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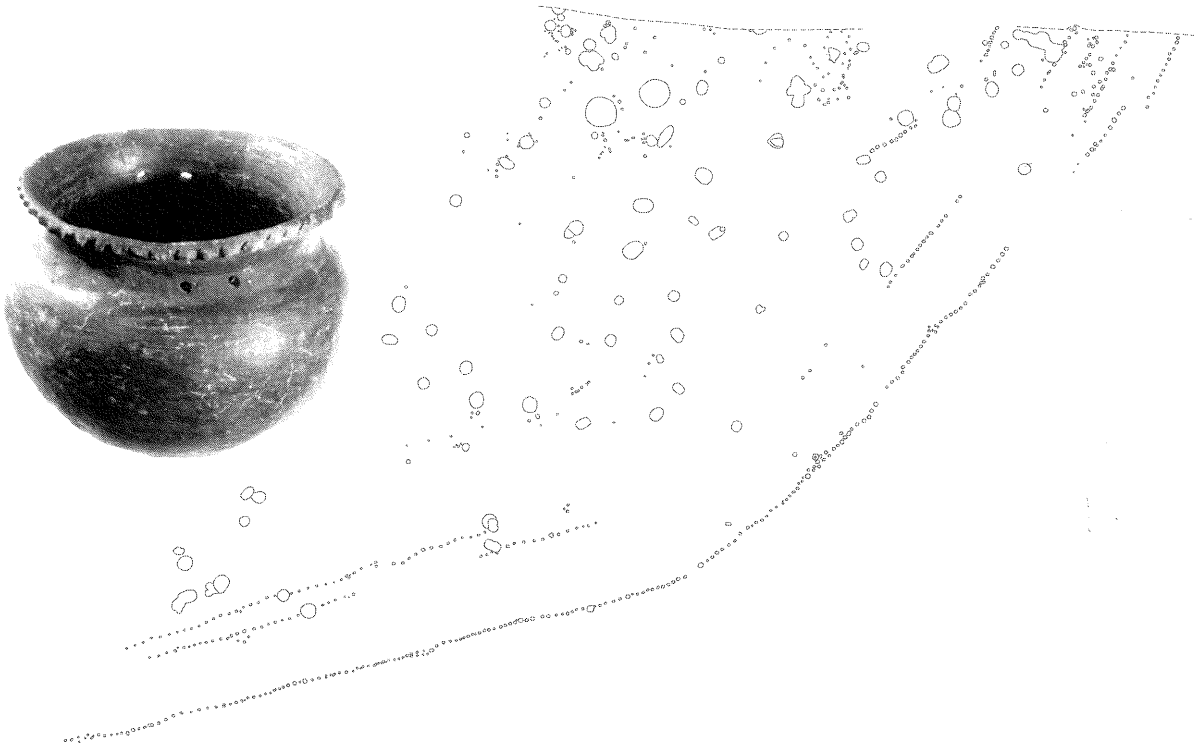
THE BONHAM SITE (44SM7)

A Late Woodland Village Complex in Smyth County, Virginia



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The Bonham Site (44SM7): A Late Woodland Village Complex in Smyth County, Virginia

Virginia Department of Historic Resources
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Authors:
C. Clifford Boyd, Jr.
Donna C. Boyd
Michael B. Barber
Paul S. Gardner

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Editor's Note

The initial draft of this report was submitted to the Virginia Department of Historic Resources in 1992. Over the past decade, a great deal has been learned about Late Woodland cultures across Virginia due, for the most part, to federal and state-funded cultural resource management surveys and excavations. New analysis methods and interpretations have also enhanced our knowledge about the past since 1992. For example, the standards for the analysis of human skeletal remains, which are now standard operating procedure for Dr. Donna Boyd and myself (Buikstra and Ubelaker 1994), were not written and published until 1994.

For the most part, this published version of the Bonham site analysis retains the language and commentary of the 1992 draft. Some revisions and additions have been made, especially in terms of radiocarbon dates and their calibration. So, this document should be read and interpreted largely in light of what was state-of-the-art knowledge about the Late Woodland cultures of Southwest Virginia in 1992.

Cliff Boyd
January 2003

Abstract

The Bonham site (44SM7), a Late Woodland village complex located along the Middle Fork of the Holston River in Smyth County, Virginia, was tested and excavated in 1989 and 1990. The Virginia Department of Historic Resources, other state and federal entities, and volunteers from the Archeological Society of Virginia provided support for this research. The 1989 test trenches uncovered 25 Native American features (including five with human remains) and evidence that at least two major village sites overlapped in the 44SM7 area. Some of the site area was protected from impending industrial development by a cap of fill dirt; however, the unprotected area of one site was subjected to salvage excavations in 1990. The main goal of these excavations was to uncover and remove any human remains from burials before they were destroyed. As a result, 25 refuse-filled features, three postmolds and 26 burial pits were partially or completely excavated. The site plan showed several palisade lines and features and burials generally clustered along the palisades. The recovered lithic and ceramic artifacts, as well as the human remains, vertebrate faunal remains, and samples of carbonized plant remains were analyzed. The predominant lithic raw materials used for producing stone tools were chert and chalcedony, and most of the projectile points were small triangular arrow tips common on most Late Woodland sites. Ceramics were predominantly grit, limestone, or gastropod shell-tempered with knotted net impressed surfaces. Some decorations on rim sherds suggested contact with Mississippian groups to the south. The remains of 35 individuals were analyzed; all major age and sex groups were represented in the human remains. Many of the individuals showed high incidences of nutritional, traumatic, or degenerative pathologies. Faunal utilization focused predominately on white-tailed deer and botanical remains suggested a mixed economy, with corn, beans, squash, and tobacco being the important domesticated plants. Even though looting extensively disturbed the Bonham site, the site is significant in the wealth of information it still preserves about Late Woodland peoples of Southwest Virginia.

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For the analysis and report preparation phase of the project, again, Dave Hazzard, Keith Egloff, Beth Acuff, and Tom Klatka of the DHR gave vital assistance in many ways—from providing photographs and slides to helping to "fill in the gaps" in some of the field notes. Chapters 1–3, the lithic (Chapter 5) and ceramic artifact (Chapter 6) analyses, the summary chapter (Chapter 9), and Appendix B were all written by Cliff Boyd. Donna Boyd conducted and wrote the human skeletal analysis (Chapter 4) and also prepared Appendix A. Mike Barber analyzed the vertebrate faunal remains (Chapter 7), and Paul Gardner provided the ethnobotanical analysis (Chapter 8). All of these individuals are thanked for their expertise and hard work and for the high quality of the final products of their analyses. Thanks should also go to the engineering firm of Dewberry and Davis and to the Town of Chilhowie and Smyth County supervisors and administrators who, with great concern and sincerity, worked to preserve a substantial portion of 44SM7. At Radford University, Kathi Gross and Christa Hampton are thanked for helping sort and analyze the human bone and Carolyn Sutphin is especially thanked for typing this manuscript. Finally at The College of William and Mary, David Lewes formatted the report for publication, and Eric Agin prepared the final graphics.

1: 44SM7: The Site and Its Environment

Introduction

This report summarizes the results of archaeological investigations conducted in 1989 and 1990 at the Bonham site (44SM7), a Late Woodland palisaded village complex approximately 200 meters in diameter and dating ca. A.D. 1300–1600 (McIlhany 1990) which is located in the floodplain of the Middle Fork of the Holston River near the Town of Chilhowie in Smyth County, Virginia (Figure 1). The Virginia Department of Historic Resources (DHR) as part of their threatened site salvage program funded the field research and laboratory analysis of recovered artifacts and ecofacts. Members of the DHR, U.S. Forest Service, Radford University and the Archeological Society of Virginia all participated in the fieldwork.

Professional investigation of 44SM7 began in 1988. Prior to this date, the site had been collected and vandalized by artifact hunters for decades and was therefore well known to the local residents. However, as part of the development of Deer Valley Industrial Park (within which 44SM7 was centrally located), town and county officials hired Calvert W. McIlhany, archaeological consultant, to better define the site boundaries and propose a plan for the preservation of this well-known and potentially significant site (McIlhany 1990:30). In July 1988, McIlhany completed the survey and presented the preservation plan to the Smyth County Board of Supervisors and to the DHR. The Department recommended that limited testing be conducted within the right-of-way of the industrial park access road before capping and protecting the village site with fill dirt (McIlhany 1990:30–31). Plowzone was mechanically stripped from two linear trenches along the centerline of the access road, exposing several postmolds, refuse-filled pits, hearths, and one intact burial. The features were mapped, and many were partially excavated (McIlhany 1990:31). However, the extensive distribution of aboriginal culture remains suggested that ". . . the E [ast] - W [est] diameter of the occupation is ca. 152 meters or 510 feet. This diameter indicates that there is more than one village. Either one village shifted through time or there are separate, overlapping villages (Egloff 1989:1)."

The identification of this additional village area resulted in further mechanical stripping of an area east of the originally identified boundaries of 44SM7 (Figure 2). Mapping and excavation of features and burials in this new site area was conducted between April 26 and May 18, 1990.

Investigations at 44SM7 were hampered by many factors all too commonly encountered by most professional archaeologists. First, as noted previously, the site had been extensively looted in the past; nearly all of the human burials, for example, had been disturbed by pothunting. Also, because this was a salvage operation, extreme time constraints were placed on the fieldwork. Finally, many different professional archaeologists and volunteers worked on the site; because of other commitments, no single professional was available to supervise excavations throughout the fieldwork. This produced some variability in recording and field procedures.

In spite of these problems, palisade lines and a variety of other features were mapped. In addition to the 25 aboriginal features excavated from the 1989 test trenches, 25 refuse-filled features and three postmolds were partially excavated and 21 burial pits were identified and excavated in 1990 (five additional refuse-filled features were subsequently determined to also have human bone). Soil samples from 48 features (including the 25 features from the 1989 test trenches) were collected and floated for the recovery of small faunal and floral remains. Bone preservation was generally very good, even for looted burials; thus, the human skeletal

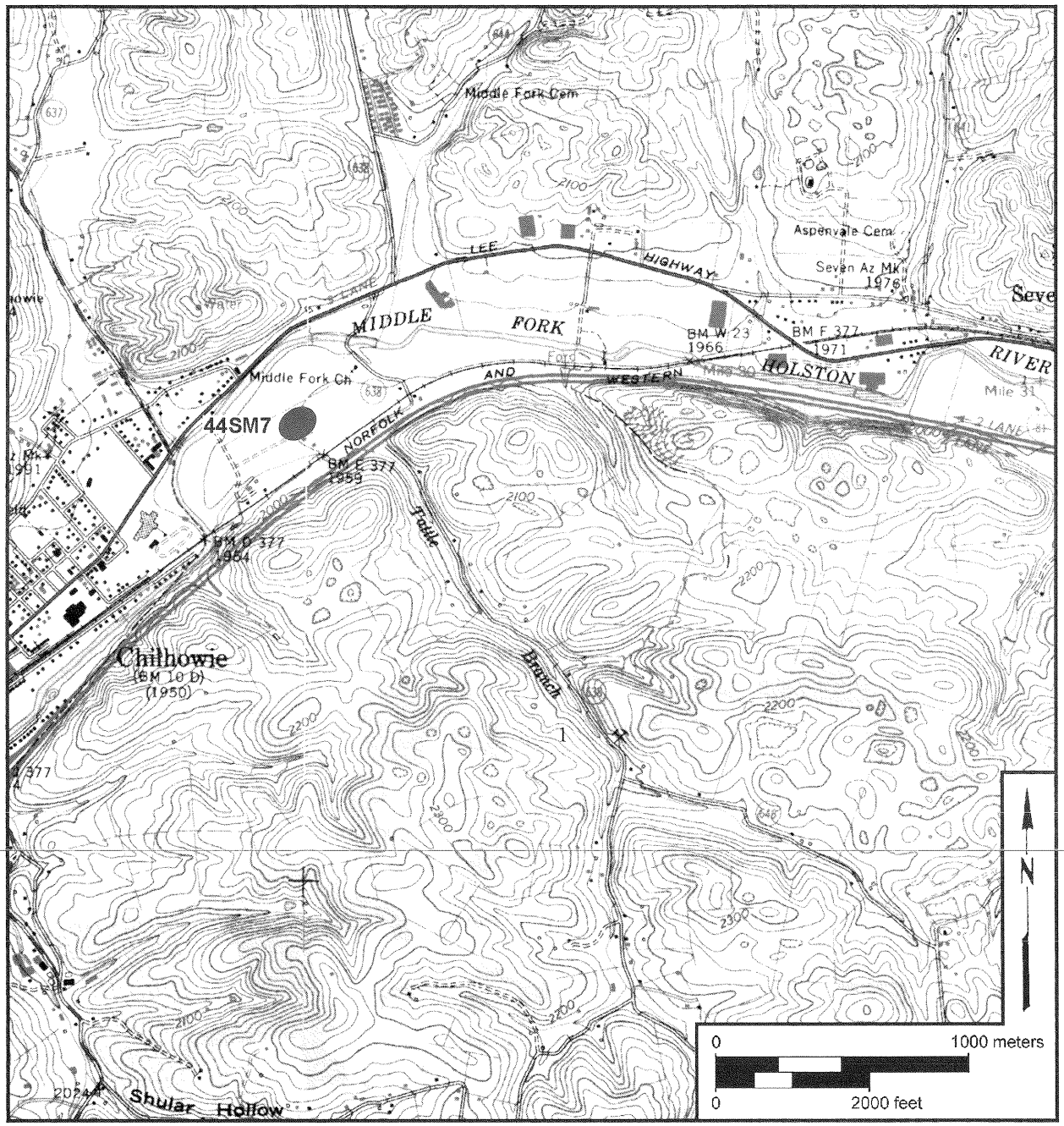

Figure 1. Section of U.S.G.S. 7.5 minute Chilhowie quadrangle showing the location of 44SM7.

