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CHAPTER 5

THE 1992 EXCAVATIONS

Survey, testing and excavation were carried out by Coastal Archaeological Research, Inc. at the Mitchell Ridge Site between January and July, 1992. This work and the resultant findings are discussed here, prior to consideration of early work conducted in the 1970s, because the 1992 investigations are more thoroughly documented and therefore provide a much more complete picture of the nature of the site. Although the excavations of the 1970s were extensive, and produced large samples of artifacts, field notes are generally cursory, a problem compounded by the fact that the provenience on the majority of materials recovered was lost subsequent to completion of fieldwork. The poor state of the data from the 1970s is discussed in detail further on, when those excavations are considered to the limited extent possible. At this point, it is sufficient to note that the disjointed data can be best interpreted within the archaeological context which emerged as the result of the 1992 work.

In order to explicate the sequence of work done in 1992, and the logic of the enumeration of spatial areas of the site and individual features, it is helpful to briefly discuss the circumstances which influenced the approach taken during in the investigations. The work carried out during the 1970s (Atkins n.d.) indicated that by far the greatest concentration of prehistoric cultural debris was at the eastern end of the site in proximity to Eckert Bayou (as noted above, our 1992 investigations are completely in accord with these observations; see Figure 5.1). As a result of these observations, it was determined that significant archaeological deposits were confined to that part of the site which adjoins, or is within approximately 200 meters of, Eckert Bayou. The western part of the site, where prehistoric cultural debris was noted as particularly sparse, was considered available for development. The Woodlands Corporation was planning a residential development in this part of the ridge which would include home lots facing on a series of boating canals and, accordingly, construction of a pilot canal was initiated in early January, 1992, under permit (No. 17800) from the U. S. Army Corps of Engineers, Galveston District.

As excavation of the pilot canal crossed the high ground of Mitchell Ridge near the west end of the site, machine operators unexpectedly encountered human bones. Construction was immediately halted, and the archaeological staff of the Corps of Engineers, Galveston District, were notified of the find by supervisory personnel of The Woodlands Corporation. Corps of Engineers archaeologists Gail C. Celmer and Bryan Guevin visited the site shortly thereafter, collected fragments of human bone from a localized stretch of pilot canal backdirt, and observed what appeared to be the cranium of a more or less intact human burial at the point where the dredging operation had been halted. It was clear at this time that construction could not proceed until the extent of aboriginal burials was determined and appropriate measures were taken to mitigate burials and, if present, other significant cultural deposits within the area to be impacted by canal construction.

On January 17, 1992, the author inspected the site in the company of personnel of The Woodlands Corporation and Corps of Engineers archaeologists Celmer and Guevin. Through examination of sediment profiles along the edges of the pilot canal it was determined that a relatively thin (30-50 cm) dark brown fine sand soil unconformably overlay the geologic core of the ridge, a series of superimposed strata of light tan sand and shell hash (discussed in Chapter 2). The in situ positions of the burial at the terminus of the 20-foot wide pilot canal cut, as well as an aboriginal burial only partly removed by the dredging operation and still visible in the wall of the pilot canal, suggested that burials were within the sand/shell hash zone, well below the base of the dark brown soil.

Given the facts that (a) to define the extent of burials using hand excavation techniques would require a massive input of manual labor, and that (b) the aboriginal graves appeared to have been dug well below the dark brown topsoil and into the tan sand/hash, the author recommended that testing for additional burials be accomplished by careful machine removal of the soil to expose the surface of the underlying geologic zone. The abrupt change in the color of sediments at the base of the soil would permit ready identification of the surface of the light sand/hash zone, against which it was predicted that the darker fill of grave pits (as observable in the two burials still in situ) would be easily recognized. The use of machinery was further justified by the dearth of artifacts or other traces of occupation in the dark brown soil profile along the pilot canal cut.

The mechanical stripping of the topsoil was carried out in several stages. Initially, the soil was

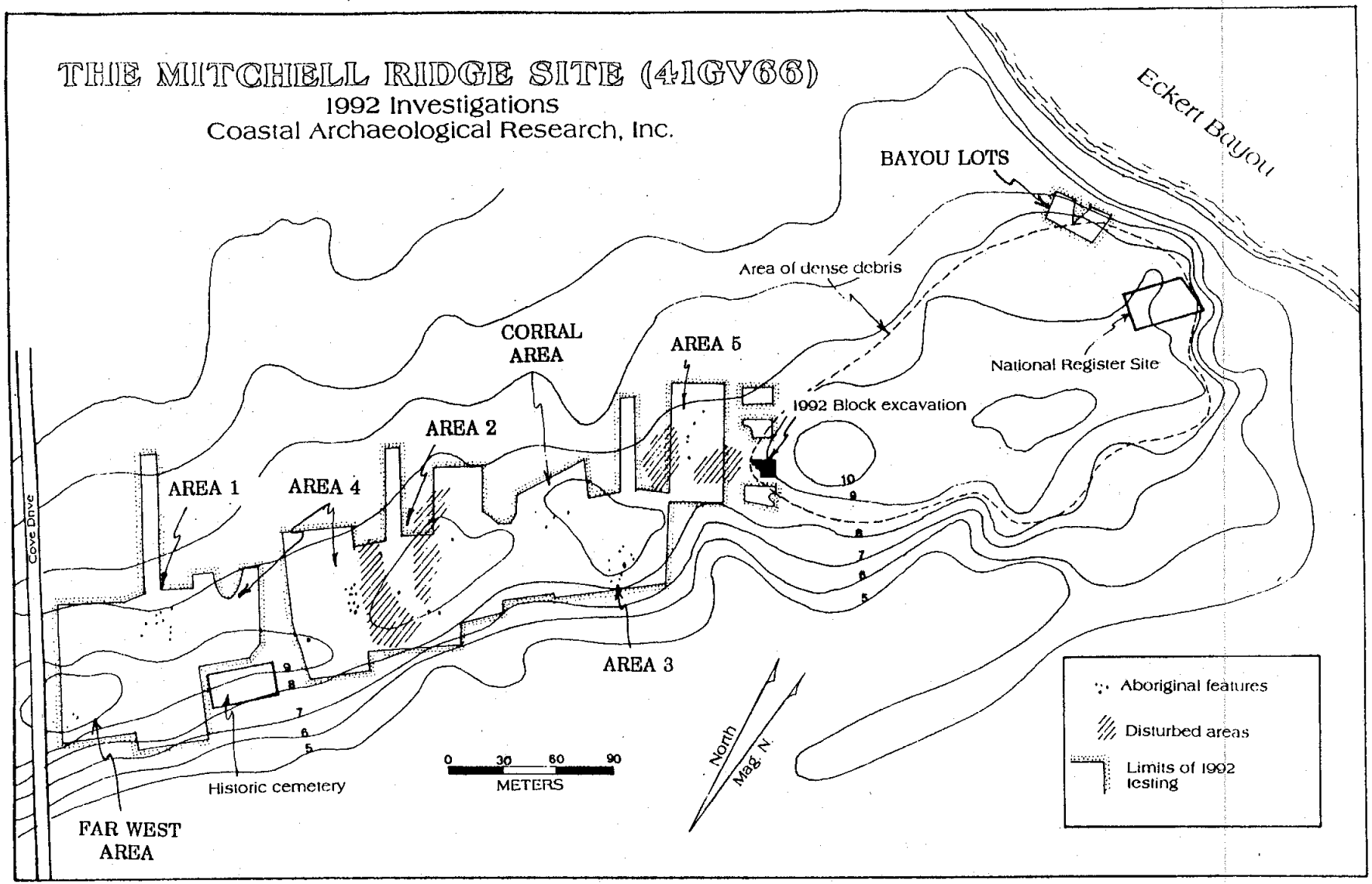


Figure 5.1. Map of the Mitchell Ridge Site showing areas exposed in 1992 by mechanical soil stripping and indicating locations of areas discussed in text. Note extent of concentrated occupation debris and National Register site near Eckert Bayou.

removed along the planned route of the pilot canal using a grade-all, with constant monitoring by the author and/or staff of Coastal Archaeological Research, Inc. Two important observations were made during this operation. First, it was quickly determined that, as expected, pits dug into the tan sand/shell hash zone were readily visible on the exposed surface of that zone; pit surfaces appeared as unambiguous circular or oval dark patches, with clearly definable edges, against the lighter matrix (Figure 5.2). Second, as this work progressed, it became apparent that aboriginal features, without exception, were located at elevations above the 8-foot contour line. All features thus located were flagged and their locations noted on a preliminary site map.

In consideration of the success of this procedure in locating subsurface features and the fact that features were all above the 8-foot contour, the Regulatory Branch of the Corps of Engineers, Galveston District, recommended virtually complete exposure of the surface of the western part of the site above the 8-foot contour. It was felt that the significance of aboriginal burials, in conjunction with the possibility of disturbance during future excavation of utility line trenches and placement of house pilings, justified the effort.

In response to this request, the use of the grade-all was abandoned in favor of soil removal employing a maintainer. This proved to be a satisfactory procedure, since the maintainer could work far more quickly and, at the same time, when run by an experienced operator, remove soil in increments as thin as five centimeters. As was the case with the grade-all operation, soil removal by the maintainer was constantly monitored, and features were flagged and mapped.

Over the course of several weeks, approximately 18,000 square meters of the site were exposed at the level of the surface of the light-colored sand/shell hash. A total of 112 anomalies was documented within the exposed area. Of these, 50 proved, upon investigation, to be definite or probable features of aboriginal origin. This total is comprised of 22 burial pits (containing the remains of at least 38 individuals), 10 definite and two probable non-burial pits of apparent aboriginal origin, 13 definite and 2 probable aboriginal hearths, two clusters of apparent post molds representing small circular structures of probable aboriginal origin, and one small concentration of aboriginal cultural debris (see Table 5.1).

The remaining anomalies included disturbances which proved not to be features, historic post molds representing old fence lines, modern trash pits, and burials of dogs and other domestic farm animals (cat, goat, sheep, horse; see Table 5.1). Initially it was speculated that the dog burials might represent prehistoric animals buried by the aboriginal occupants of the site; however, a modern radiocarbon assay on dog bones from one such feature, and the fact that the dog and other animal burials tended to cluster around the known location of the historic Wern farmhouse, which was situated immediately northwest of the historic Angloamerican cemetery shown in Figure 5.1, provide convincing evidence that these features represent occasional interment of farm animals. The five historic trash pits were determined to be of modern age by the presence of round nails and/or glass and ceramic fragments of twentieth century types.

For the sake of manageability, the large area to be exposed was worked in sections. The procedure followed was for the maintainer to make thin (5-10 cm thick) cuts the entire length of each section, except in a few instances where it was necessary to work around trees. These sections were numbered sequentially, as Areas 1 through 5, according to the order in which they were exposed (see Figure 5.1). Three additional areas were designated as the Far West Area, the Corral Area and the Bayou Lots, in order to avoid the confusion of numbers which did not follow a spatial pattern. As may be seen in Figure 5.1, the areas are, from west to east, (a) the Far West Area (adjacent to Cove Drive), (b) Area 1, the location of the initial pilot canal and first group of burials discovered in 1992, (c) Area 4, (d) Area 2 (exposed along the course of a proposed pilot canal by the grade-all), (d) the Corral Area, (e) Area 3, (e) Area 5, and (f) the Bayou Lots.

This rather awkward numbering/naming of the areas resulted from the fact that initial expectations were that our work would only expose those limited areas to be impacted by the construction of pilot canals across the site in Areas 1, 2 and 3. The subsequent decision on the part of the Corps of Engineers to ask for complete exposure above the 8-foot contour required investigation of the additional areas and thus other area designations were added. As may be seen in Table 5.1, all apparent Features were numbered in a single continuous sequence from 1 to 123, according to the order in which they were found, and independent of the area in which they were located.

The second major component of the 1992 investigations was the hand excavation of a block of 74 square meters at the western edge of the area of concentrated prehistoric cultural debris. Since this area would be skirted by a row of home lots, and thus might be affected by excavation of utility lines and house

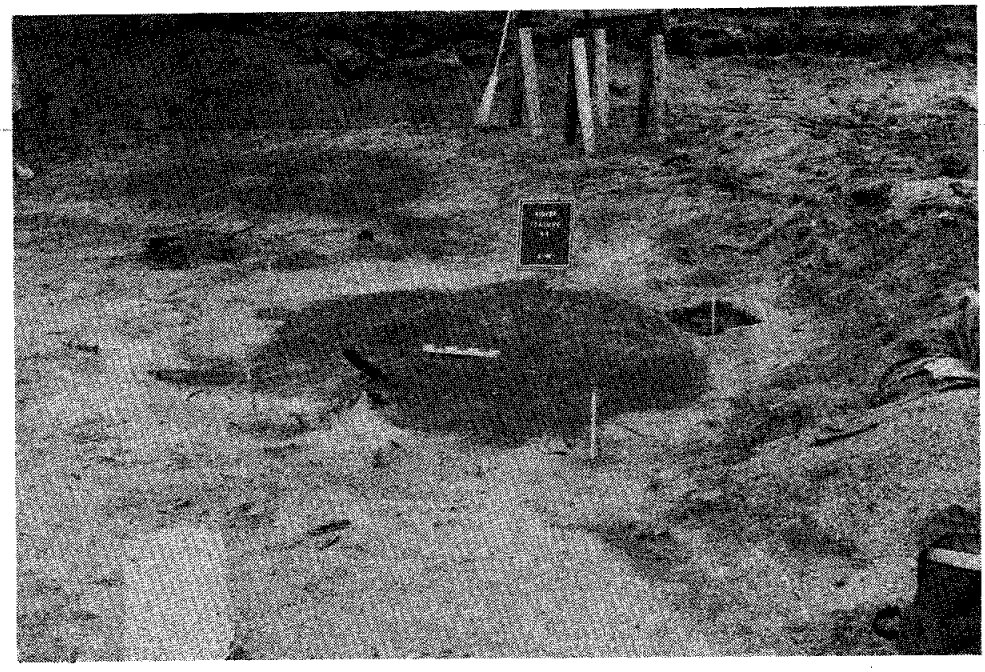


Figure 5.2. Two burial pits in Area 4, Features 64 and 65, exposed at surface of sand-shell hash sediment.

pilings, the surface of the sand/shell hash zone had to be exposed, as elsewhere within the area of proposed future construction, according to the request of the Corps of Engineers. Small hand-dug shovel tests conducted by Coastal Archaeological Research, Inc. at this locus indicated the presence of a discrete zone of rather dense aboriginal cultural debris within the dark brown soil some 15-20 cm thick and approximately 20 cm below ground surface. Because the presence of an intact zone of prehistoric debris clearly prohibited the use of machinery to accomplish exposure of the underlying sand/hash zone, it was decided that the central part of the planned home lot, where subsurface impact was most likely, would be excavated with small hand tools and the full range of procedures/documentation required in a standard archaeological excavation (e.g., screening of soil matrix, piece plotting of individual specimens, recording all finds on unit-level data sheets, etc.).

Designated the "Block Excavation" (see Figure 5.1), this area produced abundant evidence of Late Prehistoric occupation in the forms of hearths, a small pit, a probable aboriginal house floor, definable activity areas, and large artifact and faunal samples. On the bases of typologies and radiocarbon dates, it can be concluded that these materials represent, overwhelmingly, occupation(s) in the Final Late Prehistoric Period, sometime between the late thirteenth and the early fifteenth centuries. The vertically discrete nature of the zone of debris and the intact conditions of hearths and other features indicate minimal post-depositional disturbance of the findings in the Block Excavation, and thus permit certain inferences concerning the kinds and spatial arrangements of domestic activities in this part of the site.

The findings relevant to domestic occupation/activities in these various areas are discussed here in order of their significance (as measured by quantity and quality of data generated), rather than in either numerical order of areas, or according to the actual sequence of work. The most productive area, the Block Excavation, is given first consideration, followed by Area 3, which contained a number of particularly informative aboriginal features. In this way, it is possible to relate the limited findings in less productive areas to an interpretive framework permitted by the more abundant findings in the Block Excavation and Area 3.

Table 5.1. Non-burial feature data, 1992 Excavations.

Area	Feature number	Type of feature	Plan Dimensions (cm.) L	W	D	Profile shape	Contents
1	1	basin shaped pit	122	59	20	shallow basin	none
	4	hearth	56	56	20	shallow basin	charcoal,burned shell, pottery
	5	pit	133	76	20	deep basin	bone, pottery, rusted metal
	6	pit	38	34	9	shallow basin	1 shell, 2 potsherds
	7	hearth	60	65	13	shallow basin	burned shell, burned bone, pottery
3	8	***					
	9	Aboriginal trash pit	460	355	67	series of pits	bone, shell, pottery, lithics, asphaltum, glass, pumice, ochre, modern debris (intrusive), stone, sandstone
	10	***					
	11	***					
	12	historic post mold	52	65	50	U-shaped	none
	13	hearth	44	41	4	shallow basin	shell, bone, pottery, lithics
	14	Aboriginal pit	49	38	17	shallow basin	shell, bone, pottery, asphaltum
	15	modern trash pit	NA	NA	NA	NA	glass & fence wire
	16	modern trash pit	NA	NA	NA	NA	glass & fence wire

*** These apparent anomalies proved upon further inestigation to be non-cultural in origin; depressions, burrows, etc.

Table 5.1, cont.

Area	Feature number	Type of feature	Plan Dimensions (cm.) L	W	D	Profile shape	Contents
Area 3 cont.	17	***					
	18	***					
	19	modern pit	115	68	54	U-shaped	glass, rusted metal, timber
	20	modern trash pit	NA	NA	NA	NA	glass
	21	***					
	22	***					
	23	hearth	50	36	19	deep basin	shell, bone, pumice
	29	small fire	20	20	2	surface deposit	none
	31	***					
	32	***					
	33	***					
	34	modern dog burial	NA	NA	10-20	pit	canine bone, non-canine bone
	36	opossum burial	37	24	8	shallow basin	opossum bones, 2 potsherds
	37	hearth	50	50	14	basin	burned shell, burned bone
	38	debris scatter	202	135	5-7	surface scatter	shell, bone, pottery
	39	historic post mold	30	30	40	U-shaped	none
	40	possible hearth	18	18	3	flat	small bits of charcoal

*** These apparent anomalies proved upon further inestigation to be non-cultural in origin; depressions, burrows, etc.

Table 5.1, cont.

Area	Feature number	Type of feature	Plan Dimensions (cm.) L	W	D	Profile shape	Contents
Area 3 cont.	41	pit	20	20	9	V-shaped basin	4 potsherds
	42	historic post mold	30	30	41	V-shaped	none
	43	historic post mold	51	46	60	U-shaped basin	none
	44	pit	24	24	11	U-shaped basin	bone, 1 otolith, shell, basal portion of a pot
	45	historic post mold	60	39	53	U-shaped	none
	46	historic post mold	53	49	53	U-shaped	none
	47	***					
	48	historic post mold	39	40	10	shallow	3 potsherds
	49	***					
	50	historic post mold	24	24	20	U-shaped	none
	51	aboriginal pit?	74	74	7.5	shallow basin	1 otolith, bone, 1 potsherd
	53	***	90	NA	47	U-shaped	18 bird bones
Area 4	54	aboriginal pit?	63	45	10	shallow basin	1 potsherd, 1 rusted metal fragment
	55	***	135	63	0	surface scatter	31 potsherds, 1 rusted tack, 2 bones
	56	***					
	57	modern cat burial	40	36	4	basin	cat bones
		post mold	40	30	28	U-shaped	none
	58	modern dog burial	68	48	10-20	basin	dog bones

*** These apparent anomalies proved upon further inestigation to be non-cultural in origin; depressions, burrows, etc.

Table 5.1, cont.

Area	Feature number	Type of feature	Plan Dimensions (cm.) L	W	D	Profile shape	Contents
Area 4 cont.	59	***					
	60	***					
	66	deep aboriginal pit	112	165	100	V-shaped	bone, 16 otoliths, potsherds, pumice, asphaltum 2 stones
	67	***					
	68	modern dog burial	71	60	10-20	NA	dog bones
	69	***					
	70	modern dog burial	38	40	10-20	NA	dog bones
	71	***					
	72	***					
	73	***					
	74	2 historic post molds	12.5 17.5	11 21	75 15	V-shaped U-shaped	2 potsherds
	75	***					
	76	modern goat burial	NA	NA	NA	NA	goat bones
	77	***					
	78	modern pig burial	100	98	NA	NA	pig bones, 1 nail 1 potsherd
	79	***					
	80	***					

*** These apparent anomalies proved upon further inestigation to be non-cultural in origin; depressions, burrows, etc.

Table 5.1, cont.

Area	Feature number	Type of feature	Plan Dimensions (cm.) L	W	D	Profile shape	Contents
	81	***					
	88	hearth	70	55	2.5	flat	shell, bone, potsherds glass, rusted metal fragments
1992 Corral Area	89	hearth	70	48	5	flat	burned shell
	90	***					
	91	historic post mold	30	20	NA	NA	none
	92	***					
	93	historic post mold	23	26	NA	NA	shell, bone, 3 potsherds, rusted metal fragments
	94	hearth	40	30	3	flat	shell
	95	***					
	96	***					
	97	***					
	98	aboriginal post molds	21	21	21	U-shaped	none
			14	14	16	U-shaped	none
			21	21	10	V-shaped	none
			11	14	13	U-shaped	none
			18	18	18	U-shaped	none
			19	19	12	U-shaped	none
			10	10	8-10	NA	none
			14	14	8-9	U-shaped	none
	99	aboriginal post molds	15	15	NA	NA	none
			18	21	3	U-shaped	none
			23	23	43	U-shaped	none

*** These apparent anomalies proved upon further inestigation to be non-cultural in origin; depressions, burrows, etc.

Table 5.1, cont.

Area	Feature number	Type of feature	Plan Dimensions (cm.) L	W	D	Profile shape	Contents
	99 cont.	aboriginal post molds	16	11	3	U-shaped	none
			12	11	9	U-shaped	none
			12	12	18	V-shaped	none
			17	15	3	U-shpaed	none
			21	16	8	U-shaped	none
Area 5	100	hearth	33	27	NA	NA	5 potsherds
	101	aboriginal pit	37	30	25	U-shaped	potsherds, lithics, 1 metal button
	102	possible hearth	18	23	3	flat	shell, 10 potsherds
	103	aboriginal pit?	30	23	13	basin	shell fragments, bone, potsherds, cut glass
	104	***					
Block Exc.	105	hearth	43	35	5	flat	shell, bone, charcoal, 1 potsherd, asphaltum
	106	oyster shell cluster	NA	NA	NA	NA	shell, bone, lithics, asphaltum, potsherds, 1 otolith
	107	hearth	59	48	NA	NA	charcoal, shell, bone, potsherds, burned clay nodule
	108	hearth	40	39	7	shallow basin	shell, bone, 2 potsherds
	109	hearth	61	53	4	flat	shell, bone, charcoal, asphaltum
	110	possible aboriginal house floor	NA	NA	NA	NA	shell, bone, lithics, potsherds, pumice, asphaltum
	110-A	hearth	76	35	---	shallow basin	shell, bone, pumice, potsherds,

*** These apparent anomalies proved upon further inestigation to be non-cultural in origin; depressions, burrows, etc.

Table 5.1, cont.

Area	Feature number	Type of feature	Plan Dimensions (cm.) L	W	D	Profile shape	Contents
	111	aboriginal pit	35	35	NA	U-shaped	bone, potsherds, asphaltum
	112	hearth	114	84	NA	NA	bone, lithics, potsherds
	113	hearth	63	59	NA	NA	shell, bone, potsherds
	114	hearth	73	33	NA	NA	shell, bone, lithics, potsherds
	115	hearth	60	39	NA	surface	shell, bone, lithics, potsherds, asphaltum
Bayou lots	116	hearth					
	117	***					
	118	***					
Far West Area	119	hearth	80	49	18.5	U-shaped	charcoal, shell, 42 potsherds
	120	modern trash pit	140	74	20	basin shaped	brick, pumice, roofing tar
	121	hearth	60	96	12	basin shaped	shell, bone, 12 potsherds
	122	hearth	NA	60	10	shallow basin	shell
	123	modern horse burial	103	96	NA	basin	horse bones

*** These apparent anomalies proved upon further inestigation to be non-cultural in origin; depressions, burrows, etc.

The Block Excavation

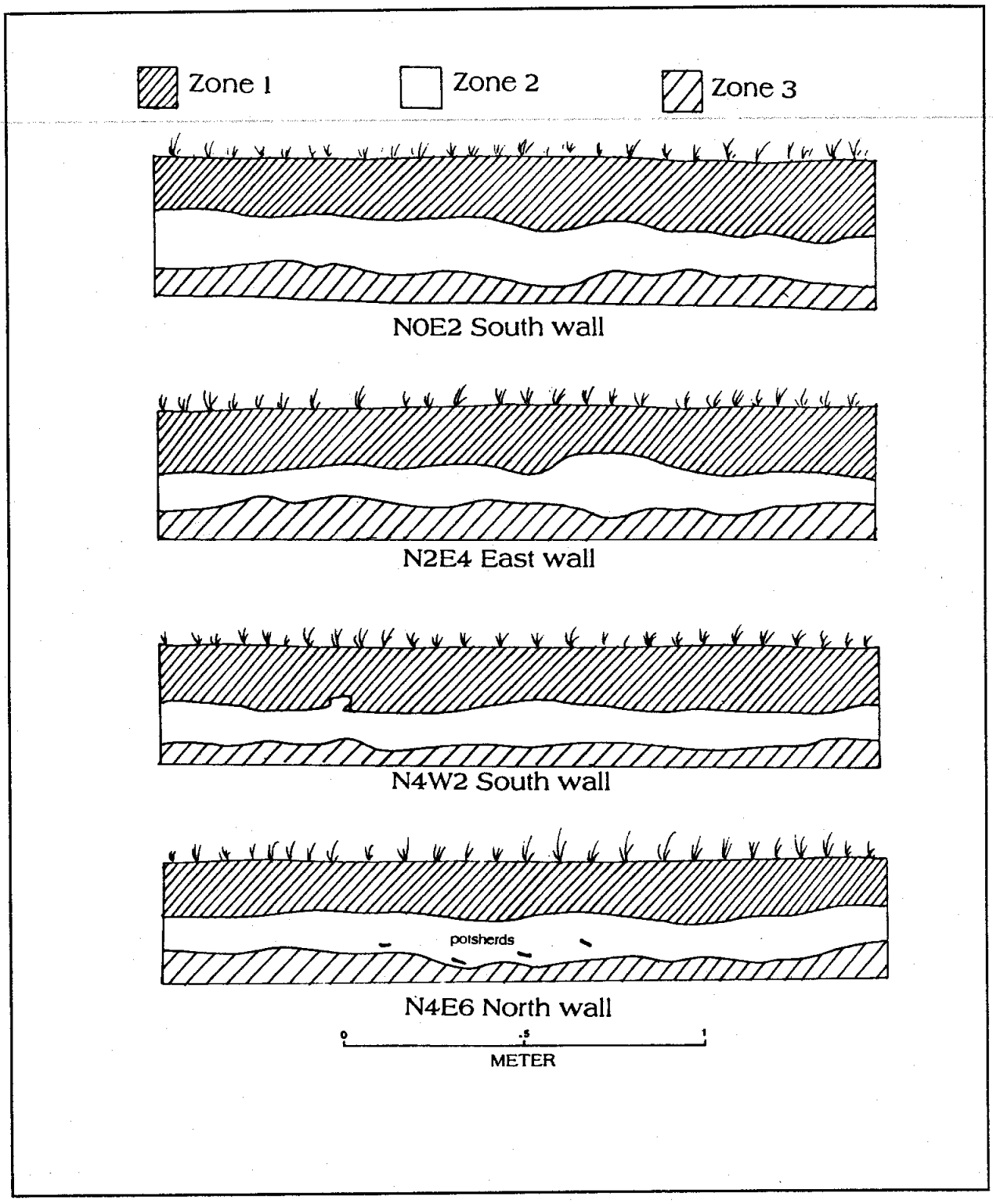
The discrete zone of Late Prehistoric occupational debris discovered in the area which was to become the Block Excavation was first identified in two 50x50 cm subsurface test units in the center of a planned home lot. The area in question lies at an elevation of 10 feet above mean sea level and, as already noted, is at the western edge of that part of the Mitchell Ridge Site which contains concentrated prehistoric cultural material. In both test units, which were located 8 meters apart, aboriginal potsherds, sparse chert debitage and mammal and fish bones, oyster shell fragments, and flecks of charcoal and small nodules of asphaltum were observed between 20 and 35 cm. below ground surface, within the dark brown fine sand soil which caps the entire site.

The term "zone" is used to describe the debris concentration, rather than "stratum", because this part of the soil profile was distinguishable only by the presence of abundant debris and by an almost imperceptibly darker soil color. On this basis, the soil profile, at this point on the site approximately 40-cm thick, was divided into three zones, for convenience and clarity in placing the finds in vertical context. Zone 1 (see Figure 5.3) consisted of the dark fine sand soil (Munsell 10YR4/2) overlying the cultural zone. Generally about 15-20 cm thick, Zone 1 was found to be virtually devoid of cultural materials, except for an occasional aboriginal artifact or faunal bone fragment probably vertically displaced by minor bioturbation and a light scatter of recent materials such as brick and concrete fragments and fragments of modern glass. Zone 2 was readily recognizable by an abundance of aboriginal potsherds, small fragments of animal bone and scattered oyster shells and shell fragments. The thickness of the zone varied somewhat, but was generally 10-15 cm. (Figure 5.3). Aside from the cultural inclusions and a barely perceptible darker color (Munsell color also 10YR4/2), Zone 2 consisted of the same fine sand soil as did Zone 1. Zone 3, usually 10-15 cm thick, was also the same dark brown fine sand immediately under Zone 2, but graded to a lighter brown (Munsell 10YR5/4) near its base. It was quite clear during excavation when the top of Zone 3 was reached, since cultural debris quite abruptly ceased to appear under the trowel. Underlying Zone 3 was the light tan sand and shell hash encountered elsewhere on the site.

The area chosen for excavation was staked out into an 8-meter-square grid, the coordinates of which were referenced to the corners of the home lot already surveyed and mapped by The Woodlands Corporation. This area of 64 square meters was eventually extended at its northwest edge to include an additional 10 square meters in order to fully expose what proved to be a particularly productive cluster of hearth features and associated concentrations of debris. Because the area to be investigated approximately conformed in shape and size to the axes of the home lot, the grid was oriented parallel to the lot boundaries. Grid "north" was thus oriented nearly northwest on the magnetic compass, and was in fact 35° west of magnetic north.

The first procedure followed in the excavation was to remove approximately the upper 10 centimeters of Zone 1 by machine. A maintainer was once again employed, since the blade could strip off the soil overburden in increments of five centimeters. In this way the entire area of the planned excavation was taken down to within 5-10 cm of the top of Zone 2. Only after this was accomplished were the grid units staked out. The next step in the excavation was to skim off the remainder of Zone 1 soil with hand shovels. In this way the top of Zone 2 was exposed in each 2x2 meter excavation unit. Zone 2 was excavated in 5-cm arbitrary levels using only small hand tools (trowels, brushes). A vertical datum point for each 2-meter unit was established at that corner at which the elevation of the top of Zone 2 was determined to be highest. Within each 5-cm level, the horizontal location of all in situ artifacts, whole shells, and bone fragments with lengths of three or more centimeters were plotted on unit/level maps for later reconstruction of possible distribution patterns of the various classes of debris. All excavated matrix was screened through 1/8 inch mesh hardware cloth. All cultural debris, with the exception of shells, was retained for laboratory analyses. In the case of shells, whole shells and umbos were counted by unit/level in the field, and samples were kept for lab analyses, and in the case of unburned shell from discrete features, for possible radiocarbon dating.

Features encountered in Zone 2 were exposed in situ and then photographed (both black and white prints and color slides), mapped and drawn in cross-sectional profile. Soil samples from within and around features were taken for fine-screening and flotation in the lab, with the goal of recovering carbonized plant remains; flotation from features in the Block excavation (and in other areas of the site) consistently produced negative results, insofar as only small bits of wood charcoal and tiny unidentifiable bone fragments were recovered. In general, charcoal was notably scarce, even within hearth features; when



Blacked surface not true surface SLB

Figure 5.3. Representative 2-m^2 wall profiles, Block Excavation, showing three identified soil zones. Cultural material was confined almost entirely to Zone 2.

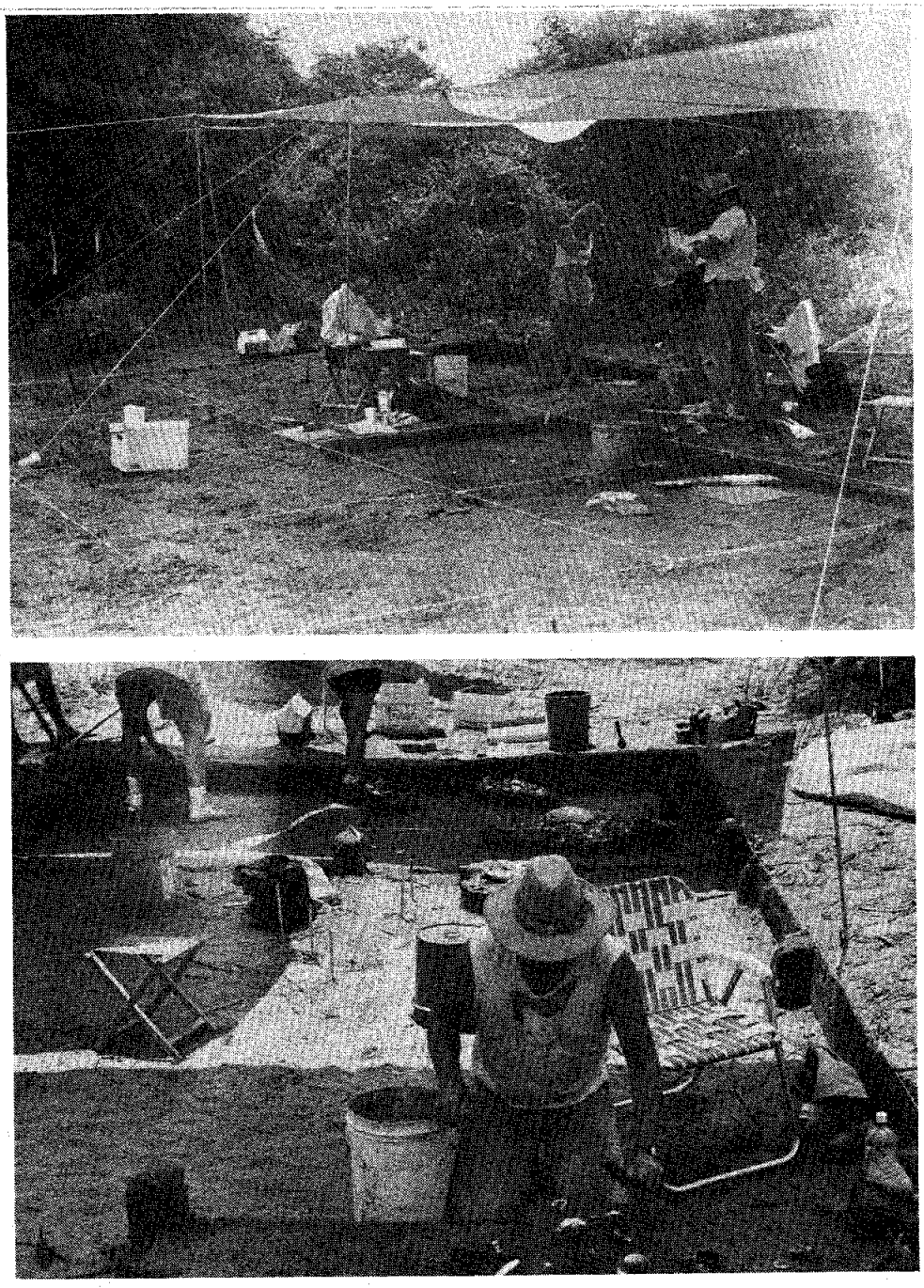


Figure 5.4. Views of work in progress, Block Excavation. Top: General view of excavation area at beginning of work, looking toward southeast corner of excavation. Bottom: Excavation of Zone 2, looking grid west; note group of shell-lined hearths in background.

present in suitable quantities, however, it was retained for radiocarbon dating.

Features in the Block Excavation

Twelve aboriginal features were present in the Block Excavation (see Figure 5.5). These features were numbered in the order in which they were found and within the same numerical sequence as the features encountered in other areas of the site during the 1992 investigations. The features in the Block Excavation (Feature 105-115, including 110 & 110-A) consist of nine hearths, a small pit, a cluster of oyster shells and a slight depression which may represent part of an aboriginal house floor. In addition to the numbered features, seven post molds, believed to represent part of an aboriginal structure, were identified in the south-central part of the excavation area.

All features were entirely within, or clearly originated in, Zone 2. They are described here in groupings based on inferred functions.

