not sufficient time to decrease the entire grid to 10 foot intervals, although a 60 by 60 foot area was tested at 10 foot intervals for comparison of data results in the final report.

Mapping and Identification of Site Areas. The bush hogging was intended to allow the property to be carefully examined for evidence of shell middens. In addition, information for a detailed topographic map of the property[8] was to be collected during this phase of the investigation. The pedestrian survey, combined with the topographic mapping, was to be used to identify specific middens for further investigation. As the middens are identified each will flagged in the field. Probing would be used to reveal the approximate boundaries of the midden (defined on the density of shell present and revealed by the probing). These boundaries would be reflected on the topographic map. Non-midden areas adjacent to the middens will be identified at the same time.

These tasks were accomplished without modification. A series of eight potential middens were identified through a combination of pedestrian survey, auger testing, topographic mapping, and probing. Elevations for the topographic map were obtained and a base map of the site was generated.

Midden and Non-Midden Excavations. Three middens would be randomly selected for excavation. The only factor to be considered would be preservation (i.e., middens which evidence damage from forces such as plowing or tree throws will be excluded). There would be no effort to either select middens in close proximity or which evidence clear dispersion within the site area. At each of the three selected middens up to 200 square feet of excavation would be undertaken.[9] As previously discussed we anticipated using 5-foot units as the minimal unit size to increase control over artifact recovery. At two of the three middens investigated we would also examine the associated non-midden area. This was to be defined as the area within a 50 foot diameter of the midden center, or effectively 35 feet around each midden fringe. Investigation of these areas would rely on a combination of 2 and 5-foot units.

This work was conducted with only minor modifications. Three middens were selected, although we were forced to integrate into our decision process the midden size. We found during the investigations that middens at the site fall into two clear size ranges -- those which are 8 to 15 feet in diameter and those which are upwards of 30 or 40 feet in diameter. These latter middens are likely "clumps" of smaller middens. However, with the time available for this study and the broad range of previously defined research questions, it was not possible to integrate this additional research question into the field work. Consequently, a conscious decision was made to exclude these larger middens from investigation. This is not a statement that they are unimportant. Nor does it reflect a failure on our part to realize their potential significance. Rather, it was a decision to remain focused on the initial research questions and attempt to achieve reasonable

---

[8] This map will be prepared with a contour interval of 0.25 foot and a horizontal scale of 10 feet to the inch. Elevation points were be taken every 20 feet, on the auger test grid, with supplemental elevation points at midden locations (revealed as topographic highs by the bush hogging).

[9] Our goal was competent, thorough excavation without attention to specific square footage "quotas." In other words, if a midden was found to be particularly complex, or if there is unexpected rain, it would be necessary to excavate less than 200 square feet. Alternatively, if it was possible to increase the sample size without lowering strict standards of recovery, larger areas would be excavated.

answers on the defined questions, rather than allow ourselves to be enveloped in additional research questions which could not possibly be addressed with the time and resources available.

At the three major middens selected, 200 square feet were excavated at two and 175 square feet were investigated at the third. Two plowed middens were also investigated through the very modest excavations of 75 square feet at one and 50 square feet at the other. Areas adjacent to three of the middens were investigated, although we found that the 50 foot diameter "rule" is likely too broad and that near midden areas may be more accurately identified as perhaps 10 to 15 feet around the toe of the midden.

Excavation of Isolated Non-Midden Areas. The artifact density data gathered from the auger tests would be used to identify non-midden areas which have dense concentrations of artifacts.[10] If such areas were found to exist at least one would be selected for block excavation of up to 200 square feet. This work was accomplished without modification.

Feature Excavation. Features identified by these investigations were to be examined at the conclusion of all block excavation activities. Although feature excavation was recognized as very important, it was to be delayed until the end of the excavations to ensure that all other outlined tasks have been achieved. The time remaining in the field investigations would determine the level of feature study possible. Minimally all features will be plotted and photographed. Ideally all features will be excavated.

When we realized that relatively few volunteers would be available, we decided to modify our approach and integrate feature excavation into the general schedule of work. This would help ensure that at least a sample of the features were investigated. This modification ensured that all of the identified features were examined and that all potential post holes were investigated.

Additional Methodologies

We recognized in the planning stage for this work that our colleagues with Garrow and Associates would be involved in the excavation of a somewhat similar shell midden site on Hilton Head Island. We felt that it would be appropriate to see if the research at the two sites could be integrated, or alternatively if there might be areas of potential research which they had devised but that had not occurred to us. Consequently, we provided Garrow and Associates with a copy of our proposal and expressed an interest in receiving a copy of their proposal in exchange. We have not yet received a copy of their proposal, but are still hopeful that some degree of coordination and sharing of data will be possible.

Several additional research goals were independently added to those initially proposed in order to expand the potential significance of these investigations. They include the measurement of soil pH for middens and features, the collection of clams for seasonality information, and the collection of pollen samples for comparison of pre-midden and midden environmental data.

In addition, we sought to obtain the input of a geologist with experience in microstratigraphy to examine the shell midden profiles for any evidence of site abandonment or similar short-term episodal changes. We were not, however, successful in finding individuals with both the experience and expertise necessary to assist in this line of research. This failure again points out both the need for interdisciplinary research, and the inherent problems with such

[10] Based on the initial survey work we will use a density of 3 artifacts per cubic foot as the threshold level.

efforts.

Findings

Although this management summary has been prepared immediately upon completion of the field work, it is possible to offer general comments concerning some areas of research.

Figure 2 represents our uncorrected field map or site plan. It includes all auger tests, excavation units, and midden locations. Topographic data, artifact density, and shell weights are available only as raw data and are included as Table 1. Figure 2 reveals a series of nine areas originally thought to be middens, with four of these (Areas 1-3, 8) clustered together in the north central site area. Each of these will be briefly considered in these discussions.

Excavation Areas

Area 1 represents an intact midden with no evidence of plowing or disturbance and measuring about 24 by 50 feet (920 square feet). During the testing of the site, Test Pit 1 was excavated in this midden. During these investigations two 10-foot units were excavated in this area, Units 17 and 21 (Figure 3). These excavations have examined approximately 22% of the midden. The maximum depth of this midden was 1.0 foot in Unit 21. One feature (Feature 6) and one post hole were encountered in the excavations. A series of seven 5-foot units (six from these excavations and one from the previous testing phase) surround this midden on two sides. One, Unit 15, produced Feature 6, initially thought to represent a pot burst.