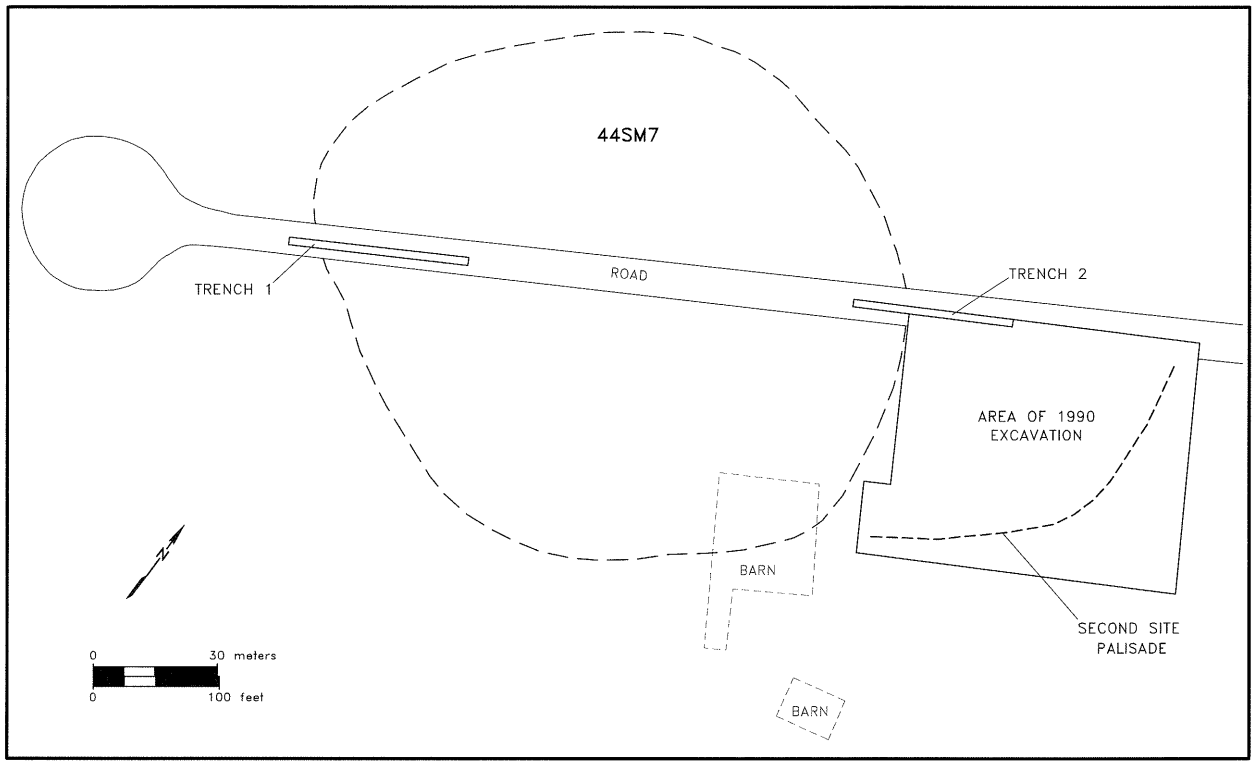

Figure 2. Originally defined boundary of 44SM7 showing the 1989 trenches and the 1990 excavation area.

remains still preserve significant descriptive information about the site occupants. The Bonham site data therefore provide a variety of information on feature form, lithic and ceramic artifact diversity, floral and faunal utilization, and human population characteristics for the Late Woodland period in this part of Southwest Virginia. After a description of the environment of 44SM7, subsequent chapters of this report describe the field and laboratory methods used and the results of the artifact and ecofact analyses of the Bonham site remains. The original field notes, photographs, and videotapes of the excavations, as well as all artifacts, faunal, floral, and soil samples are stored at the DHR in Richmond. The human remains are currently located at the Radford University Archaeology and Physical Anthropology Laboratory.

Environmental Setting

The Bonham site is located in the Ridge and Valley physiographic province, which extends in a northeast-southwest orientation along most of the western side of the state of Virginia (Fenneman 1938). Specifically, 44SM7 is located in a portion of this province called the Valley of Virginia (Woodward and Hoffman 1991). The southern portion of the Valley is higher and narrower than, for example, the Shenandoah Valley to the north. 44SM7, located along the Middle Fork of the Holston River, lies in the Holston Valley, which ". . . slopes from roughly 730 meters above sea level near Marion to 550 meters as at Bristol" (Woodward and Hoffman 1991:29). The elevation of 44SM7 is approximately 596 meters (1954 ft.) above mean sea level. The Holston River system forms part of the Tennessee River drainage system.

In terms of climate, temperatures range from means of 36.9°F (2.7°C) for the winter to 72.3°F (22.6°C) for the summer (as measured at Saltville, Virginia) (Jurney and Cline 1948:9). Mean annual rainfall is approximately 1,000 mm (40 inches) (Woodward and Hoffman 1991:35). The mean frost-free growing season is 177 days (Jurney and Cline 1948:8).

Virginia lies in the temperate broadleaf deciduous forest zone as defined by Braun (1950), and Smyth county in particular is dominated by the oak-chestnut forest type common to most of the Ridge and Valley province. This forest is currently dominated by white oak, chestnut oak, and red oak. The American chestnut, once quite abundant, is no longer a major component of this forest type due to its virtual extinction by the 1930s from blight (Woodward and Hoffman 1991:37). Bottomland forests in Smyth County were characterized by hemlock and other species such as white pine, sycamore, red cedar, and black gum (Jurney and Cline 1948:10). Aboriginal burning to attract game and for agricultural clearing practices also produced open, grass-covered areas (sometimes called "old fields") in abandoned site areas along river bottoms (Woodward and Hoffman 1991:44). The first European settlers in the county also noted these (Jurney and Cline 1948:9–10).

Soils of the floodplain on which 44SM7 is located are of the Elk Loam type, which is acid and is principally derived from limestone alluvium. This soil has a surface layer 25.4 cm (10 inches) thick, which is a dark brown or brown friable loam or silt loam. The subsoil immediately below this topsoil is a yellowish-brown or light-brown heavy silty clay loam. This soil is nearly level to gently sloping (3 to 8 percent), and is found on terraces generally not subject to extensive or frequent flooding (Jurney and Cline 1948:28, 61). This soil is considered a first class soil—good to excellent cropland producing moderately good yields for corn and other crops, even without the use of fertilizers (Jurney and Cline 1948: 112–113, Table 8.)

In summary, the Bonham site (44SM7) is located on a terrace of the Middle Fork of the Holston River with an agriculturally productive, well-drained soil type not subject to frequent flooding. The site would have been a productive location for an aboriginal village whose occupants engaged in slash-and-burn agriculture as a major subsistence strategy.

The location of the site near the confluence of the Middle Fork of the Holston River and Tattle Branch provided excellent nearby sources of water and fish for the site inhabitants. Nearby upland areas (Brushy Mountain, less than 3 km north of the site, ranges in elevation from 762 meters to 975 meters above mean sea level) provided additional sources for wild animal and plant foods. The limestone and dolomite geomorphology common to the Ridge and Valley region also provided readily available sources of chert and chalcedony lithic materials, which occur as nodules in these formations. The site area, then, was an ideal location for this Late Woodland village complex.

The Bonham site is one of several Late Woodland village sites documented along the North, Middle, and South Forks of the Holston River in Smyth County (Holland 1970: 34–40). Looting extensively damaged most of these sites; however, collector reports of rattlesnake motif gorgets, shell ear pins, and other artifacts from burials suggest that these sites were important contact points with Mississippian cultures to the south. The Bonham site is significant in that *professional* archaeologists extensively investigated it. The controlled recovery of its artifacts and ecofacts and their careful documentation and curation has created an important database for the study of Late Prehistoric culture contact in extreme Southwest Virginia.

2: Analysis Methods

Field Methods

October–November 1989

As recommended by the Virginia Department of Historic Resources, a grade-all was used to strip the plowzone from two trenches along the centerline of the proposed industrial park access road (see Figure 2). The trenches were placed to intersect the eastern and western edges of the site area, as originally defined in the 1988 survey (McIlhany 1990:31). The westernmost trench (Trench 1) was 1.5 m wide and 45 m long (Figure 3) and the easternmost trench (Trench 2) was 1.5 m wide and 37 m long (Figures 4 and 5). The trenches were dug to expose a sample of features for test excavation and to better define site feature variability, degree of disturbance by vandals and the overall site boundaries. A number of large features and postmolds were mapped and 25 Native American features and two historic livestock burial pits were partially excavated (Table 1) Features were designated by a number-letter identification code (e.g., 1A), where the number refers to the trench and the letter to a distinct feature. Postmolds were given a trench number-number designation (e.g., 1-10, 1-13). One-half of each of these features was excavated and soils were dry screened through one-quarter inch (0.64 cm) mesh screen to systematically recover artifacts. Soil samples were also recovered from each distinctive feature fill episode for future water screening and flotation. Color slides and black and white photographs, as well as plan and profile drawings were produced for each excavated feature. The articulated human burial that was identified was cleaned, photographed, and then covered by plastic and backfilled (McIlhany 1990:31).

April–May 1990

As described in Chapter 1, the 1989 test trenches identified a previously unknown area of aboriginal occupation representing an additional village area *beyond* that originally defined as 44SM7. Mechanical stripping of the plowzone south of the access road and east of the original 44SM7 boundary exposed at the top of the subsoil the plow-truncated tops of many features and postmolds that formed palisade lines (Figure 6). This exposed area was gridded into 28 ten-meter squares and the features and postmolds were mapped. As in the previous work, features were given number-letter designations. The number refers to the square and the letter a unique feature in that square.

Due to time limitations, excavations concentrated on the rapid identification and excavation of exposed burials. Large features suspected of being burials because of their shape or mottled fill were first divided in half. As with the features excavated in the test trenches one-half of the feature fill of suspected burials was excavated (Table 2). If the feature was not a burial, the second half of the feature was not excavated. If the feature was a burial, the entire feature was excavated so that all human remains and grave goods could be removed. When possible, excavated fill was dryscreened through one-quarter inch mesh screen; however, the fill in some features was a thick clay loam that was nearly impossible to dry screen. In these latter cases the feature fill was trowel sorted. Soil samples of the feature fill from most features were taken for future processing.

Photographs and plan and profile drawings were made of the pit forms for most features after they were excavated. Because looters disturbed nearly all of the

burials, detailed burial drawings were not made. As a time saving measure, photographs, and videotapes of the human and artifact remains and the feature excavations in progress were made. All feature dimensions presented in this report are in relation to grid north.

Laboratory Analysis

After washing, sorting, and cataloguing of the artifacts and ecofacts into major classes (e.g., ceramics, human bone, ethnobotanical), more specific analyses of these classes were begun. After the context descriptions in Chapter 3, subsequent chapters present the results of the analyses of the human skeletal remains, lithic artifacts, ceramic artifacts, faunal (animal bone) remains, and paleobotanical remains in that order. Each of these chapters has in its beginning sections a description of the analysis method used by the researchers.

Trench Fea. No.	Basic Description
Trench 1	
1A	Shallow oval pit-prehistoric
1A1	Bell-shaped pit beneath Feat. 1A-prehistoric
1B	Shallow circular basin-prehistoric
1C	Large oval burial pit-prehistoric
1C1	"Pothole" in 1C with some human bone-historic disturbance
1D	Shallow irregular basin-prehistoric
1D1	"Pothole" in 1D historic
1E	Large trench or ditch-prehistoric
1F	Oval pit-prehistoric
1G	Shallow circular basin-prehistoric
1H	Bell-shaped feature-prehistoric
1I	Oval articulated human burial-prehistoric
1J	Irregular pit-prehistoric?
1K	Oval pit-prehistoric
1L	Oval pit-prehistoric
1M	Shallow basin intruding Feat. 1L-prehistoric
1N	Oval pit-prehistoric
Trench 2	
2A	Horse burial-historic
2B	Oval pit-prehistoric
2C	Shallow oval basin-prehistoric
2D	Circular pit-prehistoric
2E	Oval pit-prehistoric (intruded by historic livestock burial)
2F1	Sheep burial-historic
2F2	Oval pit-prehistoric (intruded by 2F1)
2G	Bell-shaped pit with human bone-prehistoric
2H	Oval hearth area-prehistoric
2I	Oval pit-possible burial-prehistoric
2K	Circular pit-prehistoric

Table 1. Partially excavated features in 1989 test trenches.