Shell-Lined Hearths

Feature 107

This is one of several hearths determined to have been lined with oyster shell (see Figure 5.5). The hearth, located in 2x2 meter unit N6E0, was roughly circular in plan view, and measured 59x48 cm. In profile, it exhibited a shallow basin-shaped configuration with a depth of 15 cm. (Figure 5.6). As may be seen in Figure 5.6, it originated in Zone 2 and the bottom of the basin extended slightly into the top of Zone 3. That the feature represents a shell-line hearth is indicated by the facts that (a) it consists of black, ash/charcoal-stained soil surrounded by whole and fragmented oyster shells, and that (b) the shells immediately adjacent to the ash-stained soil had been thoroughly burned as indicated by their bluish-gray color and friable, almost powdery condition (while those shells around the outer edge of the feature tended to be unburned). Despite the black, apparently charcoal or ash-stained condition of the soil in the center of the hearth, wood charcoal was not present, suggesting complete combustion of light fuel (i.e., small sticks or twigs as opposed to larger pieces of wood).

Within the feature were found burned and unburned bone fragments (16 fish bones, 2 gar scales, 1 bird longbone fragment, 1 large bird talon, 2 deer-sized longbone fragments, 6 cotton rat mandibles). A small concentration of unburned bone fragments (unidentifiable to species, but including fish and small rodents) was found immediately under a part of the shell lining and within the basin in which the hearth had been built (Figure 5.6). The oyster shell lining was comprised of five whole, burned shell valves and 17 whole, unburned valves, as well as 833.9 grams of burned fragments and 194.7 grams of unburned fragments. Twenty small sherds of aboriginal pottery and one small nodule of burned clay were the only artifacts found within the feature.

Feature 112

This feature, in 2x2-meter unit N6W2, again consisted of a roughly circular mass of oyster shell and shell fragments (see Figure 5.7), virtually all of which were intensely burned. In plan the feature measured 114x84 cm. In cross section it was essentially flat and generally 5-8 cm thick; the entire feature was contained within Zone 2. The cross-sectional profile revealed that there were actually two thin lenses of burned shell, for the most part indistinguishable but separated by up to 5 cm of soil matrix at edges of the feature. This is interpreted as indicating that the hearth was re-lined with new oyster shell after some period of initial use. The soil matrix within and around the shell exhibited the same black, stained color noted in Feature 107 though, once again, wood charcoal was not present.

Fifty-two whole or nearly whole oyster valves were counted in situ, though all crumbled upon removal due to the effects of intense heat. The total weight of burned shell is 3,021 grams. Feature 112 was located more/ or less in the center of a relatively dense concentration of cultural debris (discussed below), so it was difficult to identify artifacts and faunal materials that were associated with the feature, per se. Numerous bones of fish, deer and cotton rat were in and around the feature, as well as potsherds and chert flakes.

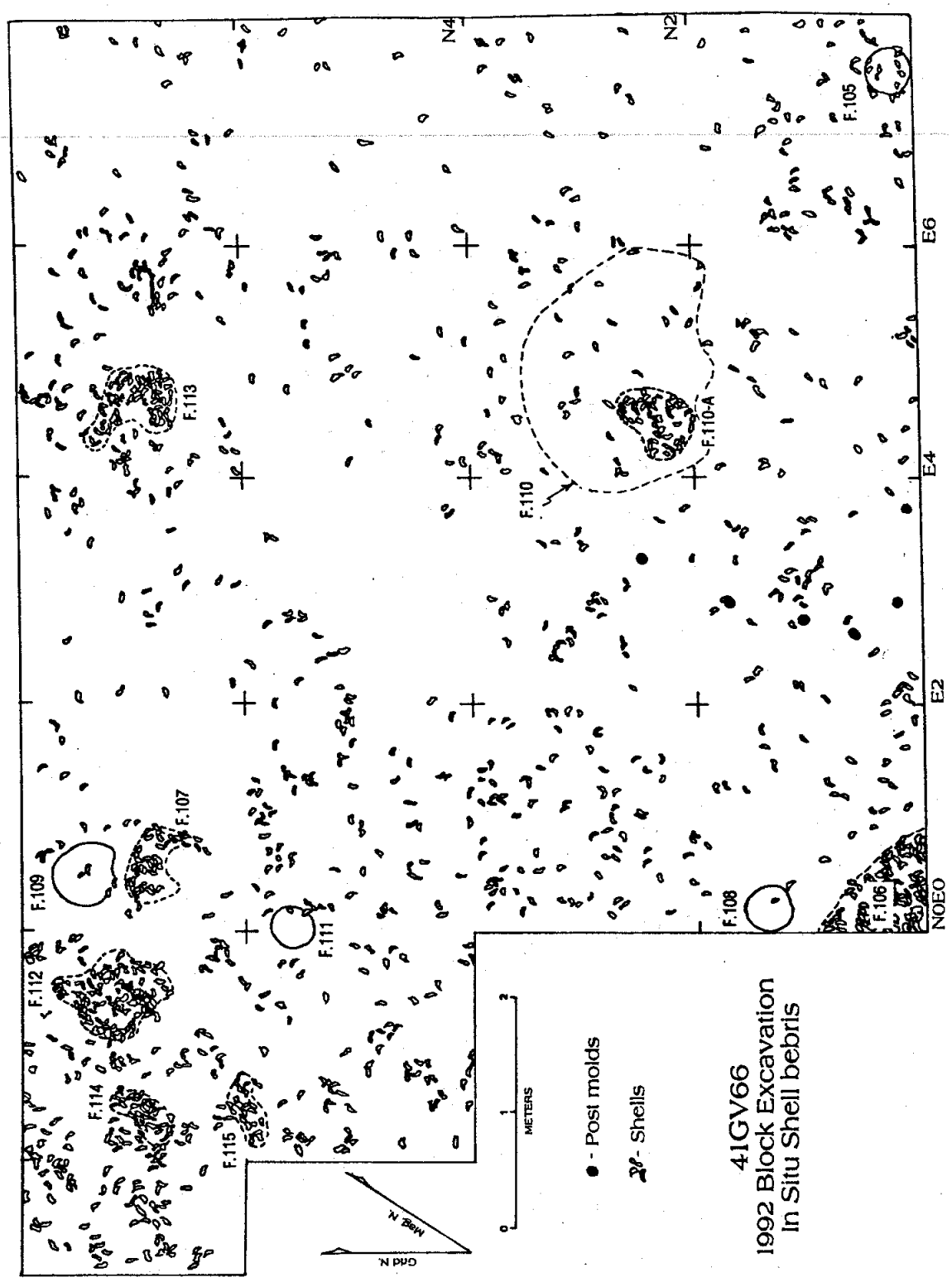


Figure 5.5. Map of Block Excavation, showing piece-plotted oyster shells, features and postmolds.

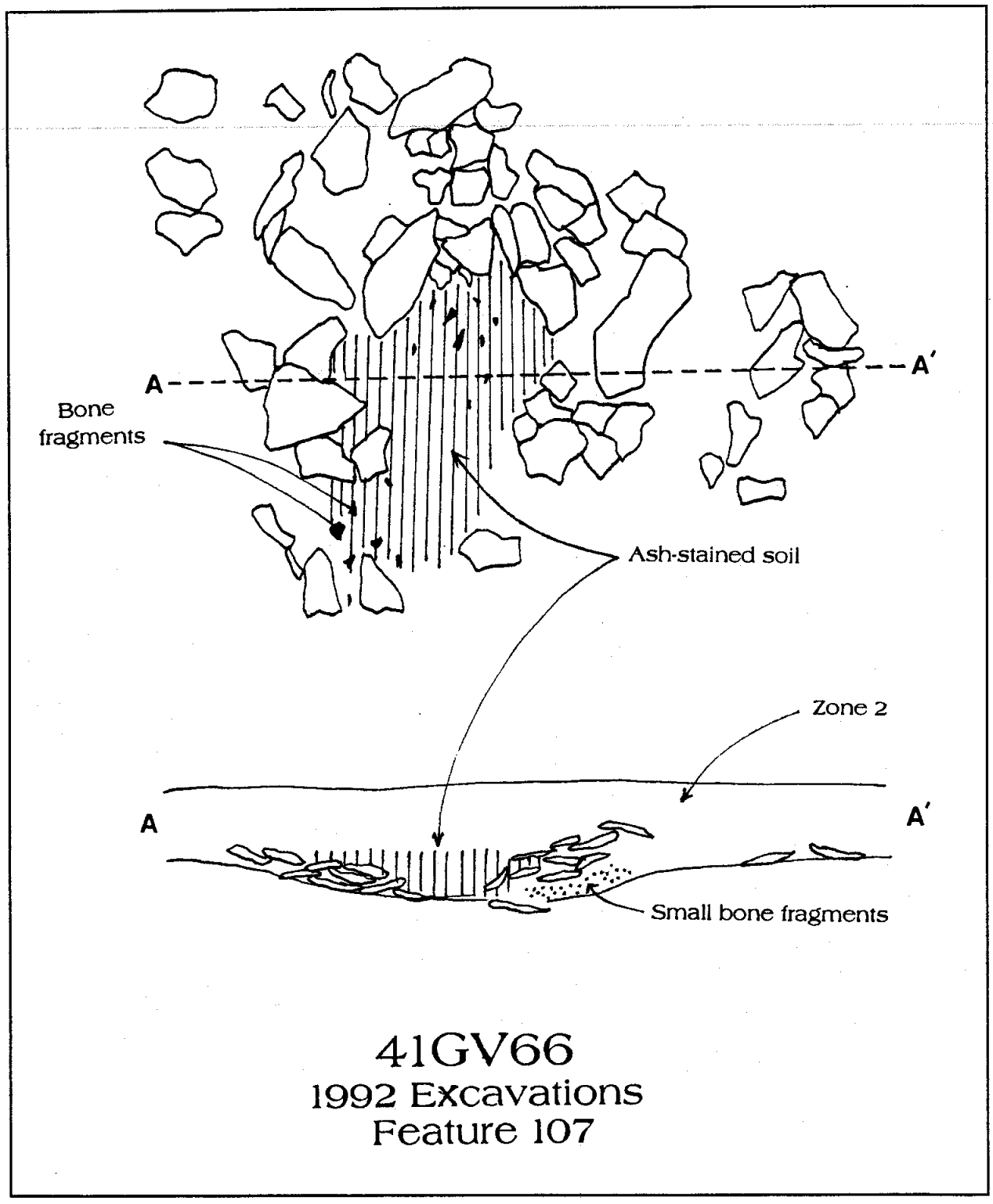


Figure 5.6. Plan and cross-sectional views of shell-lined hearth, Feature 107, Block Excavation.

Feature 113

This feature (Figure 5.8) was located in the west-central part of 2x2-meter unit N6E4. It consisted almost entirely of a mass of intensely burned oyster shell; nearly all the shell in the feature was burned. The edges of the feature were in places not clearly defined, though the consistent burning and density of the shell leaves little doubt that this is a discrete feature. In plan the hearth was roughly circular and measured 63x59 centimeters. In profile, the feature had no discernible basin shape, but appeared as a more or less flat lens of burned shell up to about 5 cm thick. The shells consisted of 8 intact, burned oyster valves and 259.5 grams of burned fragments. Judging from the in situ articulation of many of the fragments, it is apparent that the shells were laid down as whole shells which subsequently disintegrated as the result of burning. From within the feature were recovered four fish vertebrae, 21 gar scales, 1 cotton rat mandible, 16 small unidentifiable bone fragments and two small aboriginal potsherds.

Feature 114

Located only about 50 cm west of Feature 112, this feature consisted of a discrete concentration of burned and unburned oyster shells. In plan view, the shape was oblong, with a length of 73 cm and a maximum width of 33 cm. In cross-section, the feature was basically flat and no more than 5 cm thick. There was no discernible staining of the soil within the shell cluster.

The oyster shell within the feature consisted of 20 valves, five of which were clearly burned, and 168 grams of fragmentary shell, of which 28.1 grams were burned. Most of the burned shell was localized at the center of the feature. The fact that a minority of the shell is unburned, along with the absence of discernable blackening of the soil matrix, suggests that this hearth saw relatively little use.

A sample of unburned oyster shell was extracted from within the feature for radiocarbon dating. The assay (Beta-55866) produced an uncorrected radiocarbon age of 140+/-50 years B.P. Correction for the 13C fraction added 370 years to yield a corrected age of 510+/-50 years B.P. This calibrates dendrochronologically to a 1-sigma age range of 545-509 B.P., or a calendar date range of A.D. 1405-1441. The 2-sigma calibrated age range is 630-483 B.P., which gives a calendar range of A.D. 1320-1467.

Feature 115

This feature, located just south of Feature 114, was also oblong in plan view, with dimensions of 60x39 cm. In cross-section it was flat with one, in places, two layers of oyster shell. The soil matrix in most of the feature was distinctly blackened, though wood charcoal was not present. Six of the 25 whole or nearly whole oyster valves found in this feature had been burned. Of the 71.5 grams of fragmentary oyster shell, 13.7 grams had been burned. Within the feature were found three fish vertebrae, a bird longbone fragment, a black drum fish tooth, two small unidentifiable bone fragments, a small nodule of asphaltum and two aboriginal potsherds.

Shell- and Pottery-Lined Hearth, Feature 110-A

This feature, located in 2x2-meter unit N2E4, was similar to the shell-lined hearths described above, except that the lining consisted both of oyster shells and large fragments of aboriginal pottery (Figures 5.9, 5.10). Its designation as Feature 110-A is based on the fact that the hearth rested within Feature 110 (described below), a shallow depression in the surface of Zone 3 believed to represent a possible aboriginal house floor. In plan the feature was oblong, with dimensions of 76x42 cm. A cross-sectional profile revealed a slightly basin-shaped configuration, with a maximum depth of 11 cm.

Most of the oyster shell which lined this hearth was intensely burned, and the soil matrix was blackened (though wood charcoal was, again, not present). As may be seen in Figure 5.10, the shells lining the hearth were liberally interspersed with fragments of aboriginal pottery. Several observations indicate that the potsherds served as part of the lining of the hearth, and that they do not merely represent accidental breakage of a pot and disposal of the broken pieces. First, three vessels are clearly represented by the sherds, as indicated by variation in the size/quantities of sand inclusions in the ceramic paste (as revealed under 20X microscopic examination in the laboratory); it seems unlikely that fragments of three

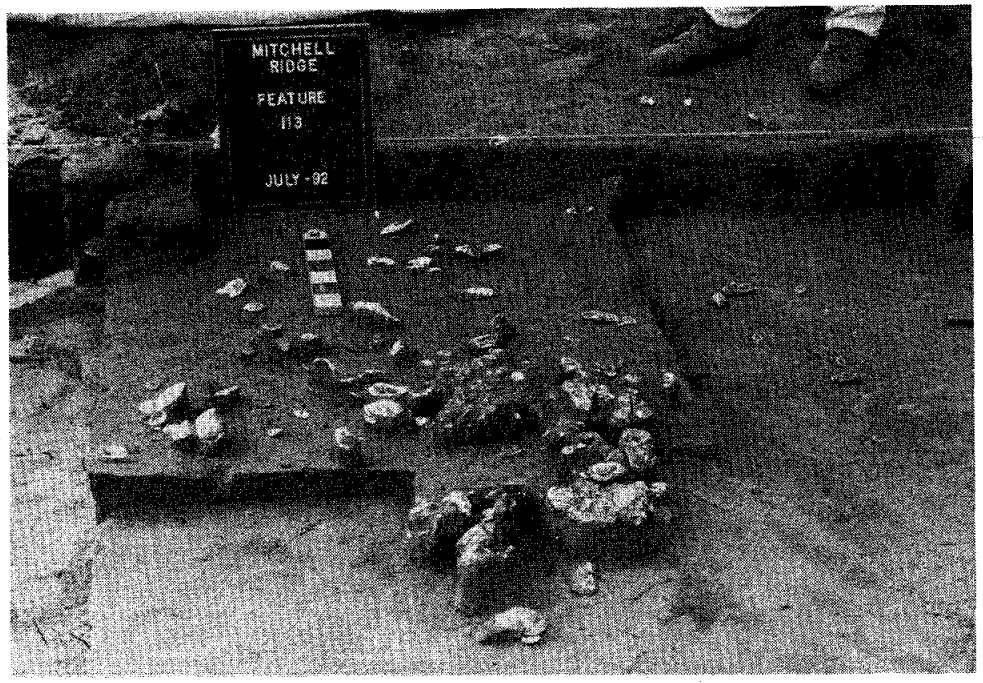
Figure 5.7. Three shell-lined hearths,northwest corner of Block Excavation. Feature 112 is in foreground, Features 114 and 115 are in middle ground.

pots would fortuitously fall or be tossed in among the shells which lined the hearth. Second, the sherds all lay flat in the bottom of the shallow basin, as did the oyster shells, or were set at inclinations along the edge of the feature which approximately conformed with the sloping walls of the basin. Also, it was clear from the articulation of many of the fragments that the sherds were of large size when placed in the feature, and that many subsequently cracked in situ. Finally, the broken edges of the sherds are oxidized to bright red or orange colors, as were the surfaces of the sherds, in contrast to the dark cores revealed by fresh edge breaks made in the laboratory. This strongly suggests that the fragments were intensely burned after being placed in the hearth, and that their placement preceded at least some of the fires built in the feature.

As seen in other hearths, the intensely burned shells consisted mostly of fragments, the articulation of which indicates their original placement as whole shells. Thus only 22 oyster valves remained intact. Fragmentary shell weighed 1,220.8 grams.

Unlined Hearths

Feature 105



Feature 5.8. Feature 113, a shell-lined hearth in Zone 2, Block Excavation.

Located in the southeast corner of 2x2-meter unit N0E6, this roughly circular feature was a discrete patch of black-stained soil containing flecks and small bits of wood charcoal. The edges of the feature, which measured 43x35 cm, were fairly distinct. The cross-sectional profile was very slightly basin-shaped with a depth of approximately 5 cm.

A small amount of wood charcoal was recoverable for standard radiocarbon dating using an extended counting time. The assay (Beta-55862) produced an uncorrected age of 650+/-170 B.P., which was corrected for the 13C fraction to 590+/-170 B.P. (the large margin of error reflects the small size of the sample). Calibrated dendrochronologically, the 1-sigma age range is 671-496 B.P. or A.D. 1279-1454.

Feature 108

This is a circular patch of fire-blackened soil containing scattered flecks and small bits of charcoal (too little for radiocarbon dating). The feature, located in 2x2-meter unit N0E0, was contained within Zone 2, though its base rested on the top of Zone 3. The diameter was 40 cm. The cross-sectional profile exhibited a slight basin shape, with a maximum depth from the surface of the feature of only seven centimeters.

Feature 109

This feature consisted of a discrete, roughly circular patch of black-stained soil containing scattered bits of wood charcoal. Plan dimensions were 61x53 cm. The cross-sectional profile was distinctly basin-shaped, with a depth from the surface of the feature of 22 cm (Figure 5.11). The most intense staining was seen in the lower part of the basin, and this is also where most of the charcoal bits were found. As indicated in Figure 5.11, the feature clearly originated in Zone 2 and extended through Zone 3 to the surface of an underlying lens of geologic shell hash. Nine burned oyster shells were found near the bottom of the feature, and these may represent a partial lining of the basin.

Feature 5.9. Feature 110-A in Block Excavation, a shell- and pottery-lined hearth in Zone 2, looking grid north.

Sufficient charcoal was present for radiocarbon dating. The assay (Beta-55863) yielded an uncorrected age of 650+/-90 years B.P. which was corrected for 13C to 610+/-90 B.P. Calibrated dendrochronologically, the 1-sigma age range is 657-529 B.P., or A.D. 1293-1421.

Pit, Feature 111

The feature is the only aboriginal pit found within the area of the Block Excavation. It was located along grid line E0, in the northwest quadrant of 2x2-meter unit N4E0 and the adjacent part of N4W2. Because the fill was indistinguishable from the Zone 2 soil matrix, it was recognized only when excavation of unit N4E0 reached the somewhat lighter brown soil of the bottom of Zone 3. It was clear, however, that the pit originated in Zone 2, since a complete profile was obtained along the eastern edge of unit N4W2 which was as yet unexcavated; the upper part of the pit profile could be distinguished by the slightly darker color of the pit fill as compared to the upper part of Zone 3. In plan the pit was quite circular, with a diameter of 35 cm. In profile the feature was basin-shaped; from the surface of Zone 3 the depth was 12 cm. No evidence of burning was present to suggest use as a hearth. The dark brown fill of the pit contained two aboriginal potsherds, a nodule of asphaltum four cm in diameter, five fish bones and one

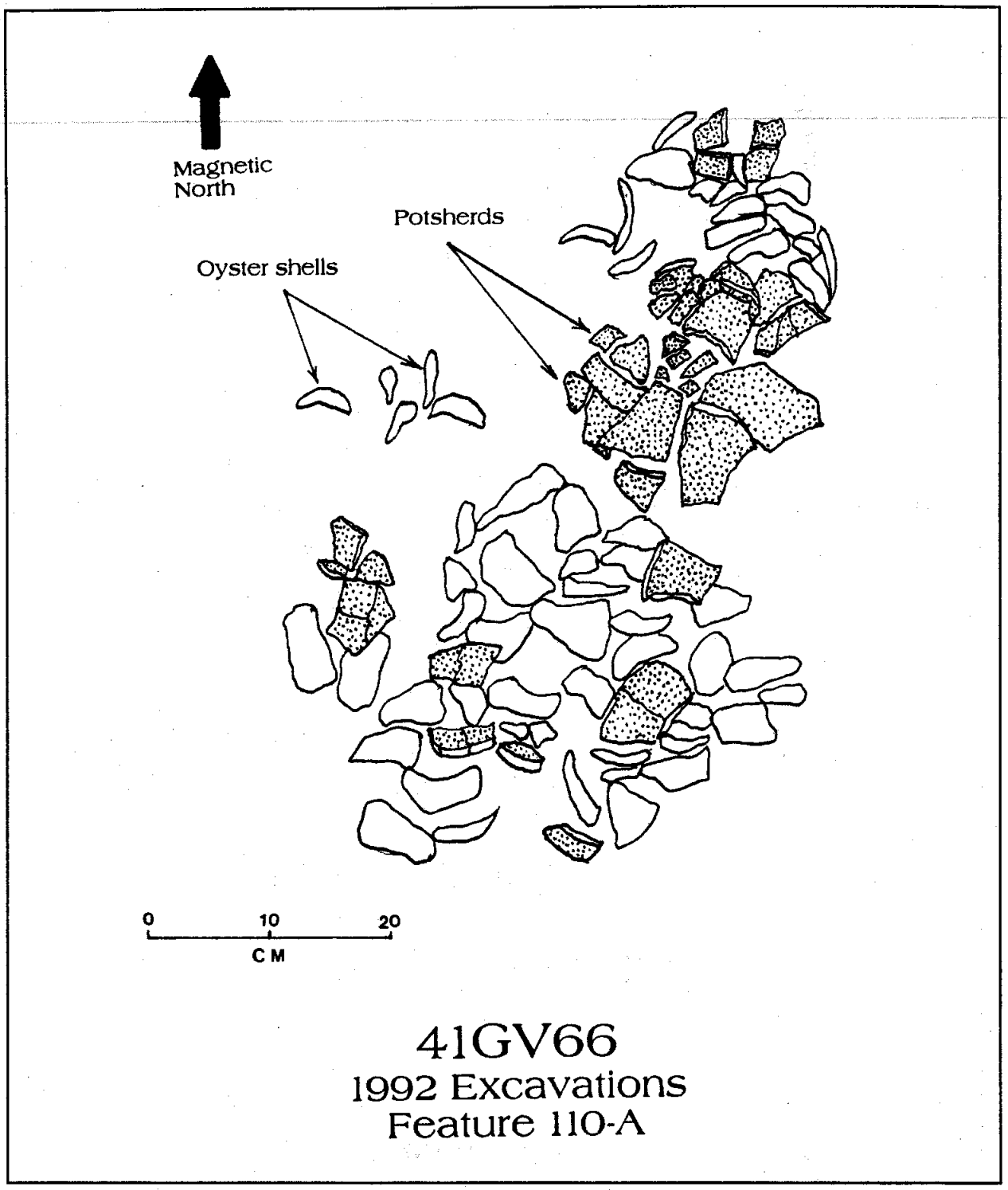


Figure 5.10. Plan drawing of Feature 110-A, a shell and potsherd-lined hearth in the Block Excavation.

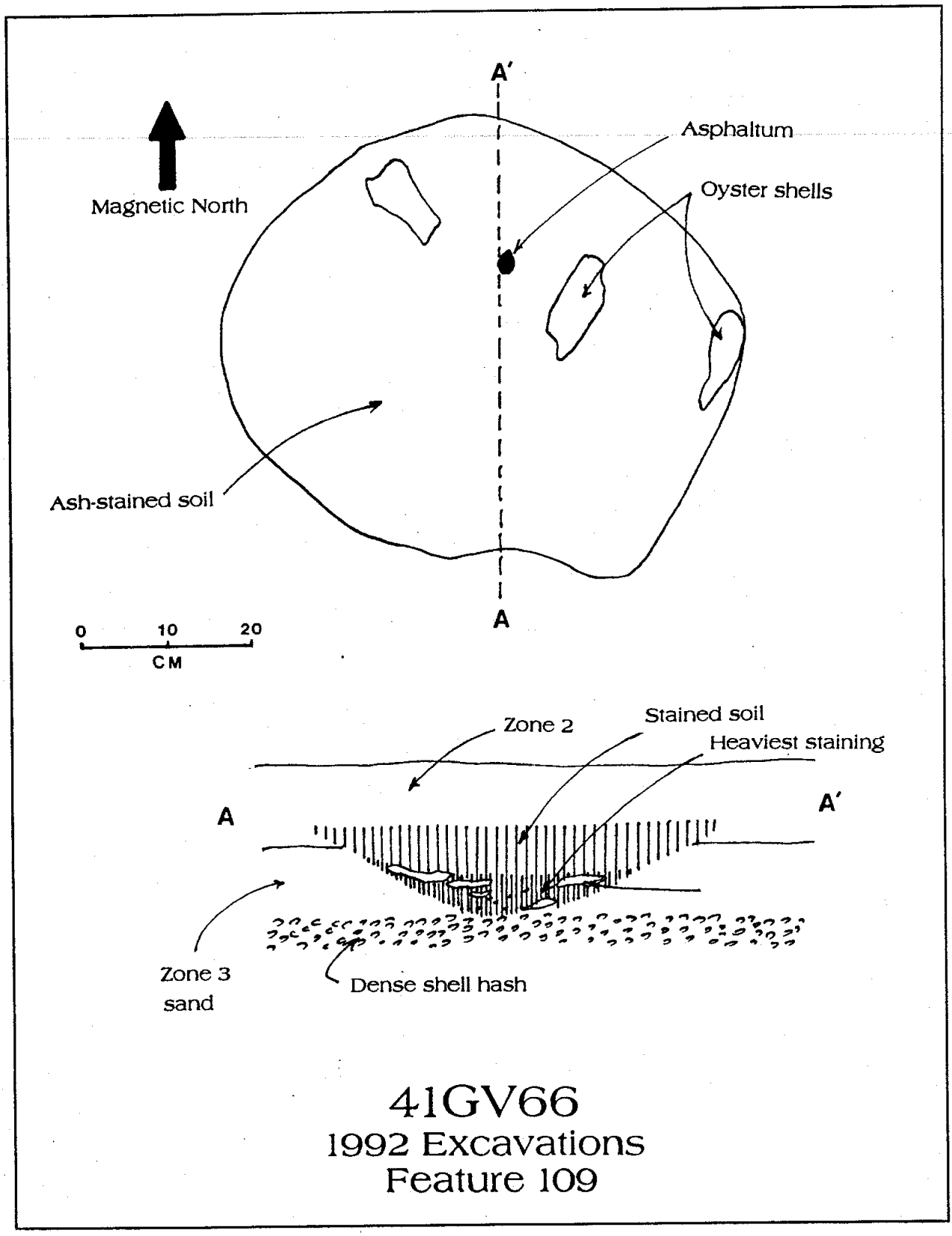


Figure 5.11. Plan and cross-sectional views of hearth, Feature 109, Block Excavation.

small unidentifiable bone fragment.

Possible Aboriginal House Floor

Feature 110

Feature 110, which extended throughout most of 2x2-meter unit N2E4 (see Figure 5.5), was a slight but distinct semicircular depression in the base of Zone 2 which intruded 6-10 cm into Zone 3, to reach the top of the underlying geologic substrate of tan sand and shell hash. As excavation of Zone 2 extended into Zone 3, the depression was clearly visible as a dark brown patch, with a clearly defined arcuate edge at its northern end, contrasting with the lighter brown of Zone 3. The fill was removed with trowels to reveal the more or less flat-bottomed, basin-like depression. As noted above, the shell- and potsherd-lined hearth, Feature 110-A, rested within the depression. Numerous potsherds, faunal bone fragments and oyster shell fragments were present within the fill, though not in quantities noticeably different from those of Zone 2. The fill was an essentially homogeneous downward extension of Zone 2.

As may be seen in Figure 5.5, the east-west diameter of the semicircular plan of Feature 110 is 210 cm. In contrast to the northern, arcuate edge of the depression, the southern edge was ill-defined. This is in part due to localized disturbance of the top of Zone 3, apparently as a result of bioturbation (animal burrowing), and partly because the depression merged with a somewhat deeper base level for Zone 2 in this area.

The function of this depression can only be suggested to relate to some sort of structural containment. During the course of work in the Block Excavation, it was repeatedly noted that the fine sand soil of Zones 1-3, when dry, had virtually no structural integrity and that even minimal treadage loosened the soil surface to a depth of two or three centimeters (thus making maintenance of even unit floors particularly difficult). When preparing exposed surfaces for mapping or photography, it was consistently necessary to sweep off the loosened and dried soil, resulting in a slight lowering of the floor of the excavation. The same result would doubtless have been obtained on any repeatedly maintained surface used by the aboriginal occupants of the site. Periodic cleaning and sweeping of a hut floor, for example, would almost certainly result in the removal of some of the original soil. Carried out within a structural containment, this procedure could have resulted in the creation of a clearly defined depression such as Feature 110. Alternate possibilities offer unlikely explanations for the configuration of the Feature. It is too shallow and probably too clearly semicircular in plan to be a treefall hollow. Nor was any evidence found to indicate some sort of complex of animal burrows, which in any case would not create the well defined arcuate pattern of the northern edge of the feature. A third possibility-- that the depression marks the bottom of some sort of pit dug subsequent to the formation of Zone 2-- is rejected on the basis of the intact condition of that Zone, as well as the aboriginal hearth, Feature 110-A, which rests within Feature 110.

Post Molds

A group of six small post molds was found to the south of Feature 110 in units N0E2 and N2E2. They form a semicircular pattern which mirrors that of Feature 110. Taken together, the arcuate patterns of Feature 110 and the group of post molds are spatially juxtaposed so as to delineate a nearly complete oblong shape 4.0 meters long and 2.2 meters wide (see Figure 5.26, p. 110). The horizontal positions of the post molds, along with scale drawings of plan and profile views of each, are shown in Figure 5.12.

The post molds became discernable as dark brown, circular patches, 7 to 20 cm in diameter, against the light brown soil of the bottom of Zone 3. Depths from the level at which the post molds became visible ranged from 2 to 15 cm. Assuming that the molds originated in Zone 2 (but could not be distinguished within the dark matrix of that Zone), the original depths would have been at least 10-15 cm greater. All of the post molds were cross-sectioned in the field, and the generally conical profiles showed clearly as the dark brown fill contrasted with the lighter Zone 3 matrix.

It should be stressed that the functional linkage between Feature 110 and the post molds is purely inferential; they may in fact not be related. However, considered independently, neither the post molds nor Feature 110 make much sense. Taken together they do form a geometric pattern similar in size and

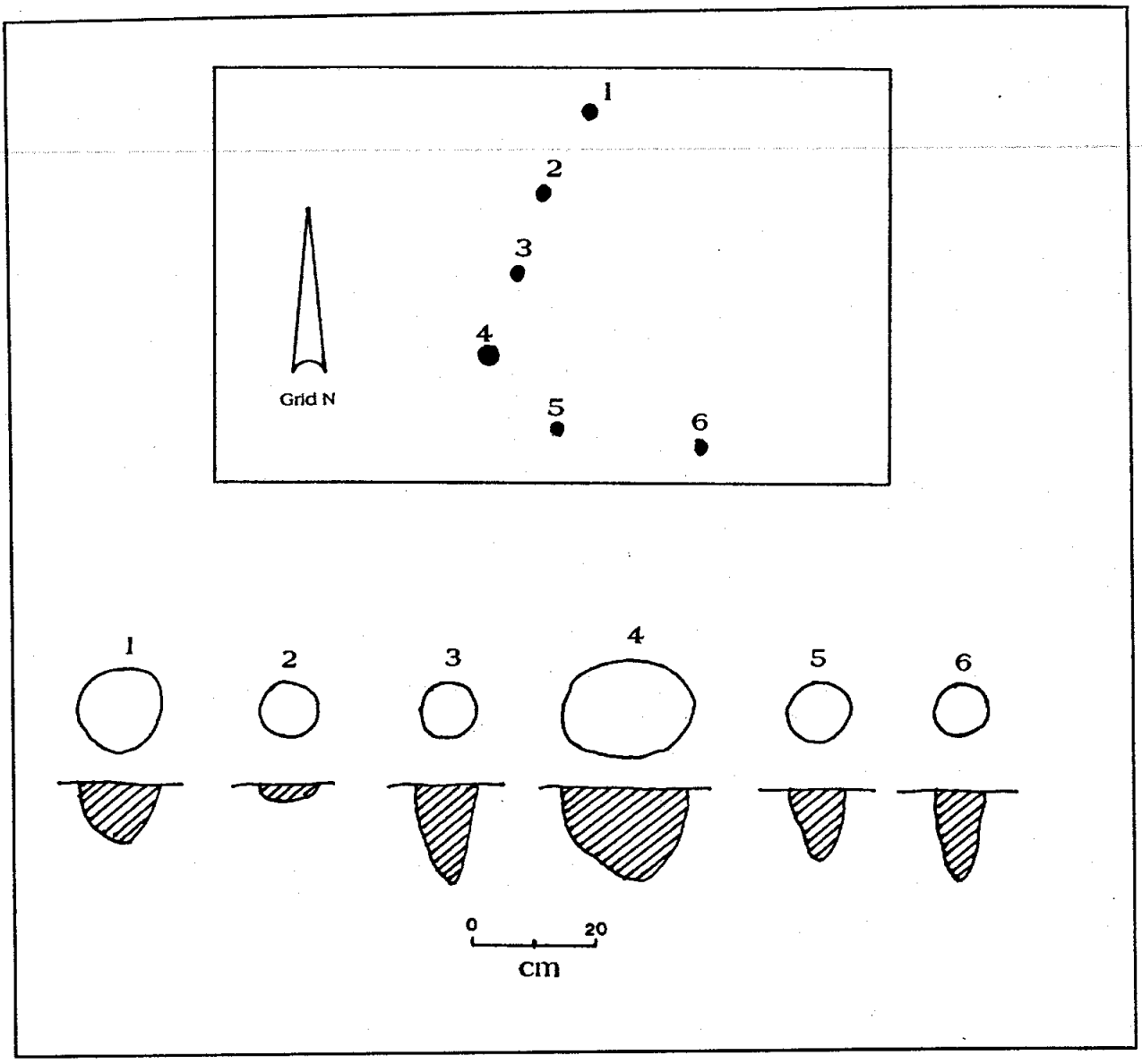


Figure 5.12. Plan view and corresponding individual cross sections of post molds in units, N0E4 and N2E4, Block Excavation. Note arcuate pattern of post mold plan, possibly associated with Features 110 and 110-A as an aboriginal house floor.

shape to aboriginal house floors delineated at other Late Prehistoric sites in coastal and inland Texas (Ricklis 1988; Ricklis and Collins 1993; Johnson n.d.) and corresponding to the kinds of small, simple huts documented ethnohistorically for the Texas coast (Newcomb 1983; Carroll 1983) and possibly observed by Cabeza de Vaca on the upper coast (Bandelier 1905:61-68; see Chapter 4, herein). If an aboriginal house floor is in fact represented, it is conceivable that the structural poles along the northern edge were removed upon site abandonment (thus leaving no trace as post molds), a practice ascribed to the mobile hunter-gatherers of the Texas coast (Newcomb 1983). The hearth, Feature 110-A, would have been located nearly in the center of the proposed structure, a common placement of hearths within aboriginal huts (e.g. Newcomb 1983; Ricklis 1988; Ricklis and Collins 1993). Thus, while no firm conclusions can be reached, the juxtapositions of these various features at least makes sense when interpreted as representing a small, temporary domicile.

Oyster Shell Concentration, Feature 106

This concentration of oyster shells was located in the southwest quadrant of 2x2-meter unit N0E0. The feature was only partially exposed, since it appeared to extend beyond the limits of the excavation (see Figure 5.13). Most shells were whole and intact, and none were burned. This indicates, along with the fact that blackened soil and charcoal were absent, that this feature is not a shell lined hearth. Rather, it is interpreted as representing disposal of oyster valves subsequent to shucking. A total of 125 whole of nearly whole oyster valves was present in the excavated part of the feature. The feature generally consisted of one layer of shells, though in a few spots it was two shells thick.

A sample of oyster shell was submitted for radiocarbon dating. The assay (Beta-55867) produced an uncorrected age of 280+/-50 years B.P. As is the case with the oyster shell sample from Feature 115, a correction for 13C of 370 years was required, which produces a corrected radiocarbon age of 650+/-50 B.P. Calibrated dendrochronologically, this yields a 1-sigma age range of 658-554 B.P., or a calendar range of A.D. 1292-1396.