Area 2 represents an intact midden measuring 15 by 20 feet (252 square feet). During the site testing phase Test Pit 3 was excavated in this midden. During the current investigations two 10-foot squares, Units 25 and 26, were placed to explore the northern two-thirds of the midden (the maximum depth of which was 0.6 foot). Figure 4 illustrates these units and a series of three post holes identified during the work. Several of the 5-foot units surrounding Area 1 also provided coverage of near midden area south of Area 2. In addition, Units 24 and 27 were excavated to the north and west. Unit 27 was excavated as a deep test to verify that no deep deposits were present at the site.

Area 3 is a small midden measuring about 12 by 10 feet (92 square feet) which was investigated through the excavation of Units 1 and 7 (Figure 5). Unit 1 was placed in the densest portion of the midden, although the northwest quadrant could not be excavated because of a large tree. Unit 7 identified only the eastern toe of the midden, revealing that while some shell is scattered around each of these piles, the middens are fairly discrete. These investigations succeeded in excavating nearly 90% of the midden, which was found to have a maximum depth of 0.6 foot. The north near-midden area was investigated by Units 15-16, 18, and 22, while Units 19 and 20 were excavated to the south.

Area 4, another small midden measuring 9 by 9 feet (52 square feet), was not investigated during this research.

Area 5 was initially identified as a very small midden, although the excavation of Units 2-5 revealed that the identified shell was actually the remnant of two plowed features (Features 1 and 2) (Figure 6). Additional units were excavated in the cardinal directions from this block excavation. Two units, 10 and 29, identified a series of post holes interpreted to represent a temporary St. Catherines structure about 7 feet in diameter (Figure 7).

Area 6, explored by a single 5-foot square (Unit 9), was found to be a small remnant

Table 1.
Artifact Counts, Shell Weights, and Topographic Elevations

Previous #[1]	New #[2]	Shell Wt.[3]	Artifact Count	Elevation[4]
31	1	0	0	8.8
32	2	0	0	8.3
33	3	0	2	8.8
34	4	0	0	8.9
35	5	4	1	9.8
36	6	7	1	9.5
52	8	[illegible]	0	10.0
142	7	3	1	
118	9	1	[illegible]	
67	10	5	1	9.7
127	11	3	0	
68	12	3	0	10.2
136	13	6	0	
83	14	4	1	9.7
84	15	1	1	9.5
99	16	0	0	9.3
100	17	.5	0	9.4
115	18	1	0	9.0
	19	No data		
143	20	.5	2	
117	21	2	0	
119	22	2	0	
126	23	3	0	
128	24	11	1	
135	25	8	1	
137	26	6	1	
30	27	0	0	8.3
29	28	0	0	8.9
28	29	0	0	9.3
27	30	.5	0	9.3
26	31	5	1	9.8
25	32	.5	0	9.8
144	33	3	1	
33	34	6	0	10.0
120	35	4	0	
66	36	5	1	10.3
129	37	8	1	
69	38	10	0	10.2
138	39	1	1	
82	40	1	1	10.1
85	41	0	0	9.9
98	42	.5	0	10.0
101	43	0	0	9.9
114	44	3	0	9.9
	45	No data		
145	46	5	0	
116	47	2	0	
121	48	2	1	
125	49	3	0	
130	50	7	1	
134	51	11	0	
139	52	1	0	
19	53	0	0	8.9
20	54	.5	0	9.5
21	55	.5	0	9.6
22	56	.5	0	9.8
23	57	8	2	10.0
24	58	23	1	10.5
146	59	3	0	
54	60	4	1	10.2
122	61	2	0	
65	62	2	0	10.6
131	63	15	2	
70	64	5	0	10.4
140	65	8	0	
81	66	5	0	10.6
86	67	1	0	10.2
97	68	2	0	10.3
102	69	3	0	10.3
113	70	1.5	0	10.4
	71	No data		
147	72	.5	0	
148	73	1	0	
123	74	.5	0	
124	75	0	2	
132	76	9	0	

Previous #	New #	Shell Wt.	Artifact Count	Elevation
133	77	15	0	
141	78	25	0	
18	79	0	0	8.9
17	80	.5	0	9.5
16	81	.5	0	9.8
15	82	.5	0	10.1
14	83	.5	0	10.3
13	84	.5	0	10.7
55	85	.5	0	10.9
64	86	1	2	10.7
71	87	11	2	10.9
90	88	.5	2	10.6
87	89	1	1	10.5
96	[illegible]	6	1	10.6
103	91	3	0	10.6
112	92	1	0	10.6
7	93	0	0	9.2
8	94	1	0	9.6
9	95	3	0	10.0
10	96	.5	0	10.1
11	97	8	0	10.5
12	98	8	0	10.5
56	99	9	2	10.7
63	100	.5	0	10.6
72	101	1	1	10.9
79	102	.5	1	10.7
88	103	.5	0	10.7
95	104	2	0	11.0
104	105	3	0	11.1
111	106	1	0	11.1
6	107	.5	0	10.1
5	108	5	2	10.2
4	109	1	0	10.1
3	110	.5	1	10.4
2	111	1	0	10.7
1	112	1	0	10.6
57	113	.5	0	10.7
62	114	1	2	11.2
73	115	1	0	10.4
78	116	2	0	10.8
89	117	4	2	11.3
94	118	3	1	11.1
105	119	0	0	11.0
110	120	.5	2	11.3
47	121	3	0	11.1
46	122	0	0	11.2
37	123	.5	0	11.0
58	124	.5	0	10.9
61	125	.5	1	11.0
74	126	1	1	11.1
77	127	3	0	11.4
90	128	.5	0	11.2
93	129	25	4	11.1
106	130	0	0	11.0
109	131	1	2	11.1
48	132	.5	0	10.9
45	133	.5	0	10.1
38	134	0	1	11.2
59	135	.5	0	11.1
60	136	0	0	11.2
75	137	0	0	11.3
76	138	.5	0	11.1
91	139	.5	0	11.3
92	140	0	0	11.1
107	141	.5	0	11.3
108	142	0	0	11.1
49	143	0	2	11.3
44	144	0	0	11.3
39	145	0	0	11.5
50	146	0	1	11.4
43	147	0	0	11.4
40	148	0	0	12.4
51	149	0	1	11.4
42	150	.5	1	11.4
41	151	0	0	11.6