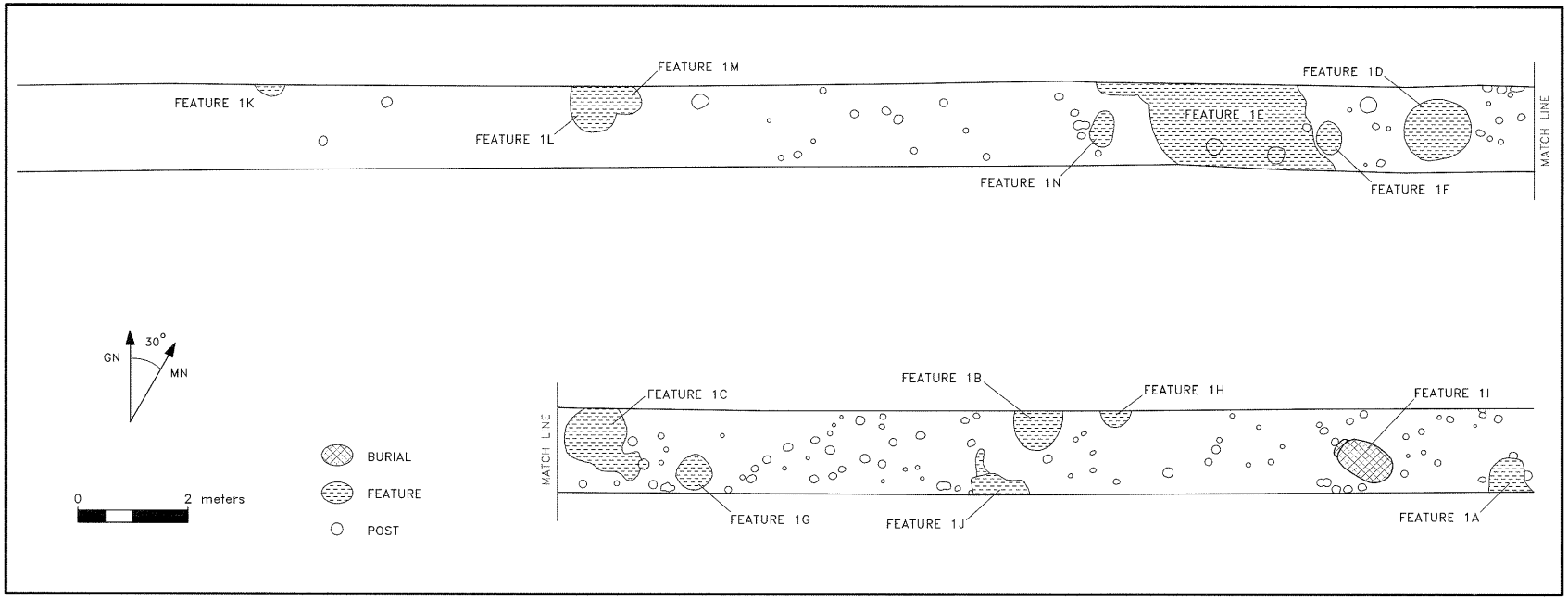

Figure 3. West trench--Trench 1.

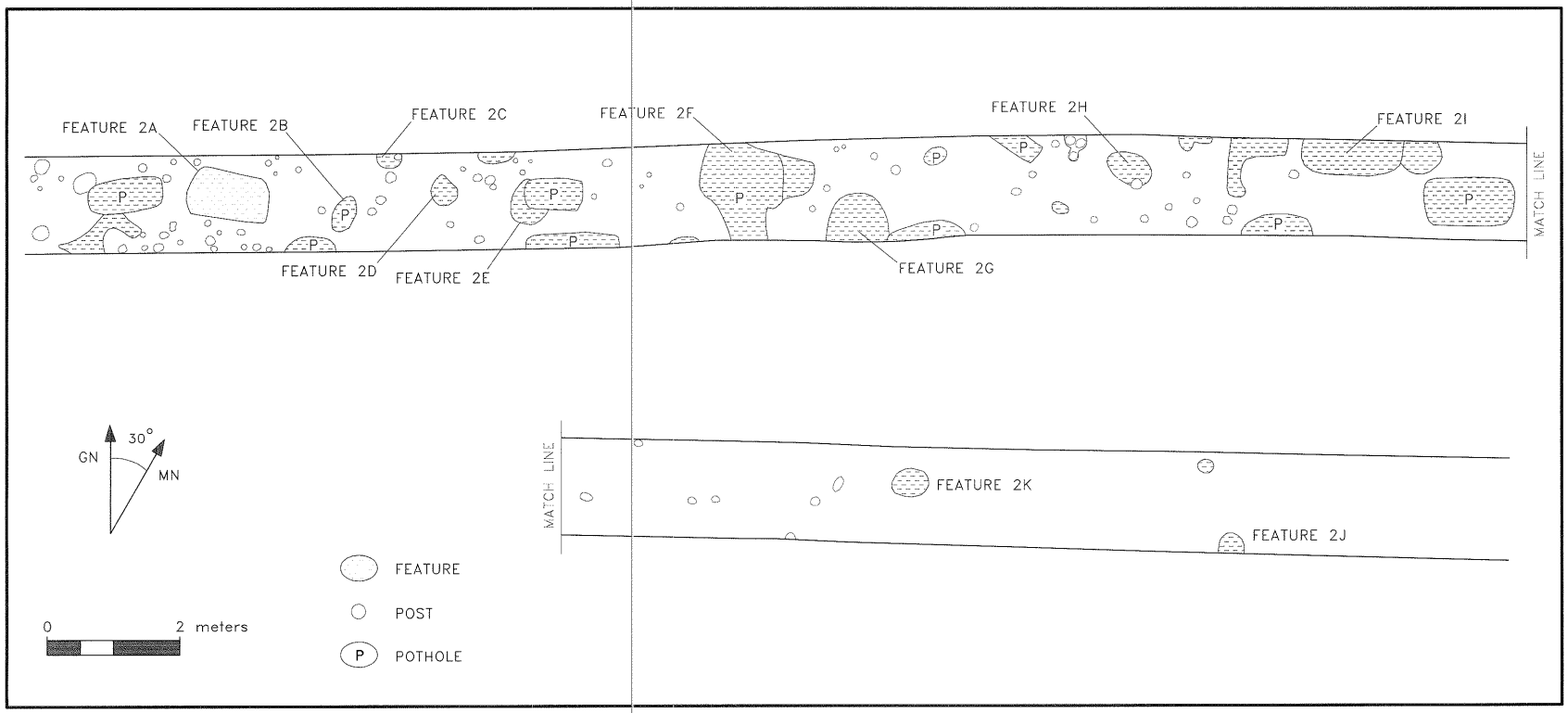

Figure 4. East trench--Trench 2.

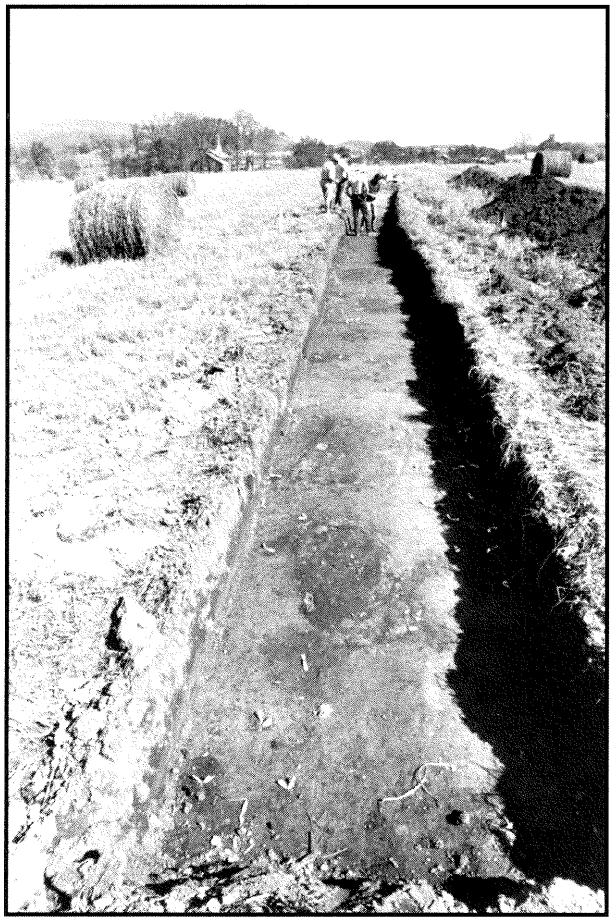

Figure 5. View of East trench showing Feature 2A in foreground.

Figure 6. General view of the site with people excavating features.

Fea.	Description
4A	3 overlapping oval pits
10A	Large circular basin with 3 strata
10B	Oval pit with associated postmolds
10C	Oval pit with animal burrow
10D	Small oval pit
10E	Irregular shallow pit with 2 strata
11A	Large circular pit with 3 strata
11B	Oval basin
11C	Oval burial pit (looted)
11D	Shaft-and-chamber burial pit (possibly not looted)
11E	Shaft-and-chamber burial pit (looted)
12F	Shaft-and-chamber burial pit (looted)
12G	Shallow pit
12K	Shallow oval basin
13A	Circular pit
13C	Oval pit with 3 strata—possible root mold
13F	Oval burial pit (looted)
13G	Oval pit with 2 strata and human bone (from 13-F; partially looted)
15A	Shaft-and-chamber burial pit with 4 strata-looted
15B	Oval burial pit-disturbed by plowing
15C	Oval pit
16B	Circular pit
16C	Circular pit
16D	Bell-shaped pit
16E	Large circular pit with 4 strata
16F	Circular burial pit, intruded by 16-E (looted)
17A	Circular pit
17B	Shallow oval basin
17C	Oval burial pit (not looted)
17D	Oval burial pit-looted
17E	Small looter's hole in burial 17-D
17G	Oval burial pit-looted
17H	Oval burial pit (possibly not looted)
17K	Large oval pit-looted
18A	Shaft-and-chamber burial pit (looted?)
18C	Oval burial pit
18D	Oval burial pit-looted
18E	Shallow oval burial pit (looted)
20C	Oval burial pit
21A	Bell-shaped burial pit (looted)
22C	Circular pit
22D	Bell-shaped pit—possible burial
22E	Oval pit
22F	Circular pit with 3 strata and human bone
22G	Circular pit
23A	Oval burial pit (looted)
23B	Oval burial pit (looted)
23C	Shaft-and-chamber burial pit with 3 strata (not looted)
25A	Oval burial pit with 2 strata (looted)
25D	Shaft-and-chamber burial pit (looted?)
26B	Palisade postmold
26C	Palisade postmold
26D	Palisade postmold
27A	Oval burial pit (looted)

Note: All burial pits except 15-A were completely excavated. One-half of each non-burial feature was excavated.

Table 2. Partially and fully excavated features, 1990 excavations.

3: Context and Feature Descriptions

Site Plan

Many features, burials, and postmolds were identified during the 1989 and 1990 excavations at 44SM7. Plan views of the 1989 trenches have already been illustrated in the preceding chapter (see Figures 3 and 4). For the 1990 excavations, a sequence of plan drawings is used to depict the features and palisade lines in detail. First, Figure 7 serves as a key, showing the sequence for the following drawings: Figures 8–15.

The figures clearly show a palisade line running the length of the exposed village area, forming its eastern and southern boundaries. At its northeastern-most edge, the palisade appears to have a gap, suggesting an entranceway with slightly overlapping palisade lines (see Figure 8). A second inner palisade line, 4–5 meters inside the outer line, was also defined in many excavation squares. Almost all of the mapped unexcavated features are within this *inner palisade*; only a few postmolds and Feature 13A lie between these two palisade lines.

Also, at least two additional portions of palisades appear in the northeast corner of the exposed site area (see Figure 8). A third portion of a palisade also appears 1–1.5 meters inside the second, inner palisade in Figures 13–15. The number of palisade lines suggest at least one and perhaps as many as three rebuilding episodes of the village with, of course, the outer, best-preserved palisade representing the last village expansion. This implies an occupation span of some duration, which is not surprising considering the highly productive agricultural soils surrounding the site and its advantageous location with respect to other resources.

A final point relates to the spatial distribution of other site features. The northwestern portion of the exposed area (see Figures 10 and 12) appears relatively free of features or burials. This suggests that the central site area may have been a relatively open plaza, with features and structures arranged in a circular pattern surrounding the plaza. Such an arrangement is common on other Late Woodland sites in Southwest Virginia (e.g., Benthall 1969). Thus, approximately one-quarter of an additional village area, to the east of the originally defined area of 44SM7, was defined by the 1989 and 1990 investigations.

Feature Descriptions

1989–Test Trench 1 (West Trench)

Plowzone thickness ranged from 30–43 cm and averaged 36 cm in thickness. All feature depths are from the base of the plowzone for Trenches 1 and 2. Directions are in relation to grid north.

Feature 1A

This was a shallow oval pit measuring at least 72 cm north-south by 55 cm east-west (the south edge was beyond trench wall and was not excavated). The dark brown fill with yellow mottles extended 5 cm below the base of the plowzone. Several postmolds intersected the north and east sides of the pit.

Feature 1A1

This was a deep, bell-shaped pit whose top had been truncated by Feature 1A. One-half of the feature was excavated. The fill was yellow sand with brown mottles. A clean yellow sand layer was encountered at approximately 70 cm beneath the plowzone and below this was a zone of mottled fill. Total depth of the feature was approximately 85 cm below plowzone. The north-south dimension of the opening was 34 cm, and its base was 41 cm wide.