Artifacts from the Block Excavation

A total of 9,935 aboriginal artifacts was recovered from the Block Excavation, all from Zone 2 (listed in Table 5.2). The total is comprised of 72 flaked lithics, 2,256 pieces of lithic debitage, 54 objects of rough or ground stone (mostly pieces of water-worn pumice), 10 bone artifacts, 9 shell implements, 5 fragments of worked glass, 510 nodules of asphaltum and 7,018 fragments of aboriginal pottery and a single piece of what appears to be a fired aboriginal potter's coil. On the whole, these materials reflect daily domestic activities, and contrast markedly with the non-mundane material assemblage recovered from the burials at the site, discussed further on. The artifacts from the Block Excavation are discussed below by material and inferred functional categories.

Flaked Lithics

Arrowpoints

Thirty-five arrowpoints or arrowpoint fragments were found in the Block Excavation. As is the case with flaked lithics in general, the arrowpoints are made from chert. The color of the cherts range from gray through brown to yellowish brown and, in one case, dusky red. Four specimens are patinated to a mottled grayish-white color. Since the patinated points are of the same Late Prehistoric types as the other arrowpoints, it is unlikely that the patination reflects greater age; more probably the patination resulted from a longer period of post-depositional exposure to the elements than was the case with unpatinated specimens.

The Perdiz type (Suhm and Jelks 1962; Turner and Hester 1993) is by far the most abundantly represented in the sample, with 10 complete or nearly complete (Table 5.3; Figure 5.14, a-j, p) and 12 fragmentary specimens. The latter group consists of two proximal fragments (stem and part of the blade), nine stem fragments, one specimen with stem missing judged to be a probable Perdiz on the basis of its triangular blade, shoulder barbs and narrow stem attachment.

Several specimens (Figure 5.14, k,l) are termed here "Perdiz-like". Two are small points with

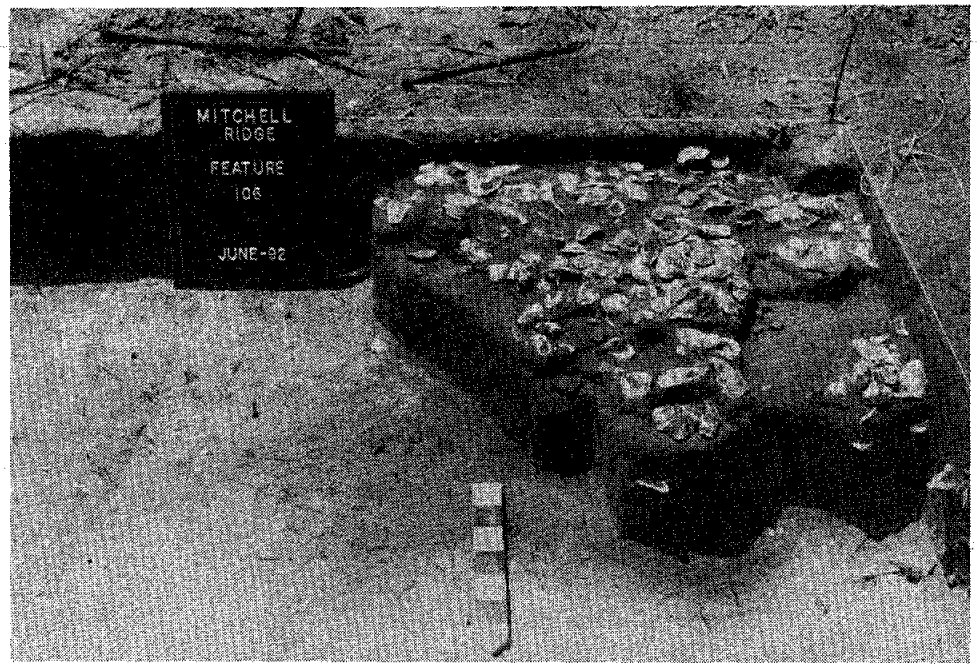


Figure 5.13. Feature 106, unburned oyster shell concentration, Zone 2, Block Excavation.

convex edges and a superficial resemblance to the so-called Cliffton type by virtue of their short, contracting stems. They are not, however, assigned to the latter type because (a) the short stems may simply have accommodated the small size of the flakes from which the points were made, and (b) the Cliffton type is in many cases questionable, since many specimens may be only Perdiz preforms (Turner and Hester 1993). A third untypable specimen (Figure 5.14, n) only vaguely resembles the Perdiz type; it has a triangular blade, well-defined shoulders (but without the barbs characteristic of the type) and a pointed stem. The fourth specimen (Figure 5.14, m) has the contracting stem and shoulder barbs of the Perdiz type but markedly indented lateral blade edges, giving the point a cruciform shape.

Only four other arrowpoint specimens can be identified as to form. One, assigned to the Cuney type (Figure 5.14, s) has a triangular blade with finely serrated edges, prominent shoulder barbs and a short, expanding stem. A single Scallorn type arrowpoint is represented by a basal stem fragment. Finally, two specimens are lozenge-shaped (see Figure 5.14, t). Both are rather poorly made, and give the appearance of fast and expedient manufacture of points from available, small flakes. They are not assumed, therefore, to necessarily pertain to a formal typological category (i.e., the so-called Lozenge type reported for the lower Texas coast; see Turner and Hester 1993).

The remaining arrowpoint specimens consist of untypable fragments. One of these (Figure 5.14, o) is a lateral fragment retaining a single prominent shoulder barb; though this point cannot be typed, it is not of the Perdiz type, since the remaining portion of the stem is clearly expanding rather than contracting. Another specimen (Figure 5.14, q) has poorly defined, rounded shoulders; it was stemmed, but the stem is broken off. The largest arrowpoint found (Figure 5.14, r) stands out from other specimens by virtue of exceptionally fine bifacial workmanship as well as by its size. It has gently convex edges, prominent shoulder barbs; the stem is broken off and the point thus cannot be typed. Two final specimens are represented only by distal tip fragments.

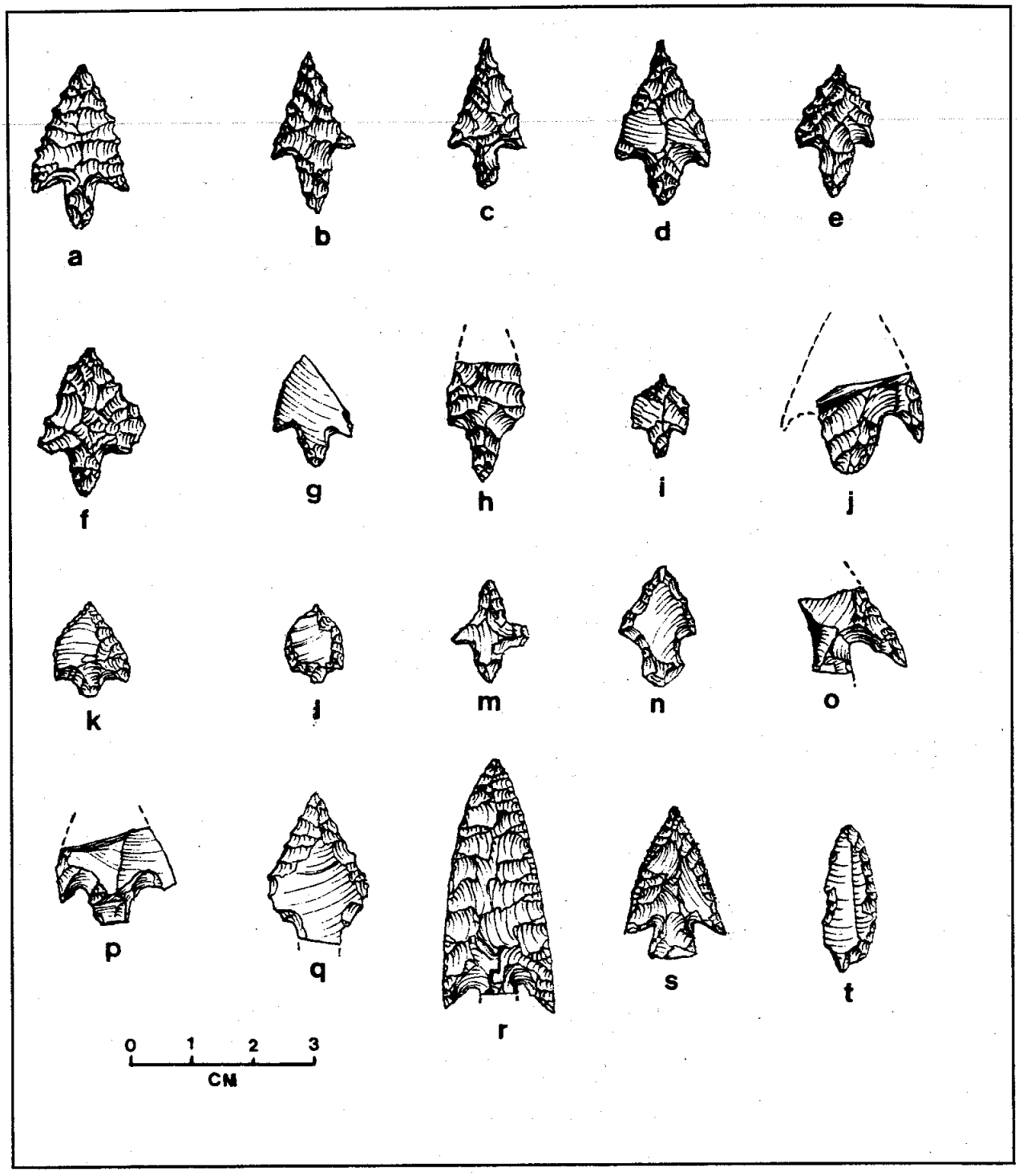


Figure 5.14. Arrowpoints, Block Excavation. A-j, Perdiz; k-n, p, Perdiz-like; o, q, r, untyped broken specimens; s, Cuney-like, t, lozenge-shaped.

Table 5.2. Artifacts recovered from the Block Excavation.

Artifact class	Description	Quantity
LITHICS		
Arrowpoints and arrowpoint fragments	Perdiz	8
	Perdiz (distal tip missing)	1
	Perdiz (reworked)	1
	Probable Perdiz (stem missing)	1
	proximal Perdiz	2
	Perdiz-like	4
	Perdiz stem fragments	9
	Cuney	1
	Scallorn base fragment	1
	lozenge-shaped	2
	untypable	3
	distal fragments	2
Chert "drills" and "drill" fragments	Expanded base form	2
	cylindrical form	2
	distal fragments	1
	proximal/distal fragments	2
Prismatic blades	complete	7
	fragmentary	10
Miscellaneous lithics	core	1
	lozenge-shaped biface	1
	large pointed biface	1
	crude pointed biface	1
	thinbiface fragment	2
	retouched flakes	7
Flakes and flake fragments	primary flakes	5
	secondary flakes	65
	tertiary flakes	315
	thinning flakes	43
	retouch flakes	805
	primary flake fragments	21
	secondary flake fragments	123
	tertiary flake fragments	864
	chunks	15
Rough stone	hammerstone	1
	sandstone abrader	1
	pumice abrader	1
	milling stone(?) fragment	1
	quartz pebble	1
	pieces of pumice	49

Table 5.2, cont.

Artifact class	Description	Quantity
BONE	rectangular Bison bone tool (pottery scraper?)	1
	distal bone awl fragment	1
	proximal awl(?) fragments	2
	bird bone beads	3
	bird bone whistle section	1
	bird bone whistle fragment	1
	deer metapodial fleshing tool	1
SHELL	Busycon shell with cut section removed	1
	perforated Oyster shells	3
	possible Oyster shell tool (edge worn)	1
	bipointed Busycon columella sections	4
CERAMICS	rimsherds	373
	sub-rimsherds	6528
	decorated sherds	107
	noded bases	10
	potter's coil (?)	1
GLASS	distal tip from a green glass arrowpoint	1
	edge flaked amber glass fragments	2
	edge-flaked green glass fragments	2
ASPHALTUM	basketry impressed asphaltum nodule	1
	asphaltum nodules	509

Table 5.3. Arrowpoints and arrowpoint fragments from the 1992 Block excavation.

Description / type	Provenience	Bifacial / Unifacial*	Dimensions (mm.) stem L	L	W	T	Use wear	Munsell number	Color
Perdiz	N6W2	B	8.0	27.5	15.5	3.0	none	10YR 6/1	gray
Perdiz	N2E4	U	9.0	21.5	12.0	3.0	none	2.5Y 6/1	gray
Perdiz	N0E6	B	7.3	26.5	15.0	4.5	none	10YR 6/3	pale brown
Perdiz	N0E4	B	11.5	27.0	14.0	3.7	none	10YR 5/2	grayish brown
Perdiz	N4E4	U	6.5	18.5	13.4	2.7	none	2.5Y 6/2	light brownish gray
Perdiz	N0E2	U	7.5	24.4	17.5	5.9	none	----------	patinated
Perdiz	N4E2	U	6.5	23.6	12.6	3.0	none	2.5Y 6/3	light yellowish brown
Perdiz	N0E6	U	4.5	13.0	13.9	1.5	none	7.5YR 6/1	gray
Perdiz (missing distal tip)	N0E4	U	8.7	NA	NA	3.1	none	7.5YR 4/3	brown
Perdiz (reworked)	N4E2	U	NA	16.1	12.0	2.1	none	7.5YR 6/1	gray
Perdiz-like	N6W2	U	2.5	14.9	12.1	2.3	none	10YR 6/3	pale brown
Perdiz-like	N4W2	U	8.2	18.8	11.9	2.5	none		striped:
								2.5Y 4/3	olive brown
								7.5YR 6/4	light brown
Perdiz ? (stem missing)	N4W2	B	NA	NA	18.6	3.0	none	5Y 5/1	gray
Cuney	N2E4	U	5.9	24.0	15.0	2.1	none	2.5Y 5/4	light olive brown
Untypable	N2E2	B	1.5	13.2	8.9	1.2	none	10YR 5/4	yellowish brown
Untypable (stem missing)	N2E4	B	NA	NA	16.0	3.1	none	----------	patinated
Lozenge-shaped	N6E4	B	NA	22.5	8.0	4.1	none	10YR 5/6	yellowish brown
Lozenge-shaped	N6E2	B	NA	20.7	10.3	4.3	none	10R 3/2	dusky red
Blunt bifacial, untyped (possibly stemmed)	N2E6	B	NA	NA	9.2	4.0	none	10YR 3/2	very dark grayish brown
Proximal Perdiz (distal tip and tip of stem missing)	N0E2	U	NA	NA	NA	4.1	none	10YR 5/2	grayish brown

* "Unifacial" indicates that original flake surface remains on much or most of 1 face of point.

Table 5.3, continued.

Description / type	Provenience	Bifacial/ Unifacial*	Dimensions (mm.) stem L	L	W	T	Use wear	Munsell number	Color
Proximal Perdiz (stem and 1 barb only)	N6E6	B	9.0	NA	NA	2.0	none	5YR 4/3	reddish brown
Probable Perdiz (part of stem and one barb missing)	N6E2	B	NA	NA	NA	3.0	none	5YR 3/2	dark reddish brown
Perdiz stem	N2E6	U	NA	NA	NA	1.6	none	10YR 6/2	light brownish gray
Perdiz stem	N6W3	U	NA	NA	NA	1.2	none	----------	patinated
Perdiz stem	N6W3	B	NA	NA	NA	2.1	none	10R 3/3	dusky red
Perdiz stem	N0E6	B	NA	NA	NA	2.3	none	5YR 4/3	reddish brown
Perdiz stem	N4W2	B	NA	NA	NA	1.8	none	7.5YR 4/2	brown
Perdiz stem	N6W2	B	NA	NA	NA	1.9	none	10YR 3/2	very dark grayish brown
Perdiz stem	N4W2	B	NA	NA	NA	1.5	none	7.5YR 5/3	brown
Perdiz stem	N6W3	B	NA	NA	NA	2.4	none	10YR 5/2	grayish brown
Perdiz stem	N4E4	B	NA	NA	NA	2.1	none	10YR 3/2	very dark grayish brown
Scallorn base fragment	N0E0	B	NA	NA	NA	2.7	none	7.5YR 4/1	dark gray
Stem fragment, untyped	N0E4	B	NA	NA	NA	3.5	none	10R 6/3-4	pale red
Distal arrowpoint fragment	N4W2	U	NA	NA	NA	1.0	none	10YR 3/2	very dark grayish brown
Distal arrowpoint fragment	N4W2		NA	NA	NA	1.2	none	----------	patinated

* "Unifacial" indicates that original flake surface remains on much or most of 1 face of point.

All arrowpoints appear to have been manufactured from thin flakes. Many are small, and are quasi-unifacial, in the sense that one face is only minimally retouched along one or both edges to create the desired shape (e.g. Figure 5.14, g, l, n. q, t). The majority of specimens show poor to fair workmanship, and the form of the points is often poorly developed, particularly on the smallest specimens. The overall impression is that the residents of the site were making arrowpoints from small flakes that were less than ideal for obtaining the best grade of workmanship. The implications of this in terms of general patterns of lithic technological organization are discussed further on, in Chapter 7.

Chert Drills

The Block Excavation produced seven examples of what are generally considered drills or perforators (Aten 1983a:252). The proveniences by excavation unit, and metric and other data for these specimens is presented in Table 5.4. Two specimens (Figure 5.15, e, f) have long, narrow bifacially flaked bits and amorphous, expanded bases. Both are made on long, narrow blades or blade-like flakes and are virtually indistinguishable from specimens found on Late Prehistoric inland Texas sites of the Toyah Phase or Horizon (e.g. Jelks 1962, Fig. 20; Highley 1986; Black 1986; Ricklis and Collins 1993; Johnson n.d.). Two other specimens (Figure 5.15, h, i) are of the bipointed, cylindrical form with biconvex cross-sections more commonly reported for the Texas coast (e.g. Campbell 1957; Corbin 1963; Aten 1983a, Fig. 13.2; Ricklis 1990). Three specimens are tip fragments (Figure 5.15, g), and it cannot be determined whether these pertain to cylindrical or expanded-base forms.

Aten (1983a:252) has pointed out that many "drills" from the upper Texas coast show no signs of the use wear which should be present on tools used repeatedly as perforators. This is the case with the specimens from the Block Excavation, all of which were examined under 20X microscopy for use wear. Only one specimen (of the cylindrical form) shows use wear in the form of light polish on one edge. It is possible that some specimens were used only briefly to perforate soft material such as hide, and were discarded before wear became detectable by low-power microscopy. While future research should call for special use-wear studies on these tool forms using high-power electron microscopy, there probably is, as Aten has implied, functional variability among the so-called drills from the region. Some, including specimens to be described here further on, have extreme edge wear and probably were used repeatedly to perforate hard material such as shell. Others clearly were not used for this purpose, and, as suggested further on, some may actually have been small arrowpoints.

Prismatic Blades

Seven complete and 10 fragmentary prismatic blades were recovered (Figure 5.16). Most are small, in keeping with the generally small size of lithic tools and debitage; the length of the largest complete specimen in only 25.3 mm (dimensions of all specimens are presented in Table 5.5). The complete specimens retain small, but distinct, single-facet platform remnants (Figure 5.16, a, b) whose surfaces are approximately at right angles to the long axes of the blades. Fragmentary specimens are identified by their more or less straight profiles and the presence of parallel flake scars on dorsal surfaces, and intervening ridges or arises running parallel to the long axes.

Six specimens show evidence of utilization, judging by the presence of continuous microflaking on one or both lateral edges (Figure 5.16, a, c), a form of edge wear attributed to use on hard substances such as wood or bone (e..g Young and Bamforth 1990). One fragmentary specimen clearly exhibits intentional retouch on one edge (Figure 5.16, e). Another fragment (Figure 5.16, d) appears to have been burinated prior to medial breakage; one edge of the break bears microflaking, indicating utilization on hard material.

Miscellaneous Flaked Lithics

Miscellaneous flaked lithics, nearly all of chert, are comprised of a single core, several bifaces not assignable to typological categories, intentionally retouched flakes, and utilized flakes.

The core (Figure 5.15, a) is somewhat reminiscent of polyhedral blade cores in shape, though this small specimen appears to have been reduced to the point that such categorization cannot be made with confidence. Numerous flake removals on the "upper" surface may reflect repeated platform rejuvenation. The specimen has a bluntly conical cross-section created by several converging flake scars. Diameter of

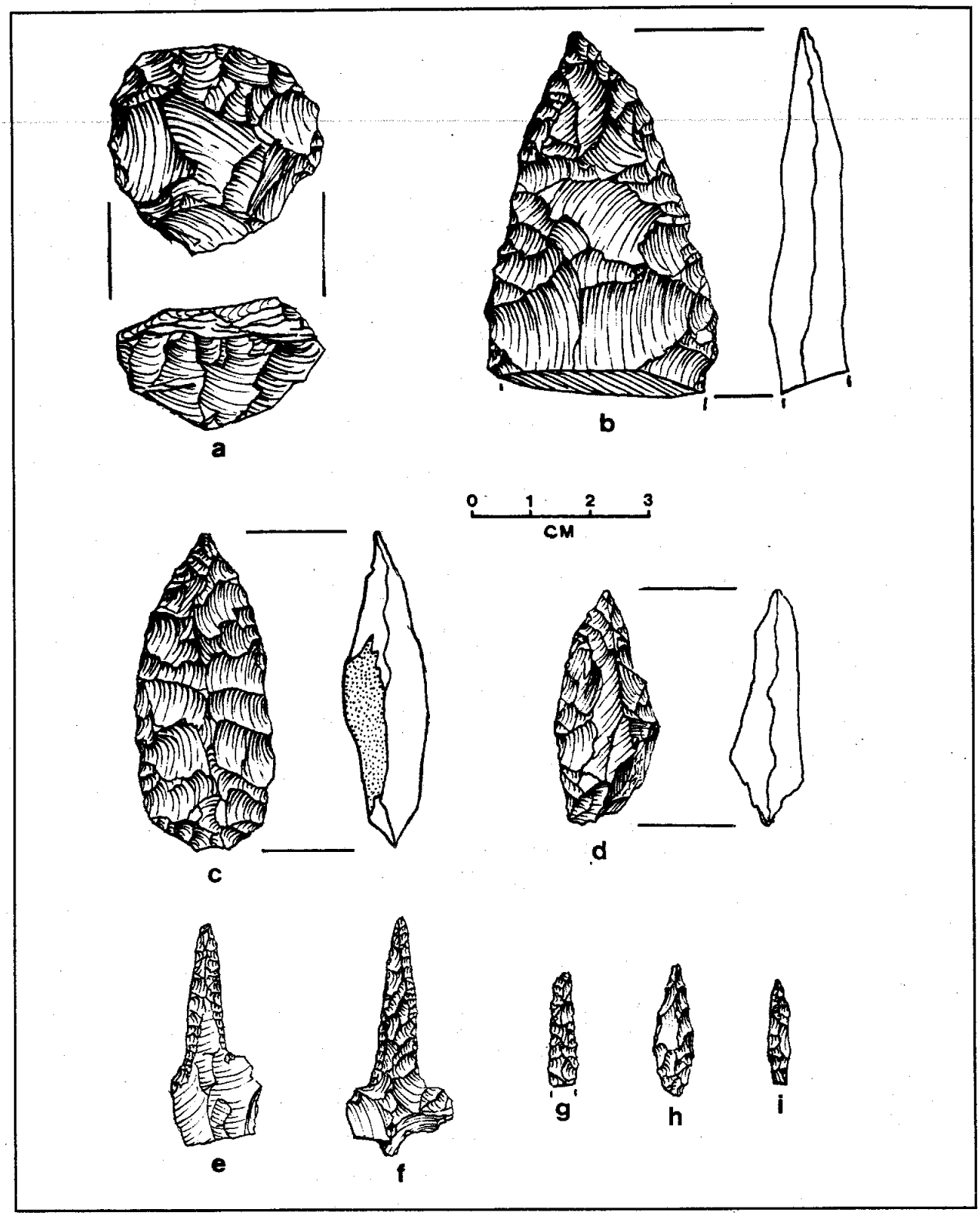


Figure 5.15. Lithics, Block Excavation. A, core; b-d, bifaces; e, f, expanded-base drills; g, drill fragment, h, i, cylindrical drills.

Table 5.4. Chert "Drills" and "Drill" fragments from the 1992 Block excavation

Description	Provenience	B ifacial / U nifacial	Dimensions (mm.)			Use wear	Munsell number	Color
Expanded Base Drill	N0E4	U	31.5	15.7	2.9	none	2.5Y 4/3	olive brown
Expanded Base Drill	N0E6	B	40.0	17.5	2.4	none	2.5Y 4/2	dark grayish brown
Cylindrical Drill	N0E6	B	17.2	4.0	4.0	polish on 1 edge	----------	patinated
Cylindrical Drill	N6W2	U	22.0	6.3	3.5	none	----------	patinated
Distal drill fragment	N0E2	B	20.1	5.0	3.2	none	----------	patinated
Proximal/distal? drill tip	N6E4	B	4.6	2.7	3.0	none	10YR 3/2	very dark grayish brown
Proximal/distal? drill tip	N0E2	B	8.9	3.3	2.4	none	10YR 5/2	grayish brown

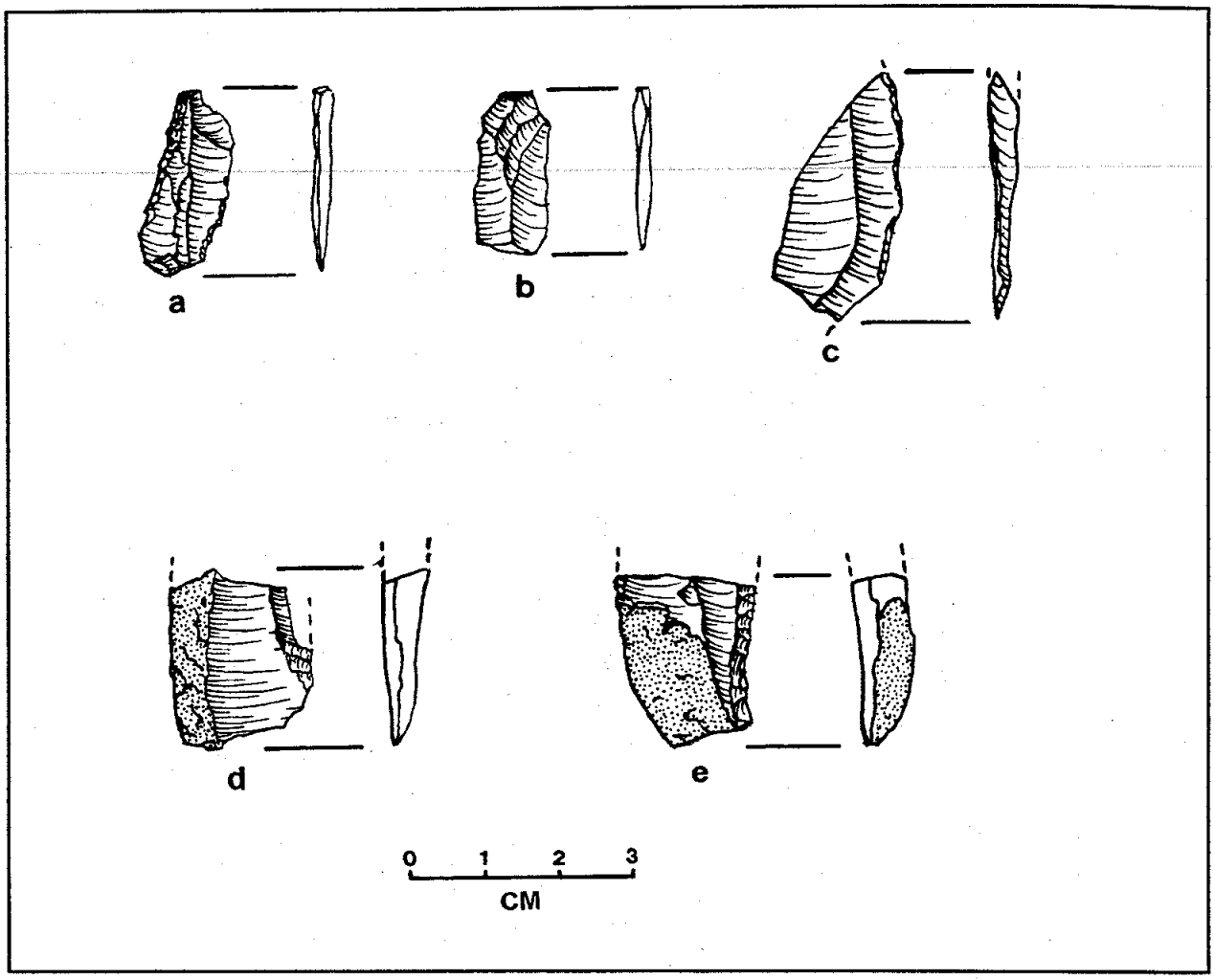


Figure 5.16. Prismatic blades and blade fragments, Block Excavation.

the specimen is 35 mm, length (height) is 21 mm.

Two complete bifaces are of indeterminate function. Both specimens (Figure 5.15, c, d) have a single pointed end; the opposite end in one case is rounded, in the other it is amorphously blunt and shows numerous small hinge fractures reflecting the flintknappers inability to further thin the piece. Both appear to be unfinished, judging from the facts that both retain cobble cortex on one surface and neither shows edge wear or polish which would reflect use.

A third biface (Figure 5.15, b), though fragmentary, is the largest flaked lithic specimen from the Block Excavation. It exhibits a break at right angles to the long axis and is pointed. A contraction of both lateral edges is apparent just short of the break. The length of the fragment is 63 mm, the maximum width is 41 mm, and the thickness is 13.5 mm. No edge wear is present, and the piece may be a late stage manufacturing failure.

A fourth biface fragment (not illustrated) is too incomplete for functional interpretation, though it is finely flaked and appears to be part of a finished tool. It exhibits nearly parallel lateral edges and the remaining end is rounded and slightly flattened in shape. The cross-section is lenticular. Length of the fragment is 25 mm, width is 14 mm and thickness is 3.8 mm.

One fragmentary and six complete flakes with intentional edge retouch were found. All are small (under 25 mm in length) and none represent formal tool categories (e.g. end scrapers). Nine flakes and

Table 5.5. Blades and blade fragments from the 1992 Block excavation

Description	Provenience	Dimensions (mm.) L	W	T	Retouch flaking	Use wear	Munsell number	Color
Prismatic blade	N0E4	23.9	10.9	3.1	none	none	10YR 6/4	light yellowish brown
Prismatic blade	N2E4	18.7	6.19	1.1	none	none	10YR 5/2	grayish brown
Prismatic blade	N4E4	25.0	9.8	3.1	on 1 edge	microflaking 1 edge	10YR 4/3	brown
Prismatic blade	N6E6	16.5	6.8	1.3	none	none	10YR 5/2	grayish brown
Prismatic blade	N6E4	24.0	8.9	.9	none	none	----------	patinated
Prismatic blade	N4E6	23.0	12.8	2.1	none	microflaking 2 edges	----------	patinated
Prismatic blade	N2E4	25.3	7.0	3.0	none	none	10YR 7/1	light gray
Prismatic blade fragment	N6E2	NA	14.8	6.1	none	microflaking 1 edge	----------	patinated
Prismatic blade fragment	N0E6	NA	13.5	15.2	none	microflaking 2 edges	7.5YR 4/2	brown
Prismatic blade fragment	N2E6	NA	13.0	4.1	on 1 edge	none	2.5YR 4/2	weak red
Prismatic blade fragment	N4E0	NA	9.0	.5	none	none	----------	patinated
Prismatic blade fragment	N6W2	NA	17.5	3.1	none	microflaking 1 edge	2.5Y 5/2	grayish brown
Prismatic blade fragment	N6E0	NA	10.0	2.4	none	none	----------	patinated
Prismatic blade fragment	F.110	NA	10.1	1.0	none	microflaking 2 edges		variegated:
							7.5YR 4/2	brown
							10YR 5/2	grayish brown
Prismatic blade fragment	N4W2	NA	19.7	6.2	none	none		mottled:
							2.5Y 6/3	light yellowish brown
							2.5Y4/2	dark grayish brown
Prismatic blade fragment	N4W2	NA	21.4	7.7	none	microflaking on medial break	10YR3/2	very dark grayish brown
Prismatic blade fragment possible side scraper	N0E6	NA	19.3	6.5	on 1 edge	none		mottled:
							10YR 5/2	grayish brown
							2.5Y 5/2	grayish brown

flake fragments and one small chunk of chert appear to have been utilized, as evidenced by edge microflaking.

Debitage

The Block Excavation produced at total of 2,256 pieces of lithic debitage. This total includes 1,233 flakes (defined here as complete flakes, and flake fragments which retain the proximal end including platform and bulb of percussion), 1008 flake fragments (specimens from which the proximal end has been broken off) and 15 chunks or amorphous fragments of shattered chert. All are the same cherts of gray through yellowish color described above for the arrowpoint sample. The thin, hard brownish cortex present on primary and secondary flakes, along with the curvatures of cortex flake surfaces, indicates that the raw material used overwhelmingly consisted of fairly small cobbles of chert of the kind found in alluvial deposits in the western Gulf coastal plain (see Banks 1990; also Ricklis and Cox 1993).

Only very small minorities of the flakes fall into the primary or secondary flake categories (i.e., retaining cobble cortex on all or part of the exterior surface). Interior flakes-- those completely lacking cortex-- account for over 94% of the specimens. Of these, most are tiny retouch flakes less than 7 mm in maximum length. The next most abundant category consists of larger interior flakes. Interior biface thinning flakes, identified on the basis of clearly lipped platforms, account for only 3.49% of the total sample of flakes.

The implications for the proportional representation of the different flake types in the sample for understanding lithic technological organization are discussed in Chapter 7. It can be noted here that the high proportion of retouch flakes indicates that lithic reduction here emphasized tool maintenance (i.e., edge rejuvenation through resharpening) rather than initial production of tools. This is in keeping with the small quantities of primary and secondary flakes, which indicate that little initial reduction of raw material in the form of chert cobbles was taking place in the area encompassed by the Block Excavation.

Rough and Ground Stone Artifacts

Forty-nine specimens fall into this general category. These mostly consist of 42 small (2-6 cm long) water-rounded pieces of volcanic pumice, which washes up along Gulf beaches as drift material originating in tectonically active areas of the southern Gulf and the Caribbean. The material is not found in the natural geologic sediments at the site, and was doubtless gathered by the aboriginal occupants and brought to the site. The potential usefulness of pumice is indicated by a single specimen (Figure 5.17, i) which has definite artificial modification in the form of two flattened surfaces. The naturally abrasive quality of pumice would have been well suited to smoothing hard materials such as shell, bone and wood, and this specimen is interpreted as an abrader.

A single relatively large cobble of limestone (not illustrated) exhibits a battered end. This piece, which measures 161x65x72 mm, fits well in the hand and is functionally classified as a hammerstone.

A small fragment of fine-grained sandstone (not illustrated) shows distinct modification in the form of slightly concave smoothing on one surface. This kind of artificial alteration is characteristic of milling stones found throughout most of the Texas area (e.g. Turner and Hester 1993). However, the specimen is but a small fragment (36x30 mm) of an implement which may not have been large enough to serve as a milling stone; alternatively the piece may be part of a stone for sharpening hard materials such as bone or shell.

A second implement of find-grained sandstone (Figure 5.17, h) does in fact appear, by virtue of its size and thinness, to have served as a sharpening or abrading stone. This specimen is complete, measuring 60x41 mm by 7 mm thick. One surface is smoothed and slightly concave.

A final specimen in this category is a small, water-smoothed quartz cobble. The cobble, which measures 39x24x22 mm, exhibits no discernable artificial modification. It is, however, unique, with no local natural geological counterparts, and was probably brought to the site. While the function of this piece cannot be determined, it would have served well as a ceramic burnishing stone, of the sort often used by pre-industrial potters (e.g. Shepard 1955).

Artifacts of Bone

The sample of 10 bone artifacts from the Block Excavation is small but interestingly varied. It includes, in addition to domestic tools, some of the few non-mundane items recovered from the Mitchell Ridge Site outside of the aboriginal burials.

Bone Awls

Three fragmentary specimens are believed to represent as many awls or perforators. One specimen (Figure 5.17, d) is a distal end ground from a piece of deer-sized longbone. The pointed tip exhibits polish, presumably from repeated use. Two other fragmentary specimens, also made from sections of deer-sized longbone (Figure 5.17, g), may be the proximal ends of awls. The straight ends of both have been cut and then ground, and the two lateral edges of both specimens are ground smooth.

Pottery Smoother (?)

This specimen (Figure 5.17, e) is a piece of thick (bison?) longbone which has been ground to a rectangular shape. The ends have a rounded shape, and are bifacially beveled to create distinct worked edges. Both lateral edges are bifacially tapered to form similar edges. All four edges exhibit short, minute striations which run perpendicular to the long axes of the edge. The edges at the two narrow ends are somewhat polished.

The function of this tool is indeterminate. However, it is quite analogous in shape, size and edge configuration to modern potters' tools, which are generally made of extremely hard wood (e.g. rosewood). The bevelled edges of such tools are used to smooth the surfaces of pots when the clay is still moist and malleable.