1. Number used in testing and data recovery field notes and used for cataloging testing proveniences.

2. Number used in final report and for cataloging of data recovery proveniences.

3. Shell weight is in pounds.

4. Elevation is to nearest 0.1 foot MSL.

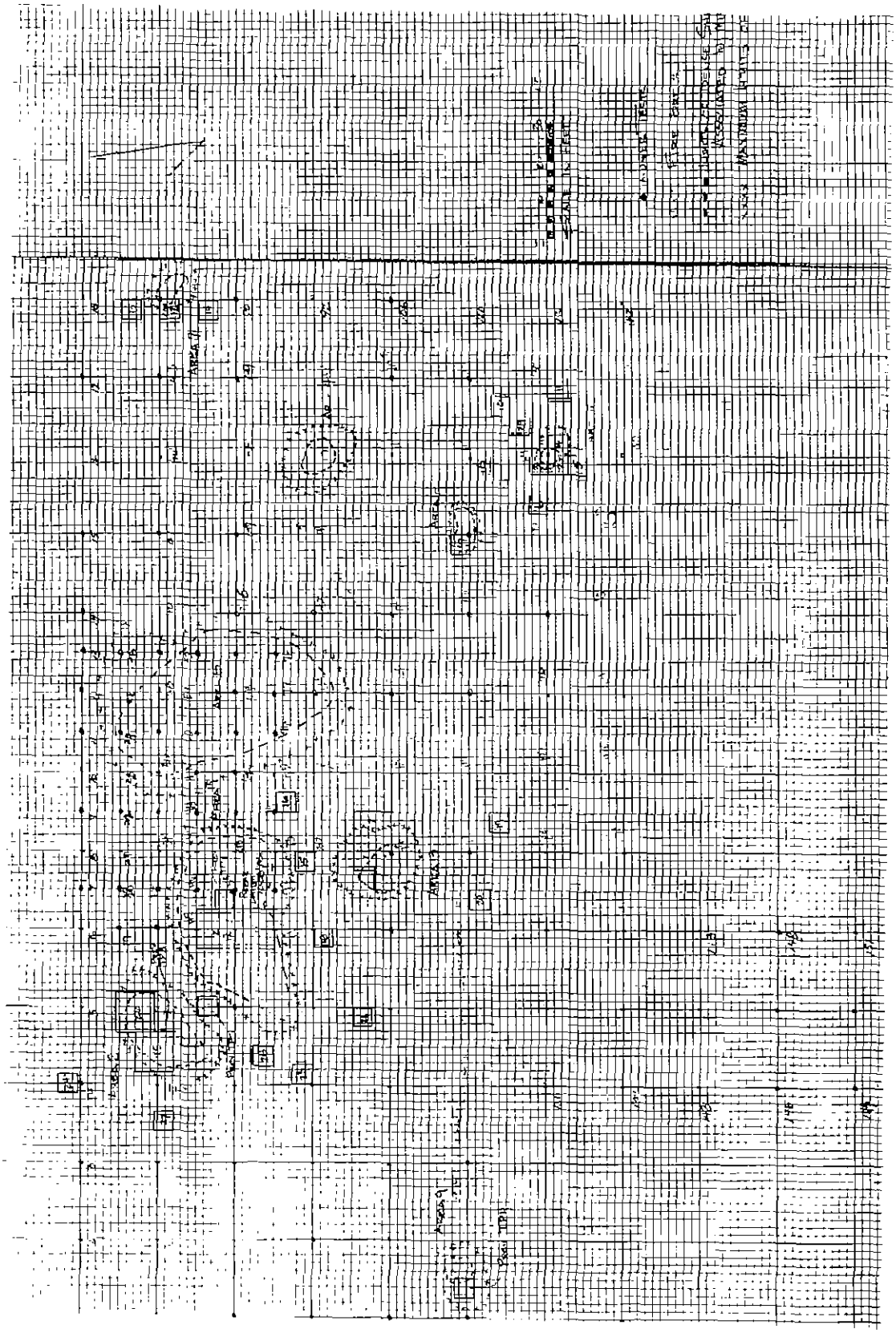


Figure 2. 38BU861 field map showing excavation areas.

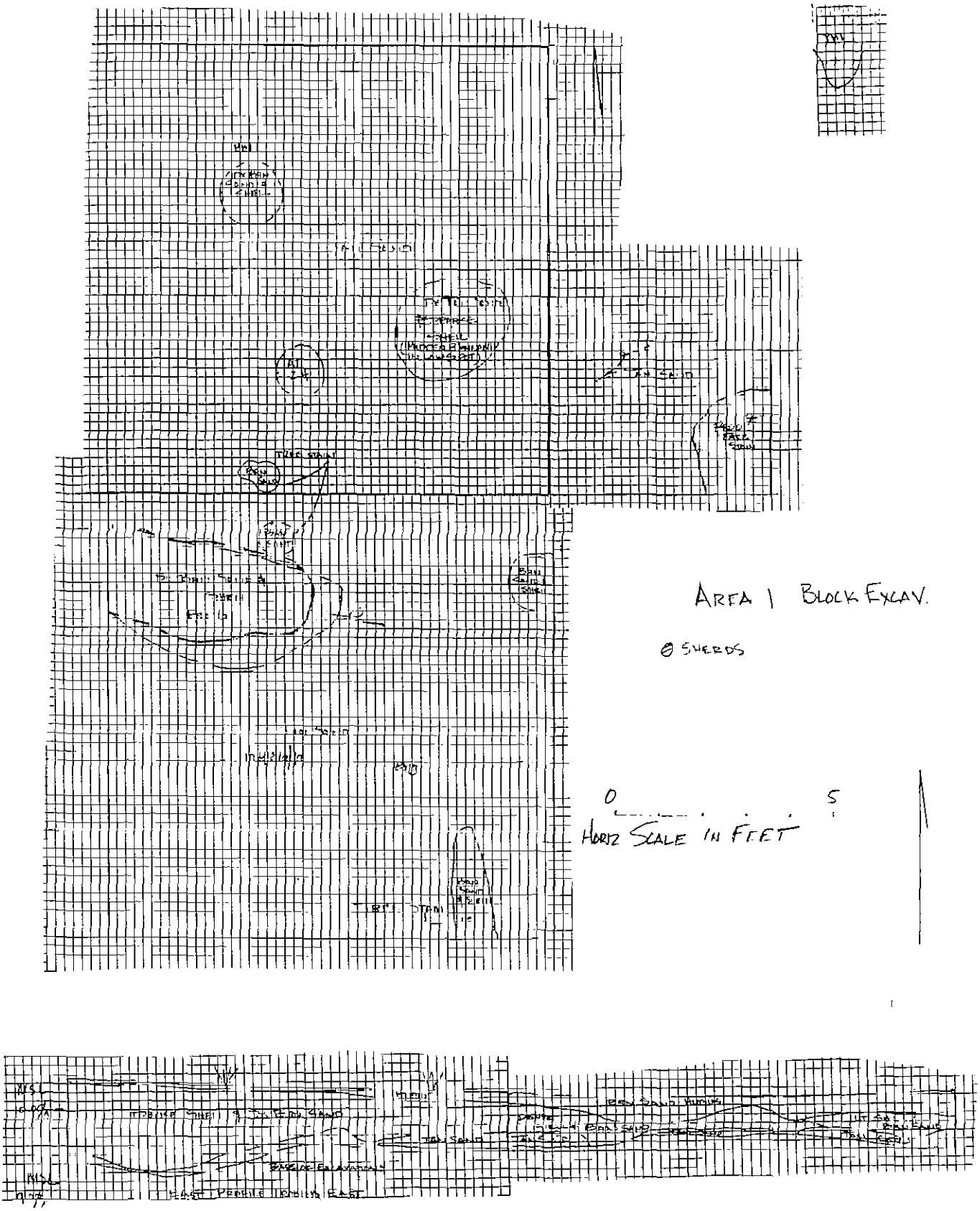


Figure 3. Block excavations at Area 1.