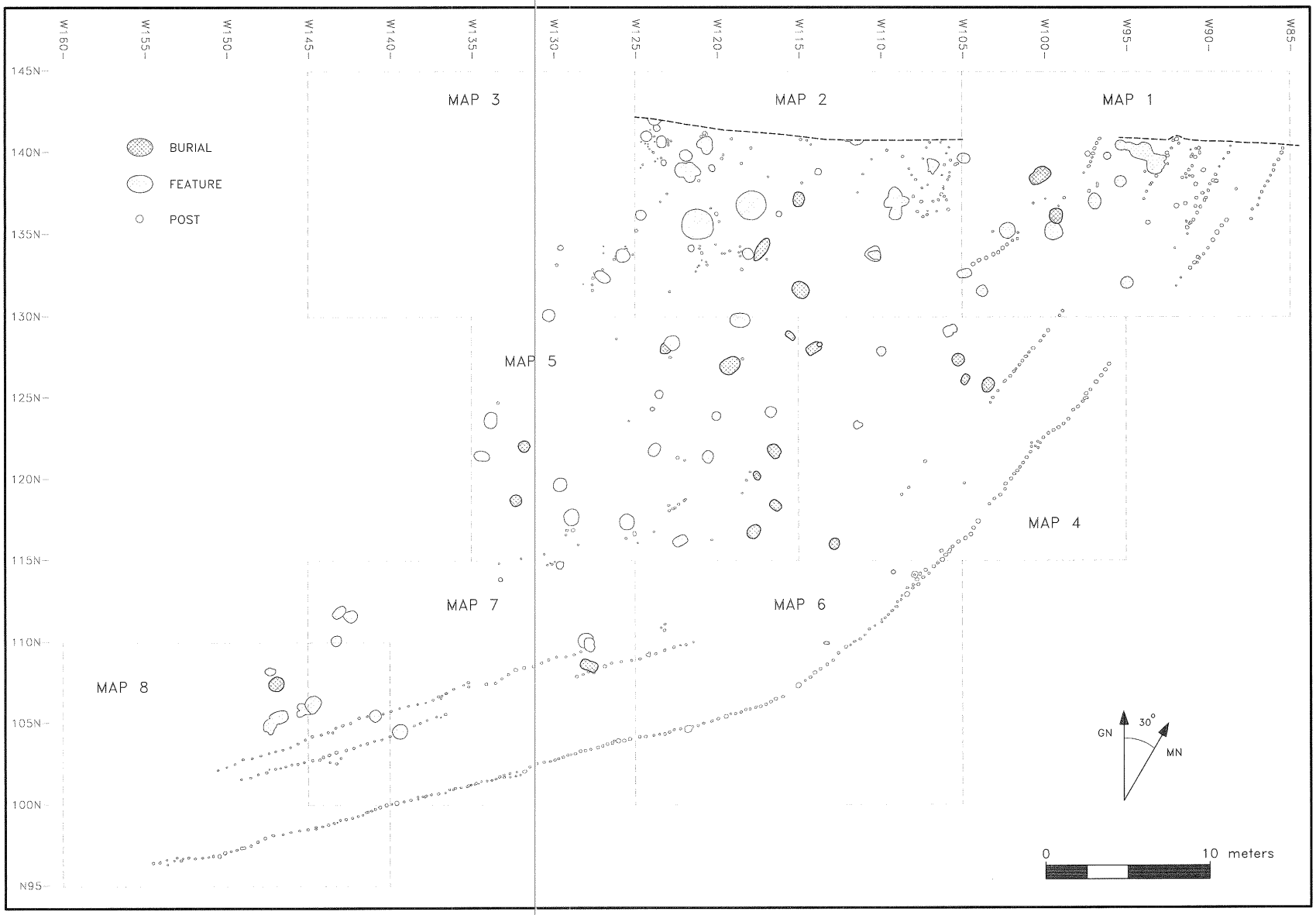

Figure 7. 1990 site plan.

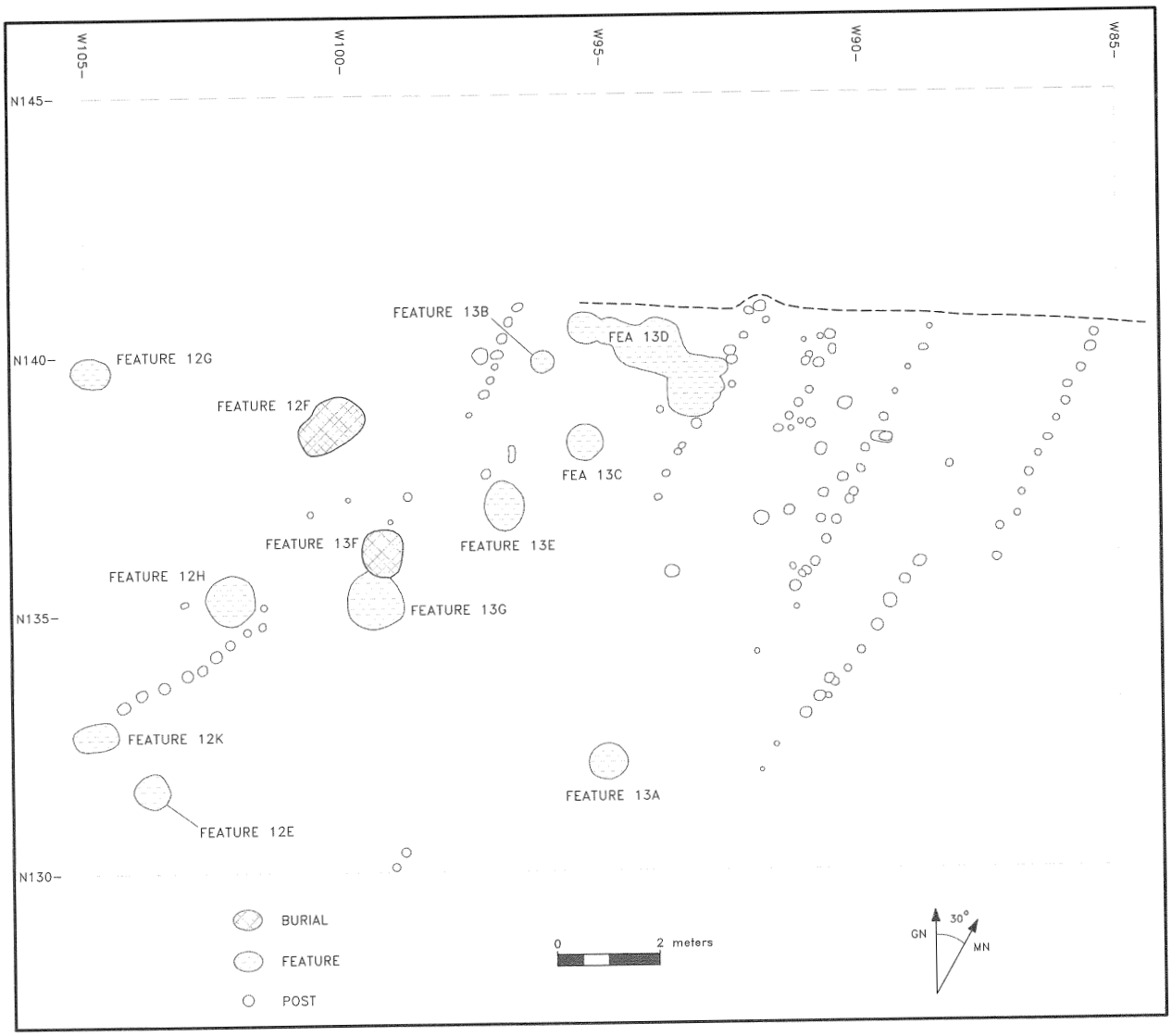

Figure 8. Map 1: 1990 excavations.

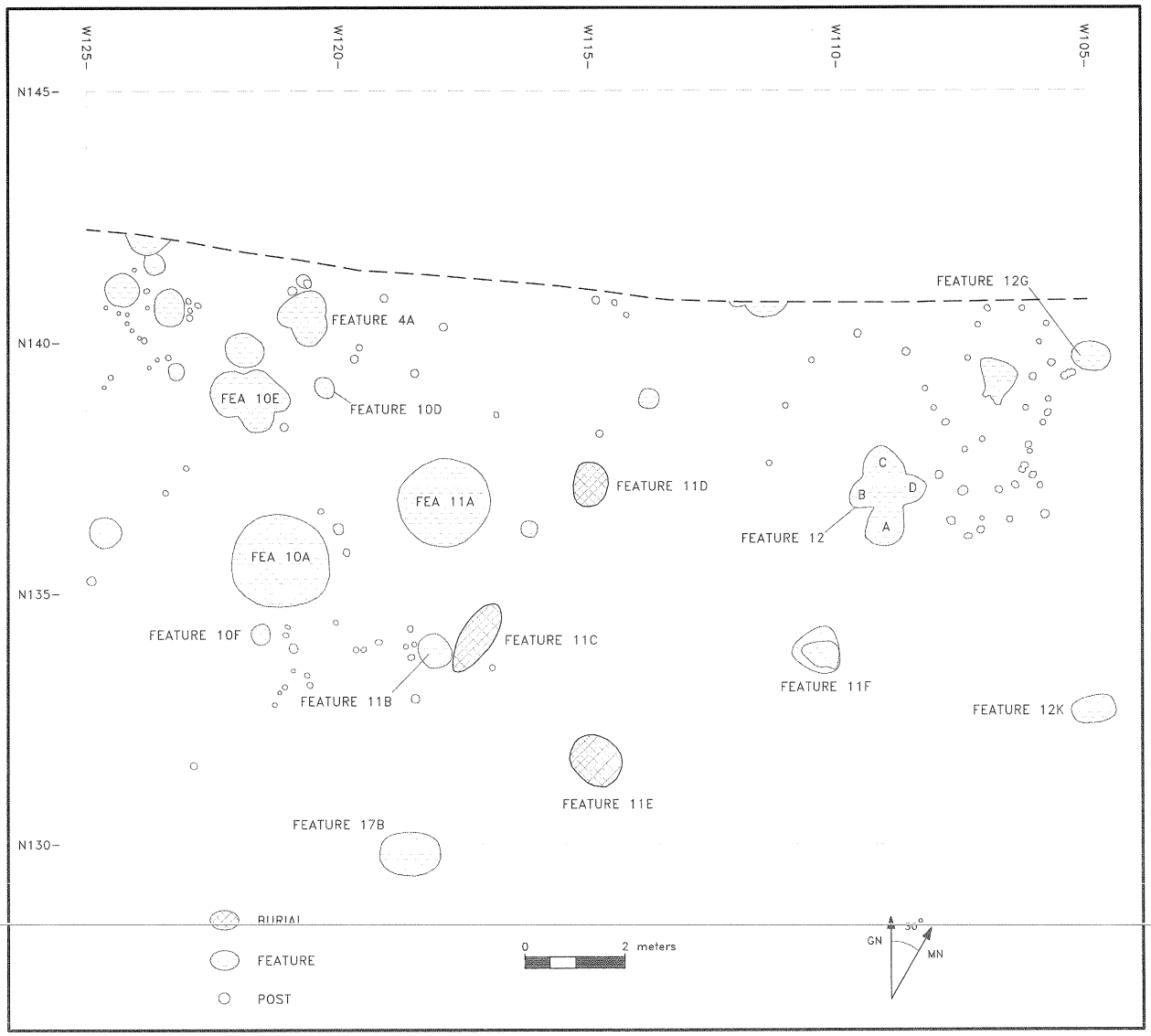

Figure 9. Map 2: 1990 excavations.

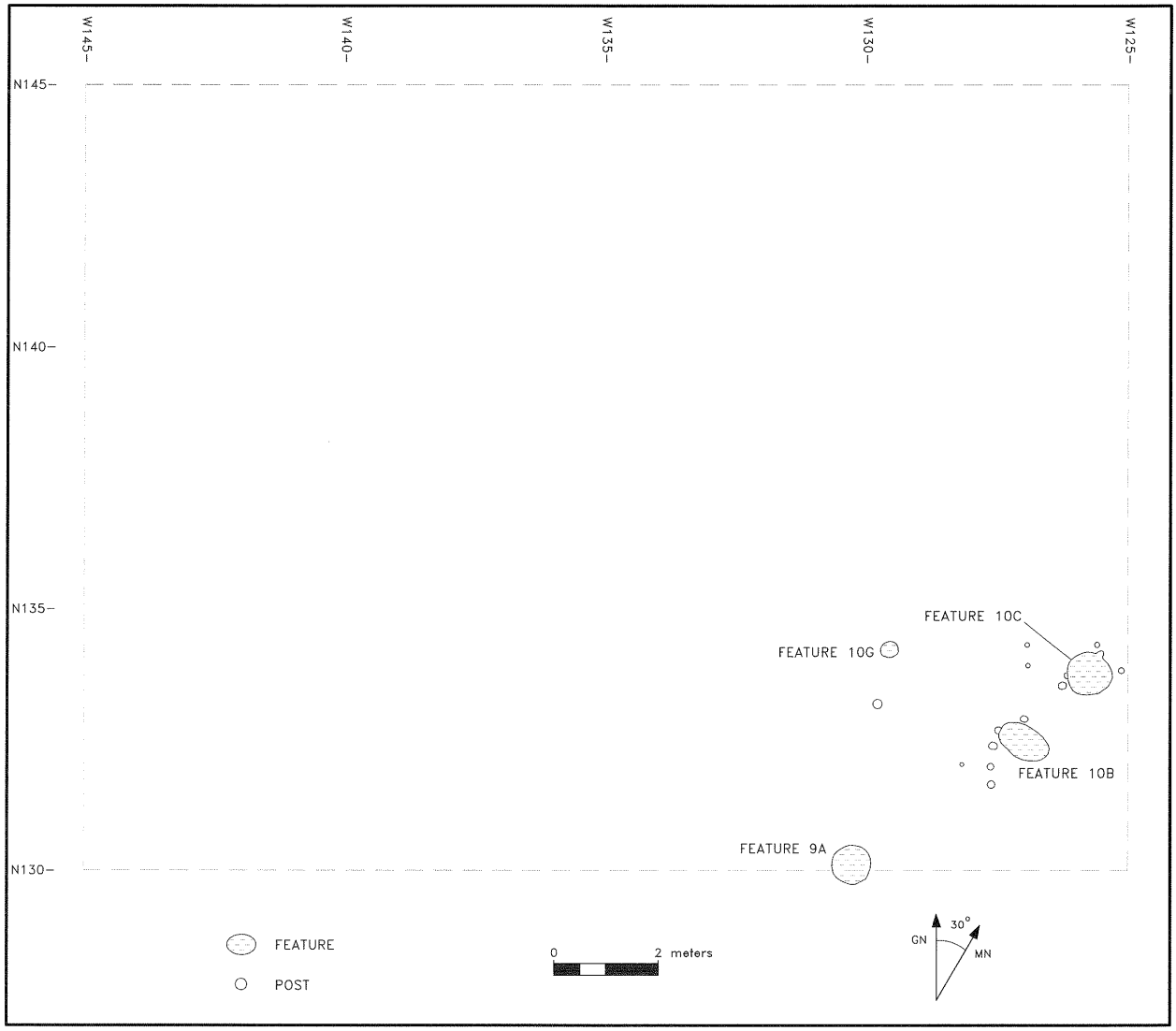

Figure 10. Map 3: 1990 excavations.