Worked Deer Metapodial (probable fleshing tool)

This specimen (Figure 5.18) is the proximal section (155 mm long) of a split deer metapodial. The proximal articular end is largely intact, and the specimen is broken off at the approximate mid-point of the original bone. Both edges of the split length of the bone have been smoothed; longitudinal striations parallel to the long axis of the bone suggest that this smoothing was accomplished with a hard, sharp tool (e.g., a chert blade or flake). Viewed from the side, the smoothed edges dip downward from the articular end of the bone to the break near the center and begin to trend back upward just short of the break, creating the impression that the bone was worked on one side to a shallowly concave configuration.

The function of this implement is not entirely clear. It closely resembles, however, the so-called bone beamers or fleshing tools made from deer metapodials which have widespread occurrence on prehistoric sites throughout the Eastern Woodlands (e.g. Mac Neish 1952, fig. 16; Morgan 1952, Fig. 35; Ritchie and Funk 1971:163) and onto the Great Plains (e.g. Chapman 1952, Fig. 61).

Bird Bone Beads

Three tubular beads made from cut sections of bird longbone were recovered in the Block Excavation. Two of these are small and made from longbones of duck-sized birds (see Figure 5.17, c). Both are exactly 10 mm in length; one is polished. The third, much larger, specimen (Figure 5.17, b) is broken and thus incomplete. Its function as a bead is problematical. It was made from a larger bird, and the length of the fragment is 45 mm. This specimen exhibits a rather high polish.

Bird Bone Whistle Fragments

Parts of two bird bone whistles were recovered from the Block Excavation. The larger of the two fragments (Figure 5.17, a) is made from the ulna of a large bird; the size of the bone suggests that it pertains to a great blue heron. It is crudely decorated with a total of 19 short, mostly parallel incisions, and is slightly polished. Part of the edge of a single cut hole at one end identifies this specimen as a whistle.

The second whistle is represented by a relatively small fragment of large bird longbone which retains part of the edge of a cut and smoothed oval hole, a characteristic of most of the bird bone whistles

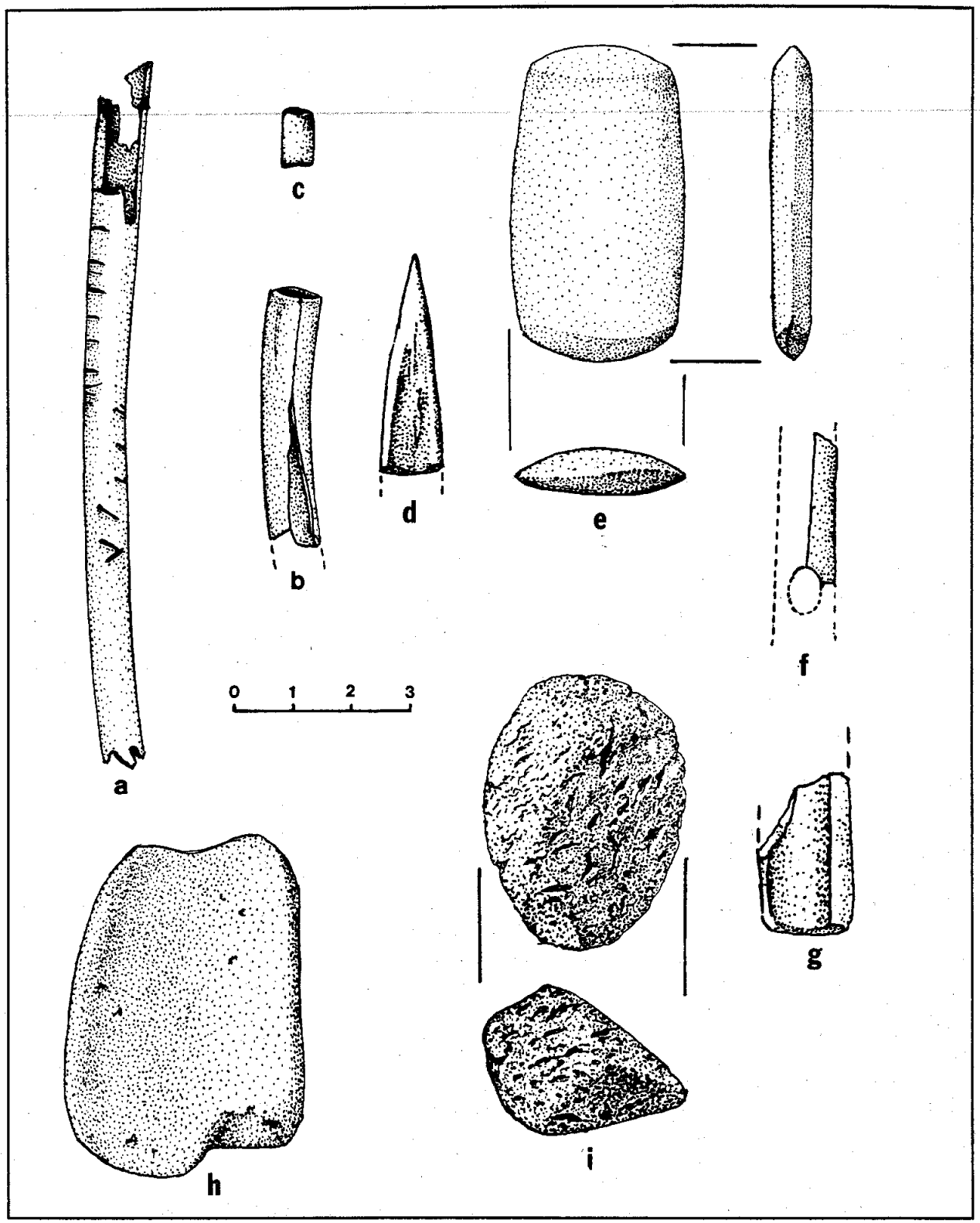


Figure 5.17. Bone and rough stone artifacts, Block Excavation. A, f, whistle fragments; b, c bird bone beads; d, g, bone awl fragments; e, bone pottery smoother (?); h, sandstone abrader; i, pumice abrader.

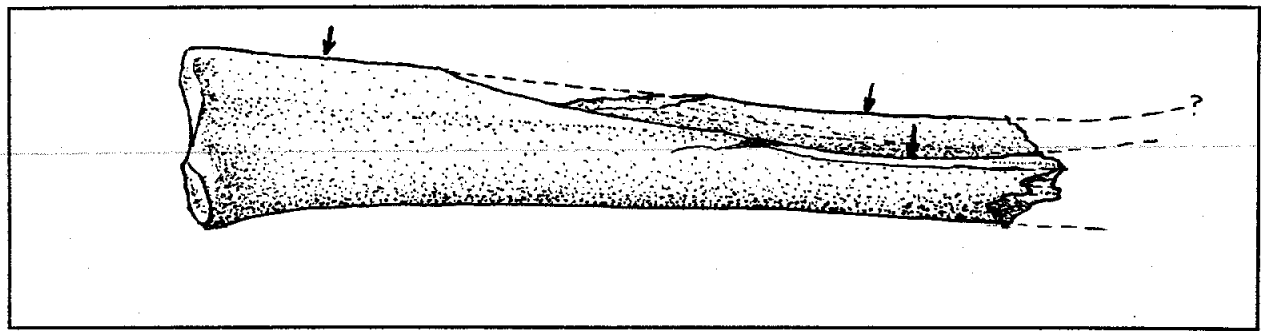


Figure 5.18 Possible deer metapodial fleshing tool, Block Excavation (shown actual size). Arrows point to worked surfaces.

found in burials at Mitchell Ridge. This piece also has light exterior polish. The diameter of this bone was slightly larger than the other specimen described above, but still fits within the range expectable for great blue heron. Both specimens were made from bones of birds which were smaller than the Whooping Cranes whose ulnae were consistently used for whistles found in the Mitchell Ridge burials, discussed in subsequent chapters.

Shell Implements

Perforated Oyster Shells

Three oyster valves (2 lower and 1 upper valve) bear intentional perforations (Figure 5.19, a). These are all good-sized shells, with lengths of 109, 122, and 140 mm. The roughly circular holes appear to have been punched out, judging by their jagged edges. The diameters of the holes are 7, 7, and 22 mm. The largest specimen, measuring 140x87 mm, exhibits heaving edge battering on the interior of the distal end of the shell (i.e., the end opposite the umbo). This extends completely along the convex edge of the end of the shell, strongly suggesting modification through use rather than fortuitous edge damage (e.g., through treadage); it is inferred that this shell was used in some kind of heavy cutting or chopping task.

Perforated oyster valves are apparently not a common element in upper Texas coast artifact assemblages. Aten (1983a), in his systematic examination of the regional artifact assemblage, does not report them, nor have they been documented in subsequently published site reports. This tool form is, however, commonly reported from the central Texas coast (e.g., Corbin 1963; Campbell 1952). Campbell (1958a) hypothesized that perforated oysters may have served as netweights.

Possible Utilized Oyster Shell

A single lower oyster valve exhibits edge attrition on the distal end which may indicate utilization. Edge modification consists of (a) splintering of the interior edge, as though from a battering action, (b) wear on the exterior edge resulting in a beveled appearance, and (c) a flattening of the end of the shell through removal of the naturally convex configuration. It may be significant that this shell is unusually thick and heavy for its length (111 mm long, 29 mm thick at the umbo), an attribute which may have increased its effectiveness in heavy cutting or chopping tasks. Aten (1983a:264) reported oyster shell cutting tools from the Brazos River delta area, but noted a absence of documented specimens from further

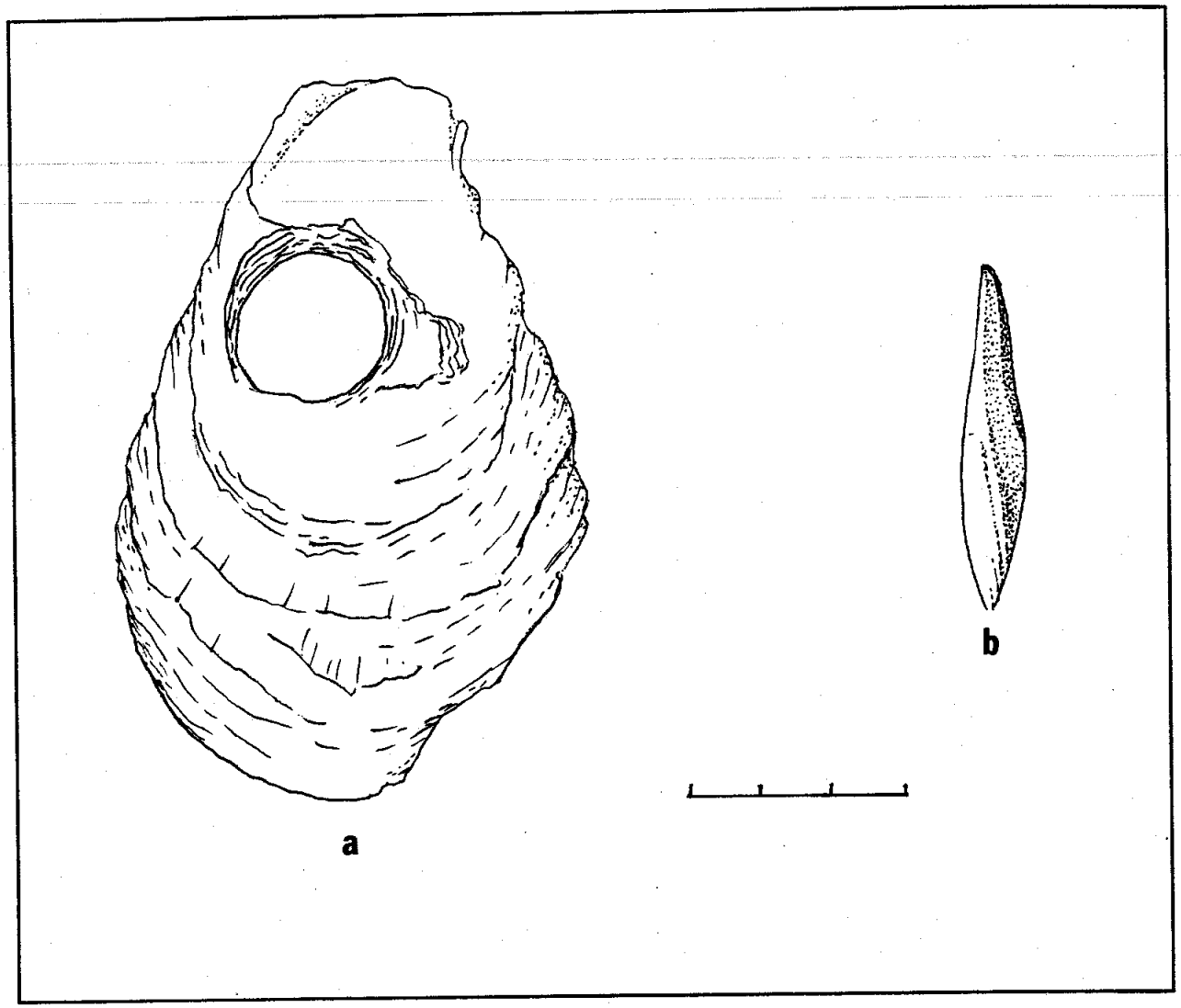


Figure 5.19. Shell artifacts, Block Excavation. A, perforated oyster shell; b, bi-pointed whelk columella section.

up the coast. A scarcity of such tools in the Galveston Bay area is in keeping with the fact that only two such specimens were recovered in the Block Excavation, despite a fair abundance of discarded oyster valves.

Cut whelk Shell

One edge of a fragment of the outer body whorl of a fairly large lightning whelk (*Busycon perversum*) shell (not illustrated) is cut. The cut runs parallel to the long axis of the shell. This was a fairly large whelk, with an estimated whorl diameter of 10 cm and an estimated length of 17 cm.

Whelk shell is very scantily represented in the Block Excavation and elsewhere on the site, and *Busycon* probably did not live in the estuarine environment near Mitchell Ridge. Accordingly, it is likely that this specimen, and other whelk shell artifacts at the site, represent transport of raw material for manufacture of tools and ornaments, perhaps from the relatively high-salinity areas around the tidal passes at the north and south ends of Galveston island.

Bipointed Whelk Columella Sections

Four fragments from the columellae or central spires of lightning whelk are bluntly pointed at each end (see Figure 5.19, b). Because the surface of the shell is weathered to a chalky consistency, it is impossible to determine whether these items were artificially shaped or were created naturally as waterworn columella fragments. In either case, they should probably be regarded as artifacts since, as noted above, whelk does not appear to have been a component in the local estuarine environment and the shells were doubtless carried onto the site by the aboriginal occupants. The function of these objects is unknown; they could conceivably have served as blunt projectile points, or perhaps they were naturally occurring blanks for the cylindrical columella beads of the kind recovered from a number of the burials at the site.

Asphaltum

The Block Excavation produced a total of 510 pieces of asphaltum, a naturally occurring tar which comes from petroleum seeps in the floor of the Gulf and which washes onto Gulf beaches. All but one of the specimens recovered consist of small nodules, 1 to 6 cm in diameter which were found scattered throughout Zone 2. Findings in the Block Excavation and elsewhere on the site indicate that asphaltum was a useful substance for repairing cracks in ceramic vessels and for hafting. Another use of asphaltum was for plugs in the ends of bird bone whistles, as described further on. The 509 nodules doubtless represent waste or unused material associated with the common use of asphaltum for repairing cracks in ceramic vessels, etc.

A single small piece of asphaltum bears, on one surface, a series of parallel impressions of what appears to have been a grass or grass-like fibrous material. This small fragment measures 12x11 mm and has a more or less uniform thickness of 4-5 mm. The specimen is virtually identical to similar but larger pieces reported from the central Texas coast which clearly bear basketry impressions (Campbell 1952; Cox and Smith 1989; Ricklis 1990:172), though its small size precludes identification of the type of weave. The central coast specimens show impressions of a simple twined weave that appears to have been constructed using twisted grass fibers of the sort apparently represented in the specimen reported here.

Worked Glass

Five pieces of worked glass were recovered. All come from Zone 2 in the southernmost units in the Block (N0E0, N0E2, N0E4). A single specimen of oxidized light green bottle glass is bifacially pointed and lenticular in cross-section, and is believed to be the distal tip of a glass arrowpoint.

The other specimens are fragments of amber and oxidized light green bottle glass (2 specimens of each kind of glass) with continuous edge flaking. One of the pieces of amber glass exhibits continuous shallow edge flaking along the exterior surface, as though the broken edge was used for scraping, the pressure of which resulted in spalling of the surface. The other amber specimen has deeper continuous flakes along the inner edge of the fragment which appear to have been intentionally removed by pressure flaking. The size (51x30 mm) of the piece and its curvature fit comfortably between the thumb and fingers in such a way that the retouched edge could have easily been used for cutting.

The two fragments of oxidized light green bottle glass each bear microflaking along the edges. The flakes scars are small (1-2 mm in length and appear to be the unintentional result of the use of the fragments for scraping.

Since the four radiocarbon-dated features in Zone 2 fall well within the Final Late Prehistoric Period, these fragments of worked glass presumably post-date the major occupation represented by the findings in the Block Excavation. The fact that all were found near the southern edge of the excavated area hints at the presence of a later occupation, most of the evidence of which may lie south of our excavation. It can be stated with confidence that no significant amount of such material was present in Zone 1, since careful watch was kept for definable concentrations of occupational debris during skim-shovel removal of that Zone, and no evidence of such was present. These fragments of worked glass are tentatively interpreted as representing the scant traces of native occupation during the Early Historic Period; that the site was occupied during this era is clearly indicated by burial data discussed further on. The scant amount of material of the period in the Block suggests that either (a) the occupation

represented was of short duration, and resulted in the deposition of relatively little debris or (b) our excavation merely skirted the edge of an Early Historic deposit more abundantly represented outside of the excavated area.

Aboriginal Ceramics

Fired Clay Coil

Fired clay artifacts from the Block Excavation include a single piece of what appears to be a fired potter's coil and 7,019 ceramic vessel fragments. The coil is made of sandy paste clay and is fired to a buff color. It is circular in cross-section, broken at both ends, and has a length of 32 mm. It is slightly tapered, so that one end has a diameter of 8.5 mm and the other end has a diameter of 7 mm. In terms of paste, hardness and color the piece is indistinguishable from potsherds of the Goose Creek type which were abundantly recovered from the excavation.

Potsherds

All units in the Block Excavation produced numerous sherds of aboriginal pottery. The total sample of 7,018 sherds is comprised of 6,528 plain bodysherds, 373 undecorated rimsherds, 33 decorated rimsherds, 74 decorated sub-rimsherds and 10 noded base fragments. Microscopic analysis of all 406 rimsherds to determine variations in paste characteristics, along with observations of sherd color, thickness and surface treatment, indicate that at least 248 ceramic vessels are represented.

The ceramics from the Block Excavation, as well as from other areas of the site, are discussed in detail in Chapter 7. The salient features of the pottery are worth summarizing here, however. The clay body nearly always contained a significant amount of quartz sand, to which crushed sherds (grog) was added in about one-third of the vessels. Crushed bone was used as tempering agent in 14, or 5.6% of the vessels. Rim and bodysherd curvatures indicate that virtually all vessels expressed some variation on a two basic themes in terms of shape: Pots took the form of either bowls or jars. All bases were rounded, though a minority bore small nodes at the very bottom of the pot. No examples of flat bases, or appendages such as handles, lugs and feet, were recovered. Vessels were of small to medium size, and jars probably had capacities of between about two and eight quarts. Jar shapes varied somewhat; the most common form was a more or less straight-sided jar with round base, though vessels with constricted necks and slightly everted rims were not uncommon. Many sherds show clear coil breaks, leaving little doubt that coiling was the common, perhaps exclusive, technique of vessel construction. Most surfaces are well smoothed and sometimes they exhibit slight burnishing. Numerous large sherds and a few partially restored vessels indicate that pots were very competently made, with even wall thicknesses and, in some cases, remarkably thin vessel walls. Most vessels were fired to a buff-to-orange or pale red color, indicating an oxidizing firing atmosphere (though many sherds show dark gray mottling, indicating either variable firing atmospheres of post-firing smudging). Firings must have been rapid, judging from the fact that the great majority of sherds show dark cores along fresh edge breaks, indicating that the oxidation process did not last long enough to penetrate the full thickness of vessel walls.

Decoration nearly always involved manipulation of wet, still plastic clay. Techniques include incising, notching and punctation. Decorations were almost always confined to a more or less narrow zone around the exterior of the vessel rim; the sole exception is a basal fragment which exhibits several groups of parallel incised lines that converge near the bottom of the pot (see Figure 7.19, a, Chapter 7). Incising is the most common decorative technique, with the most prominent designs consisting of bands of horizontal lines, parallel vertical lines or criss-crossing oblique lines. Vessel lip decoration includes shallow continuous scallops, short incising or nicking or nicking at right angles to the rim circumference, and short diagonal or criss-crossed incised lines.

Only two vessels bore the red wash reported as a minor decorative element at other sites in the Galveston Bay area (Aten 1983a). The use of asphaltum for painted decorations is also extremely rare. Asphaltum was used fairly commonly, however, to repair cracks in vessel walls. Numerous sherds bear small holes, drilled from the vessel exterior, adjacent to cracks. Several restored vessel sections from the site show that the holes were paired, one on either side of the crack, and they are interpreted as serving for lacing along crack lines in attempts to salvage a pot for further use. The fact that in several cases the

edges of the cracks and the sides of drilled holes are thoroughly oxidized (while fresh breaks on the same sherds show that wall interiors were not) indicates that such repairs were often, if not always, made prior to firing.

Several ceramic types, discussed at length in Chapter 7, are represented by the sherds. These include Goose Creek Plain and Goose Creek Incised and a new provisional type, Goose Creek Modified Lip (all made from sandy clay bodies), and the grog tempered types Baytown Plain, San Jacinto Incised and another provisional type, San Jacinto Modified Lip. Other types, only sparsely represented, include Harrison Bayou Incised, and a possible example of Maddox Engraved (types found in the Lower Mississippi Valley; Phillips 1970), and three vessels of Rockport Black-on-Gray, a central Texas coast type (Suhm and Jelks 1962).

Faunal Remains from the Block Excavation

As already noted, Zone 2 was characterized by an abundance of faunal bone and shells and shell fragments. Bone preservation was good, though virtually all bone was fragmentary, and many tiny fragments and splinters are not identifiable by species. Nonetheless, the excavation yielded a total of 8,428 specimens which can be identified at least at the level of genus. Molluscan remains are dominated overwhelmingly by the moderate salinity oyster, though four other bivalve species and four gastropod species are also represented in the sample. Shell was not as well preserved as bone; the weathered chalky condition of most shell is attributed to chemical breakdown under the saline soil conditions on Galveston Island. The quantities and species of bone and shell are listed in Table 5.6.

Fish remains (N = 6,343) account for the majority (75%) of the faunal bone recovered. Species represented are sheepshead, black drum, spotted seatrout, sea catfish, gar, and stingray, variously identified on the basis of diagnostic head elements (bones, otoliths) or vertebra. Undifferentiated bony fish, excluding catfish, are represented by 2,365 vertebrae. These represent sheepshead, black drum, spotted seatrout and/or redfish, the vertebrae of which are indistinguishable. Catfish vertebrae, which are morphologically distinguishable from the other bony fish species, number 335.

Otoliths are greatly under-represented relative to bones. On the basis of factors discussed below, a minimum number of 114 bony fish is represented by bone, whereas only four sagittal otoliths (3 redfish, 1 sea catfish) were recovered from the Block Excavation. Since each individual fish cranium contains two sagittal otoliths, the expected number, based on bone quantities, is 228, or 57 times the number actually found. This is not attributable to cultural selection (i.e., removal of fish heads elsewhere), since mandibular elements, cranial fragments, gill plates and teeth are reasonably well represented. Rather, the dearth of otoliths is believed to be the result of extreme weathering. The specimens found were in very poor condition and barely recognizable as otoliths; they exhibited heavy surface attrition and had been bleached white, and were thus barely distinguishable from small, weathered shell fragments. On the other hand, otoliths found in pits or grave fill were in very good or even nearly pristine condition. This contrast suggests that otoliths left on prehistoric living surfaces were subject to chemical weathering that did not affect those which were protected by immediate burial. It is tentatively concluded that the saline conditions on the island contributed to deterioration of most otoliths to the point that their diagnostic surface morphology and overall shape (see Zimmerman et al. 1988) were obliterated.

Next to fish, mammals constitute the most abundantly represented taxa in the bone assemblage (N = 1,885 bone specimens). The hispid cotton rat accounts for 1,038 of the identified bone specimens. The next most abundant is white-tailed deer; 158 identifiable bone elements and 687 longbone fragments from deer or deer-sized mammals were recovered. Nineteen specimens are bovid elements or fragments of bovid-sized longbones. Given that these elements were found with abundant Late Prehistoric debris, it is probable that bison, rather than domestic cattle, are represented by these specimens. The only other mammals represented are coyote (2 molars) and river otter (1 mandible fragment).

Bird species include the turkey vulture, little blue heron, duck, American coot and sage grouse. Reptiles are represented by turtles and snakes.

Considering that the Mitchell Ridge Site is located on a lagoonal shoreline, molluscs are not particularly abundant. Except for the thin oyster shell concentration designated as Feature 106, and the small concentrations of oyster shell representing hearth linings, shell debris was not particularly abundant in the Block Excavation; nothing approaching the density of a true shell midden was encountered (which proved generally to be the case at the site). Whole oyster shells and umbo fragments number 963, which

Table 5.6. Faunal elements, Block Excavation, Feature 9 and C. C. Area..

	Species	Element	C.C. Area	Feature 9	Block Excavation
MAMMALS n=3705	Bovid (*Bos/Bison*)	incisors			2
		molar fragments			4
		cuneiform		1	3
		magnum	1		
		astragalus			2
		bovid-sized longbone fragments	25		8
	White-tailed deer *(Odocoileus virginianus)*	antler fragments	6	15	22
		skull fragments		2	
		mandible fragments		2	
		teeth (upper)	3	3	12
		(lower)			6
		(indeterminate)	3	3	9
		tooth fragments	56	15	67
		scapula fragment			1
		rib fragments		6	5
		vertebra			1
		vertebra frag.			1
		unfused vertebra epipysis			1
		proximal humerus			1
		right distal humerus frags.			2
		distal radius			1
		fawn distal radius			1
		proximal ulnae frag.			1
		cuneiforms			2
		proximal metapodial			2
		medial metapodial			1
		distal metapodials	2		2
		distal metapodial halves		2	4
		unfused distal metapodial halves			7
		distal tibia			1
		astragalus		1	1
		calcaneus			1
		phalanges	3		2
		proximal phalange			1
		medial phalange			1

Table 5.6, cont.

Species	Element	C.C. Area	Feature 9	Block Excavation
	distal phalange			1
	deer sized longbone fragments	241	69	697
Dog/Coyote *(Canis familiaris/ latrans)*	molar M1	1		
	phalange	1		
Coyote *(Canis latrans)*	upper premolar P4			1
	lower molar M1			1
Opossum *(Didelphis marsupialis)*	skull fragments		7	
	maxilla fragments		1	
	left mandibles		2	
	incisor		1	
	cervical vertebrae		3	
	thoracic vertebra		1	
	lumbar vertebrae		2	
	undetermined vertebrae		2	
	inominates (different sizes)		2	
	caudal vertebrae		9	
	scapulae		2	
	proximal ribs		6	
	medial ribs		1	
	distal ribs		5	
	whole rib		1	
	ulna		1	
	phalange		1	
	unidentified bone fragments		10	
River Otter *(Lutra canadensis)*	right mandible			1
Cotton rat *(Sigmodon hispidus)*	maxilla fragments	147	19	121
	upper incisors	22		38
	right mandibles	95	32	270
	left mandibles	88	32	297
	right/left mandibles	11	1	20
	lower incisors	17	2	60
	vertebrae	214	9	29
	ribs	2	1	1
	scapula fragment	1		
	humeri	182	4	41

Table 5.6, cont.

	Species	Element	C.C. Area	Feature 9	Block Excavation
		ulnae	45	1	1
		radii			2
		pelves	27		14
		femora	190	14	96
		unfused distal femur epiphyses	32		
		tibiae	106	8	48
		fibula		1	
		metacarpals/tarsals	3	1	
BIRDS	**Turkey Vulture** *(Cathartes aura)*	talon	1		8
	Little Blue Heron *(Florida caerulea)*	coracoid	1		
		carpometacarpus	3		
		tarsometatarsus			1
	Duck *(Anthya collaris)*	distal humeri			2
		ulna			1
	American Coot *(Fulica americana)*	coracoid	2		
		tarsometatarsus			1
	Sage Grouse *(Centrocerus urophasianis)*	distal humerus			1
REPTILES	**Alligator** *(Alligator mississippiensis)*	dermal scutes	8		
	Turtle (species unidentified)	carapace/plastron fragments	45	10	74
		vertebrae		1	1
	Rattlesnake *(Crotalus sp.)*	vertebrae	120	7	88
	Snake (species unidentified)	vertebrae	44		19
FISH	**Shark** (species unspecified)	tooth	1		

Table 5.6, cont.

	Species	Element	C.C. Area	Feature 9	Block Excavation
	Stingray (species unidentified)	spine			1
	Gar	teeth	2		
	(Lepisostens sp.)	vertebrae	76	57	177
		scales	1404	1072	2282
	Black Drum	mandible fragments	19	47	63
	(Pogonias cronis)	otoliths	1	2	
	Black Drum/ Sheepshead *(Pogonias cronis/ Archosargus robatocephalus)*	molars	209	33	921
	Sheepshead	skull fragments	19	5	48
	(Archosargus	mandible fragments		2	48
	probatocephalus)	teeth	33	6	37
		gill plates	3	8	53
		proximal fin spines	8	3	6
	Sea Catfish	vertebrae	1216	22	335
	(Arius felis)	otoliths	45	7	1
	Spotted Seatrout	mandible fragments	2		
	(Cynoscion nebulosus)	otoliths	2	1	
	Redfish *(Sciaenops ocellata)*	otoliths	5	4	3
	Unspecified	vertebrae	1976	541	2365
	Estimated unidentifiable small bone fragments		6730	2133	8426
MOLLUSCS	**Oyster**	upper shells & umbos	26	32	296
	(Crassostrea virginica)	lower shells & umbos	40	42	431
		unidentified upper/ lower shells	11		236
	Sharkeye	whole shells	1	2	7
	(Polinices duplicatis)	shell fragments	1		52
		whole shells		4	2
		shell fragments			19

Table 5.6, cont.

Species	Element	C.C. Area	Feature 9	Block Excavation
Atlantic Cockle *(Laevicardium robustum)*	whole shells		4	2
	shell fragments			19
Quahog *(Mercenaria sp.)*	whole shells	1	1	
	shell fragments	1		7
Rangia *(Rangia cuneata)*	whole shells	5		25
Rangia *(Rangia flexuosa)*	whole shells	5		
Florida Horse Conch *(Pleuroploca gigantes)*	whole shells	1		4
Lightning Whelk *(Busycon perversum)*	whole shells	1		1
	columella fragments	1		14
	whorl fragments	1		23
Disk Dosinia *(Dosinia discus)*	whole shell		1	
Atlantic Cyclinella *(Cyclinella tenuis)*	whole shell		1	
Whitened Dwarf Olive *(Olivella dealbata)*	whole shell	1		
Cross Barred Venus *(Chione cancellata)*	whole shell			1
Marsh Perrywinkle *(Littorina irrorata)*	whole shells	66	7	3

represents 86% of the total shell count (excluding the intensely burned and highly fragmented oyster shell in hearth linings). When other species are considered only in terms of the number of individual shells represented (i.e., as whole shells, umbo fragments or, in the case of gastropods, whole shells or columellae, each of which can be taken to represent one shell), oyster accounts for 95% of the sample. Bivalves include, other than oyster, Atlantic cockle, quahog, *Rangia cuneata* and cross-barred venus. Gastropod (univalves) species represented are sharkeye (moon snail), lightning whelk, Florida horse conch and marsh periwinkle.

Dietary Inferences Derived from the Faunal Sample

Based upon the raw counts of faunal specimens recovered, it is impressionistically apparent that fish and mammals comprised the bulk of the meat diet during the occupation(s) represented by the findings in the Block Excavation. It is also apparent that species diversity is rather limited, with most of the mammalian meat provided by deer, hispid cotton rats and probably bison, and only a few species of fish. In order to define more precisely the relative importance of the different taxa, the contribution of each to the overall meat diet must be quantified.

Essentially, two approaches to the problem of determining dietary significance of taxa are possible. Both have the final goal of determining the weight of useable meat contributed by species or groups of species, but the methodologies are significantly different. The first involves calculation of the minimum number of individuals (MNI) represented by a given taxa. The MNI is calculated on the basis of the fewest number of animals of a species which could be represented by the identified bone elements within the sample. Once the MNI has been determined, the represented biomass is calculated using (a) an estimated average weight of an individual, and then (b) estimating the percentage of total body weight which is useable meat (e.g. White 1953; Grayson 1978; Klein and Cruz-Uribe 1984).

The alternative approach is to calculate biomass directly as an relationship between bone weight and total body weight (Reitz et al. 1987). With this method, the weight of archaeological bone is employed in an allometric formula to derive the biomass of the living species. Thus, for a given mass of deer bone, for example, it is possible to predict within reasonable margins of error the amount of meat represented by the bone. This method has the primary advantage of avoiding reliance on estimations of average weight, which can vary according to the age/sex of the animal as well as regional differences in size. It also avoids a potentially significant problem inherent in MNI estimates, that the number of individuals may be under- or over-estimated according to cultural selection or archaeological sampling biases.

The MNI method is employed here because of the problems inherent in predicting the weight of fish using bone weight. As a general principle, the larger the animal, the greater the proportion of total body weight contributed by the skeleton, since greater mass requires heavier skeletal support. Conversely, a small animal has a proportionately greater mass of soft tissue in relation to the skeletal mass. An adult deer, then, will have a very different proportion (much less) of meat mass to skeletal mass than will an adult rabbit. Once the bones of different sized mammals are identified and separated by species, it is possible to predict soft tissue mass according to a constant formula, and the prediction should fall within an acceptable margin of error for that species. In the case of fish, however, the wide range in body mass among adults makes such a prediction less reliable. Unlike other animal classes, fish do not attain a more or less constant mature body size, but continue to grow in size and weight throughout their life cycle. An adult black drum, for instance, may weigh 3 kg. at 3-4 years of age and as much as 12 kg. at 20 years of age (an age not uncommonly attained by the species (e.g., Beckmann et al. 1988a).

In order for the allometric method to produce reasonably reliable results on fish, therefore, it is as important to know the approximate age of the fish as which species are represented. Since there may be a wide range in ages represented, from juveniles to old adults, such determinations would have to be made for individual fish on the basis of the size of individual bone elements, a daunting prospect in a highly mixed and fragmented archaeological faunal sample. If fish remains comprised only a minor part of the total sample, this would not present a serious problem. At a site such as Mitchell Ridge, however, the abundance of fish bone precludes accurate results.

The MNI method is thus used here, but it is emphasized that the results should be viewed with caution, insofar as they probably provide a gross approximation of prehistoric dietary reality. The taphonomic and sampling problems with the MNI approach have been discussed at length by various researchers (e.g. Grayson 1979, 1984; Binford 1981; Butzer 1982:191-198; Klein and Cruz-Uribe 1984).

The working assumption that MNI accurately represents the proportional dietary importance of different taxa can be questioned on the basis of (a) selective transport/deposition of different anatomical parts of animals by site occupants, (b) post-depositional disturbance of site deposits (e.g. removal of anatomical parts by scavenging carnivores), or (c) bias due to inadequate sampling of the archaeological deposit. Any or all of these variables can render the MNI of a given taxa a significant under-representation which means, concomitantly, that other species are over-represented.

In the case of the Block Excavation, post-depositional disturbances are probably not a significant problem, judging from the fact that there is almost no indication of scavenging in the form of carnivore gnaw marks on bones. Sampling bias in the archaeological recovery is probably not a serious problem either, at least in the case of shellfish and fish remains, since these categories are represented by large numbers of specimens dispersed throughout the excavated area. The same probably holds true for the white-tailed deer and hispid cotton rat remains, which are fairly abundantly distributed throughout the entire excavation. Sampling bias could be of significance in the case of the far less abundant bird and reptile remains. However, the fact that these taxa are poorly represented in the faunal samples from other parts of the site suggests that the low representation is real, rather than an artifact of the limited extent of the Block Excavation.

Much more problematical are the probable bison remains since, unlike the case of small animals, a single individual can contribute significantly to the total meat weight estimate derived from the excavated bone sample. If the presence of the few bison bone fragments in the Block Excavation were counted as an MNI of one, the result would almost certainly be a gross over-representation of the dietary significance of bison relative to other species. In other words, if the bones of a single bison were scattered over an area considerably larger than that of the excavation, the quantities of bones of much more abundant and more evenly distributed species within that same large area would be much greater and the MNI would be proportionately much higher relative to bison than that for only the Block Excavation.

Another source of potential bias in the case of bison derives from the large size of the animal. Bison likely did not inhabit Galveston Island, and could have been procured only on the coastal prairies of the mainland (as was clearly the case represented in the De Bellisle account of 1720, cited in Chapter 4). The size and weight of a bison would have precluded transport of whole carcasses and, once an animal was killed, it would have been either consumed at the kill site or butchered so that meat or transportable parts could be taken elsewhere. Thus bison meat would have reached the Mitchell Ridge Site only in butchered form, and much of the animal may have been divided and taken elsewhere (either to other locations or to unexcavated parts of the Mitchell Ridge Site). The few bones found in the Block Excavation could thus represent only a fraction of a single animal.