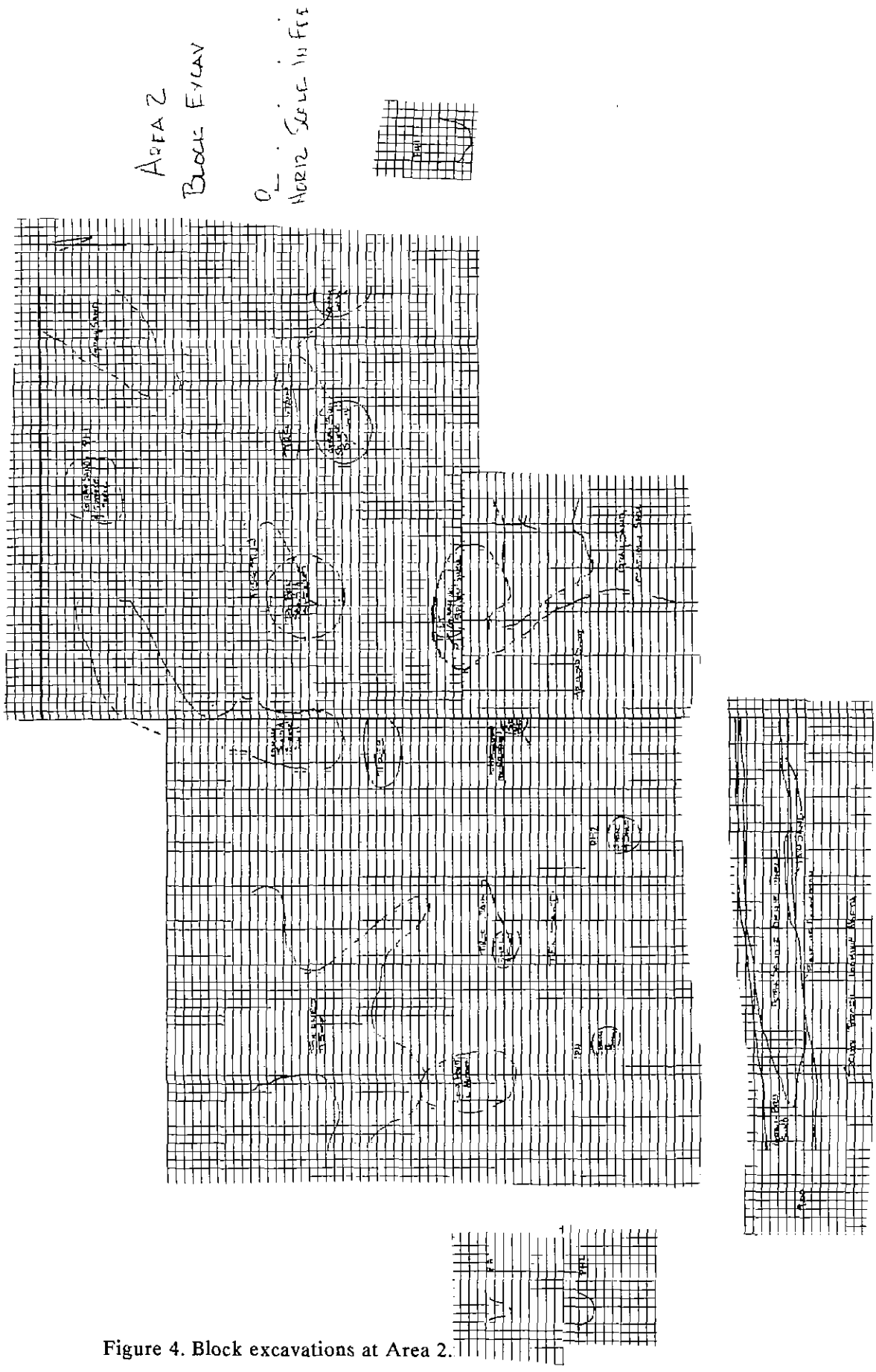


Figure 4. Block excavations at Area 2.