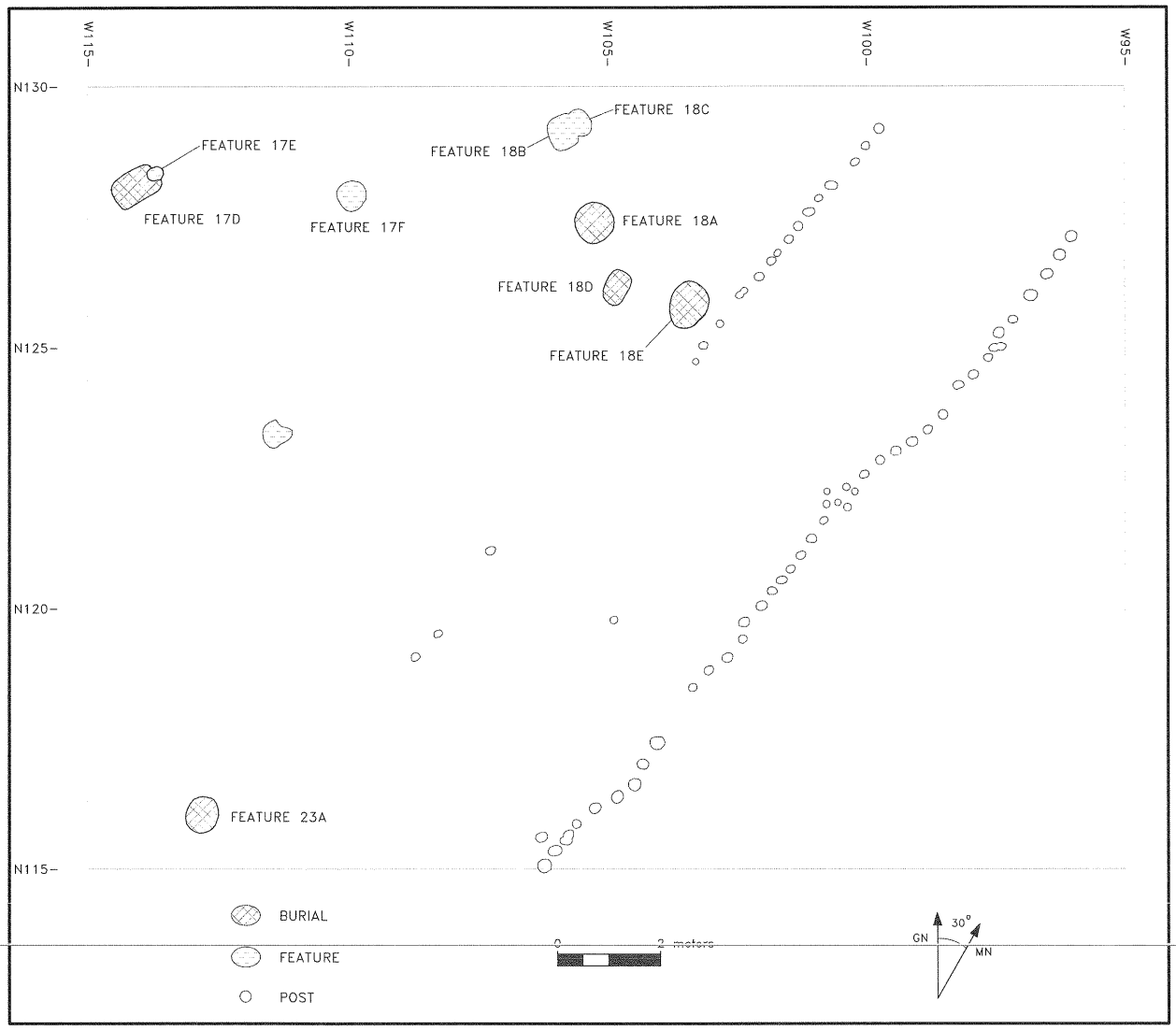

Figure 11. Map 4: 1990 excavations.

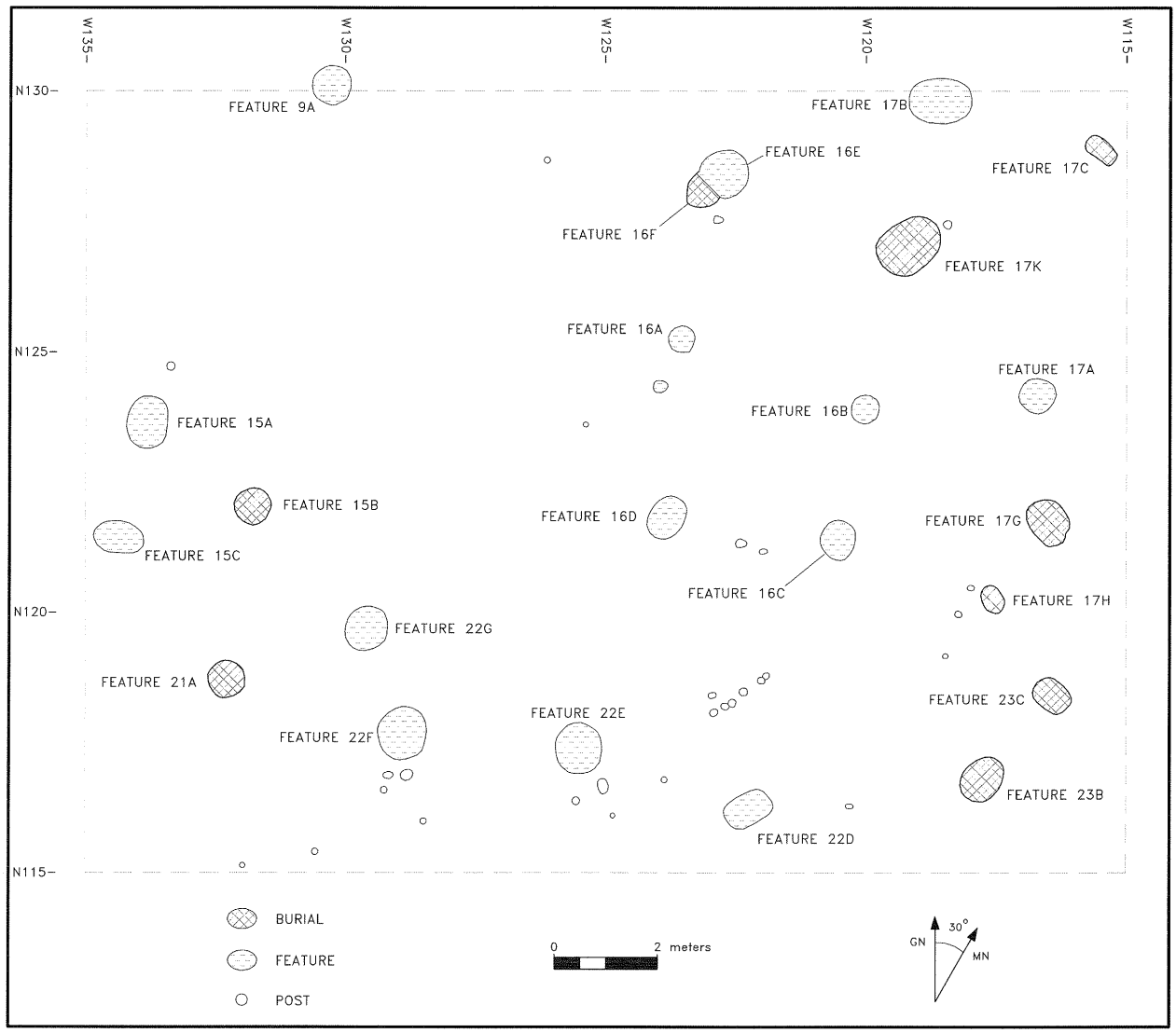

Figure 12. Map 5: 1990 excavations.

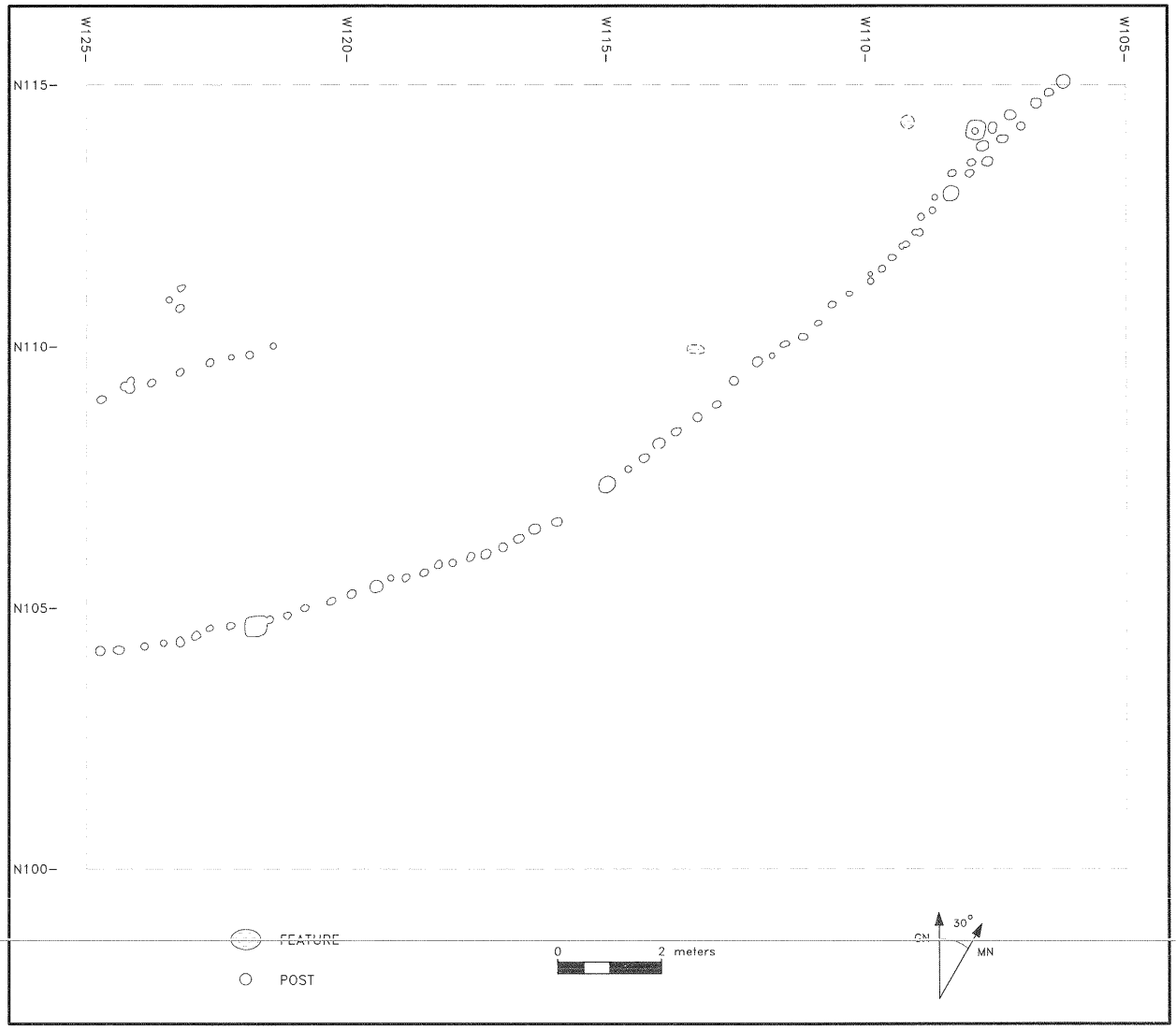

Figure 13. Map 6: 1990 excavations.