Given these kinds of problems, bison is excluded from the estimates of total meat weight derived from analysis of the Block Excavation material. It must, therefore, be kept in mind that the total contribution of terrestrial game to the meat diet is accordingly somewhat under-represented.

The MNI, estimated useable meat weight, and the percentage of the useable weight from each species are presented in Table 5.7, along with data for other faunal samples from the site. The estimated useable meat weight for a given species in based on (a) the total estimated average live weight for an individual of the species, (b) the percentage of that weight which is useable meat, and (c) a multiplication of the useable meat weight per individual by the MNI for the species.

Weights of "average" individuals are derived from various sources. Redfish and black drum both weigh approximately 3.5 kg upon reaching maturity (Beckmann et al. 1988), and this figure is employed here. Weights for other fish species are general estimates derived from Compton (1975) and Hoese and Moore (1977). Since oysters make up by far the greatest bulk of the shellfish species represented, only the weight of oysters is considered significant, in view of the very approximate values which can be derived for even the abundantly represented taxa. An average meat weight value of 15 grams is given to oysters, based on averages of uncooked oyster meat weights from modern Galveston Bay oysters (Ricklis 1990:215).

Average weights of individual mammals and birds are derived from White (1953) and Prange et al. (1978). Most of the weights for mammals follow White, with the exception of white-tailed deer, which in general are smaller in Texas than in the more northern latitudes from which White's estimate of 200 pounds (91 kg) was apparently derived. Observations on deer growth patterns on the coastal prairie of San Patricio County, Texas indicate average weights of 43 kg and 63 kg for mature does and bucks, respectively (Knowlton et al. 1978). The average of these figures, 53 kg., is used here for archaeological deer bone with fused epiphyses (indicating mature animals). In the case of juveniles, weights are estimated

Table 5.7. Data on faunal samples from three areas, Mitchell Ridge Site, showing major species, estimated meat weight in grams per individual, MNI, total estimated meat weight (g) based on MNI, and % of total meat weight for the area.

Taxa		C.C. Area			Feature 9			Block Exc.		
	Ind. meat wt.	MNI	Est. Wt.	%	MNI	Est. Wt.	%	MNI	Est. Wt.	%
Deer	26,500	1	26,500	15.0	1	26,500	36.2	4	94,500	30.5
Dog/Coyote	5,650	1	5650	3.2						
Coyote	5.650							1	5,650	1.8
River Otter	5,650							1	5,650	1.8
Cotton Rat	140	101	14,140	8.0	33	4,620	6.3	307	42,980	13.9
Turkey Vulture	1,650	1	1,650	.9				1	1,650	.5
Little Blue Heron	3,500	2	7,000	3.7				1	3,500	1.1
Duck	700							2	1,400	.5
American Coot	700							1	1,400	.5
Sage Grouse	630							2	1,260	.4
Alligator	10,000	1	10,000	5.6						
Turtle	420	1	420	.2	1	420	.6	1	420	.1
Snakes	800	3	2,400	1.4	1	800	1.1	2	1,600	.5
Gar	5,000	3	15,000	8.4	3	15,000	20.4	7	35,000	11.3
Sea Catfish	220	25	5,500	3.1	4	880	1.2	7	1,540	.5
Unspecified fish	1,292	83	87,814	49.7	23	24,334	33.2	99	104,742	33.8
Oyster	15	46	690	.4	42	630	.9	549	8,235	2..7

on the basis of data in Knowlton et al. (1978).

MNI are determined for mammals and birds on the basis of the maximum number of right or left side specimens of a particular bone element. In the case of white-tailed deer, duplicate elements are considered to represent at least two different individuals when one of the group has unfused epiphyses and thus clearly represents a younger animal.

In the case of fish, MNI is derived from counts of vertebrae. Most species known to be represented by diagnostic cranial elements (black drum, redfish, seatrout, sheepshead) have 24 vertebrae per individual. Since the vertebrae of these species are indistinguishable, MNI is determined for the combined species by dividing the number of vertebrae in the sample by 24. Catfish vertebrae can be differentiated on the basis of shape; MNI for catfish is obtained by dividing the number of recovered vertebrae by 49, the number in each individual fish. The use of elements other than vertebra is deemed less reliable, since otoliths (which are species-diagnostic) are clearly greatly under-represented and other cranial elements are, for the most part, too fragmented for reliable identification.

An inherent limitation in the use of vertebrae is that the species represented, which have a considerable divergence in size and weight, must be lumped together, producing an MNI for the combined group (listed as "undifferentiated fish" in Table 5.7) rather than for each species. The meat weight derived from the undifferentiated category is based on an average of common adult weights for each species, which is calculated on the basis of the common weights given in Chapter 2 (black drum, 3.5 kg; redfish 3.5 kg; sheepshead 2.0 kg; spotted seatrout .4 kg). This expressed as the formula $W = .55 \times 1/4(D_w + R_w + S_w + T_w)$, where W is the weight value given to each individual fish and D_w, R_w, S_w and T_w represent the respective common weights for individual adult black drum, redfish, Sheepshead and seatrout. The value of .55 represents the percentage of body weight (55%) which is useable meat, as generally ascribed to fish (Geiger and Borgstrom 1962:31). This gives an individual unspecified fish weight of 1,292 g ($W = .55 \times .25[3500g + 3500g + 2000 g + 400 g]$, or $W = .55 \times 2350$, or $W = 1292.5$.

As may be seen in Table 5.7, the results of these calculations show fish as a major component of the meat diet in terms of useable meat, with the combined species (gar, catfish, unspecified) comprising 45.6% of the meat weight represented by all taxa. Mammals are of about equal importance, comprising 48.0% of the total meat weight. White-tailed deer is by far the most important mammal, but hispid cotton rats comprise a significant 13.9% of the total meat weight (as discussed below, the approximately isomorphic distributions of rat bones with the bones of other taxa indicate that rat bones are a component of occupational debris, and that this species was a food resource). Other mammals, birds and reptiles combined comprise only 6.7% of the total, and oysters are of minor importance, comprising 2.7% of the total.

In sum, it is apparent that the faunal remains from the Block Excavation represent a subsistence focus on a rather narrow range of species; two species of mammals and as few as five species of fish (gar, black drum, redfish, sheepshead and seatrout) provided the overwhelming bulk of the consumed meat.

Debris Class Distributions and Inferences Concerning Spatial Patterning of Activities

Because Zone 2 was vertically discrete, it was initially inferred that little displacement of cultural debris had taken place since the Late Prehistoric occupation represented in the Block Excavation. As excavation proceeded, this inference was supported by the various features, the clearly definable edges of which suggested little post-depositional disturbance by biophysical agents. Prior to the beginning of excavation, it was decided to record the precise vertical and horizontal locations of in situ debris as it was exposed by troweling, under the working assumptions that (a) the locations of artifacts and faunal materials were for the most part the result of one or another kind of prehistoric human activity, and that, consequently (b) piece-plotting of individual items on an excavation map might permit reconstruction of patterns of debris disposal which would reflect the spatial patterning in prehistoric activities.

A second method of plotting debris class distributions involves definition of relative horizontal densities by 2x2-meter excavation units. Though less precise than the piece-plotting method, this proved to be, in some ways, more informative.

It should be noted at this point that there was no discernable vertical patterning of debris. As mentioned earlier, Zone 2 was excavated in 5-cm arbitrary levels (generally there were 3 such levels in each unit); this was done so that differences in horizontal distributions within a single debris class might be discerned through comparisons of 5-cm level maps for a given excavation unit. However, discernable

horizontal changes in debris densities were generally mimicked in all 5-cm levels, indicating that Zone 2 should be treated as a single vertical unit for analysis purposes.

Distributions of Piece-Plotted Debris

Figures 5.5 and 5.20 through 5.22 show, respectively, the locations of piece-plotted oyster (whole and nearly whole shells only), fauna bone, lithic artifacts (including debitage), and potsherds. In the case of bone fragments, it was decided in the field to arbitrarily piece-plot only those fragments three or more centimeters in length, since complete documentation of the profusion of tiny fragments would have been prohibitive in terms of available time.

Figure 5.5 shows clearly the generally light scatter of oyster shell. The only concentrations were Feature 106 and the shell linings of several hearths. It is apparent, however, that oyster shells were somewhat more abundant in the northwest part of the excavation, in the vicinity of the cluster of hearths, Features 107, 109, 112, 114 and 115.

The distributions of piece-plotted bone fragments is shown in Figure 5.20. Little is revealed in terms of horizontal patterning. Bone fragments are more or less evenly distributed throughout the Block Excavation, except for an apparent dearth of fragments in the central part of the excavated area, and slightly greater quantity in the northwest part of the excavation and to the southeast of the hearth, Feature 113. A relative concentration of gar scales was located just south of the hearth, Feature 107.

The distribution of piece-plotted potsherds is even less revealing. As may be seen in Figure 5.22, potsherds were present in abundance everywhere in the excavation, and there are no apparent areas of relative concentration.

The distribution of lithics is somewhat more meaningful in terms of the patterning of activities. Readily apparent in Figure 5.21 is a discrete concentration of chert debitage immediately south of the group of hearths in the northwest part of the excavation. The specimens in this concentration consists overwhelming of small retouch flakes (generally, interior flakes less than 1 cm in length), and it is inferable that tool refurbishing was carried out at this location. Also, there is a slight tendency for formal lithic tools to be concentrated in the northwest and southeast parts of the excavated area, perhaps reflecting the use and discard of tools around hearths (the group of hearths in the northwest part of the excavation and Feature 105 in the southeast corner).

Distribution of Debris by 2x2-Meter Units

The horizontal distributions of debris classes by excavation units is, in general, more informative than the data generated by piece-plotting, probably because the quantities by 2x2-meter units represent all of the specimens within a given class, including small bone fragments not recorded in situ during excavation, as well as smaller materials recovered on 1/8-inch mesh screens. The densities of materials by excavation units, shown in Figures 5.23 through 5.25, tend, therefore, to reflect the distributions of the smaller items within a given class. Since these distributions show more spatial contrasts in densities, it can be inferred that smaller objects better reflect the patterning of activities than larger ones, at least in the present case. Smaller materials would probably have been less likely to have been redeposited in secondary locations for the purpose of clearing activity areas of debris, and may also have been less susceptible to unintentional relocation by daily scuffing and treadage.

Figure 5.24, B indicates that oyster shells (excluding those in hearth linings), were most abundant in units N0E0, N6E4, and in the extreme northwest part of the excavation. The abundance in unit N0E0 is a reflection of the presence of the discrete oyster concentration, Feature 106. The relative abundances in the other two locations may reflect oyster shucking activities carried out around hearths.

Figures 5.23, A, B, and 5.24, A, show the relative densities of the three most abundant faunal taxa, namely, hispid cotton rat, fish (all species combined) and white-tailed deer. Two significant observations can be made on the bases of these data. First, it is apparent that the greatest concentration of bone debris was in the northwestern part of the excavation, within and near the cluster of hearths in that area. On this basis it is inferable that the bone debris was related to processing and cooking activities involving use of the hearths. The second significant point is that the distribution of hispid cotton rat bones approximately mimics those of deer and fish, insofar as the highest density is in the northwest part of the excavated area. On this basis it can be argued that cotton rats were in fact a food resource (as opposed

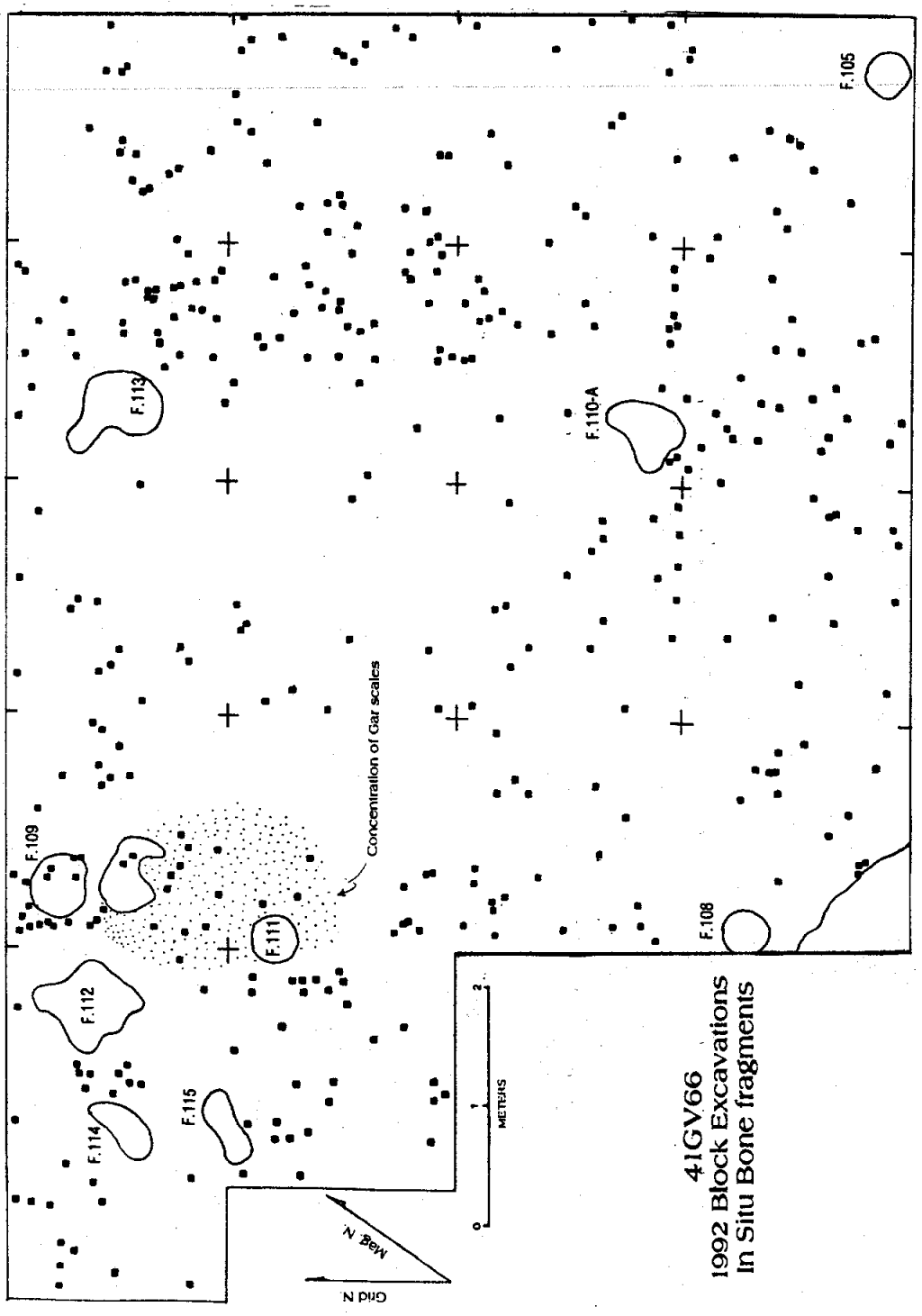


Figure 5.20. Map of Block Excavation showing piece-plotted faunal bone fragments. Only fragments 3cm or more in length were piece plotted.

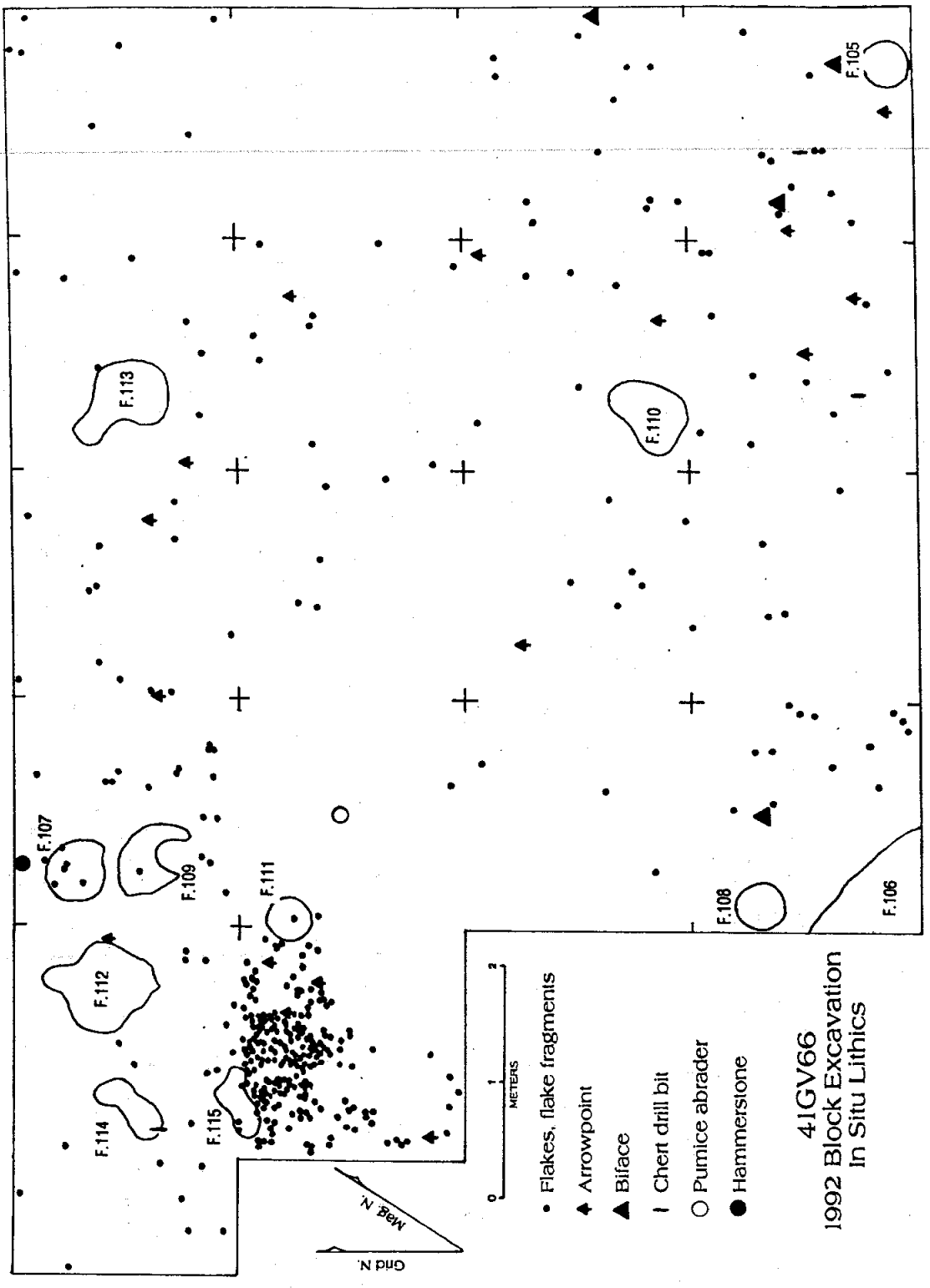


Figure 5.21. Map of Block Excavation, showing piece-plotted lithic tools and debitage.

Figure 5.22. Map of Block Excavation, showing piece-plotted potsherds.

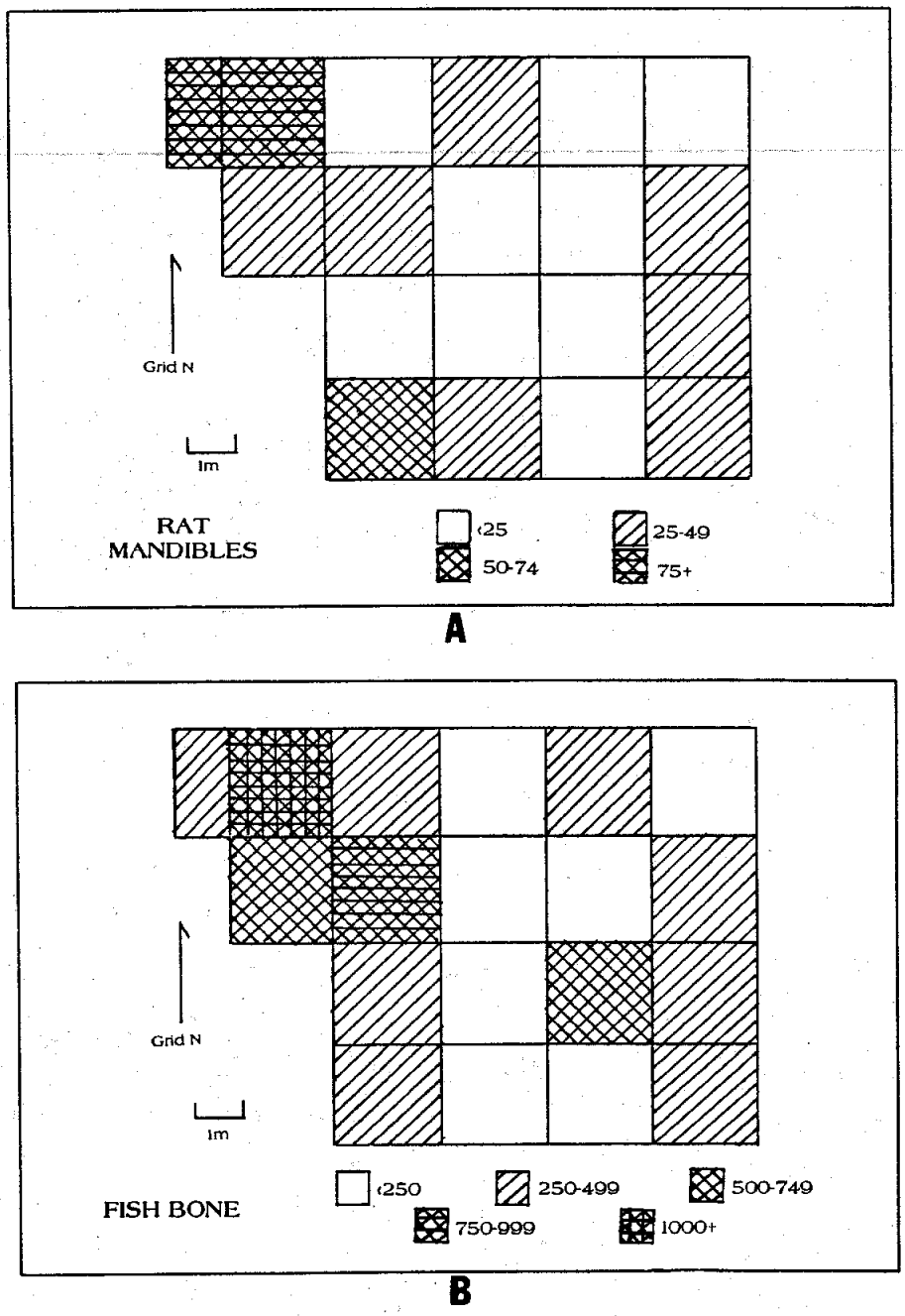


Figure 5.23. Densities of hispid cotton rat mandibles and fish bone by $2m^2$ units, Block Excavation.

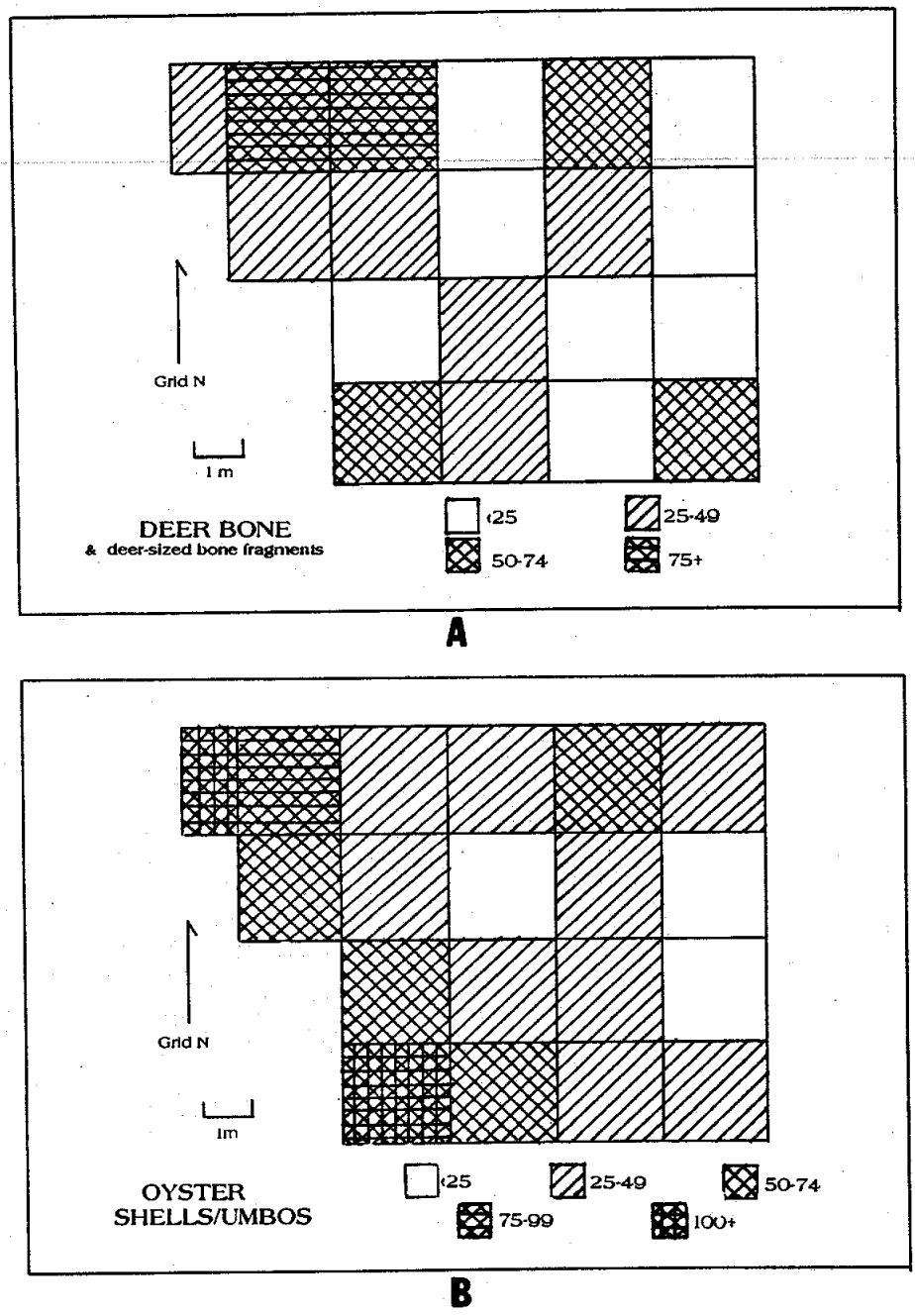


Figure 5.24. Densities of deer bone fragments and oyster shells (whole and umbo fragments) by $2m^2$ units, Block Excavation.

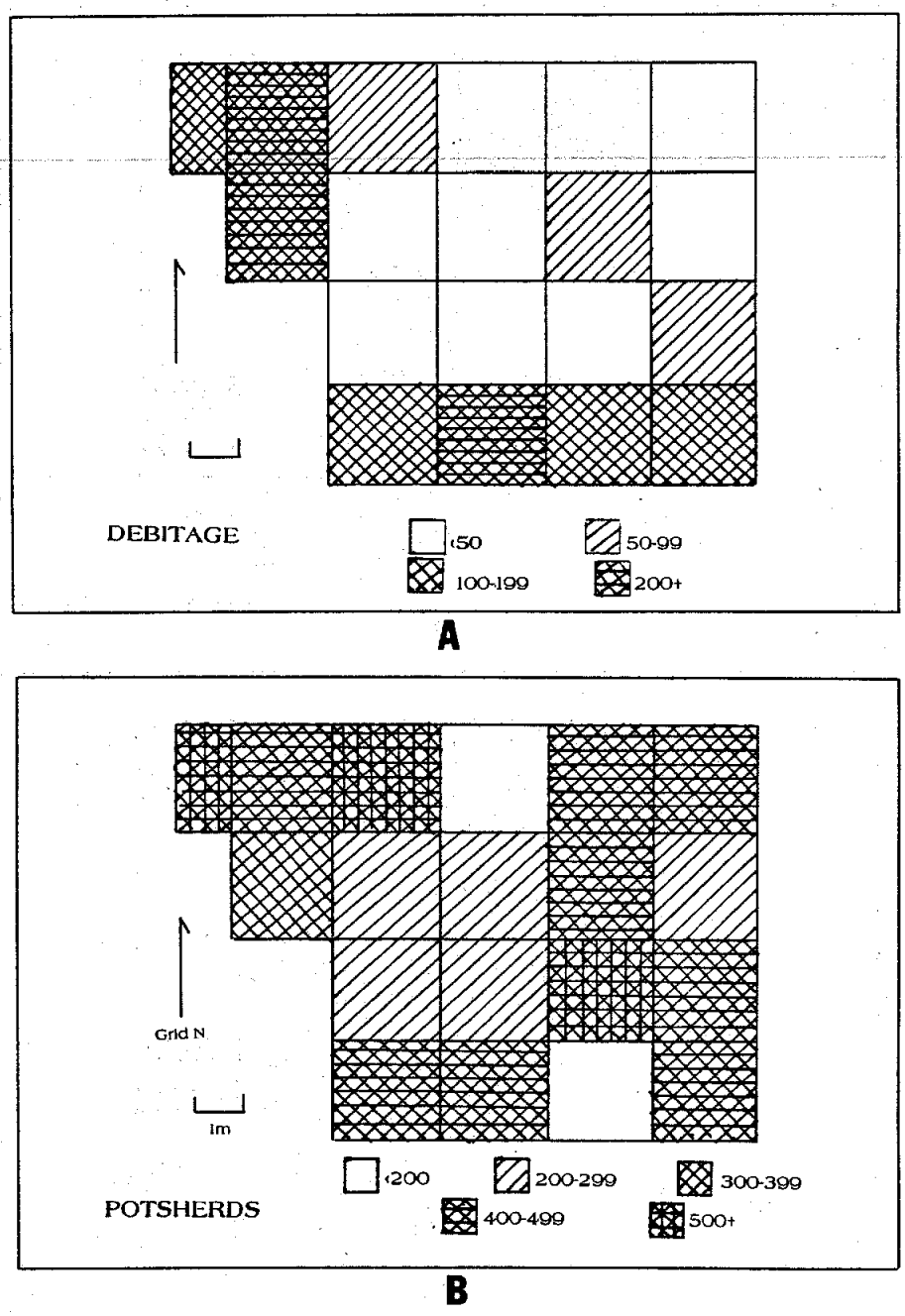


Figure 5.25. Densities of lithic debitage and potsherds by $2m^2$ units, Block Excavation.

Table 5.8 . Fragment size of bones of deer, deer-sized mammals grouped according to 2x2-meter units with hearths and 2x2-meter units without hearths.

	Fragment Sizes (lengths)				
	< 2 cm	2 - 4 cm	4 - 6 cm	> 6 cm	Totals
Units with hearths	179 (42%)	200 (47%)	37 (9%)	9 (2%)	425 (100%)
Units without hearths	82 (31%)	147 (56%)	28 (11%)	5 (2%)	262 (100%)

to representing natural deaths in the local rat population), since the bones follow the general distributional patterns of other classes of prehistoric cultural debris.

The densities of lithic debris by excavation units are in some ways similar and in some ways different from those suggested by piece-plotting. The most obvious similarity is the concentration of small retouch flakes south of the hearth cluster in the northwest part of the excavation. The greatest dissimilarity is that the counts of debitage by units shows a relative abundance along the southern margin of the excavation, a pattern not apparent in the piece-plottings. This doubtless reflects a relative abundance of small flakes in that area, since the piece-plotted debitage tended to consist of larger specimens which could be readily seen during excavation. The numerous retouch flakes in the northwest part of the excavation that were piece-plotted reflect the fact that their abundance was such that many of them did not escape recognition during excavation, despite their generally very small size.

The density of potsherds by excavation unit, shown in Figure 5.25, B, is somewhat less ambiguous than that revealed by the piece-plotted data. The units with the greatest numbers of sherds are in the northwest part of the excavation and unit N2E4. This suggests something of a correlation between hearths or hearth-related activity areas, which is further suggested by the fact that those units with the least amount of pottery did not contain hearths.

Discussion of the Distributional Data

In general, it is apparent that debris of all classes tends to be most abundant in those excavation units which contained hearths, suggesting that most activities took place at those locations. Nowhere within the Block Excavation were there encountered large concentrations of debris suggestive of intentional, repeated secondary disposal of debris away from the primary activity areas around the hearths which would be recognizable as refuse dumps or discrete toss zones (sensu Binford 1983). At the same time, debris of all classes was found throughout the excavated area, suggesting considerable scattering of material through unintentional relocation (scuffing, treadage) and, perhaps, occasional tossing aside of material as it was used and discarded.

The distributions of deer and deer-sized longbone fragments by excavation unit best reflect the general pattern of debris distribution. As may be seen in Table 5.8, 425 of a total of 687 fragments, or 62%, were recovered from 2x2-meter units containing hearths. This contrast is even greater in terms of actual areas represented by units with vs. units without hearths, since the former group includes a total 28 m^2, whereas the latter group consists of 46 units. The data presented in Table 5.8 also reflects the fact, suggested above, that a greater proportion of the bone fragments near hearths are of relatively small size as compared to those in units without hearths; fragments less than 2 cm in length constitute 42% of the total from units containing hearths, and 31% from units without hearths.

Table 5.9 . List of 2x2-meter excavation units contining hearths, and the debris classes which are represented with relative abundance for each unit (the class is considered relatively abundant when quantities in the unit fall within the two categories of highest quantities shown for the class in Figures 5.23 - 5.25.

Unit	Hearths	Abundantly Represented Debris Class
N6W2	Feature 112 Feature 114 Feature 115	rat mandibles fish bone deer bone oyster shell lithic debitage potsherds
N6E0	Feature 107 Feature 109	deer bone oyster shell potsherds
N6E4	Feature 113	deer bone potsherds
N0E0	Feature 108	rat mandibles deer bone oyster shell lithic debitage potsherds
N2E4	Feature 110-A	potsherds
N0E6	Feature 105	deer bone lithic debitage potsherds

While debris in general is most abundant around the hearths, is worth noting that this tendency shows variability according to different classes of material. *All* classes of debris tend to be concentrated around the cluster of hearths in the northwest part of the excavation, but only certain classes are concentrated in units containing the other hearths. For example, rat bones (as represented by mandibles), deer bone, oysters and potsherds are relatively abundant in unit N0E0, which contained the hearth, Feature 108. Deer bone, oysters and potsherds were relatively abundant in N6E4, in which was located Feature 113. In unit N2E4, which contained the shell and pottery lined hearth, Feature 110-A, only potsherds show relatively high densities (see Table 5.9).

On the basis of these variable densities of different kinds of debris around different hearths, it is

possible to suggest that there were corresponding differences in the range of activities performed. The hearth complex in the northwest part of the excavation inferably saw the greatest range of activity, since all classes of debris are particularly abundant there. This is not surprising, since the fact that several hearths are clustered together suggests that this was an rather intensively used activity area, with the several hearths perhaps reflecting use by more people who were carrying out more different kinds of activities than elsewhere within the excavated area.

Seasonality of Occupation

The only useful seasonality indicator among the debris in the Block Excavation is comprised of oyster valves. Fish otoliths have been employed in recent years for seasonality determinations on the Texas coast (Smith 1983; Prewitt 1987; Ricklis 1988, 1990; Eling et al. 1993), but, as already discussed, the preservation of otoliths in the soil at Mitchell Ridge was very poor, to the extent that most specimens were unrecognizable as otoliths.

Although shell had also suffered considerable surficial weathering, the relatively large number of oyster shells permitted the selection of an adequate sample of shells on which surface morphology was sufficiently well-preserved to permit seasonality determination. Of the 549 oyster valves recovered, seasonality readings were possible on 42 specimens.

The use of oyster valves for seasonality determination has been discussed elsewhere in some detail (Kent 1988; Lawrence 1988; Cox and Cox 1993) and need only be very briefly summarized here. The interior umbo portion of the lower valve exhibits growth increments marked by macroscopically visible grooves which represent the period of winter dormancy which occurs when ambient water temperature falls below the range in which growth can occur. Each groove represents, then, a winter season, and the accumulation of shell between the grooves represents spring through fall growth of the oyster. These groups of growth interruption grooves and warm weather shell growth, or annuli, are registered on the outer shell surface as well, but generally are more even and clearly discernable on the interior umbo. A shell in which the umbo growth terminates on the interruption groove is considered to represent a winter death. Shells are placed in spring, summer or fall growth categories according to the amount of growth which has taken place beyond the final winter interruption. For example, if the umbo has begun to grow past the final winter groove but has attained less than one-third the growth registered in previous years (as measurable by the length in millimeters of each previous annuli), the shell is placed estimated to have died during the "spring". Similarly, where growth past the final winter interruption approaches the length of previous annuli, the shell is considered to represent a late stage in the annual growth cycle and is placed in the "fall" category.

The results of the oyster seasonality analysis are presented in Table 5.10. Seven shells, 17% of the total sample, fall into the spring growth category. Summer is represented by only 4 shells (9%), fall by 11 shells (26%), and winter by 20 shells (48%). Cool season gathering of oysters appears to be indicated.