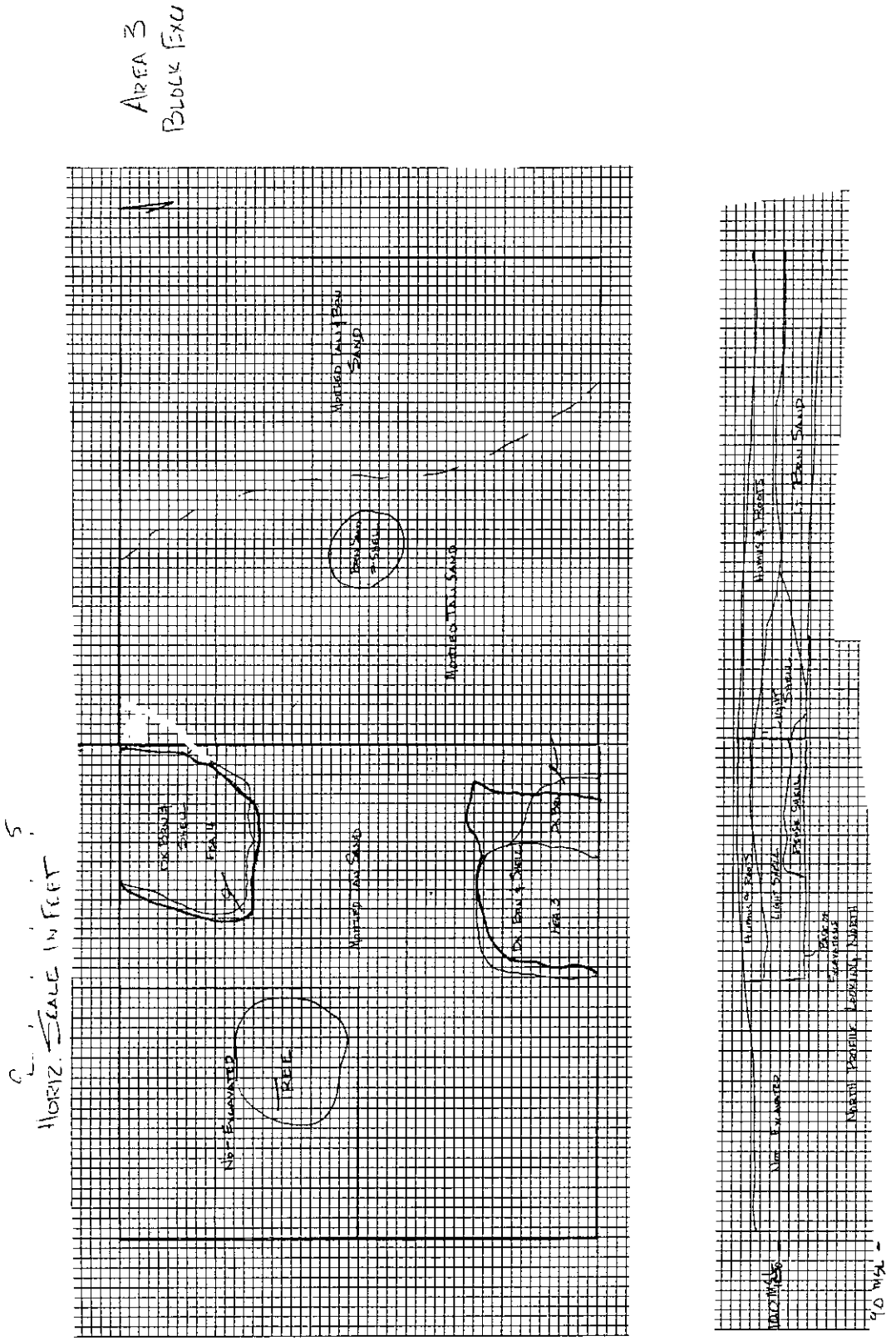


Figure 5. Block excavations at Area 3.

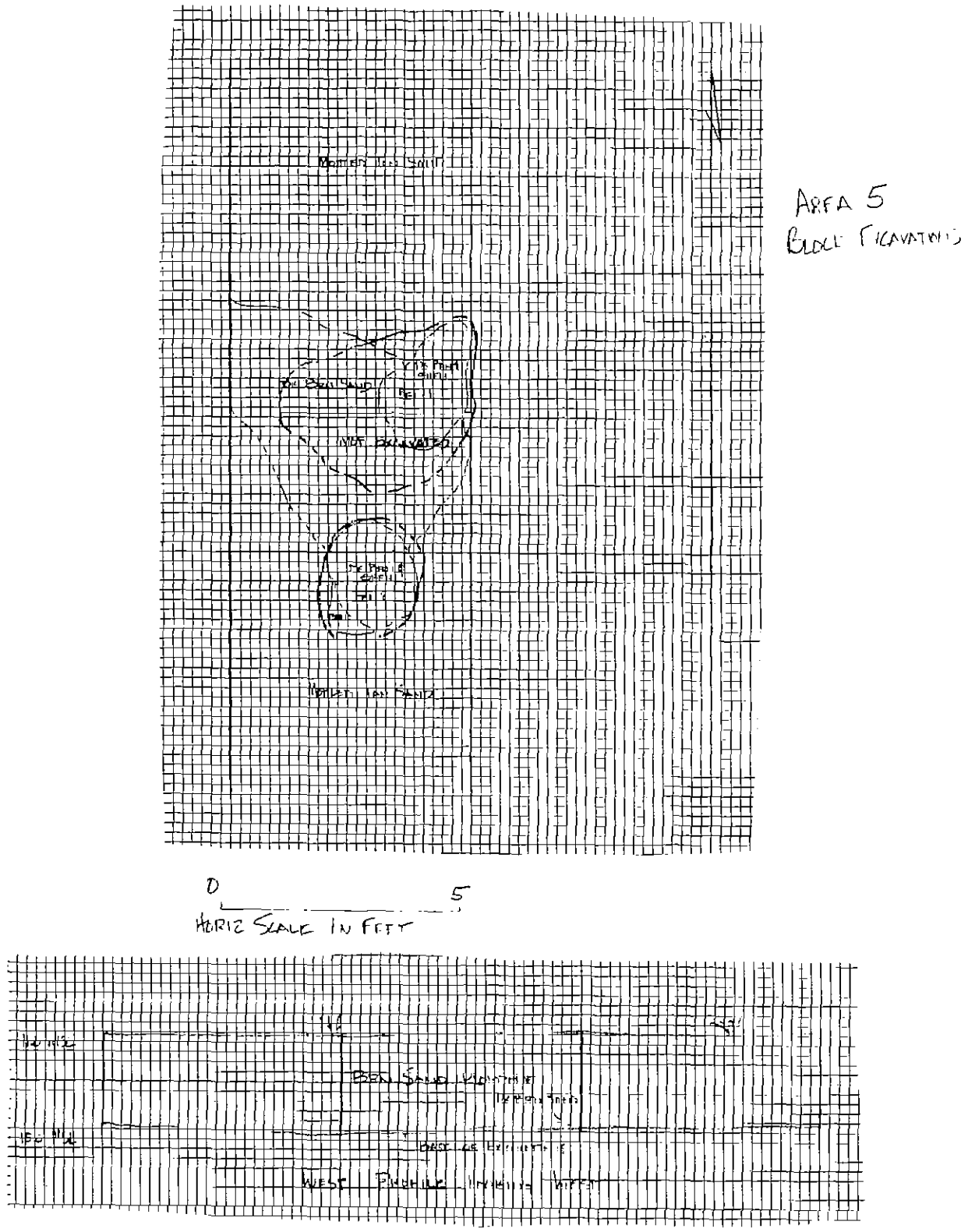


Figure 6. Block excavations at Area 5.