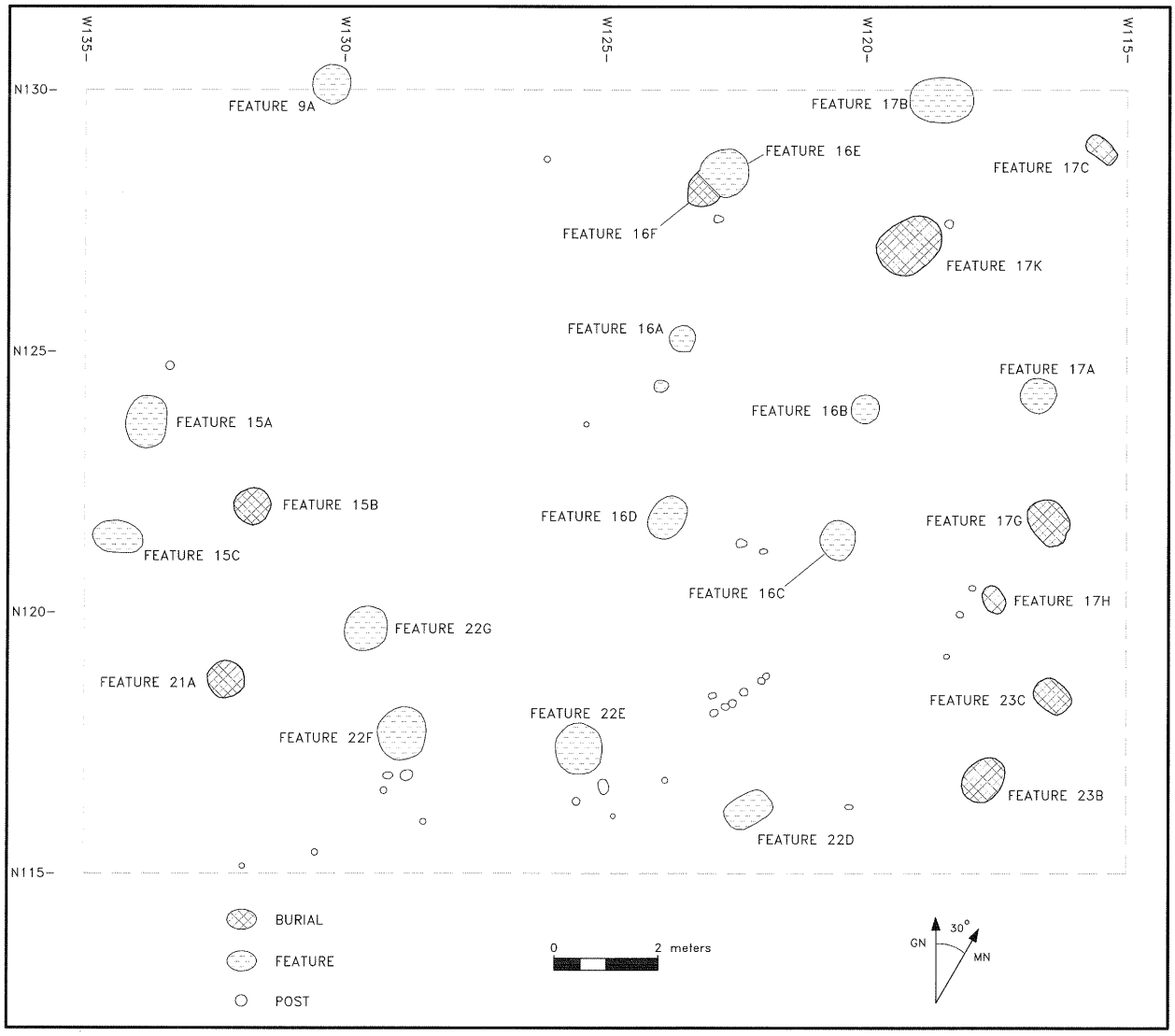

Figure 12. Map 5: 1990 excavations.

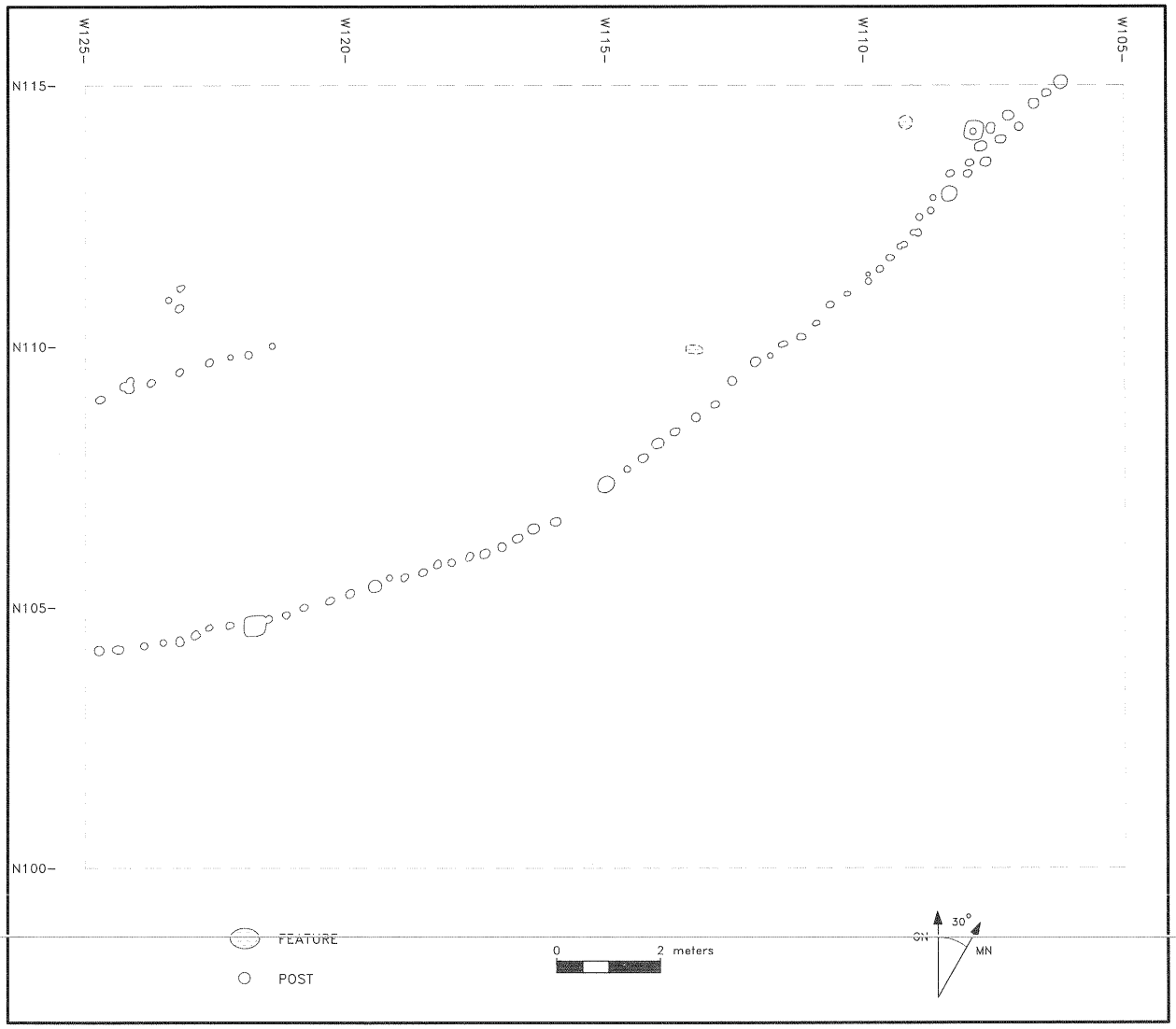

Figure 13. Map 6: 1990 excavations.

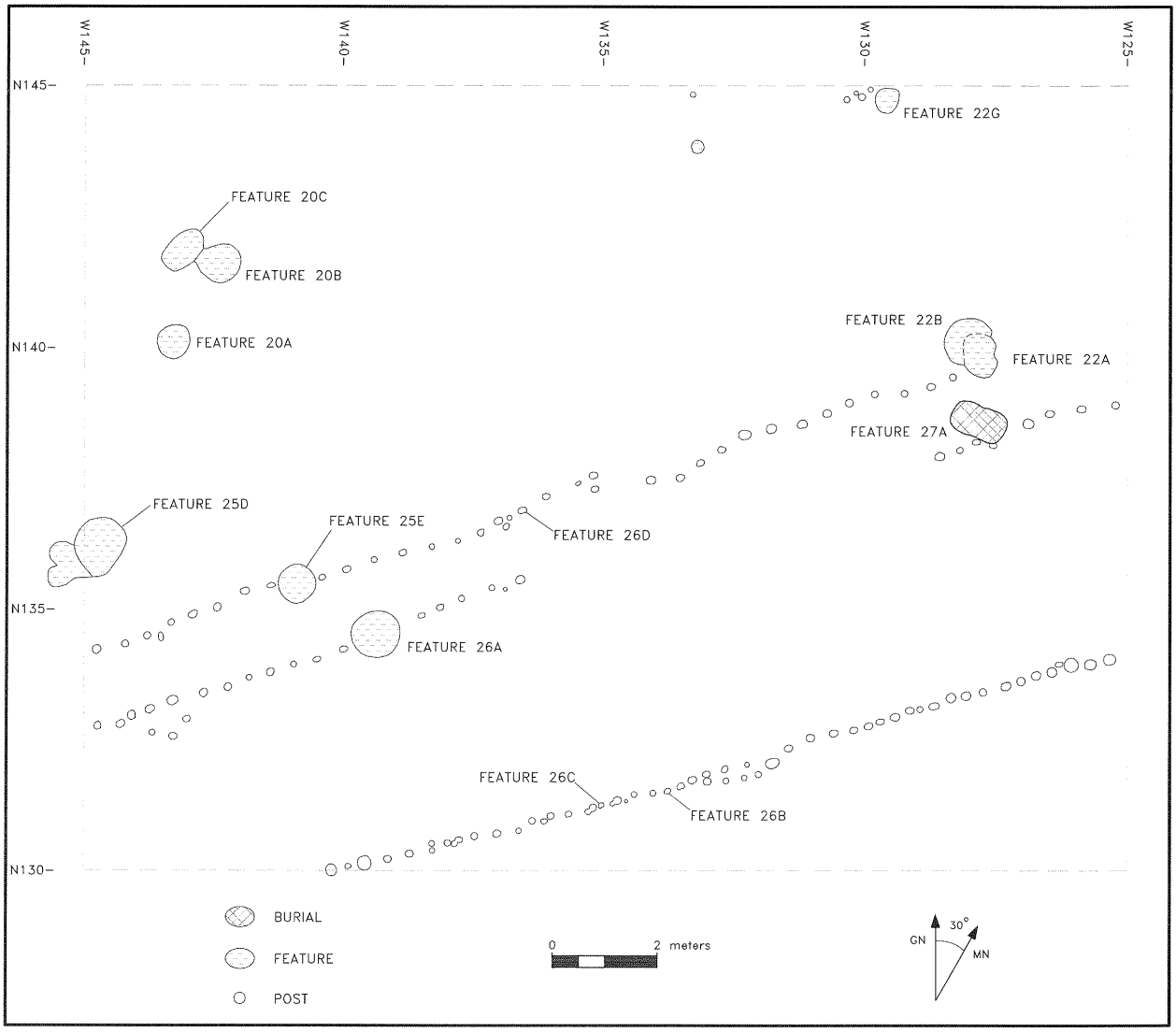

Figure 14. Map 7: 1990 excavations.

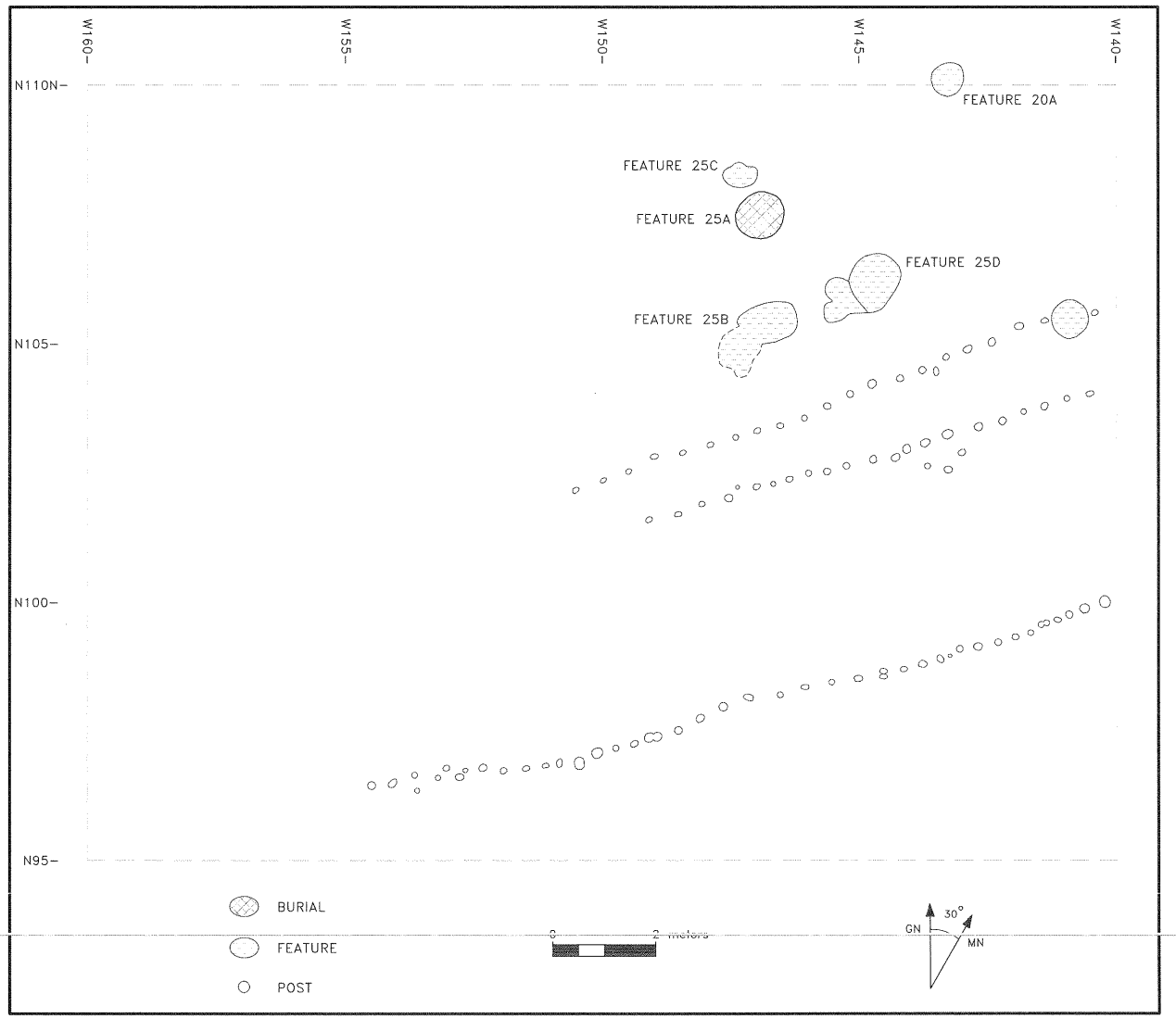

Figure 15. Map 8: 1990 excavations.