The Block Excavation: Summary Discussion of Key Points

The key findings in the Block Excavation shed light on a number of aspects of Late Prehistoric occupation of the Mitchell Ridge Site. These can be concisely enumerated, as follows:

1. The overwhelming majority of the materials and features recovered represent occupation during the Final Late Prehistoric Period. Four separate hearths in Zone 2, Features 105, 106, 109 and 114, have been radiocarbon dated, with respective calibrated 1-sigma calendar date ranges and intercepts (in parentheses) of A.D. 1279-1454 (1398), 1292-1396 (1305, 1367, 1373), 1293-1449 (1322, 1340, 1393), and 1405-1441 (1426). Two of the dates (Features 105, 109) were obtained on wood charcoal and two on oyster shell (Features 106, 114); the shell dates, when corrected for 13C, agree well with those obtained on charcoal. These assay results constitute a tight clustering of dates, placing occupation within a relatively narrow chronological time slot between the end of the thirteenth century and the early part of the fifteenth century.

This chronological placement of Zone 2 is congruent with the kinds of cultural materials recovered. The complete absence of dart points strongly points to a Late Prehistoric occupation, and the overwhelming dominance of the Perdiz type in the arrow point sample indicates occupation during the

Table 5.10. Estimated season of death of Oysters from the 1992 Block excavation.

Growth year	Estimated season of death	Growth year	Estimated season of death
4	Winter	4	Winter
4	Summer	3	Fall
5	Spring	6	Spring
6	Fall	?	Winter
6	Winter	4	Winter
4	Winter	4	Winter
3	Fall	3	Winter
3	Winter	4	Spring
?	Winter	4	Winter
5	Fall	4	Winter
7	Winter	4	Winter
9	Winter	4	Summer
4	Fall	3	Spring
6	Summer	5	Winter
5	Winter	4	Spring
6	Summer	5	Fall
?	Fall	3	Winter
6	Spring	4	Winter
4	Fall	3	Fall
3-4	Winter	5	Spring
5	Fall	3	Fall

Spring- 7 (17%)
Summer- 4 (9%)
Fall- 11 (26%)
Winter- 20 (48%)

Final Late Prehistoric; the Perdiz point is well dated to ca. A.D.1520/1300-1700 in the larger Texas region (Prewitt 1981, 1985; Ricklis 1992b; Turner and Hester 1993). Although Patterson (1991) has suggested an earlier placement for the type in southeast Texas, beginning ca. A.D. 600, his data appear to come from stratigraphically mixed deposits, and are probably unreliable indicators of projectile point chronologies (see Ricklis 1993c). Also assignable to the Final Late Prehistoric are the small prismatic blades, which are generally associated with Perdiz points in Late Prehistoric assemblages from Texas (e.g. Hester and Shafer 1975; Johnson n.d., Ricklis 1992b), and expanded-base drills made on blades or blade-like flakes, another diagnostic of the period (e.g. Black 1986; Highley 1986; Prewitt 1981).

2. The faunal sample indicates that subsistence involved a heavy reliance on a rather narrow range of animal species. In terms of weight of useable meat, the greatest contributions to the diet appears to have come from mammals and fish. The most significant dietary component, represented by 33.8% of the estimated meat weight, were numerous small-to-medium sized fish such as black drum, sheepshead, spotted seatrout and redfish. The larger gar fish made a significant contribution as well, representing an estimated 11.3% of the useable meat. Adding the small contribution from sea catfish (.5%), the combined meat weight of fish in the faunal sample makes up an estimated 45.6% of the usable meat.

Two mammal species-- white-tailed deer and hispid cotton rat-- comprise most of the remaining

estimated useable meat weight (44.4%) represented by the bone sample, with deer representing an estimated 30.5% of the total and cotton rat 13.9%. Other mammals, birds, snakes and oyster combine to make up the balance of 9.6% of the estimated useable meat.

A few spirally fractured bovid longbones were recovered, and their presence in Zone 2 strongly suggests that they represent at least one bison which was procured by the Late Prehistoric occupants. For reasons discussed above, it is difficult to determine the importance of bison in the meat diet. However, given the general scarcity of bison bone in the Block Excavation (and, as discussed later, on the site in general), it is likely that this was a food resource occasionally procured and butchered on the mainland, and that some of the meat and/or anatomical parts were transported to the island for final consumption.

3. The role of plant foods in the diet cannot be determined on the basis of the empirical evidence, since no carbonized macrobotanical materials were recovered by flotation of soil samples from hearth areas. This could, however, simply reflect a lack of emphasis on the kind of plant processing which would be most likely to produce carbonized remains (e.g., parching of seeds). It may be that other kinds of plant foods were of considerable significance. For example, Cabeza de Vaca observed that roots of aquatic plants were of considerable dietary significance among the island Indians with whom he stayed (see Chapter 4); presumably these were high-starch items which could have been consumed directly or pounded into a batter-like consistency in preparation for cooking (as can be done with cattail roots, for example; see Tull 1987). This sort of processing would be unlikely to leave behind evidence in the form of carbonized remains.

It can be inferred with confidence that plant foods must have played a significant role in the prehistoric diet. Sources of energy in human diets are proteins, fats and carbohydrates (Wing and Brown 1980). Lean meat provides calories in the form of protein, which must be balanced by either fats or carbohydrates in order to avoid so-called "protein poisoning" from excess nitrogen production in the form of urea excreted by the kidneys (Noli and Avery 1988; see also discussion in Speth 1983 of the deleterious effects of sustained lean meat intake). Thus, in human diets worldwide, protein generally provides less than 25% of caloric intake, and probably cannot constitute more than about 40-50% of the ingested calories (McClellan and Dubois 1930; McGilvery 1983); the balance must be made up of fats and carbohydrates. A certain amount of fat could have been derived from fish and deer. All deer longbones from the Block Excavation are either split longitudinally or spirally fractured, suggesting extraction of fat in the form of bone marrow. Nonetheless, fish oil and subcutaneous and bone marrow fats from a few deer could have provided only a fraction of the non-protein caloric intake required to balance the intake of lean-meat protein represented by the faunal remains. Shellfish yield small amounts of carbohydrates (Galtsoff 1964; Noli and Avery 1988), but even if oysters were a major dietary component-- which they clearly were not-- the intake of carbohydrates would have been greatly outweighed by protein. The carbohydrates available from plant foods (as starch and/or sugars) must, therefore, have been an important dietary component, a supposition in keeping with the high importance of aquatic roots noted by Cabeza de Vaca (see Chapter 4).

4. The seasonality analysis of oyster shell indicates oyster gathering mainly during the winter season. It is unfortunate that because of poor preservation, fish otoliths were not recovered for seasonality analysis. It can be mentioned here, however, that otoliths preserved in pits from other parts of the site show predominantly fall-winter seasonality. In combination with the oyster seasonality data from the Block Excavation, this suggests that the site was used mainly during the fall-winter. Some summer or perhaps early fall occupation is suggested by a minority of otoliths which produced summer seasonality readings, as well as from a single distal radius fragment from a fawn from the Block Excavation.

5. The findings permit a general summary of the kinds of activities carried out during the occupation(s) which left behind the materials in the Block Excavation. Clearly, fishing was an important subsistence activity at the site. The species represented are all found in the bay-lagoon estuarine environment, and the shallow waters of Eckert Bay and West Bay were likely the main fishing grounds for the occupants of the site. A narrow, shallow inlet such as Eckert Bayou would probably have afforded ideal conditions for construction and maintenance of fish traps, a technology documented for the region by Cabeza de Vaca (see Chapter 4). Large quantities of fish could thus have been readily procured, and this probably was a major attraction of the site for prehistoric occupants. In fact, considering the primary importance of fish in the meat diet, it may be that the opportunity for fishing was *the* decisive factor in drawing prehistoric people to the site.

Another abundant local food resource were the hispid cotton rats. As noted in Chapter 2, this is

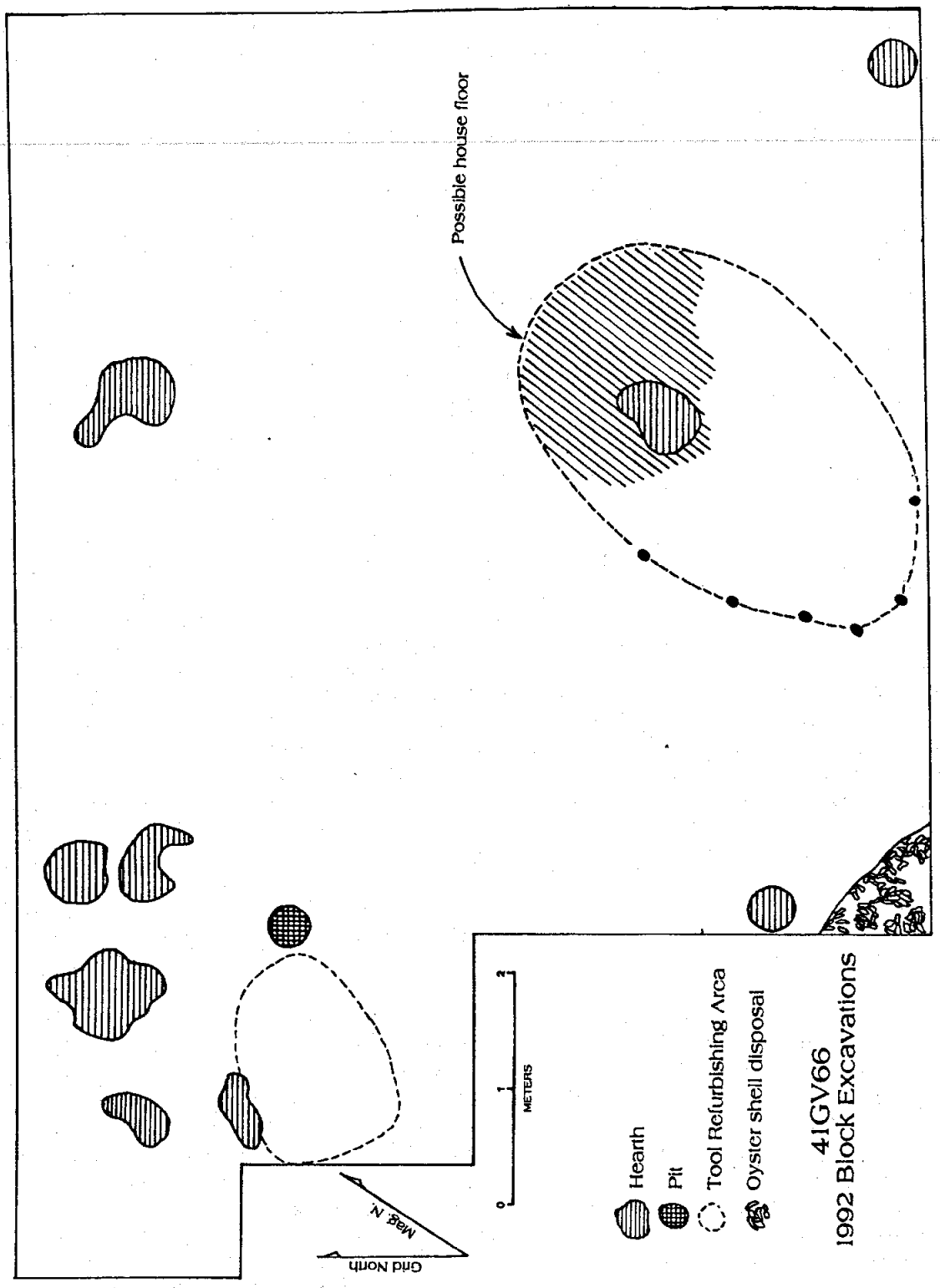


Figure 5.26. Map of Block Excavation, showing features, apparent lithic tool refurbishing locus, and possible aboriginal house floor.

presently the most abundant mammalian species on Galveston Island, and presumably this was also the case during Late Prehistoric times.

Subsistence activities clearly included hunting, as is indicated by the bones of deer and bison, as well as the presence of a fair number of arrow points in the artifact sample. Deer are occasionally seen on the Texas coast barrier islands, and some deer hunting could have been carried out in the vicinity of the site. However, by far the greatest numbers of deer are found in riverine and prairie-woodland upland environments on the mainland (Shew et al. 1981; Schmidly 1983), and it is likely that island deer populations would have been quickly depleted by prehistoric hunters. As must have been the case with bison, most deer may have been procured on the mainland.

Given the tendency for cultural debris to be most abundant around hearths, it is reasonable to conclude that hearths were focal points of domestic activity. They were doubtless used for cooking and, during colder weather, for warmth as well. The fact that faunal bone fragments and potsherds achieve their highest densities around the hearths is inferably correlated with food processing, cooking and consumption. Lithic artifacts and retouch debitage also tend to be found most abundantly in the vicinity of hearths, suggesting tool maintenance and refurbishing at these locations as well.

The tight spatial clustering of hearths in the northwest corner of the Block Excavation raises the possibility that these features were more or less in simultaneous use and that they represent a common work area shared by a relatively large number of people, perhaps several family groups. This possibility is at least congruent with the fact that the area produced more classes of relatively concentrated debris than did any of the more isolated hearths in the Block Excavation. Still, this alone does not demonstrate simultaneity of the features, since sequential use of the several hearths in close proximity would still have resulted in the accumulation of more debris than elsewhere. However, it intuitively seems unlikely that several hearths would fortuitously be located in such close proximity to on another, given that all other hearths in the Block Excavation (and elsewhere on the site) were much more widely spaced.

Feature 110-A, possibly located within the confines of a small domiciliary structure, presents an interesting contrast to the hearth cluster in the northwest part of the excavation. The only debris class found with relatively high abundance around this hearth is potsherds (Table 5.9). Faunal bone and other classes of debris are present, but in no more abundance than many excavation units which did not contain hearths. Possibly, the hearth was used for only limited cooking and warmth within a shelter, and thus differs somewhat in its function from hearths at which relatively intensive food processing was carried out.

The difficulty in confidently postulating functional variability in the hearth features derives from the simple fact that we do not know how long a time span is represented, except that the radiocarbon and lithic typological evidence points to occupation(s) between ca. A.D. 1280 and 1440. The various features and debris could represent only a single short-term occupation or several recurrent occupations. The Zone 2 deposit is clearly not an occupational palimpsest; the facts that the features were all easily identified and that there were not thick accumulations of midden debris argue against numerous recurrent occupations which would have obscured individual features and patterns of debris distribution. At the same time, the rather large number of ceramic vessels (N = 248) represented by over 7,000 potsherds, and the general lack of highly discrete clusters of bone or artifactual debris suggests an occupational duration of more than a very short period of time. Most likely, then, the findings represent occupation of a season or more probably several seasons, considering the large number of potsherds recovered.

Testing and Excavations in Area 3

That portion of the site designated as Area 3 lies some 90 meters west of the Block Excavation at an elevation of approximately 9 feet (See Figure 5.1). This area, which lay along the proposed course of a pilot canal, was initially tested by mechanical removal of the dark brown soil cover using a gradeall. As noted previously, this and other areas in the western part of the site generally showed little evidence of aboriginal occupation. The approximately 20-foot width of the gradeall stripping did reveal several aboriginal features (see Figure 5.27) within the light tan sand/shell hash geologic sediment above the 8-foot contour. Additional mechanical soil removal with a maintainer exposed several additional pits and what proved to be a Late Prehistoric burial in Area 3, as well as a small area of moderately concentrated prehistoric cultural debris which may have been associated with a nearby hearth. The area also contained several pits which proved, upon excavation, to be modern trash pits containing 20th century bottle glass, round wire nails and pieces of unbarbed fence wire; these are not dealt with here due to their clearly

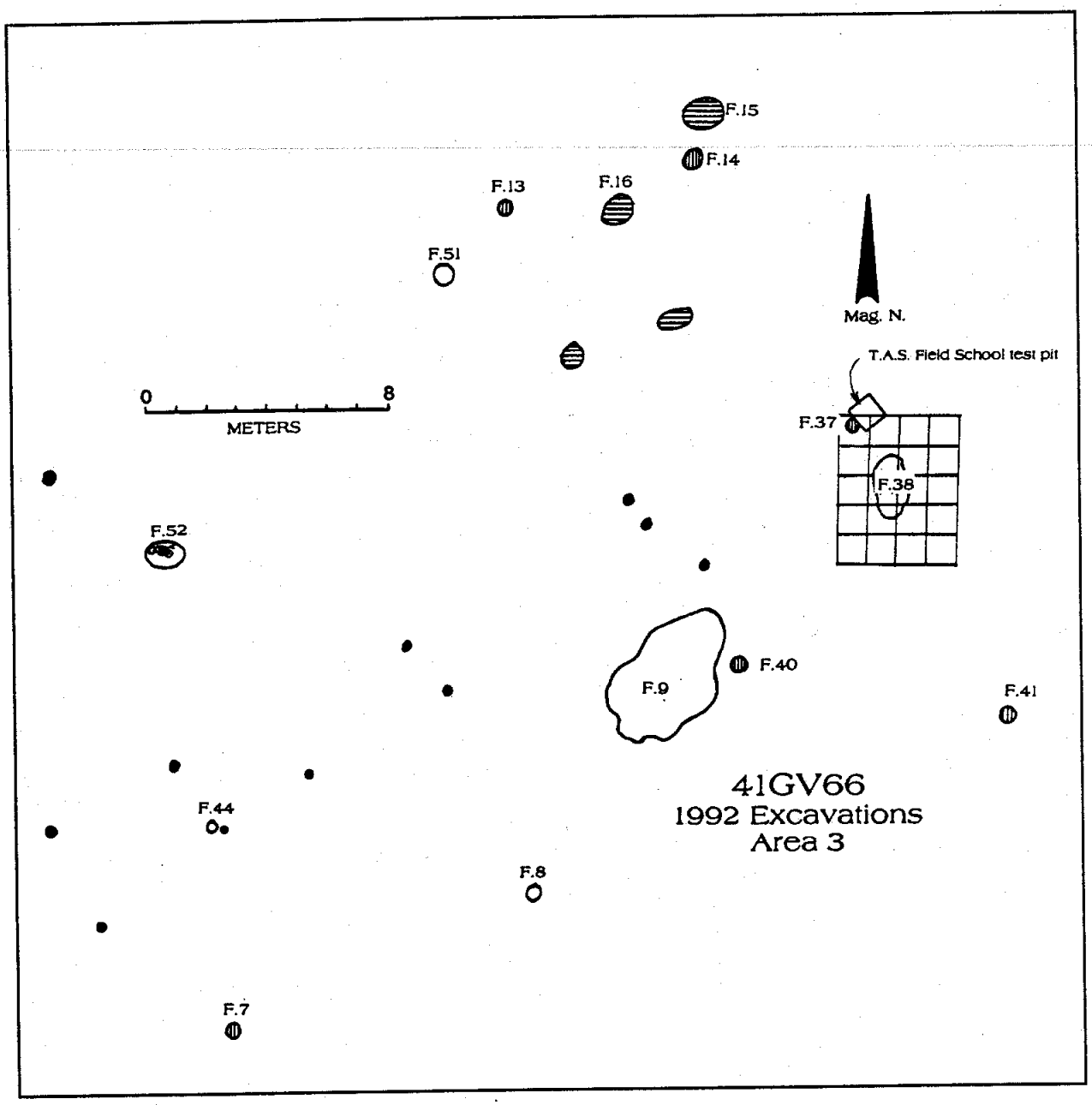


Figure 5.27. Map of Area 3. Aboriginal pits are indicated as open circles, aboriginal hearths are shown with vertical hachuring. Modern trash pits are shown with horizontal hachuring, and black dots represent historic fence posts. Note isolated burial, Feature 52, at left center.

modern age. The aboriginal features are discussed below in order of the quantity of information obtained, with the exception of the single burial, which is described in Chapter 8.

Feature 9: A Complex of Overlapping Pits

Feature 9 was first recognized as a large dark stain exposed by the gradeall in the surface of the tan sand/hash matrix. The feature was readily recognizable as pertaining to the aboriginal occupation of the site, by virtue of the numerous aboriginal potsherds and faunal bone fragments visible on the exposed

surface. In plan the feature was roughly oblong, with a length of 4.1 meters and a maximum width of 2.5 meters (see Figure 5.28). Excavation proved the maximum depth to be 70 cm below the surface of the tan sand/shell hash into which the feature had been dug.

Because of the large size of Feature 9, a grid of 1-meter squares was established which encompassed its perimeter, thus facilitating documentation of in situ artifacts and faunal materials and preparation of a map of the feature. Excavation was accomplished in 10-cm levels, using small hand tools. All excavated fill was water-screened through 1/16-inch hardware cloth for maximum recovery of small bone fragments and lithic microdebitage. Soil fill samples were taken for subsequent flotation in the laboratory for extraction of carbonized macrobotanical materials; results were negative.

Excavation in each 10-cm level within a given 1-meter^2 unit was terminated upon reaching the light-colored geologic sand/shell hash matrix. The limits of the feature were readily identified in this way, since there was a distinct shift in color and texture between the dark brown fine sand pit fill and the sedimentary matrix. Once the feature had been completely excavated, a bottom contour map was prepared using a surveyor's level, so as to document the interior configuration of the pit (Figure 5.30). Additionally, cross-sectional profiles were obtained at one-meter intervals along north-south grid lines by excavating the feature in alternating one-meter wide transects (Figure 5.31).

The fill consisted of dark brown, organically rich, fine sand soil containing numerous artifacts, faunal bones, scattered shells and shell fragments and occasional small bits of wood charcoal. As may be seen in the cross-sectional profiles in Figure 5.31, laminations of sand and fine shell hash, devoid of cultural debris, were present in places. These are believed to represent intentional deposition by prehistoric people. The laminations could, alternatively, have resulted from natural in-washing of sand and hash into the pit, but the sand and hash mix is indistinguishable from the geologic matrix; colluvial wash probably would be better sorted by grain size than is the case here.

Both the bottom configuration (Figure 5.30) and the cross-sectional profiles (Figure 5.31) show that Feature 9 consisted of four overlapping basins rather than a single pit. The 10-cm depth increments depicted in Figure 5.30 clearly show three of these basins as concentric contours; the fourth is less obvious, but the outer edge shows clearly in the cross-sectional profile at the bottom of Figure 5.31. Further supporting the interpretation that there are actually four overlapping pits here is the pattern of horizontal debris distribution. At first glance, the distribution of debris in the upper 20 cm of the feature appears to be rather even. However, as shown in Figure 5.32, it actually follows closely the outlines of the four hypothetical pits. Additionally, the distribution of debris below the 20-cm level (Figure 2.29) shows three fairly distinct clusters which correspond to the bottoms of the three deepest of the four basins.

In sum, Feature 9 is interpreted as representing four overlapping basin-shaped pits, of similar plan dimensions but varying depths, which were intentionally filled with occupation debris. The dark staining of the fill suggests that a good deal of perishable organic detritus was included in the fill, along with discarded artifact fragments and faunal bone. The laminations of culturally sterile sand/fine shell hash suggest intentional covering of offal, prior to final infilling of the pits with additional trash and organic refuse.

The original function of the pits is speculative. Given the fact that Area 3 is immediately adjacent to low ground which would have provided a natural place for refuse disposal, it is unlikely that the pits were originally intended for this purpose; it would seem to have been much simpler to merely toss debris downhill than to go to the trouble of digging trash pits. Another possibility is that pits were excavated as traps for the numerous cotton rats which live on the island and which were gathered as a food resource. However, for this purpose the pit walls would need to have been quite steep, and this is not consistently the case in Feature 9. The intentional excavation of a series of pits is perhaps most reasonably interpreted as the creation of short-term, subsurface storage facilities, perhaps for gathered plant foods such as the roots mentioned as an important dietary staple by Cabeza de Vaca. If this was the case, it is apparent that, once the pits no longer served their primary function, they were used as convenient trash/refuse receptacles.

Artifacts from Feature 9

Feature 9 produced a sizeable sample (N = 2,253) of aboriginal artifacts consisting of 1,681 potsherds, 504 lithics, 56 asphaltum nodules and a single small nodule of yellow-orange ochre (listed in Table 5.11). The artifacts were distributed more or less evenly throughout the feature fill.

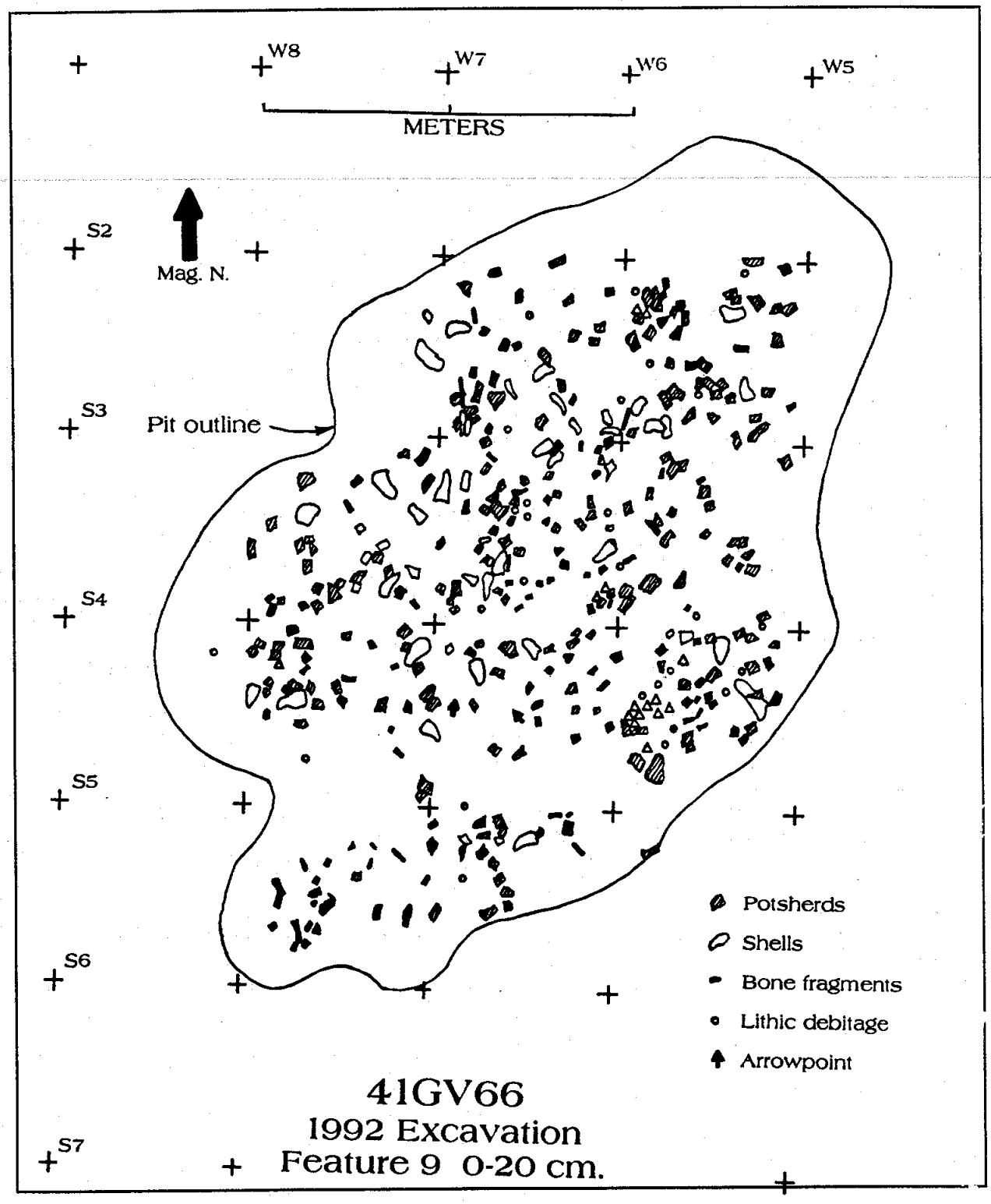


Figure 5.28. Map showing outline of Feature 9 at the level of the surface of the sand/shell hash sediment, and piece-plotted cultural debris to a depth of 20 cm below the exposed surface of the features.

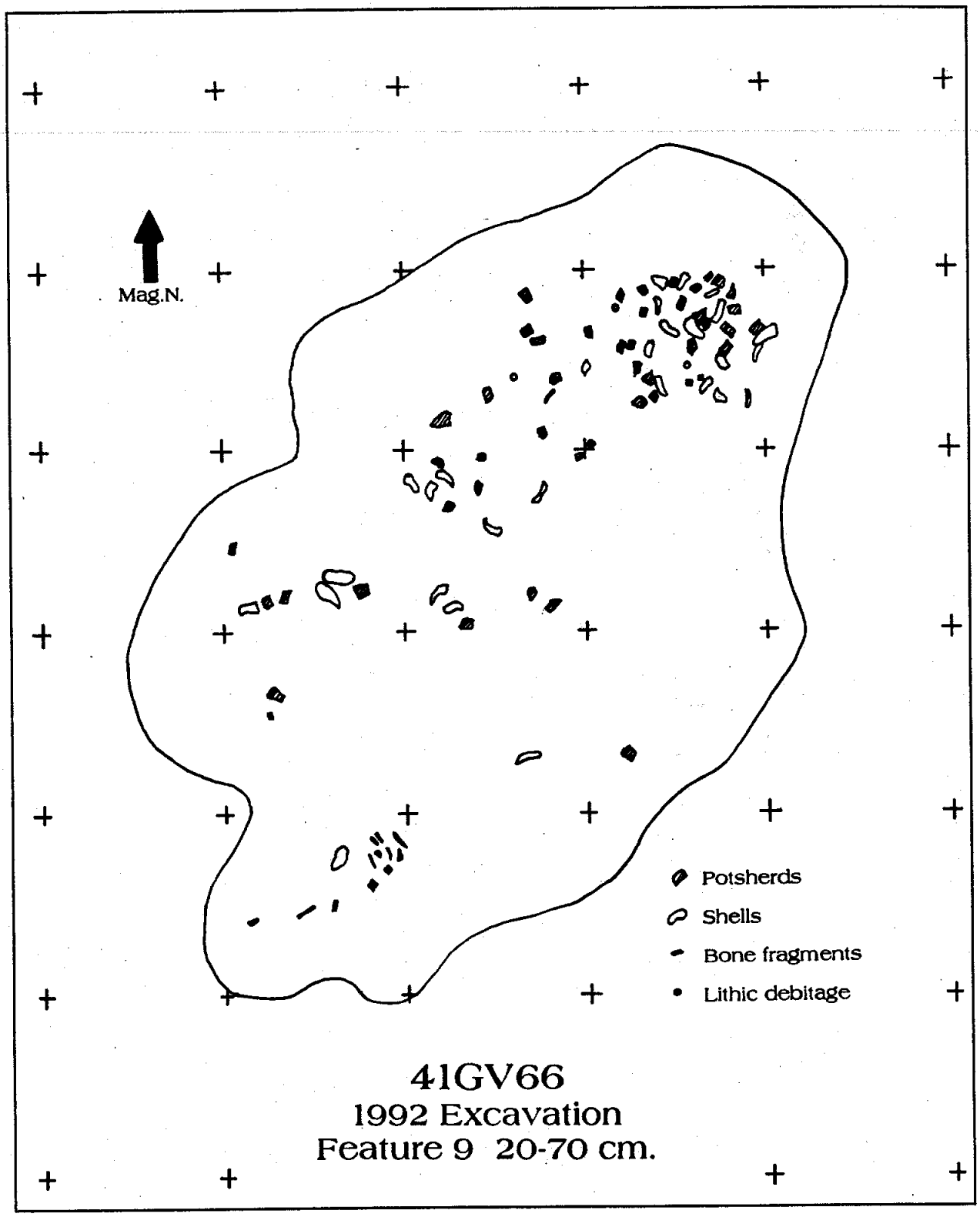


Figure 5.29. Map showing of Feature 9 showing piece-plotted debris below 20-cm depth from the exposed surface of the feature.

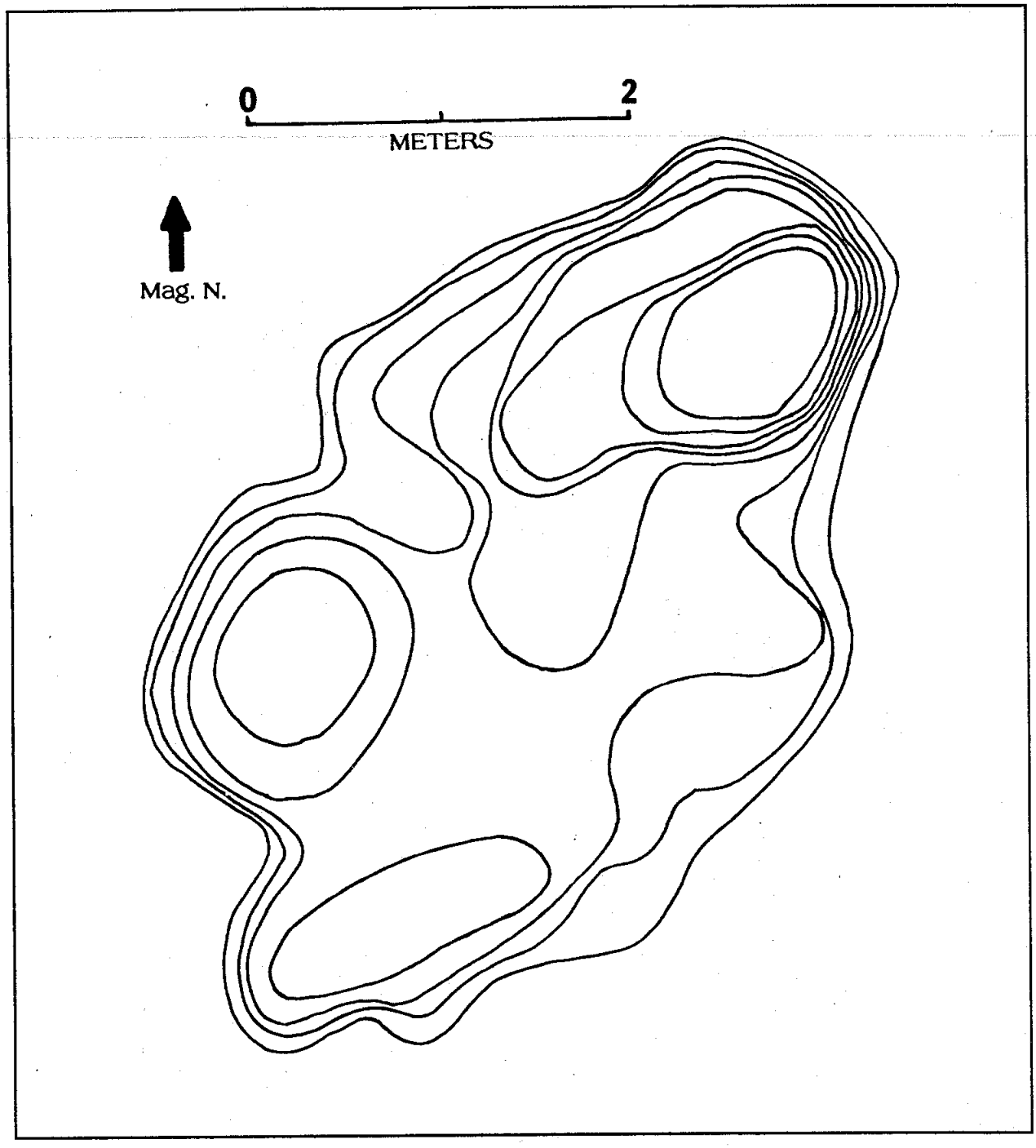


Figure 5.30. Map showing of Feature 9 showing bottom contours of the feature, expressed in 10-cm intervals.