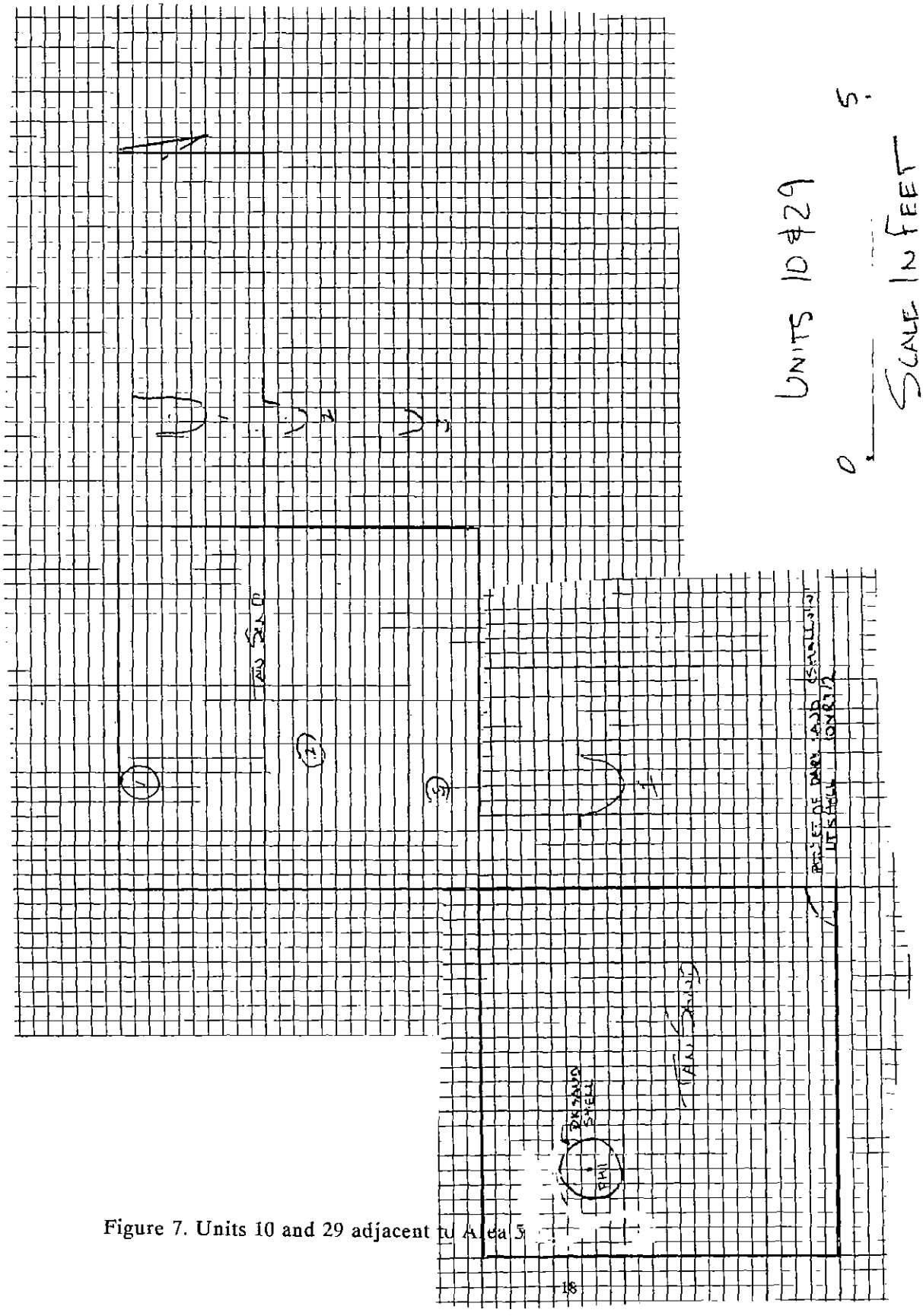
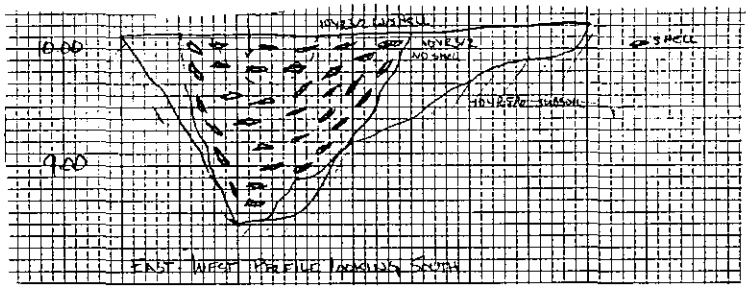
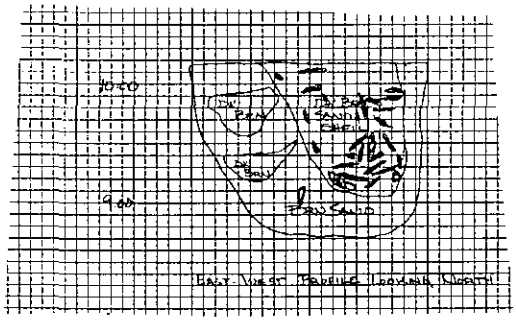


Figure 7. Units 10 and 29 adjacent to Area 5.

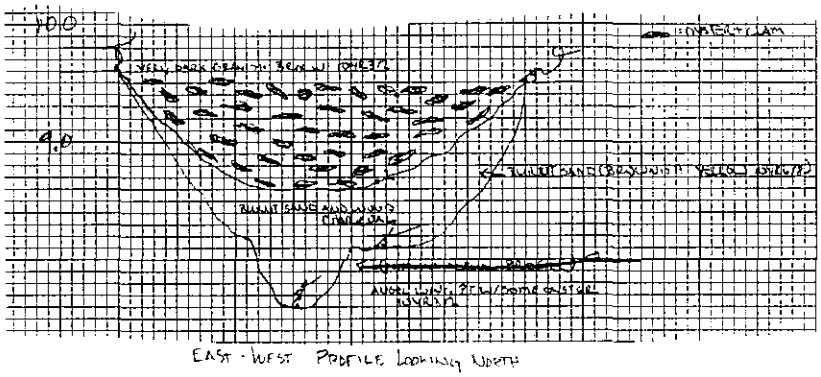
FEATURE 1



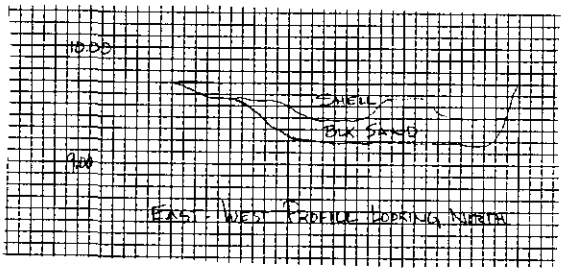
FEATURE 2



FEATURE 3



FEATURE 4



FEATURE 6

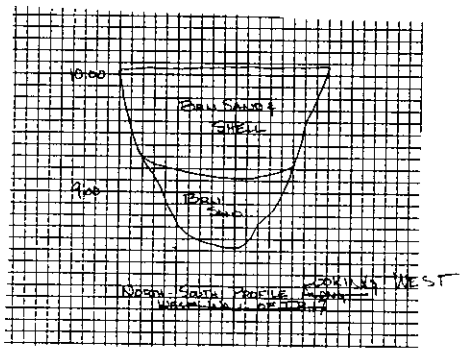


Figure 8. Feature profiles.

midden almost completed destroyed by plowing. The estimated remaining size is 5 by 10 feet (36 square feet) and only 0.2 foot of midden depth was found intact.