Figure 16. Feature 1E.

Feature 1B

Feature 1B was a shallow circular basin measuring 86 cm east-west by at least 74 cm north-south. Maximum depth of the feature was 10 cm below the plowzone. The fill was a dark brown (7.5YR4/2) sandy loam with occasional mottles of 7.5YR5/6 strong brown fine sand.

Feature 1C

This feature was a large oval pit with straight sides and a relatively flat bottom. Feature 1C1 was a recent "pothole" disturbance containing both human bone and a modern plastic Pennzoil jug. Dimensions were 115 cm east-west, approximately 110 cm north-south and 44 cm deep beneath the plowzone.

Feature 1D

This large, shallow irregular basin had dimensions of 125 cm east-west, 110 cm north-south, and a depth of 18 cm below the plowzone. The feature fill was brown sandy loam with some yellow mottling. A large "pothole" (Feature 1D1) and a postmold intruded the feature.

Feature 1E

This feature was a large, irregular trench or ditch running northwest-southeast which extended into the north-south trench walls. The feature had concentrations of ash, shell, and rock. Its width was approximately 275 cm east-west, and its depth was 19 cm below the plowzone (Figure 16).

Feature 1F

This was an oval pit with an irregular bottom. Its fill was a dark brown sandy loam (7.5YR4/2), and its measurements were 44 cm east-west, 59 cm north-south and 17 cm deep below the base of the plowzone.

Feature 1G

Feature 1G was a shallow circular basin with dark brown sandy loam fill (7.5YR4/2) and dimensions of 65 cm north-south, 57 cm east-west and a maximum depth below plowzone of 9 cm. A line of six postmolds was located just east of this feature.

Feature 1H

This feature was a bell-shaped pit, one-half of which was exposed in the trench. The east-west dimension of the feature opening measured 56 cm and 78 cm at its base. Its depth below plowzone was 34 cm.

Feature 1I

This was an oval burial pit with straight walls and a flat bottom. The pit fill was a reddish yellow sandy loam (7.5YR6/6) with dark brown mottling (7.5YR4/2). The articulated and flexed human skeleton was partially exposed and photographed before being backfilled. Pit dimensions were 106 cm southeast-northwest, 68 cm northeast-southwest, and 46 cm deep (Figure 17).

Feature 1K

This was an oval steep-sided pit partially exposed in the north wall. The fill was dark brown sandy loam (7.5YR4/2) with numerous mottles of red-yellow sand (7.5YR6/8). The maximum exposed east-west dimension of the feature was 65 cm, and its depth was 50 cm.

Feature 1L

This feature was an oval pit with steep sides and a flat bottom. The fill in its west half was dark brown and contained cobbles and fire-cracked rock at its bottom. The east half had yellow mottled fill with less rock. Its dimensions were 100 cm east-west and 90 cm (exposed) north-south. Its depth below plowzone was 34 cm (Figure 18).

Feature 1M

This was a shallow basin that intruded 1L. Its east-west dimension was 68 cm, and its exposed north-south dimension was 62 cm. Its maximum depth below plowzone was 9 cm (see Figure 18).

Feature 1N

This was an oval pit with a rounded bottom with dark yellow brown (10YR4/6) sandy loam fill. It measured 38 cm east-west, 75 cm north-south, and was 12 cm deep. Two excavated lines of postmolds were located just west of this feature (Figure 19).

1989-Test Trench 2 (East-Trench)

Plowzone thickness ranged from 36–54 cm with a mean thickness of 45 cm.

Feature 2A

This feature was an historic period livestock burial. It had a rectangular shape and dimensions of 120 cm southeast-northwest, 71 cm northeast-southwest, and 56 cm deep.

Feature 2B

Feature 2B was a medium-sized oval pit with steep sides and a rounded bottom. Its fill was a dark brown silty sand (7.5YR4/2) with yellow-brown (10YR5/8) mottling. Its dimensions were 34 cm east-west, 54 cm north-south, and 22 cm deep beneath the plowzone.

Feature 2C

This feature was a shallow oval basin, one-half of which extended into the north wall of the trench. Its fill was a very dark gray-brown silty sand (10YR3/2) with yellow-brown sand mottling (10YR5/6). Its east-west dimension was 38 cm, and its depth was 9 cm. It was intruded by a postmold (2C-PM) that formed a line with three other postmolds to the south.

Feature 2D

This was a nearly circular pit with steep sides and a rounded bottom. Its fill was a dark brown silty sand (7.5YR4/2), and it measured 45 cm east-west, 49 cm north-south, and 26 cm deep below the plowzone.

Feature 2E

This feature was an oval pit with steep sides and a rounded bottom. The fill was a dark yellow brown (10YR3/4) sandy loam. It measured 70 cm northeast-southwest, 51 cm southeast-northwest, and was 21 cm deep. Its northeast portion had been intruded by an historic period livestock burial.

Feature 2F1

This rectangular pit was an historic period livestock burial measuring 27 cm east-west, 92 cm north-south, and having a depth of 25 cm below the plowzone.

Feature 2F2

This was an oval pit with steep sides and a rounded bottom. Historic Feature 2F1 intruded on its western edge. The fill of this feature was dark brown with yellow-brown mottling. Its dimensions were 55 cm east-west, 69 cm north-south, and 33 cm deep below the plowzone.

Feature 2G

Feature 2G was a large bell-shaped pit with a nearly circular opening. The dimensions of the opening were 74 cm east-west and 68 cm north-south; the east-west length at its base was 106 cm, and it was 93 cm deep below the plowzone. There was a heavy concentration of animal bone and prehistoric ceramics in the bottom 10 cm of the pit (Figure 20). A charcoal sample from this feature (Beta-105216) produced a calibrated radiocarbon date range spanning the 14th century A.D. (Stuiver and Reimer 1993; Stuiver et al. 1998a, 1998b) (Table 3).

Feature 2H

This was a red oval fired area (2.5YR4/6–4/8) with dark brown (7.5YR3/2) mottling extending 6 cm into

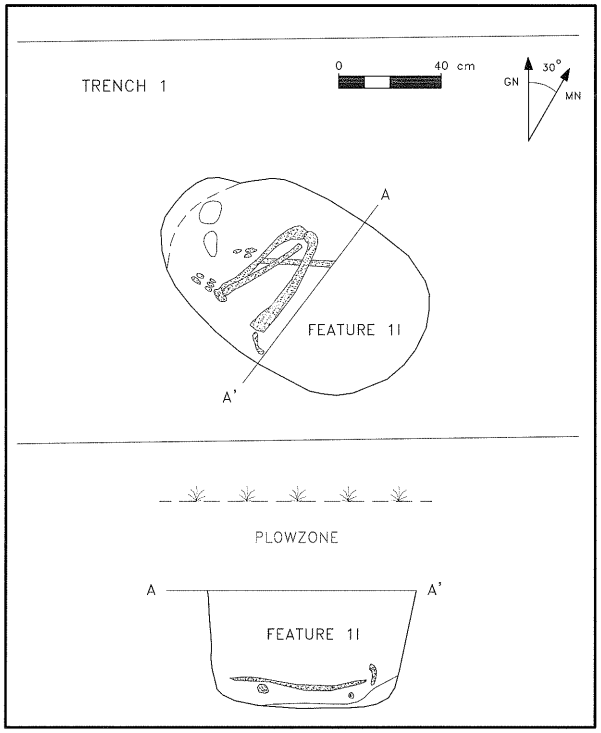

Figure 17. Feature 1I.

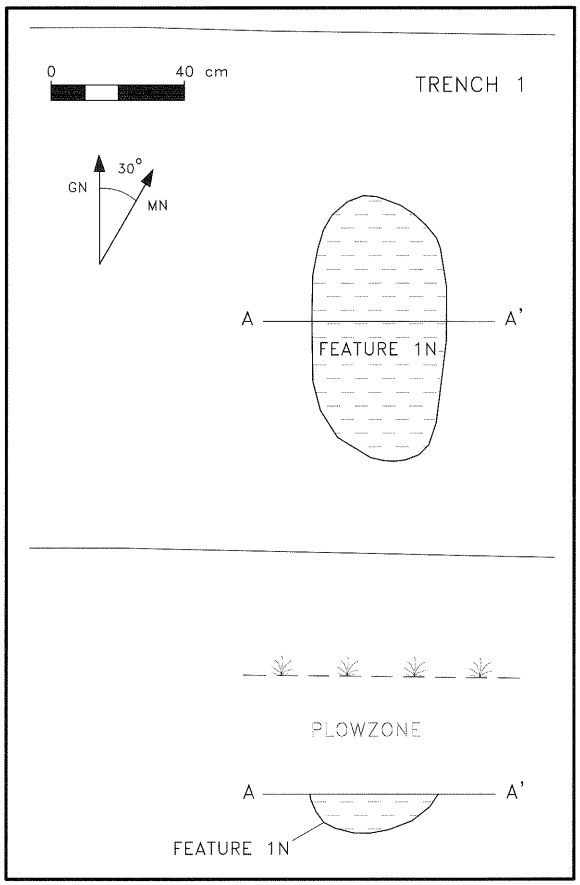

Figure 19. Feature 1N.

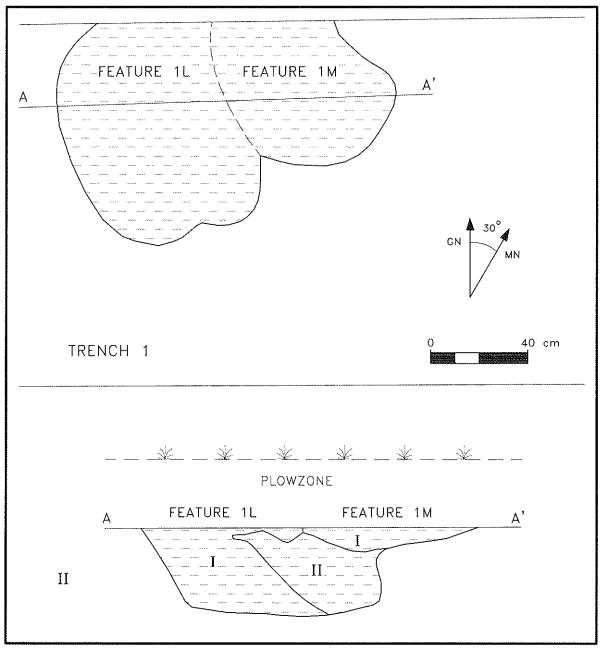

Figure 18. Features 1L and 1M.

Figure 20. Feature 2G.

Feature/ Sample Number	Conventional Radiocarbon Age	2-sigma calibration with Intercepts in Parentheses
2G (Beta-105216)	620+/-50 B.P.	Cal A.D. 1289 (1315,1353,1388) 1410
15C (Beta-53212)	370+/-50 B.P.	Cal A.D. 1443 (1485) 1534
23C (Beta-105217)	440+/-70 B.P.	Cal A.D. 1397 (1443) 1637

Note: The calibrated dates and calibration curve intercepts presented for Features 15C and 23C are those with the highest probability (15C = 0.505; 23C = 0.988). The probability for the calibrated range of Feature 2G was 1.000.

Table 3. Radiocarbon dates from 44SM7.

the subsoil. Its dimensions were 48 cm northeast-southwest by 72 cm southwest-northwest.

Feature 2I

This large, possible burial pit (part of a human mandible and patella were found in its fill) was apparently oval in shape, with steep sides and its bottom resting on a gray, plastic clay layer. Most of the north one-half of the feature extended into the north trench wall. Its dimensions were 159 cm east-west with a depth of 88 cm below the plowzone.

Feature 2J

This was a small-chambered pit that extended into the south trench wall. Its northern portion is only 7 cm beneath the plowzone, while its southern (exposed) portion extended 27 cm below the plowzone. Its maximum east-west dimension was 41 cm. Its fill was a dark brown sandy loam with yellow-brown mottling.

Feature 2K

This feature was an oval pit with steep sides and a flat, slightly bell-shaped bottom. The fill was a very dark brown (10YR3/2) sandy loam with a yellow-brown (10YR5/4) sand layer in the middle of the feature. Its dimensions were 52 cm east-west, 53 cm north-south, and 29 cm deep below the plowzone.