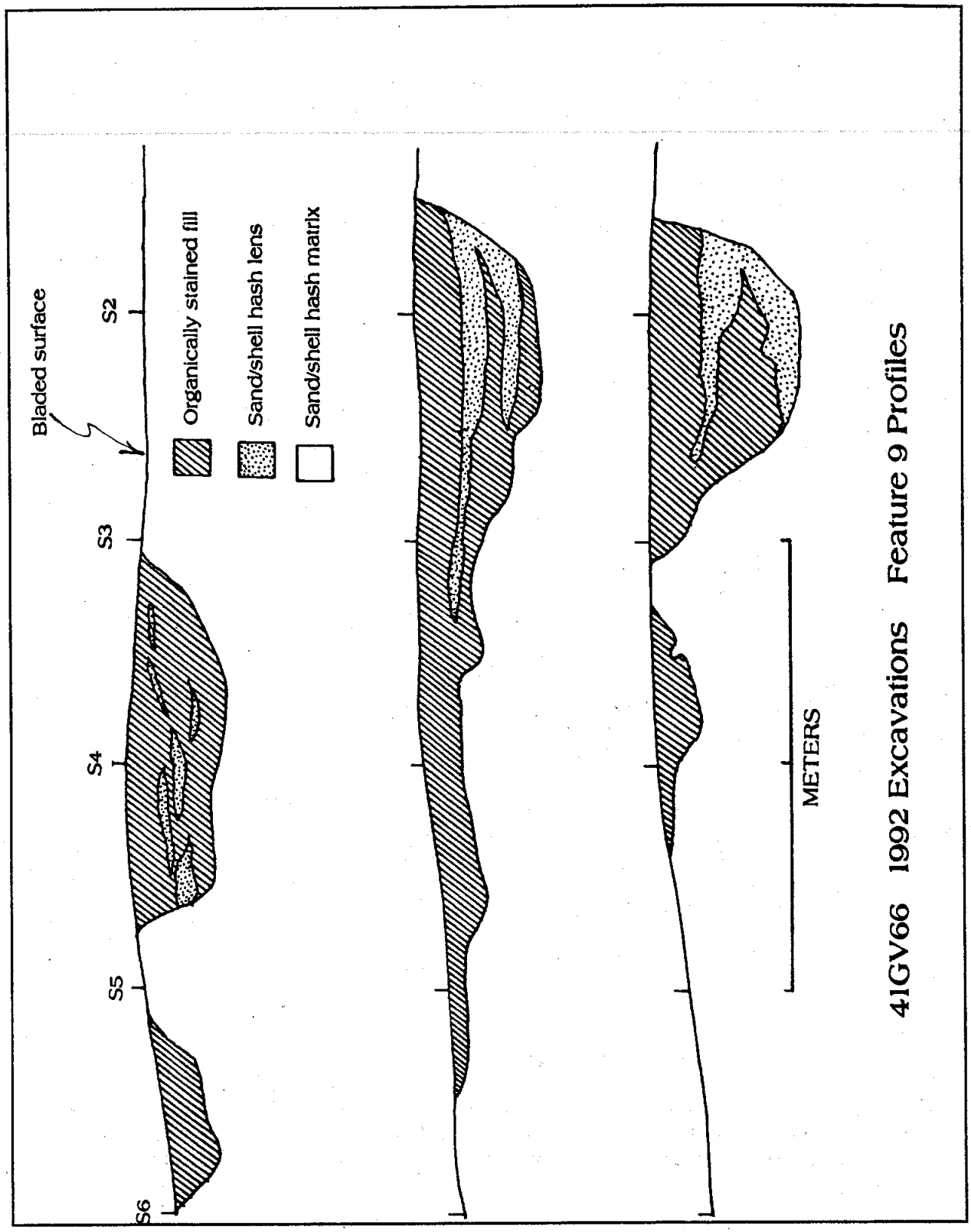


Figure 5.31. Three profiles of Feature 9, made at one-meter intervals from west to east (top to bottom in figure).

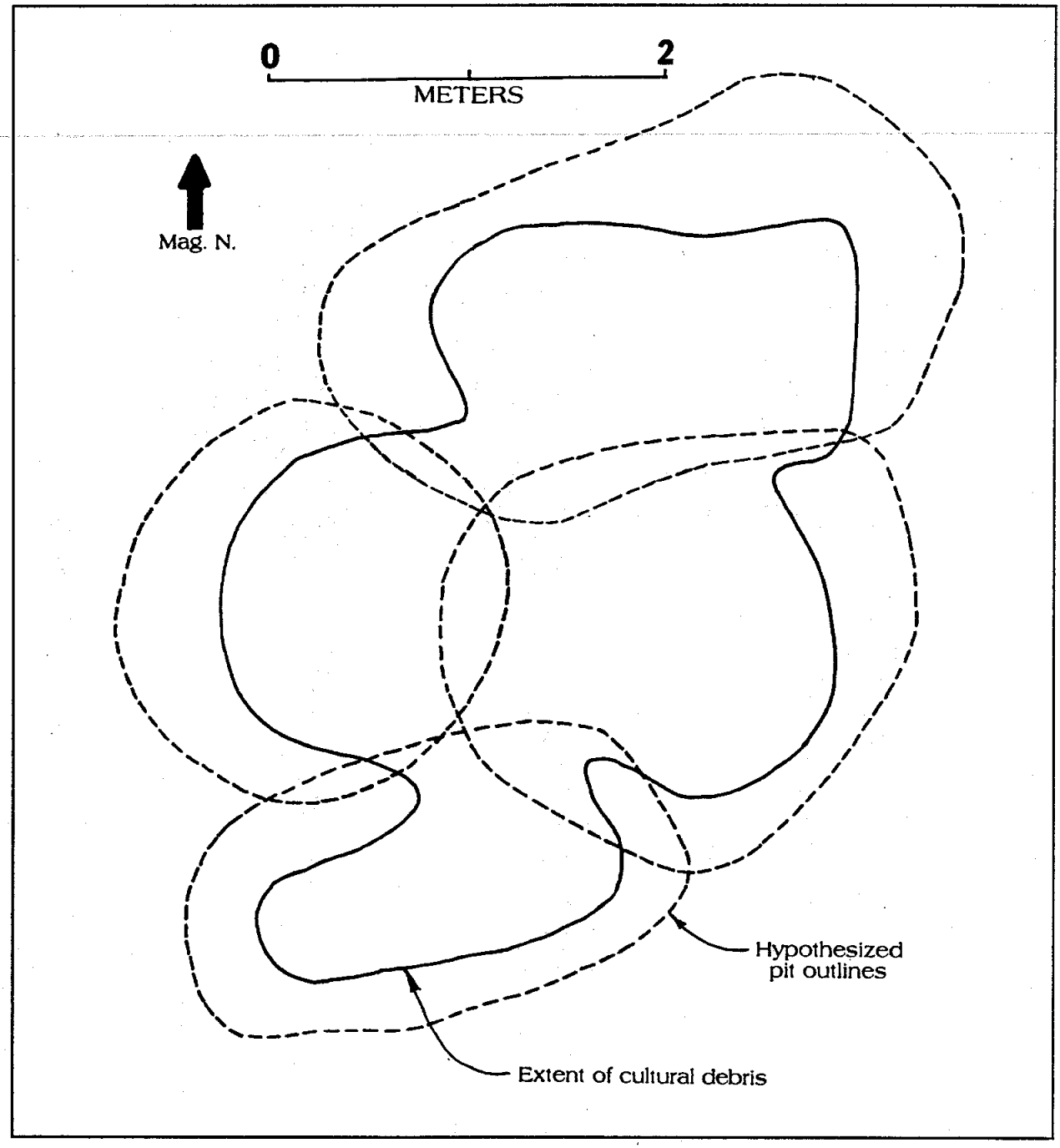


Figure 5.32. Map showing horizontal extent of cultural debris in Feature 9 and hypothetical overlapping pit outlines. Note that outlines do not correspond perfectly with actual outline of the feature at the level of the surface of the light-colored sand/shell hash, since the pits probably originated within overlying dark brown sandy soil.

Table 5.11. Aboriginal artifacts, Feature 9

Artifact class	Description	Quantity
LITHICS		
Arrowpoints and arrowpoint fragments	Perdiz	1
	possible Perdiz (stem & 1 barb missing)	1
	Perdiz stems	4
	sub-triangular arrowpoints	3
	lozenge shaped arrowpoint	1
	Bulbar stemmed arrowpoint (distal tip missing)	1
	untyped arrowpoint fragment (1 barb missing)	1
	unfinished distal arrowpoint fragment	1
Chert "drills" and "drill" fragments	drill/arrowpoints	2
	drill/arrowpoint fragments	2
	medial drill fragments	2
	expanded base drill fragment	1
Blades and blade fragments	prismatic blades	2
	prismatic blade fragment	2
Miscellaneous lithics	retouched flakes	5
Flakes and flake fragments	primary flakes	4
	secondary flakes	31
	tertiary flakes	120
	thinning flakes	5
	retouch flakes	75
	primary flake fragments	11
	secondary flake fragments	52
	tertiary flake fragments	164
	chunks	3
Ground/rough Stone	pieces pumice	10
CERAMICS	potsherds	1681
	asphaltum nodules	56
MISCELLANEOUS	piece orange ochre	1

Ceramics

The sample of potsherds includes 75 rimsherds and 1,606 sub-rimsherds. The general characteristics of the pottery are the same as those discussed above for the sherd sample from the Block Excavation. Examination of the rimsherds from Feature 9 under 20x binocular microscopy for variability in aplastic inclusions, along with macroscopic observations of sherd surface treatment and color, indicates that at least 38 vessels are represented. The clay body in 23 of the vessels was sandy paste, while 12 vessels were grog-tempered and three were bone-tempered. Except for the three bone-tempered pots, all

fall into either the Goose Creek, Baytown Plain, or San Jacinto typological groupings. Thirty-one (81.6%), of the vessels were undecorated and seven (18.4%) bore some form of decoration. The ceramics are discussed in greater detail in Chapter 7.

Lithics

Lithic artifacts include 13 arrowpoints and arrowpoint fragments, 7 small quasi-cylindrical drills (some of which may actually be small arrow points), four small prismatic blades, a small biface, three utilized and five retouched flakes, 465 pieces of chert debitage, and 10 pumice nodules.

In contrast to the findings in the Block Excavation, where the arrowpoint sample was clearly dominated by the Perdiz type, the arrow points from Feature 9 are typologically quite heterogeneous (see Tables 5.12). The Perdiz type is represented by one complete specimen (Figure 5.33, a) and three stem fragments. A fourth possible Perdiz (Figure 5.33, d) consists of a short blade fragment with prominent barbs (1 is broken off) and a break at the juncture of what was a fairly narrow stem. Nearly as abundant are small, thin subtriangular (rounded-base) arrowpoints, of which three specimens were recovered (Figure 5.33, e, f, h). The Bulbar stemmed type (see Corbin 1974; Turner and Hester 1993) is represented by one specimen. A single small lozenge-shaped point (Figure 5.33, g) completes the list of specimens which can be identified as to form. An additional specimen (Figure 5.33, b) is complete but appears to be unfinished; the final form is thus indeterminate, although it clearly was intended to have a stem. Another unfinished specimen (not illustrated) is a flake, 17 mm long, which bears only what appears to be an unfinished pressure flaked stem. A single distal fragment is poorly formed and may represent an arrowpoint broken during the manufacturing process.

Seven specimens have been classified as "drills" (see Table 5.13). One of these (not illustrated) is a roughly rectangular flake, 20 x 16.5 mm, from which the drill bit appears to have been broken off; this piece is believed to have been an expanded-base drill similar to those recovered in the Block Excavation. Two specimens (see Figure 5.33, l) are medial fragments of long, narrow drills or perforators with lenticular cross-sections. Four other specimens (Figure 5.33 j, k) are much shorter relative to their widths, and may be short drills or small arrowpoints.

The dimensions of the four small prismatic blades from Feature 9 are presented in Table 5.14. Other lithic items include five flakes bearing edge retouch, and four flakes which appear to be utilized, judging by continuous microflaking along one face of one edge.

Debitage consists entirely of cherts of the same gray, brown, and yellowish colors described above for the sample from the Block Excavation. The sample includes 235 flakes, 227 flake fragments (pieces missing the proximal ends with platforms and bulbs of percussion), and three small amorphous chunks. Among the specimens retaining the proximal ends, four (1.7%) are primary cortex flakes, 15 (6.38%) are flakes with cortex platforms, 16 (6.81%) are secondary flakes, 120 (51%) are interior or tertiary flakes, 5 (2.13%) are biface thinning flakes and 75 (31.9%) are very small (less than .75 cm long) retouch flakes. Of the 227 flake fragments, 11 (4.8%) are primary, 52 (22.9%) are secondary and 164 (72.25%) are tertiary. The implications of these percentages for understanding the organization of lithic technology are discussed in Chapter 7.

As was the case in Zone 2 in the Block Excavation, small lumps of asphaltum and pumice were scattered throughout the fill of Feature 9. The 56 asphaltum lumps are generally sub-spherical and range in size from just under 1 cm to 2.5 cm in diameter. The 10 pieces of pumice are in the form of rounded pebbles 1.5 - 3 cm in length; none show evidence of artificial modification.

Faunal Remains from Feature 9

The listing of faunal remains from Feature 9 is presented in Table 5.6. A total of 2,116 bone specimens are identified by taxa. An additional 2,133 very small fragments and splinters, recovered mostly during water screening operations, are estimated on the basis of the ratio of weight to numbers of specimens determined for three representative unit levels, and extrapolation of an estimated numerical total for the total weight of such fragments from the entire feature. Ninety identifiable molluscan shell were recovered; the great majority (74 specimens) are oyster (*Crassostrea virginica*).

Forty-seven bone elements of opossum are listed in Table 5.6. These are believed to represent the natural death of a single individual animal, since the bones have a "fresh" appearance and are not

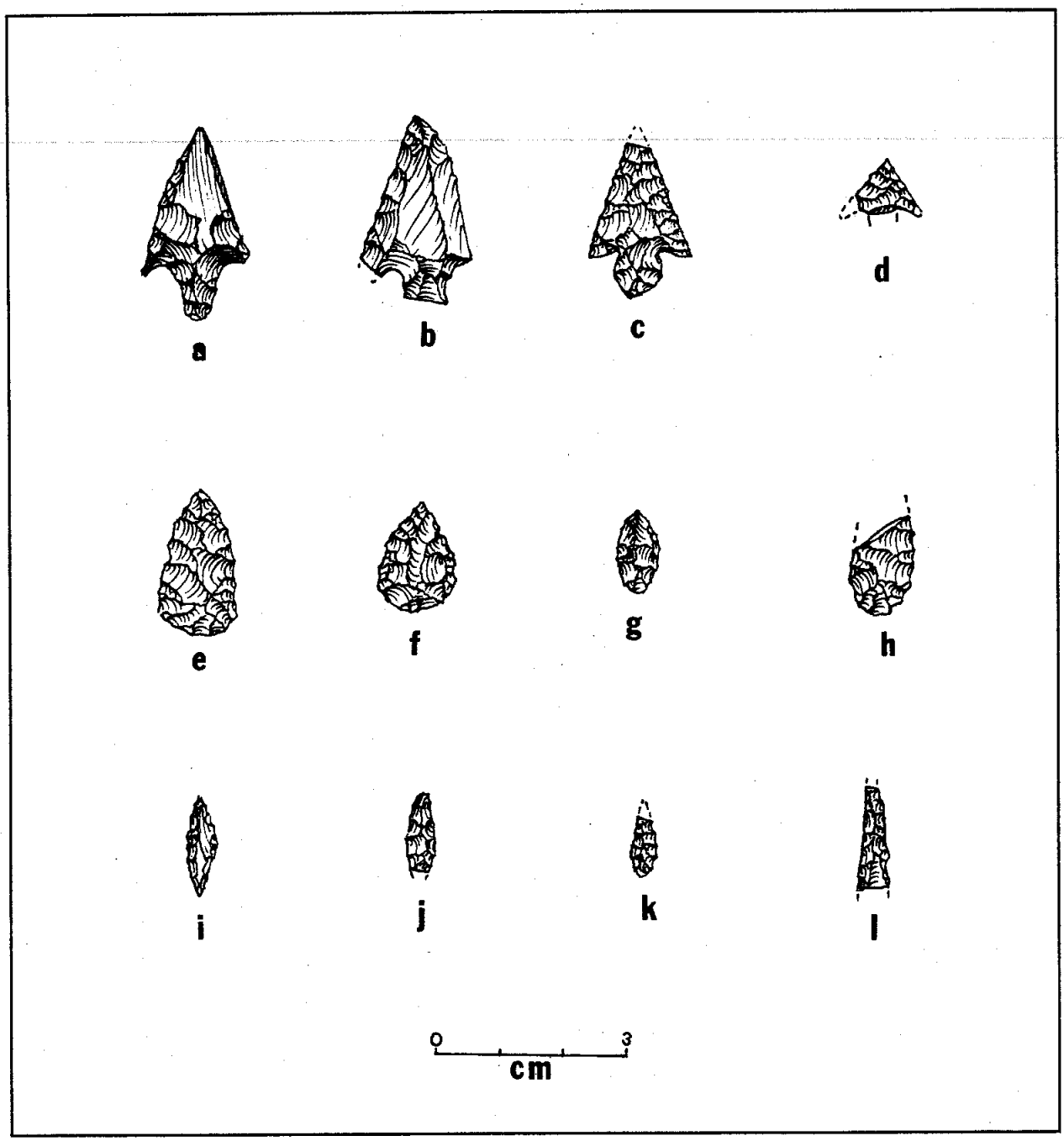


Figure 5.33. Flaked chert artifacts, Feature 9. A, Perdiz arrowpoint; b, d, untyped stemmed arrowpoint (b is probably unfinished); c, Bulbar Stemmed arrowpoint; e, f, h , subtriangular, round-based arrowpoints; g, lozenge-shaped arrowpoint; i-k, small arrowpoints or drills; l, medial drill fragment.

Table 5.12. Arrowpoint data, Feature 9.

Description	Provenience / Level	Bifacial / Unifacial*	Dimensions (mm.) stem L	L	W	T	Use wear	Munsell number	Color
Perdiz	S5W6 L.2	U	8.0	28.3	17.2	3.1	none	10YR4/1	dark gray
Sub-triangular arrowpoint	S4W5 L.1	U	NA	16.2	11.8	1.2	none	2.5Y 5/2	grayish brown
Sub-triangular arrowpoint	S3W6 L.2	B	NA	22.2	12.4	3.7	none	10YR 6/2 10YR 6/3	pale brown to light yellowish brown
Sub-triangular arrowpoint	S5W6 L.2	U	NA	NA	8.5	2.8	none	----------	patinated
Lozenge-shaped arrowpoint	S5W6 L.1	U	NA	12.1	7.1	1.8	none	----------	patinated
Small Perdiz (stem & 1 barb missing)	S4W5 L.1	U	NA	NA	NA	1.6	none	2.5Y 5/1	gray
Bulbar stemmed (distal tip missing)	S3W6 L.3	B	5.9	NA	15.8	1.2	none	10YR 7/3	very pale brown/tan
Untyped (one barb missing)	S5W6 L.1	B	7.0	NA	NA	4.8	none	2.5Y 4/2 2.5Y 5/3	medium grayish olive brown
Proximal sub-triangular arrowpoint	S2W3/ S3W3 0-20	U	NA	NA	9.8	2.5	none	----------	patinated
Perdiz stem	S4W6 L.1	B	NA	NA	NA	2.6	none	----------	patinated
Perdiz stem	S5W5 L.2	B	NA	NA	NA	2.2	none	7.5yr 4/2	light brown
Perdiz stem	S3W5 L.2	B	NA	NA	NA	1.7	none	----------	patinated
Perdiz stem	S2W3/ S3W3 0-20	B	NA	NA	NA	2.9	none	----------	patinated
Distal fragment	S3W5 L.1	U	NA	NA	NA	2.0	none	10YR 6/3	pale brown

* "Unifacial" indicates that original flake surface remains on much or most of 1 face of point.

Table 5.13. Chert drills and drill fragments, Feature 9.

Description	Provenience	Bifacial / Unifacial*	Dimensions (mm.) L	W	T	Use wear	Munsell number	Color
Drill/arrowpoint	S4W5	U	14.9	4.8	2.1	none	----------	patinated
Drill/arrowpoint	S2W3/ S3W3	U	1.9	4.1	2.2	polish on 1 edge	----------	patinated
Medial drill fragment	S5W5	U	NA	4.8	2.0	polish on flaked edges	----------	patinated
Medial drill fragment	S2W3/ S3W3	U	NA	5.3	1.7	none	----------	patinated
Drill/arrowpoint fragment	S5W5	B	NA	4.8	2.3	none	10YR 6/4	light yellowish brown
Drill/arrowpoint fragment	S4W6	B	NA	4.4	2.3	none	10YR 5/3	grayish yellow brown
Expanded base drill fragment	S4W6	U	NA	16.5	3.7	none	2.5Y 4/1 2.5Y 5/3	dark gray brown light olive brown

Table 5.14. Prismatic blades and blade fragments from 1992 Feature 9.

Description	Provenience	Dimensions (mm.) L	W	T	Retouch flaking	Use wear	Munsell number	Color
Prismatic Blade	S6W7	24.8	12.9	5.6	none	none	2.5Y 7/3	pale yellow brown
Prismatic Blade	S3W6	14.7	5.2	1.4	none	microflaking 1 edge	----------	patinated
Prismatic Blade fragment	S6W7	NA	17.3	7.4	none	none		mottled:
							2.5Y 5/1	gray
							2.5Y 7/2	pale yellow gray
Prismatic Blade fragment	S6W7	NA	8.4	3.2	none	microflaking 1 edge	10YR 3/2	very dark grayish brown

fragmented, as is most of the faunal bone confidently believed to represent prehistoric meat procurement (e.g. deer, fish bones). Thus the opossum, though listed in Table 5.6, is not included in the estimations of useable meat weight.

The Faunal sample from Feature 9 is roughly similar to that from the Block Excavation, insofar as the bones of fish, hispid cotton rats and white-tailed deer comprise the great majority of the specimens. As was the case in the Block Excavation, deer bones are highly fragmented (see Table 5.8), with many specimens exhibiting "green" bone spiral fractures. Most fish bone is also very fragmentary, so that identification at the species level is not possible in the majority of cases. Otoliths and various bone elements indicate that gar, black drum, redfish, spotted seatrout, sheepshead and sea catfish are represented.

Minimum numbers of individuals (MNI) were calculated using the procedure discussed above for the faunal sample from the Block Excavation. As may be seen in Table 5.7, MNIs for mammals include one deer and 33 hispid cotton rats. MNIs of 1 hardshell, terrestrial turtle and 1 rattlesnake account for the very limited representation of reptiles. Fish MNI are comprised of three gar, four marine catfish and 23 "undifferentiated".

The combined fish MNIs account for the greatest part (54.8%) of the total estimated useable meat weight, followed by deer (36.2%) and hispid cotton rat (6.2%). Oysters, with an MNI of 42, provided an estimated 630 g of useable raw meat, or only 0.9% of the total. The turtle and snake comprised the small balance of 1.7%.

The Chronological Placement of Feature 9

As noted above, small bits of wood charcoal were present in the feature fill. Two samples, each consisting of small localized clusters of charcoal, were collected from the southern part of the feature, one from Level 1 (0-10cm below the exposed surface of the feature) and one from Level 2 (10-20 cm). Both were submitted to Beta Analytic, Inc. for radiocarbon assay.

The sample from Level 1 (Beta-53671) assayed modern, with no measurable age. Since this charcoal was gathered near the top of the pit, it is interpreted as modern charcoal associated with the late historic occupation of the site, evidence of which was found near Feature 9 in the form of modern trash pits.

The sample from Level 2 (Beta-53672) yielded an uncorrected age of 380 +/-70 B.P., which corrects for 13C to 360 +/-70 B.P. Calibrated dendrochronologically, a 1-sigma calendar date range of A.D. 1448-1644 is obtained, with intercept points at A.D. 1511, 1600 and 1616. The range falls mostly within the Protohistoric Period, with the early end extending back slightly into the Final Late Prehistoric. This appears to be a satisfactory date for the kinds of artifacts recovered, and is accepted as a reasonably accurate chronological placement of Feature 9 and its contents. This sample and that from Level 1 each consisted of relative concentrations of charcoal bits, localized within areas approximately 20 cm in diameter, and were thus spatially discontinuous, so it is assumed that the Level 2 sample had not been significantly contaminated by the historic charcoal which clearly had intruded into the top 10 cm of the feature fill.

Accepting the assay from Level 2 as reliable, it is apparent that Feature 9 post-dates the main occupation in the Block Excavation by about 200 years. This temporal divergence may be reflected in the differences in arrowpoint types; whereas the Block Excavation arrowpoints consisted overwhelmingly of Perdiz and Perdiz-like points (24 of 29 specimens, or 83%), Perdiz points comprised less than half of the arrowpoints from Feature 9 (4 of 9 specimens, or 44 %). The nine morphologically identifiable arrow points from Feature 9 are a small sample, so firm conclusions concerning chronological change in arrowpoint types should be avoided. It is interesting and perhaps significant, however, that seriation of arrowpoint types on the central Texas coast suggests a relatively late placement for Bulbar Stemmed points (Corbin 1974), and that unstemmed arrowpoints may increase in relative abundance in Protohistoric times in east Texas (Turner 1978, Fig. 33). The typological differences between the Block Excavation and Feature 9 at least suggest that the Perdiz type, dominant during the Final Late Prehistoric, was giving way to other types during the Protohistoric Period.

Other Aboriginal Pits in Area 3

Feature 8

Feature 8 was a shallow basin-shaped pit located approximately 7 meters south of Feature 9. In plan, the pit was quite circular, with a diameter of 41 cm. Maximum depth from the exposed surface was on 9 cm. The fill consisted of brown fine sand soil, and contained 4 sandy paste potsherds and 3 small splinters of bone.

Feature 41

This was another shallow basin-shaped pit. Plan diameter was 20 cm, depth from the exposed surface was 9 cm. Fill consisted of dark brown fine sand soil containing fine shell hash. The only cultural inclusions were four aboriginal potsherds.

Feature 44

This small pit was unique among those on the site in that it contained the base of a sandy paste pottery jar which was filled with faunal bone. The pit was circular in plan, with a diameter of 24 cm. Depth from the exposed surface was 11 cm. The fill consisted of dark brown fine sand soil containing scattered bits of burned oyster shell and tiny flecks of charcoal (too little for radiocarbon age determination).

The base of the ceramic vessel appears to have been intentionally placed in the bottom of the pit. The pot, which was made of sandy paste clay, had a rounded though slightly conical bottom. The exterior is well smoothed and slightly burnished, the interior is roughly smoothed. The piece is the basal section of a small deep bowl or jar which appears to have broken as an intact unit from the rest of the vessel. The break follows obvious coil joints, probably structural weak points which allowed the base to break off in one piece. The vessel section measures 58 mm high from the base and has a diameter of 107 mm. It was entirely within the pit fill, and there is no possibility that the rest of the vessel was present but removed by the machinery blading operation. The piece was in 22 fragments which were separated only by fine hairline cracks and which tended to follow coil joints. The vessel section retained its original shape in the ground, and it is clear that it was originally buried in one piece.

Tightly packed within the pot base were a fragment of burned oyster shell, 2 large fish vertebrae (probably black drum or redfish), 7 smaller fish vertebrae, and 42 small fish bones. In the fill immediately overlying, and probably also originally placed within the vessel section, were 8 small oyster shell fragments, a complete oyster valve, a redfish otolith, 2 catfish fin spines, 6 small fish vertebrae, a hispid cotton rat mandible and 115 small fragmented fish bones. These materials are listed in Table 5.15 (as are materials from other features which produced aboriginal debris).

The function of this feature is problematical. The inclusive materials are unlikely to have been tossed into the pit as refuse. The pot base clearly rested in an upright position on the bottom of the pit and the faunal materials clearly were contained within the pot, strongly suggesting intentional placement. Nor is it easy to see the findings as form of storage. There hardly seems to have been enough food represented to be worth storing, and the tight packing of the bone fragments and absence of anatomical articulation suggests that little or no meat remained attached when the material was placed in the pit. A third possibility is that Feature 44 served non-utilitarian or ritual function, in which bones of commonly eaten animal species were buried as a symbolic gesture. There is little contextual information with which to elucidate this possibility. It is conceivably relevant that Feature 52, the Final Late Prehistoric burial of an adult male, is located some 9 meters to the northwest, and that fish and rat bones and shells were intentionally placed in the grave fill. Feature 44 could be an offering associated with that burial, but there is no way of testing such an hypothesis based on available archaeological or ethnohistorical data.

Feature 51

This is another shallow basin-shaped pit, similar to Feature 8. In plan the pit was circular, with a diameter of 74 m. The depth from the exposed surface was only 7.5 cm. Fill consisted of dark brown fine sand soil mixed with fine shell hash. The pit fill contained a white-tailed deer phalange, 1 redfish otolith, 3 sheepshead gill plates, 2 redfish gill plates, 28 sheepshead and black drum mandible fragments, 5 black drum or sheepshead molars, 2 catfish fin spines, 3 catfish vertebrae, 97 unspeciated fish vertebrae, 5 hispid cotton rat mandibles, 2 hispid cotton rat longbone fragments and 167 very small bone fragments

Table 5.15. Cultural debris found in Area 3 aboriginal features.

Debris class	F. 13	F. 14	F. 38*	F. 44	F. 51
Artifacts					
Potsherds	37		47	1 pot base	1
Chert flakes	2				
Prismatic blade			1		
biface	1				
Faunal remains					
Mammals		1			
White-tailed deer bones					
phalange					1
Hispid cotton rat bones					
mandibles	30	10	1	1	5
longbone frag.	21	3	4		2
other	46	2			4
Bird					
longbone frags.	3				
Reptile					
Alligator					
dermal scute					
Terrestrial turle (sp?)					
carapace/plastron					
fragments		1	1		
snake (sp?) vertebra			1		
Fish					
Gar					
scales	10		89		1
vetebrae			5		
Sea catfish					
vertebrae	3	60	1		3
fin spines		4		2	2
otoliths					
Sheepshead		4			
mandible fragments	9				17
gill plates	24				3
Black drum					
mandible fragments	10				28
other	36				5
Redfish					
gill plates					2
otoliths				1	1
Undifferentiated					
vertebrae	300	56		15	97
unidenitified fragments	201.2 g	18.2g	9.7g	157	167
Molluscs**					
Oyster valves/umbos			28		
Scallop shell fragments			3		
Codkle shell fragment			1		

* Includes debris scatter around Feature 38.
** Does not include shells which served as hearth linings.

(fish and hispid cotton rat). The only artifact was a single plain sandy paste potsherd.

Hearths in Area 3

Feature 7

This was a shell-lined hearth similar to those described earlier for the Block Excavation. It was situated within the dark brown fine sand soil which caps the entire site, in a vertical position approximately equivalent to Zone 2 in the Block Excavation (i.e., 15-20 cm above the top of the geologic sand/shell hash underlying the soil). The feature was noted during monitoring of gradeall soil stripping, at which time the machine operator was instructed to work around it so that it could be hand excavated.

In plan, the hearth was roughly circular, measuring 65x60 cm. During hand excavation, a cross-sectional profile was made, revealing a slightly basin-shaped configuration with a maximum depth of 13 cm. The soil within the feature was stained black, presumably the result of burning; no wood charcoal was present, suggesting complete combustion of small-sized fuel. Virtually all shell within the feature showed some degree of burning, and most had been intensely burned to a bluish gray color. Shell included 44 oyster valves and umbo fragments and 699.4 g of highly fragmented burned oyster. The only other materials present were a single fragment of Atlantic cockle shell, a small fragment of burned bone, and 3 small aboriginal potsherds.

Feature 13

Another shell-lined hearth, Feature 13 was located 13 meters west of Feature 9. As was the case with Feature 7, this hearth was exposed during gradeall operations and subsequently hand-excavated. The feature consisted of a flat, circular mass of burned oyster shell. The soil within the feature was stained black, though once again no wood charcoal was present. Plan dimensions were 44x41 cm, and the burned shell deposit was up to 4 cm thick. The feature was well within the dark brown sandy soil, and rested approximately 20 cm above the top of the tan sand geologic sediment which underlay the soil. Virtually all oyster shell was burned. The hearth contained 8 more or less complete oyster valves and 308 g of burned fragments. Also present were 8 fragments of burned bay scallop shell.

Artifacts apparently associated with the feature consist of 37 sherds from a single sandy paste vessel, 2 small chert flakes and a small, crude biface of gray chert. The potsherds were found in a cluster adjacent to the western margin of the hearth. Several of the sherds fit together to form the rim and upper wall section of a straight-sided jar of the Goose Creek Plain type. The biface, 44 mm long, 22 mm wide and 10 mm thick, is bluntly pointed at both ends. It clearly represents an attempt to rework a much older tool, since the original flake scars are patinated to a yellowish brown color and more recent edge trimming reveals the unpatinated, light gray color of the chert. A flaw in the material appears to have prevented complete rethinning, and the piece may have been discarded prior to completion of intended reworking.

In the soil matrix at the eastern margin of the hearth was a small but dense concentration of fish and hispid cotton rat bones. Bones consist of 10 gar scales, 2 catfish fin spines, 3 catfish vertebrae, 1 black drum gill plate, 35 black drum or sheepshead molars, 10 black drum mandible fragments, 300 small undifferentiated fish vertebrae, 30 hispid cotton rat mandibles, 46 hispid cotton rat teeth, 21 cotton rat longbones, 3 bird longbone fragments, and 201.2 g of tiny fragmented fish and rat bones.

Feature 40

The feature, located 1 meter from the northwest margin of Feature 9, is interpreted as an unlined hearth. It consisted of a small circular patch of black-stained soil, containing numerous tiny flecks of charcoal, resting at the base of the brown fine loam soil. It measured 18 cm in diameter, and had a thickness of 3 cm. No artifacts or faunal materials were associated.

Features 37 and 38, A Hearth and Possibly Associated Debris

These features were located approximately 9 meters north of Feature 9. Feature 37 is an oyster shell-lined hearth. Approximately 2 meters to the east is Feature 38, a patch of black, organically stained

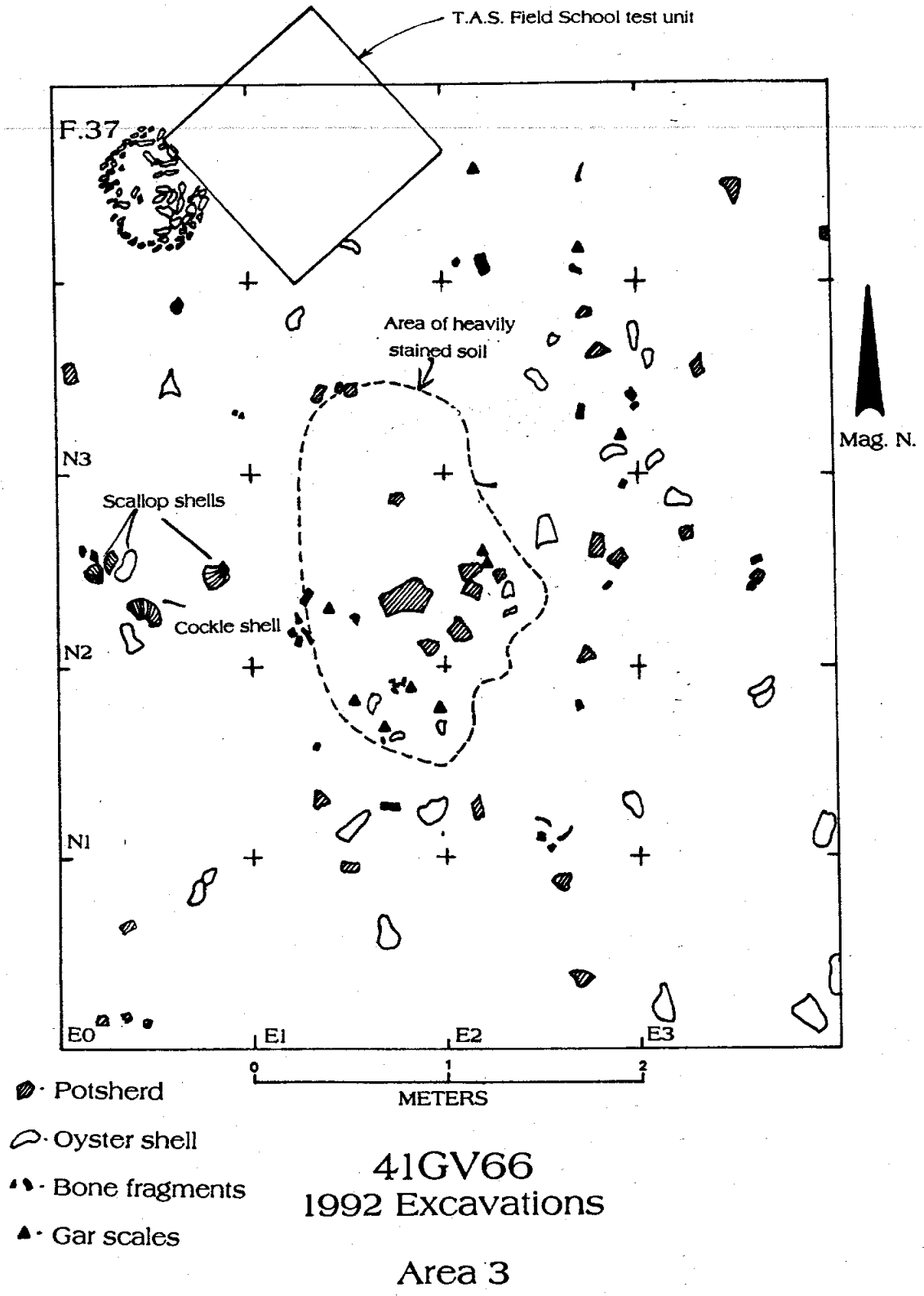


Figure 5.24. Shell-lined hearth, Feature 37, and relatively concentrated aboriginal cultural debris (Feature 38) in Area 3.

soil and apparently associated cultural debris. The shell-lined hearth, black soil and scattered debris were noted during mechanical stripping of the soil, and the area was set aside for hand excavation. Subsequent trowel testing of the area revealed the fact that the staining and scattered debris were quite discrete, and were encompassed within an area measuring 4 by 5 meters. In preparation for hand excavation, this area was staked out in a small grid of 1-meter units. Soil was then removed with trowels and cultural materials recorded in situ on an excavation map (Figure 5.34). The troweling was taken down to the light-colored surface of the underlying geological sands, in search for postmolds or other features. None were found.

Feature 37 was circular in plan, measuring 50 cm in diameter. One edge of the hearth adjoined a 1-meter square patch of mottled fill consisting of a mix of brown fine sand soil and tan sand and shell hash, and interpreted to be a backfilled test unit from the 1970s excavations. Feature 37 had no appreciable depth, appearing as a nearly flat lens of burned oyster shell in cross-section. As with the other hearths of this type, the soil within the feature was stained black, though no charcoal was present. The shell lining consisted of 14 more or less complete, burned oyster valves and 280.4 g of heavily burned shell fragments.