Area 7 represents another plowed midden, with the remnant measuring 9 by 4 feet (36 square feet). Three 5-foot units were excavated in this area, revealing two post holes but no other features.

Area 8 represents a very large midden measuring 56 by 31 feet (1,272 square feet) situated just east of Areas 1-3. This midden was so large that it was not investigated by this research, beyond the auger testing at 10 foot intervals.

Area 9 represents a midden measuring 8 by 9 feet (36 square feet) at the southwest edge of the study area. While this midden was investigated during the data recovery efforts, a 5-foot test pit was excavated on its edge during the testing phase. No further work was conducted in this area because of the extensive disturbance caused by the fire plow.

Table 2 provides information on the content of the various middens explored, including the density of shellfish and the species present.

Table 2.
Shell Midden Content and Density, weights in pounds

			Percent by Wt.					Total	
Midden and Unit	Shell:Soil	pH	Oyster	Clam	Mussel	Arc	Cockle	Wt.	Wt./Ft³
Area 1, Unit 17	1:3.6	8.1	93.3	4.5	2.2	-	-	930	10.0
Area 1, Unit 21	1:2.0	8.2	97.9	1.9	0.1	-	0.1	1938	27.7
Area 1 mean	1:2.8	8.2	95.6	3.2	1.2	-	0.1	-	18.9
Area 1 SD	0.8	0.05	2.3	1.3	1.05	-	-	-	8.85
Area 2, Unit 25	1:1.4	8.6	95.4	2.5	2.1	-	-	865	14.1
Area 2, Unit 26	1:2.1	8.2	97.2	1.3	1.5	-	-	1072	19.1
Area 2 mean	1:1.8	8.4	96.3	1.9	1.8	-	-	-	16.6
Area 2 SD	0.35	0.2	0.9	0.6	0.3	-	-	-	3.53
Area 3, Unit 1	1:1.2	7.6	98.4	1.4	0.2	-	-	984	18.7
Area 3, Unit 7	1:11.2	6.9	98.3	1.6	0.1	t	-	435	5.8
Area 3 mean	6.2	7.3	98.4	1.5	0.2	-	-	-	12.3
Area 3 SD	5.0	0.35	0.05	0.1	0.05	-	-	-	6.45
Combined mean	1:3.58	7.9	96.8	2.2	1.0	-	-	-	15.9
Combined SD	3.49	0.54	1.8	1.1	0.9	-	-	-	7.0

The table reveals that there is some diversity in the proportion of shell to soil, although only Area 3, where Unit 7 was placed on the toe of the midden rather than in the midden, is there a significant variation within any individual midden (notice, for example, that the standard deviations for Areas 1 and 2 are quite low). While taken as a whole there is considerable variability, if Unit 7 is excluded from the overall calculations the ratio is 1:2.06 with a standard deviation of only 0.84. pH generally reflects density of shell midden, with the denser middens having more alkaline (i.e., higher) pH readings. Only in Area 3 is this not consistent. While the low pH for Unit 7 clearly reveals the domination of the acidic soil over the alkaline midden, the

relatively low reading in Unit 1 cannot be readily explained. The percentage by weight of oyster shell is relatively consistent, both within individual middens and also between the three areas (in fact, the standard deviation for the combined areas is only 1.8. Understandable the standard deviations for the other shellfish are higher, but still there is considerable uniformity. The weight of shell midden per cubic meter of excavation provides a different estimate of midden density, revealing more deviation around the mean than might be expected.

Features

Six features (not including post holes) were identified and excavated during this research. These features are shown on the block excavation plan views (Figures 3-7) and profiles are illustrated in Figure 8.

Feature 1 was first encountered in an auger test which unfortunately penetrated the entire pit. It is situated at the base of the plowzone in the northeast corner of Unit 2 in Area 5. Excavation of the north half revealed a pit measuring 4 by 3 feet with a depth of 1.6 feet. The central portion of the feature is filled with discarded shell, while the outer margins are a dark brown sand. The feature is interpreted to represent a shellfish steaming pit with the shell consisting of a single episode of cooking.

Feature 2 is situated in Area 5, bisected by the Unit 2 and 5 line. The south half was excavated to reveal a pit about 2.1 by 2.5 feet in diameter and 1.5 feet in depth. This feature is also interpreted to represent a steaming pit which had been re-used on at least two and possibly three occasions. Shell was observed scooped up along the east margin with two distinct burn lenses found in the west half of the pit.

Feature 3 is found at the base of the Zone 1a shell midden in Unit 1 (Area 3). The pit is situated in the southeast quadrant and is bisected by the south wall of the unit. The observed portion of the pit measures 3.6 by 2.8 feet and the maximum depth of the feature is 1.9 feet. This pit suggests possible re-use since at its base was a dense pocket of stout tagelus and charcoal, representing an initial steaming deposit of these bivalves. Above are burnt and crushed shells, perhaps representing a second use period associated with the overlying dense deposit of shell, likely representing refuse thrown back into the pit.

Feature 4 was found in the northeast quadrant of Unit 1 and is bisected by the north profile of the square. It measures 3.3 by 2.9 feet but is only 0.5 foot deep. Being so shallow the feature might be interpreted as being a low spot in the midden, rather than a cultural feature; however the profiles suggest that the pit was intentionally dug. A more likely scenario is that the feature represents the base of a pit originating higher in the midden.

Feature 5, found at the base of Zone 1 in the northeast corner of Unit 15, was initially thought to represent a pot burst. Examination of the recovered pottery revealed mending fragments of a single vessel, although all of the recovered sherds had coil fractures. In addition many of the sherds were very friable, almost dissolving during even gentle washing. It appears that the vessel broke during firing and many of the sherds are incompletely fired, representing little more than low fired clay. The presence of evidence that vessels were being manufactured and fired on-site suggests that occupation was for longer periods than a few days.

Feature 6 was encountered at the base of Zone 1a in Unit 17. It was located in the northwest quad of the unit and is bisected by the west wall of the unit. Unlike the other features examined (which tend to be roughly circular), Feature 6 is oval to linear, measuring at least 5 feet in length and 2.8 feet in width. The feature is 1.5 feet in depth and consists of a sand and shell fill

overlying a brown sand lens. While ambiguous, the feature may represent a steaming pit.