Feature 38 had no clearly definable edges, but was only the darkest part of a larger area of apparent organic staining the size of which more or less conformed with the distribution of debris shown in Figure 5.34. The area of most intense staining designated as Feature 38 was oblong, measuring 202 x 135 cm. The stained soil was up to 7 cm thick. Artifacts found within and around Feature 38 were 47 aboriginal potsherds from several vessels, and a small prismatic blade of chert. Faunal materials consist mostly of fish bone, including 93 gar scales, 5 gar vertebrae, 4 sciaenid fin spines, 2 sea catfish vertebrae, 44 gar scales, 2 sciaenid fish, 2 fragments of deer-sized longbone, 28 oyster valves, 3 fragments of bay scallop shell and a fragment of Atlantic cockle shell.

Both Features 37 and 38 rested within the brown fine sand soil, approximately 15 cm above the surface of the underlying light-colored sand/shell hash geological sediments. Their close proximity suggests a functional relation, with Feature 38 and associated debris representing deposition of cultural debris and refuse associated with activities carried out at or near the hearth, Feature 37.

Overview of Area 3

Although the dark brown soil in Area 3 contained relatively little in the way of artifacts or other cultural debris, several aboriginal features were found and excavated, indicating sporadic use of the area. The largest and most productive was Feature 9, interpreted as a group of four overlapping pits which may have served as storage facilities, and which subsequently were filled with refuse and trash. Three additional, much smaller and shallower pits were encountered; these generally contained little debris, and seem not to have been used as trash receptacles. A fourth pit, Feature 44, may have served a non-mundane ritual function, since the ceramic vessel base filled with a small quantity of fish and cotton rat bones appears to have been intentionally placed in the pit and then covered over. Four small hearths, three of which were lined with oyster shells, and one of which appears to have been associated with a definable scatter of cultural debris, complete the list of non-burial features in Area 3.

Non-Burial Features in Other Areas Investigated in 1992

Aboriginal cultural features were widely scattered in the several areas investigated in the western part of the Mitchell Ridge Site. Aside from Area 3, which encompassed approximately 2,700 m^2, some 16,000 m^2 of the site was exposed by mechanical soil stripping operations, revealing only 19 aboriginal features. Thus, one feature was found per 840 m^2, a very low density which obviously contrasts markedly with the one feature per 6.7 m^2 found in the Block Excavation, where the density of features was some 125 times greater. These figures are in concert with the general pattern in which the eastern part of the site showed by far the greatest evidence of prehistoric occupation in the form of cultural debris.

The areas investigated (see Figure 5.1) are, from west to east, the Far West Area, Area 1, Area 4, Area 2, the Corral Area, Area 5, and the Bayou Lots (referring to two house lots on Eckert Bayou at the margin of the site). Additionally, three relatively small areas, each comprising the center portion of a planned home lot, were exposed just outside the apparent margins of the area of dense cultural debris at the east end of the site; these lots, which produced no discrete features, are in a line with the home lot within which the Block Excavation was located (see Figure 5.1). The features exposed in all areas

Table 5.16. Data on shell-lined hearths, various areas investigated in 1992 (excepting Block Excavation and Area 3).

AREA/ Feature	Plan shape	Length (cm)	Width (cm)	Profile shape	Max. depth (cm)*	Shells whole/ frags. (g)	Associated materials
FAR WEST							
F. 119	oblong	80	49	basin	18.5	39/1387 g	42 sherds
F. 121	oblong	96	60	basin	12	25/120 g	12 sherds
F. 122	circular	60	60	basin	10	8/247 g	none
AREA 2							
F. 4	circular	56	56	basin	8	24/335 g	4 sherds, charcoal
AREA 4							
F. 88	oblong	70	55	flat	2.5	0/248 g	14 sherds 1 flake
CORRAL AREA							
F. 89	oblong	70	48	basin	5	19/800 g	none
F. 94	circular	40	40	flat	2-3	5/269 g	none
AREA 5							
F. 100	circular	33	27	flat	2-3	no data**	none
F. 102	ciruclar	23	18	flat	2	4/120 g	10 sherds
F. 105	oblong	43	35	basin	5	no data**	1 sherd
BAYOU LOTS							
F. 116	circular	35	35	flat	2-3	no data**	none

* Depth as measured from upper surface of exposed feature to base of feature.
** Shells not collected.

combined include shell-lined hearths, pits, and two apparent aboriginal post mold patterns. Because the shell-lined hearths differed in no significant way from those already described for the Block Excavation and Area 3, and verbal description would be needlessly redundant, they are concisely summarized in Table 5.16. Other features show sufficient variation to warrant descriptions which are presented below by areas.

The Far West Area

The Far West Area was rectangular in plan, and was sandwiched between Cove Drive on its western margin and Area 1 along the eastern edge. The area measured approximately 45x75 meters, encompassing about 3,375 m^2. Within this rather large area, only 3 aboriginal features, all shell-lined hearths, were found. All were located toward the southern end of Area 3 above the 10-foot contour line. Two modern features were also found at this locale (see Table 5.1). One was a trash pit containing

fragments of orange brick, pumice and modern asphalt roofing material. The other was the burial of an immature horse, which is interpreted as one of a number of burials of farm animals scattered across the western end of the site.

Area 1

Only two features of definite or probable aboriginal origin in Area 1 are not burials. Feature 1 is an oblong pit with a basin-shaped profile. In plan the pit measured 122 x 59 cm. Depth, as measured from the surface exposed by mechanical grading (i.e., the level of the surface of the geological sand/shell hash), was 20 cm. Initially, it was believed that this feature was an aboriginal burial pit, since it was of similar dimensions to burial pits in the immediate area and contained the same brown fill as did the burials. However, upon excavation the pit proved to have no contents.

The function of such a feature is, therefore, difficult to ascertain. The absence of any trace of modern debris in or near the pit suggests an aboriginal origin, as does its location within a clustering of prehistoric burials. At the same time, a lack of aboriginal cultural material, or any evidence of burning, precludes interpretation of the feature as a prehistoric trash pit or hearth. The feature may be related to the burials in Area 1, insofar as it served some function in prehistoric mortuary ritual. Three possibilities can be suggested, though none can be demonstrated: (a) the pit contained a primary interment which was removed and deposited elsewhere as a secondary burial, (b) the pit contained some kind of perishable offering which was of insufficient mass to leave evidence in the form of discernable organic staining or, (c) the pit was dug for a burial which, for one reason or another,
was never placed therein.

Feature 2 consisted of a circular patch of black, ash-stained sand sediment, discernable on the exposed surface of the sand/shell hash. It measured 40 cm in diameter and had a basin-shaped profile with a depth of 22 cm. The feature appears to represent in situ burning, though it contained no wood charcoal, suggesting use of small, completely combustible fuel. The feature may represent a hearth, though there was no occupational debris found in the immediate area which would suggest domestic activities. Perhaps more likely, it represents a small fire built in association with one or more of the burials in Area 1 within the context of mortuary ritual. As discussed further on, at least two other burned spots at the site appear to have been associated with burials.

Area 4

Area 4, bounded on the west by Area 1 and on the east by Area 2, encompassed approximately 4,500 m^2. It consisted of two sections, separated by a dirt road which followed the course of a planned paved road (since the planned roads at the site were to be built on the ground surface, roadways were not recommended by the Corps of Engineers for subsurface testing). In addition to a group of Late Prehistoric, Protohistoric and Early Historic burials described in Chapter 8, and modern animal burials and apparent fence post molds (see Table 5.1), Area 4 produced only a single aboriginal hearth (see Table 5.17) and 2 aboriginal pits.

Feature 54

This feature was a shallow, basin-shaped pit with plan dimensions of 63 x 45 cm. Fill consisted of brown fine sand soil mixed with fine shell hash. Maximum depth from the surface of the tan sand/shell hash geologic matrix was only 10 cm. The only cultural materials found within the pit were a single small aboriginal potsherd and a fragment of heavily rusted iron, probably intrusive from the later Angloamerican occupation of the site.

Feature 66

This was a relatively large and deep pit. In plan it was oval, with a length of 165 cm and a width of 112 cm (see Figure 5.35); the long axis was oriented west-southwest to east-northeast on the magnetic compass. The profile was roughly V-shaped, with a maximum depth of 100 cm (Figure 5.35).

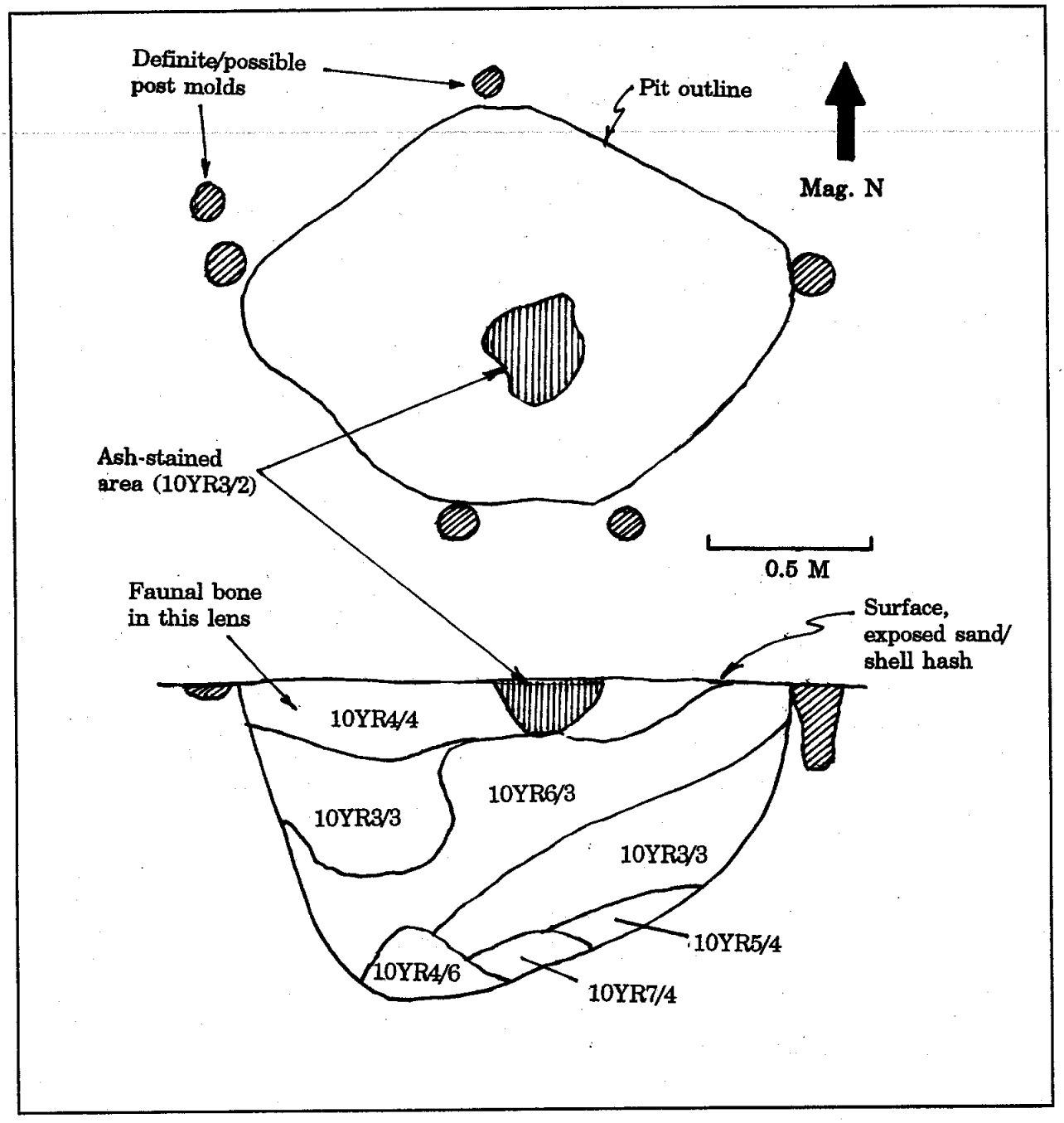


Figure 5.35. Plan (top) and profile views of large pit, Feature 66, in Area 4. Profile presents cross-section looking north, and shows various lenses of pit fill of different shades of brown (with Munsell colors indicated).

Table 5.17. List of materials recovered from upper part of pit, Feature 66.

Faunal Remains

Mammals
- 14 white-tailed deer maxilla fragments
- 4 deer molars
- 2 hispid cotton rat maxilla fragments
- 3 hispid cotton rat left mandibles
- 1 hispid cotton rat distal tibia fragment

Reptile
- 1 terrestrial turtle carapace fragment

Fish
- 15 marine catfish otoliths
- 1 seatrout otolith
- 10 marine catfish vertebrae
- 46 unspecified vertebrae
- 1 black drum manidible fragment
- 5 sciaenid fin spines

Bird
- 1 longbone fragment

97 unidentified small bone fragments (fish and cotton rat longbone splinters)

Artifacts

Ceramics
- 2 plain rimsherds
- 1 scalloped rimsherd
- 8 bodysherds

35 asphalum nodules

3 pieces of pumice

Six definite or possible post molds were found around the perimeter of the pit, suggesting some kind of structural containment. All were circular in plan, ranging in diameter from 10 to 20 cm. Only three showed any depth below the surface of the mechanically exposed sand/shell hash geologic matrix; depths of these post molds ranged from 5 to 27 cm. The other three, when cross-sectioned, appeared only as thin (1-2 cm) dark stains on the surface of the exposed matrix. However, the round plan configuration of dark brown staining on the surface of the geologic sediment was quite distinct, and it is believed that these probably represent the bottoms of posts which were set or driven into the overlying fine sand soil, and which penetrated only to the level of the top of the sand/shell hash zone. The horizontal spatial relation between the post molds and the pit is shown in Figure 5.35.

In the approximate center of the pit, at the exposed surface, was a nearly black-stained patch (Munsell 10YR 3/2) which contrasted with the surrounding brown (10YR 4/4) pit fill. This patch was roughly circular in plan, with a diameter of approximately 35 cm (see Figure 5.35). In profile, it was a U-shaped,with a depth of 20 cm below the exposed surface of the pit. The dark color of was very similar to that observed in hearth features at the site, and the staining is interpreted as the probable result of in situ burning. An absence of wood charcoal, also the case in many of the hearths, is believed to reflect the use of small sticks or twigs which were subjected to complete combustion. A sample of the fill was taken for flotation in the laboratory, in the hope of recovering small particles of carbonized plant remains. This procedure was carried out, with negative results.

The profile of the entire pit clearly showed a series of depositional units definable on the basis of differing soil colors and by varying amounts of inclusive fine shell hash (Figure 5.35). These are believed to have resulted from varying degrees of mixing of dark brown soil and underlying geological shell in the pit backdirt, and subsequent layering as the pit was backfilled.

The topmost layer of fill contained a scattering of faunal materials. Listed in Table 5.17, these consist of bones of fish (with catfish and seatrout elements identifiable), 16 fish otoliths (15 sea catfish, 1 spotted seatrout), hispid cotton rat, white-tailed deer (maxilla fragments and teeth), a turtle carapace fragment, a bird longbone fragment and 97 small fragments of fish and small rodent-sized mammal bones (probably hispid cotton rat). Also in this layer were 11 fragments of aboriginal pottery (3 rimsherds and 8 bodysherds), 35 small nodules of asphaltum and 3 small pieces of water-worn pumice.

The 15 catfish otoliths were in excellent condition and thus were susceptible to cross-sectioning for seasonality estimation; the trout otolith is too small (young) for reliable seasonality determination. The catfish otoliths fall into seasonal categories, as follows: 8 winter, 5 summer, 2 fall.

Feature 66 is difficult to interpret in terms of its function. The fact that it contained aboriginal cultural debris and was completely devoid of modern trash leaves little doubt that it is of aboriginal origin. When first exposed, the feature was thought to be an aboriginal burial pit; the complete absence of human bone in the fill obviously rules out this interpretation. Three alternate possibilities can be suggested, though none can be demonstrated: (a) the feature may have been intended as a burial pit but, for unknowable reasons, never used as such; (b) it may have served as a pit for a primary burial which was subsequently removed and redeposited elsewhere as a secondary interment; (c) the pit may have been used for storage and backfilled when it was no longer needed.

If the pit served as a storage facility, it is not clear why it would have been backfilled once it was no longer of use. In the case of Feature 9 in Area 3, discussed above, infilling of a complex of possible storage pits involved refuse and trash disposal, but the small amount of debris in Feature 66, confined to the topmost layer of the fill, was hardly sufficient to fill in the pit. Thus, whatever the reason for backfilling, the operation was intentional and not contingent upon the need to dispose of any significant amount of camp debris. The placement of posts around the pit is very similar to that in the case of two nearby Early Historic burials, Features 63 and 64, discussed further on in Chapter 8. While the similarities are rather striking, they do not necessarily indicate that Feature 66 served a mortuary function; it certainly is not unreasonable to suppose that relatively large storage facilities were at times enclosed and/or roofed over to protect contents from the elements or from scavenging animals.

On the other hand, the apparent fact that a fire was built in the center of the feature after backfilling hints at a ritual function, as opposed to purely utilitarian one. As is shown in Chapter 8, small burned patches were associated with at least two of the aboriginal burials at Mitchell Ridge, suggesting the burning of fires as an occasional element of mortuary ritual. It is difficult to otherwise explain the burned patch in the center of Feature 66, since purely mundane backfilling would hardly call for a fire to be burned over the pit fill. It is conceivable that a domestic hearth was simply built, fortuitously, at this location, but this seems highly improbable given that (a) it is located in the virtual center of the feature and (b) only one other hearth (Feature 88), located some 15 meters west of Feature 66, was present within Area 4.

The general dearth of occupational debris in the soil overlying Feature 66 raises the question of how/why the various faunal remains were present in the uppermost layer of the pit fill. Although the small quantity of these materials indicates that the main function of the pit was not for debris disposal, it is entirely possible that small quantities were tossed in during backfilling. Such an interpretation would seem to be in keeping with the presence of a few small potsherds and small nodules of asphaltum and pumice, all items found elsewhere at the site in debris deposits. It is also possible, however, that the bone material represents the ritual offering of foodstuffs, an occurrence which would not be unique at Mitchell Ridge. The possible ritual origin of the faunal bones buried in the base of a ceramic jar in a small pit, Feature 44, has been noted above. To this can be added the virtually certain food offerings represented by faunal bone in a Final Late Prehistoric burial, Feature 52, discussed in Chapter 8.

Area 2

Area 2 was roughly rectangular in plan, measuring approximately 50 x 60 meters and thus covering an area of some 3,000 m^2. Area 2 was exposed in part by gradeall soil stripping along the route of a proposed pilot canal, and subsequently expanded by soil removal accomplished with a maintainer. Features were scarce in Areas 2; only a single shell lined hearth (see Table 5.1) and 2 shallow pits were encountered.

Feature 5

This was a shallow pit with an oval plan measuring 76 x 133 cm. In cross-section, the pit had a shallow basin shape and a depth from its exposed surface of 20 cm. The fill was a homogeneous brown fine sand soil containing scattered bits of shell hash. Aboriginal cultural debris in the fill was sparse, and consisted of a few specimens of faunal bone (1 hispid cotton rat femur, 3 small fish vertebrae and 4 small

splinters of unidentified bone) and a single sherd of sandy paste pottery. Two small fragments of flat, rusted iron were probably intrusive, judging from the observed presence of late historic debris scattered in the overlying soil.

Feature 6

This small, nearly circular pit measured 34 x 38 cm in plan and had a depth from the exposed surface of only 9 cm. Again, the fill was a homogeneous brown fine sand soil containing scattered shell hash. Cultural debris in the fill consisted only of an oyster shell and 2 small aboriginal potsherds.

The Corral Area

The name for this area derives from the presence, during the 1970s, of an animal corral associated with modern occupation of Mitchell Ridge. Several large posts, apparently representing one side of the corral were still present during our 1992 work. The designation was first applied by the investigators during the 1970s, and was adopted in 1992. The area is roughly rectangular, with the length running parallel to the axis of the ridge on which the site is situated. The Corral Area encompassed approximately 4500 m^2. Features of apparent aboriginal origin consisted of two shell-lined hearths and the two arcuate post mold patterns described below.

Post Mold Patterns

Both of the apparent aboriginal post mold patterns identified in the Corral Area were located near the 9-foot contour during constant monitoring of the soil stripping operation. As the maintainer blade reached the surface of the tan sand/shell hash sediment, small brown circular patches forming two arcuate patterns were observed (Figure 5.36). These were immediately recognized as possible post mold patterns, and each patch was flagged for closer scrutiny. Each of the clusters of postmolds was given a feature designation, and individual post molds were located on the overall site map with surveying instruments and then documented in the field notes using a letter designation. The plan configuration of each post mold was delineated by careful scraping of the exposed surface with a trowel. Cross-sectional profiles were also done with trowels, and profile drawings made. The fill of those post molds which showed discernable depth consisted of a brown fine sand similar to the overlying soil horizon.

Feature 98 consisted of an arcuate pattern of one possible and seven definite post molds. Those regarded as "definite" were all round in plan view with bluntly conical profiles (Figure 5.37). Diameters ranged from 10 to 21 cm, and depths from the exposed surfaces were from 8 to 21 cm. It is likely that the original ground surface from which the posts were inserted was within the dark, fine sand soil, higher than the surface of the geologic sediments, so these depths may represent only the lower parts of posts. The single "possible" post mold also appeared as a dark circular patch, but when cross-sectioned it showed no discernable depth. At the "open" end, the arc-like pattern measured 2.4 meters across.

Feature 99 was of similar plan configuration, but larger than Feature 98. It consisted of eight definite and 4 possible postmolds. All but one of the post molds were circular in plan, with diameters ranging from 12 to 23 cm. Again, those considered definite exhibited clear, round-based or bluntly conical profiles (Figure 5.37), whereas the possible examples were dark circular patches without definable profiles. Depths below the surface of the tan sand/shell hash ranged from 11 to 43 cm. The maximum breadth of Feature 99 was 5.3 meters.

Both features are believed to represent probable aboriginal structures, based upon their size, shape and the circular plans and relative small size of the post molds (in contrast to the large size and often square plan shape of obvious historic fence posts found scattered across the site). The arcuate plan configurations are essentially the same, and also resemble that of the group of postmolds in the Block Excavation, described earlier. Solely on the basis of these three examples, it would appear that the aboriginal structures at the site consisted of semicircular arrangements of poles set into the ground, presumably joined in some fashion, and covered with mats or hides to form a roofed space. The fact that, in all three cases, the patterns are incomplete suggests that the structures may commonly have been open-sided, though the example from the Block Excavation may have been completely enclosed, as suggested by Feature 110, a semicircular depression which appears to conform to part of the overall shape of an

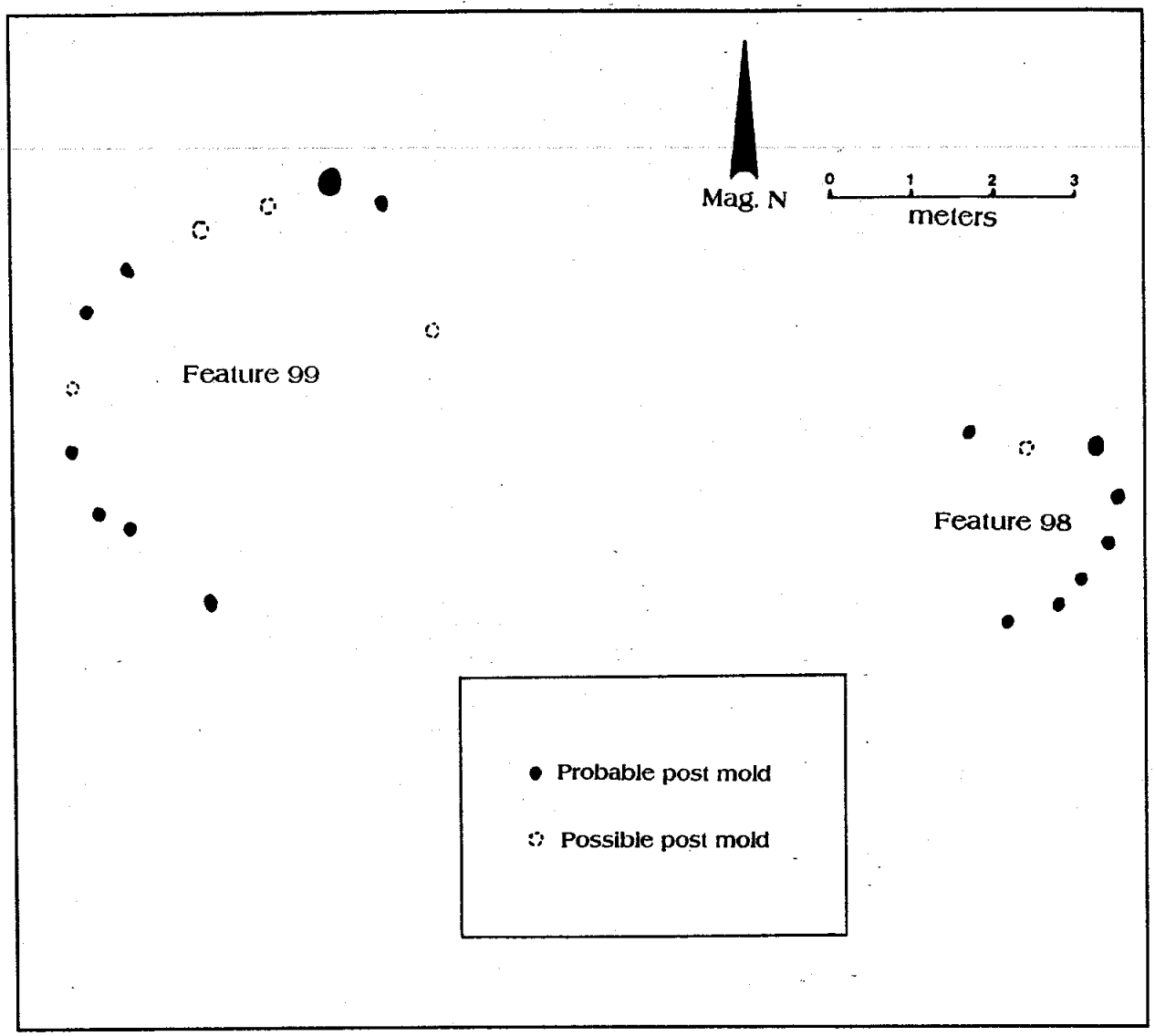


Figure 5.36. Plan views of Features 98 and 99, probable and possible post molds exposed at surface of sand/shell hash sediment.

oblong structure (see discussion, above). In this case, the entire structure may have been enclosed by posts, some of which could have been removed from the ground leaving no permanent trace. Such conceivably could have been the case with all three examples reported here.

If Features 98 and 99 represent domiciles, it is interesting that there was no discernable accumulation of cultural debris within or around the structures. Only a few potsherds were observed during the extensive mechanical blading of the entire Corral Area; clearly debris was extremely sparse, and even slight concentrations of artifacts or faunal materials would have been noticed during the constant monitoring of the soil stripping operation, which involved a rather slow and careful removal of soil in thin (5-10 cm) increments. The dearth of such materials associated with features 98 and 99 suggests several possible interpretations. The structures may have been domiciles that were used for too short a period of time for the accumulation of significant amounts of debris. It is also possible that the domiciles may have served only as sleeping quarters, with daily activities-- and the attendant deposition of debris-- taking place elsewhere. If this were the case, however, it would seem unlikely that such activities would be so far removed that the traces would not have been present nearby, within the area exposed by the machine

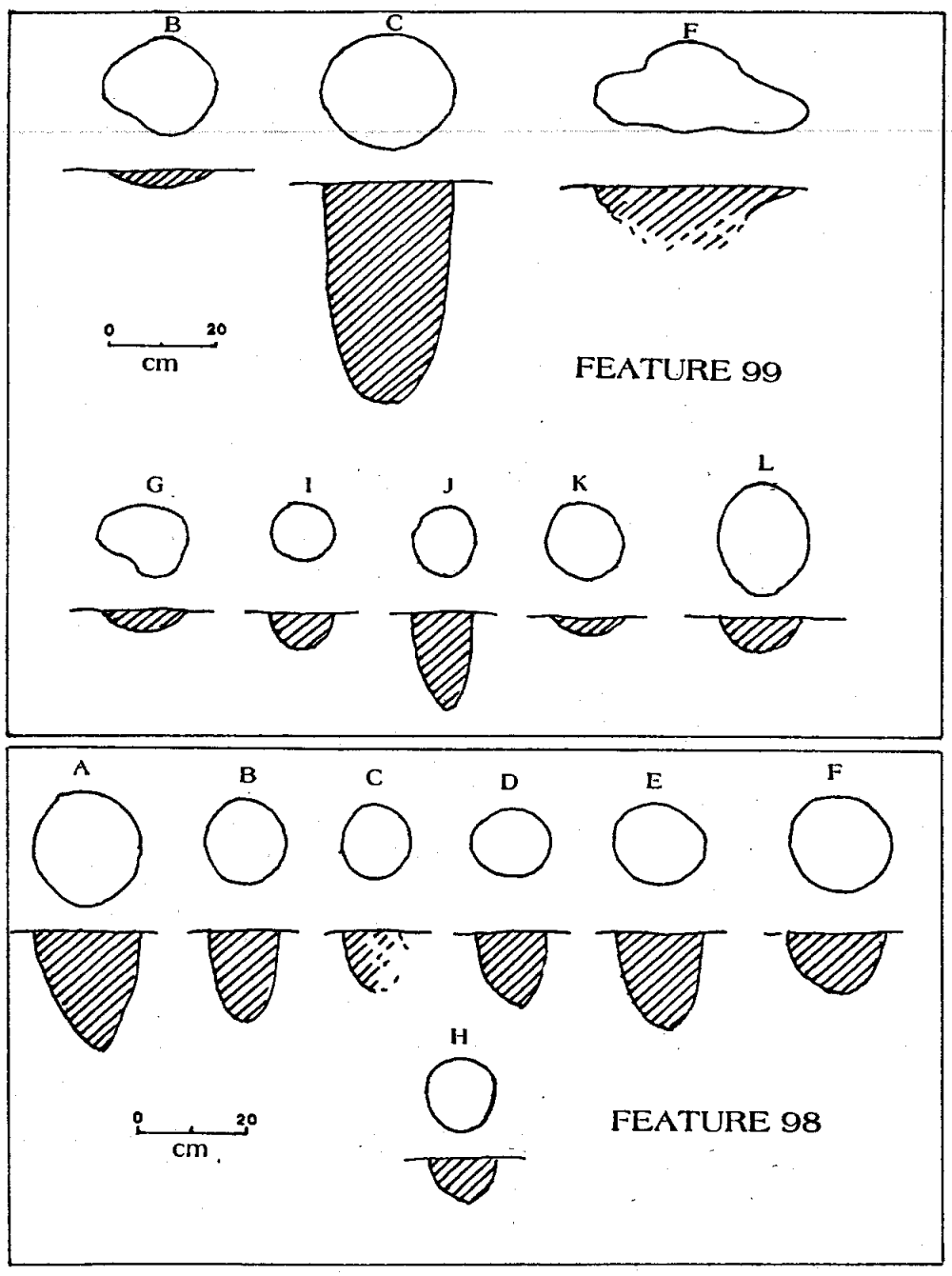


Figure 5.37. Plan and profile views of post molds, Features 98 and 99, Corral Area.

operations. Small circular huts used only for sleeping are known ethnographically for hunter-gatherer groups, but general daily activities generally took place immediately outside the structures (e.g. Binford 1983).

Alternatively, the structures simply may not have served as living quarters. Such an interpretation would be consistent with the absence of hearths either within or near Features 98 and 99 (which was not the case with the apparent structure in the Block Excavation where the shell-lined hearth, Feature 110-A,

may have been functionally associated). One reasonable interpretation is that the structures were built for storage. An ethnohistoric reference to above-ground storage facilities on the Texas coast was provided by the French navigator Jean Beranger, who noted that a coastal aboriginal group living northeast of present-day Corpus Christi had built "...a dozen quite large, round huts...where they put the supply for the winter that consists of fish that they dry without salt..." (Carroll 1983:22). Another possibility is that the features represent facilities for curation of bodies prior to burial, or charnel houses. While these are not ethnohistorically documented for the Texas coast, their existence is suggested archaeologically by a number of secondary (i.e., defleshed) burials at Mitchell Ridge, as well as by certain taphonomic characteristics of human bones found in those burials (discussed further on in Chapters 8 and 9). Finally, some undefinable ritual function cannot be ruled out.

Although the available information does not permit confident interpretation of Features 98 and 99, the evidence does suggest that pole-frame structures were a recurrent element in the material culture inventory of the aboriginal people living at the Mitchell Ridge Site. Circular, semicircular or oblong structures appear to have been the rule, judging from the limited data, and this is in keeping with very limited ethnohistorical evidence for the Texas coast (Newcomb 1983). Comparative archaeological data are also limited, but the apparent structures at Mitchell Ridge have counterparts further down the coast in the Corpus Christi Bay area. An open-sided arcuate post mold pattern of probable Archaic age, with a maximum breadth of 3.2 meters, was documented at the Means Site (41NU184) on the lower Nueces River (Ricklis and Gunter 1986). At the nearby McKinzie Site (41NU221), extensive excavation exposed a Late Prehistoric (Rockport Phase) circular or semi-circular structure containing a central hearth complex and having a breadth of 5.5 meters (Ricklis 1988). The structures at both sites were associated with thin deposits of debris, though the example at the Means Site apparently had no associated hearth. Thus, although the evidence is limited, it is possible to suggest that the native people who occupied the Mitchell Ridge Site were constructing simple hut structures of a basic kind generally in use along the Texas coast.

Area 5

Area 5 was rectangular in plan (see Figure 5.1), measuring approximately 40 by 60 meters and encompassing an area of approximately 2400 m^2. Aside from three shell-lined hearths (see data in Table 5.16), the only cultural features found in this area were two small pits, both of aboriginal origin.

Feature 101

This small pit was visible at the surface of the tan sand as a quasi-circular patch of brown fine sand soil. The plan dimensions were 30 x 37 cm. In profile, the pit was U-shaped, with a depth below the exposed surface of 25 cm. Artifacts were found clustered within the bottom 20 cm of the fill. These included 4 undecorated rimsherds and 67 bodysherds of aboriginal pottery, a small chert flake, and one small chert prismatic blade. Intermixed with these materials were 3 whole oyster shells, 16 oyster shell fragments and a fragment of whelk columella. Also present within this cluster of artifacts was a brass-plated iron button of non-aboriginal manufacture. The fact that the button was within a cluster of material of clear aboriginal origin, near the bottom of the pit, suggests that it was associated as an item of trade and that the feature dates to the Early Historic Period.

Feature 103

This is another small pit with a somewhat oblong plan, measuring 23 x 30 cm. In profile, the pit was basin-shaped, with a depth below the exposed surface of 13 cm. The fill consisted of a mix of brown, fine sand soil and shell hash. Inclusive cultural materials were 2 undecorated rimsherds and 36 bodysherds of aboriginal pottery, a chert flake, and several fragments of oyster shell. A fragment of a non-aboriginal cut clear-glass bowl was found on the exposed surface; this is typical of glass of late nineteenth or twentieth century manufacture and is probably intrusive and non-contemporaneous with the aboriginal pit.

The "Bayou Lots"

Two planned home lots fronting on Eckert's Bayou were investigated during the 1992 fieldwork.

These were located at the northern margin of that part of the site which adjoined the bayou shoreline. In general, cultural materials were scarce within the fine sand soil, reflecting the fact that the lots were at the edge of the areal extent of occupational debris (see Figure 5.1). Careful surface inspection of the ground fronting the shoreline to the west of these lots revealed an absence of cultural materials. Constant monitoring of soil stripping operations did reveal, however, three cultural features of aboriginal origin. One of these was a small shell-lined hearth, the dimensional data for which are presented in Table 5.16.

The other two "features" were masses of aboriginal potsherds which rested within the soil approximately 15 cm from the surface of the underlying tan geologic sand (thus approximately corresponding in their vertical position to Zone 2 in the Block Excavation). These consisted simply of concentrations of sherds which, when exposed with small hand tools, showed no clearly definable edges nor other cultural associations. The sherds lay in essentially flat lenses and thus appear to have been deposited on the prehistoric surface. Because of their amorphous shape, and the lack of other inclusive materials, the sherd concentrations were documented in the field notes as "sherd clusters" and not assigned feature numbers. One of the clusters was contained within an area measuring 130 x 95 cm, the other within a smaller area measuring 90 x 75 cm.

Initially it was thought that each of the two sherd clusters represented a single broken vessel. Upon excavation, however, it became apparent that the sherds in both areas were too numerous for a single pot. This was verified in the laboratory, when washing revealed that several vessels were represented by each cluster. These vessels are discussed in detail further on in chapter 7.

Interpretation of the sherd clusters is difficult. They seem to represent disposal of broken pottery, but are not part of a general trash disposal area, judging by the absence of associated faunal materials or other kinds of debris. They do *not* represent sherd-lined hearths, as was the case with Feature 110-A in the Block Excavation; no evidence of in situ burning was present, and the sherds do not exhibit evidence of post-breakage firing, as was the case with Feature 110-A.