Table 3 provides information on the shell content of the various features. In each case oyster was the dominant shellfish, ranging between 77.7% and 92.8% by weight. Clam was

Table 3.
Shell Content of Features, weights in pounds

		Percent by Weight					
Feature	Weight	Oyster	Clam	Mussel	Tagelus	Peri.	Whelk
Feature 1	78.5	81.4	14.3	4.0	-	0.3	-
Feature 2	36.5	92.8	2.7	4.2	-	0.3	-
Feature 3	195.0	80.8	15.2	2.0	1.0	-	1.0
Feature 4	60.0	91.9	5.4	2.7	-	-	-
Feature 6	81.0	77.7	5.6	16.7	-	-	-
Combined mean	-	84.9	8.6	5.9	-	-	-
Combined SD	-	6.2	5.1	5.4	-	-	-

Mussel = Ribbed Mussel; Tagelus = Stout Tagelus; Peri. = Periwinkle

consistently the next most common shellfish when the combined mean is considered, although several features exhibited significantly more ribbed mussel by weight than clam. Periwinkles are found as components in two features, while stout tagelus and whelk are each found in one feature. When these data are compared to the content of the various middens, it is immediately obvious that minority shellfish, especially shellfish which are inherently fragile such as stout tagelus and ribbed mussel, are more common in features contexts, possibly because of better preservation and less damaging excavation techniques. In spite of this the features should not be taken as representative of routine exploitation. For example, periwinkles are found in only two features -- and in both cases as a very small proportion of the assemblage. These shells are relatively durable and easily recognizable. Yet they were not found in any of the midden excavations, suggesting that while they were found in two features they do, in fact, represent a very limited portion of the site occupants' diet.

Significantly, the shellfish recovered reflect at least two distinct marsh habitats -- the typical mud flats were oysters and ribbed mussels are commonly found, occasionally with whelks as predators, and the sand flats where clams are able to survive. Additional ecological research will explore the habitats used by the site's inhabitants.

ANALYTICAL EFFORTS

At the present time the collections are in the process of cataloging, with analysis of artifacts due to being by Monday, May 2.

Oyster shell samples (including column samples and handpicked collections of special importance) and soil samples for identification of *Boonea impressa* have already been provided to Dr. David Lawrence. Based on the sample sizes and the funding level available, Dr. Lawrence has made the decision to focus on three areas:

- one of the shell columns for Area 1,
- three soil samples, one each from Area 1, Area 2, and Area 3, and
- the hand picked samples.

Dr. Lawrence's delivery date for this study is 30 to 45 days.

Clam shell samples were retained from a variety of proveniences for seasonality study by Dr. Cheryl Claassen. We had hoped that given the absence of apparent microstratigraphy and the excavation of units by quadrants, that Dr. Claassen would be able to incorporate materials other than features into her study. After detailed discussed this has proven impossible -- Dr. Claassen maintains a very conservative approach to her study and is concerned that mixed samples would provide inaccurate results. While this is disappointing, we certainly understand, and respect, the methodological rigor involved in the decision. Consequently, we have identified one sample of ca. 40 clam shells from Feature 3 which is suitable for analysis. These have been sent to Dr. Claassen for study and her expected delivery date is within 30 days.

A series of five pollen samples have been identified which have secure contexts, relatively large soil volumes, and which allow examination of both pre-midden and midden (or post-midden) environmental conditions. These samples have been forwarded to Dr. Arthur Cohen for analysis and results are anticipated in 30 days. If, during the examination process, we discover that one or more of the samples lack adequate pollen for counting, we are prepared to substitute samples in an effort to achieve a valid study. Consequently, the pollen studies may take from 30 to 60 days.

Five charcoal samples have been selected for radiocarbon dating -- one from Area 5, two from Area 1 and two from Area 3. This distribution will hopefully allow information on the length of time that the Area 1 and 3 middens were used, as well as provide information on the use of Area 5. We have spoken directly with the radiocarbon laboratory and explained our needs. They are prepared to extend the counting time, if necessary, to provide the smallest possible standard deviations. Expected delivery time for this information is 30 days (even with extended counting time).

Flotation samples from Features 1-4 and 6 have been processed (using a mechanical water flotation technique) with the heavy fraction refloated to maximize the recovery rate. Although each sample is small, they should be adequate for examination. Hand picked samples have been pulled and will be incorporated into the analysis. This study should be completed within 15 days. Faunal materials are being examined and we are in contact with our zooarchaeologist, Dr. Jack

Wilson, to determine whether the small quantities recovered warrant any special attention or whether simple allometric analysis is sufficient. Regardless of the final decision, these studies will be complete within 30 to 45 days.

Computer generated graphics and density maps are being prepared and should be available in the next two weeks. We are currently seeking a consultant familiar with statistical nearest neighbor analysis for use with the individual midden locations.

We anticipate that the draft final report will be complete between 45 and 60 days from the date of this management summary.

SUMMARY

While it is hardly possible to summarize the results of the data recovery efforts when virtually none of the analysis has been conducted, it is possible to evaluate some aspects of the work. For example, the methodology proposed has been implemented with few changes and none of those have adversely affected data recovery efforts. Some additional data recovery efforts were undertaken beyond those stipulated in the proposal, including routine measurement of pH, collection of pollen samples, and collection of pollen samples. We are convinced that these efforts will improve the overall research potential of the site and contribute significant additional data.

In addition, there are methodological issues which this study will be able to address, including the benefit of ⅛-inch water screening (as opposed to ¼-inch dry screening), the benefit of very close interval auger testing (10 foot interval as opposed to 20 foot interval), and the usefulness of identifying individual midden areas.

The study has already illustrated areas of difficulty, including our inability to identify a geologist with the skills necessary to contribute to microstratigraphic analysis, the relatively low floral content of features and middens, the inability to routinely use clam seasonality studies, and the absence of adequate information on both otolith seasonality and the use of *Boonea impressa* as a seasonality indicator. It is likely that as the research continues additional areas of difficulty will be identified, and these will be discussed in the final report.

SOURCES CITED

Jones, David
n.d. Archaeological Survey of a Proposed 20 Acre Development Tract, Hilton Head Island, South Carolina. Brockington and Associates, Atlanta. Ms. on file, Chicora Foundation, Inc., Columbia.

O'Neil, Dennis H.
1993 Excavation Sample Size: A Cautionary Tale. *American Antiquity* 58:523-529.

Trigger, Bruce
1978 *Time and Traditions: Essays in Archaeological Interpretation*. Columbia University Press, New York.

Trinkley, Michael and Natalie Adams
1993 *Archaeological Testing at 38BU861, A Middle Woodland Shell Midden on Hilton Head Island, Beaufort County, South Carolina*. Research Contribution 120. Chicora Foundation, Inc., Columbia.

Trinkley, Michael, Debi Hacker, and Natalie Adams
1993 *Life in the Pee Dee: Prehistoric and Historic Research on the Roche Carolina Tract, Florence County, South Carolina*. Research Series 39. Chicora Foundation, Inc., Columbia.