1990 Excavations

All feature depths are from the base of the plowzone. Directions are in relation to magnetic north.

Feature 4A

This feature consisted of three overlapping pits with associated postmolds and a rodent burrow. The south pit was slightly bell-shaped with a top width of 60 cm and a bottom width of 64 cm. Its base was 15 cm below the base of the plowzone. The west pit had simi-

lar dimensions and appeared to have been intruded by the north and south pits. The feature fill was a dark brown - black sandy loam.

Feature 10A

This was a large circular pit with a diameter of 200 cm and a depth of 24 cm (Figure 21). Three distinct types of strata, possibly representing several different filling episodes, were noted:

Stratum 1 – very dark brown - black greasy loam with high concentration of charcoal, bone and pottery

Stratum 2 – reddish brown greasy loam

Stratum 3 – very dark brown - black loam with high concentration of periwinkle shell and ash

Feature 10B

This feature was an oval pit with two postmolds nearby. It measured 96 cm east-west, 69 cm north-south, and was a maximum of 27 cm deep. Two strata were noted:

Stratum 1 – dark brown - black very organic sandy loam

Stratum 2 – dark yellow brown clayey loam

Feature 10C

Feature 10C was a large oval pit measuring 90 cm east-west, 97 cm north-south, and 32 cm deep. Its northwestern wall sloped inward from the surface about 10 cm before forming a vertical wall to the base of the feature. The feature fill was dark brown - black. The west one-half of the feature was excavated.

Feature 10D

This feature was a small oval pit measuring 38 cm northeast-southwest, 46 cm northwest-southeast, and 14 cm deep. Its fill was dark brown loam with yellow brown mottling. The southeast one-half was excavated.

Feature 10E

This feature was a shallow, irregularly-shaped basin, possibly representing two overlapping features. The feature measured 148 cm northeast-southwest, 97 cm northwest-southeast, and was 23 cm deep at its maximum point. Two strata were defined:

Stratum 1 – very dark brown/black organic loam

Stratum 2 – yellow-brown loam with black mottling

Feature 11A

This feature was a large oval basin with several (at least three) distinct fill zones (Figure 22). It was 165 cm northeast-southwest by 176 cm northwest-southeast and was a maximum of 24 cm deep. Three strata were defined:

Stratum 1 – very dark brown-black greasy loam with high charcoal content and bone and pottery

Stratum 2 – dark brown loam with ash and periwinkle shell

Stratum 3 – dark reddish brown greasy loam lightly mottled with yellow sandy clay, fewer artifacts than in other strata

Feature 11B

This was an oval basin measuring 61 cm northeast-southwest, 71 cm northwest-southeast, and has a maximum depth of 21 cm below plowzone. The fill was a dark brown-black organic sandy loam. The southeast half of the feature was excavated.

Feature 11C

This feature was an oval burial pit measuring 60 cm east-west, 155 cm north-south, and 24 cm deep. The fill was mottled dark sand with ash and yellow sand and clay. The burial had been disturbed from the head to the patellae by looters. Shell beads and canine pendants were found near the skull (Figure 23).

Feature 11D

Feature 11D was a shaft-and-chamber burial measuring 95 cm east-west, 95 cm north-south, and 35 cm deep. Soil from this feature was mottled with clay and was not screened. Shell beads were found near the cranium.

Feature 11E

This feature was another shaft-and-chamber burial measuring 97 cm east-west, 98 cm north-south, and 76 cm deep. The chamber was located in the northern half of the feature. The upper portion of the fea-

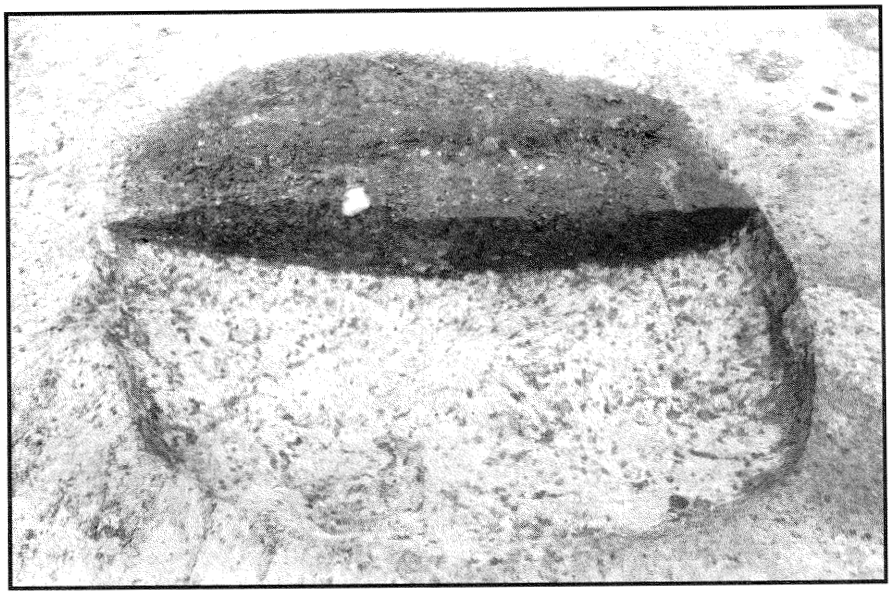

Figure 21. Feature 10A.

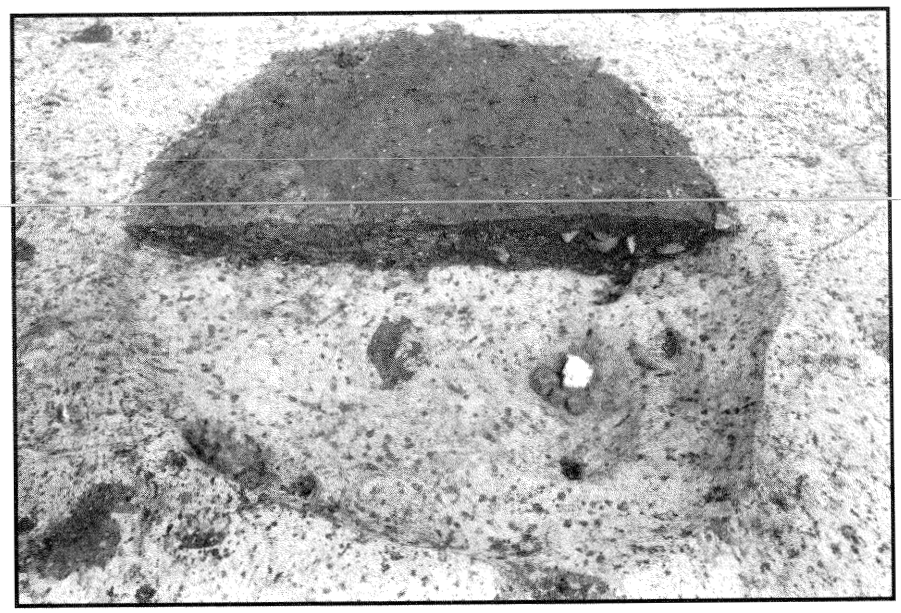

Figure 22. Feature 11A.

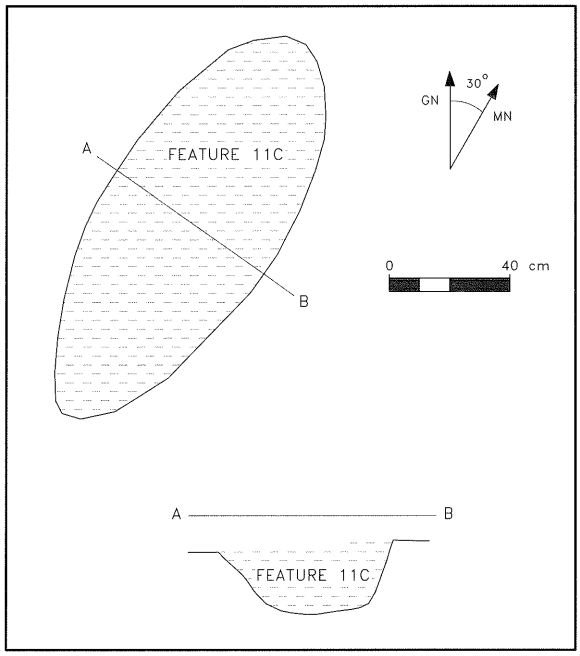

Figure 23. Feature 11C.

ture had been disturbed by recent domesticated animal burial (dog), and looting disturbed the human remains at the bottom of the pit. The human bones were resting on a natural pavement of river cobbles.

Feature 12F

This feature was another looter-disturbed shaft-and-chamber burial. Its dimensions were 115 cm northeast-southwest, 90 cm northwest-southeast, and 55 cm deep in the chamber area. The jumbled human bones were located in the chamber in the southwest portion of the feature. Three soil strata were identified:

Stratum 1 – very dark brown-black loam with charcoal

Stratum 2 – dark brown loam mottled with yellow sandy clay

Stratum 3 – compact yellow sandy clay mottled with orange clay and swirled with dark loam (prepared burial pit)

Feature 12K

This was a shallow oval basin with dark brown organic loam fill lightly mottled with yellow-orange sandy clay. It measured 53 cm southeast-northwest, 80 cm northeast-southwest, and 8 cm deep. The southwest half was excavated.

Feature 13C

This irregular oval feature may represent a posthole-postmold. Its dimensions were 60 cm northeast-southwest, 69 cm northwest-southeast, and 60 cm deep. Three strata were identified:

Stratum 1 – black loam mottled with yellow sandy loam

Stratum 2 – black sandy loam with charcoal and artifacts

Stratum 3 – yellow-brown sandy loam

Feature 13F

This feature is a looter-disturbed burial also intruded by Feature 13G (Figure 24). Both features were likely disturbed twice by looting. Feature 13F measures 80 cm north-south, 90 cm east-west, and 35 cm deep.

Feature 13G

This feature was a refuse-filled pit partially disturbed by looters. The west one-third of the feature was excavated (see Figure 24). It measured 112 cm north-south, 106 cm east-west, and 47 cm deep. Three strata were identified:

Stratum 1 – dark brown organic fill

Stratum 2 – dark brown fill with light yellow day mottling (looter disturbance)

Stratum 3 – light brown sandy clay (outside pit)

Feature 15A

This was a possible shaft-and-chamber burial subsequently filled with refuse. The feature measured 95 cm north-south, 80 cm east-west, and approximately 65 cm deep. Looting also disturbed it. Four strata were identified:

Stratum 1 – 0–15 cm deep. Black sandy loam with artifacts, animal bones and charcoal

Stratum 2 – 15–34 cm. Yellow sandy clay with some animal bone

Stratum 3 – 34–50 cm. Black clayey loam with heavy concentration of periwinkle shell and artifacts

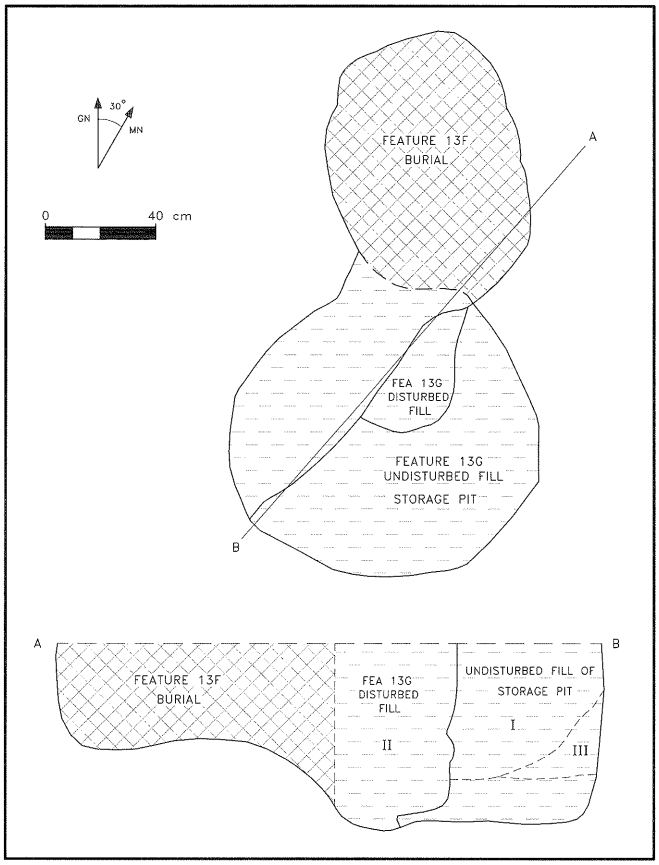

Figure 24. Features 13F and 13G.

Stratum 4 – 50–65 cm. Mottled yellow clay and brown sandy loam with most of the human bones located in southeast corner of feature only

Feature 15B

This feature was a shallow refuse-filled pit that also contained some human bone in its northern half. The feature measured 66 cm north-south, 72 cm east-west, and was a maximum of 6 cm deep. The fill contained periwinkle shell and charcoal.

Feature 15C

This was an oval refuse-filled pit containing much charcoal, bone, periwinkle shell, and pottery. Its west one-half was excavated. Its dimensions were 60 cm north-south, 98 cm east-west, and 27 cm deep. A charcoal sample (Beta-53212) from this feature produced calibrated radiocarbon date ranges predominantly within the 15th and 16th centuries A.D. (Stuiver and Reimer 1993; Stuiver et al. 1998a, 1998b) (see Table 3).

Feature 16B

This was a circular pit whose base tapered to a point and which may have been a root or postmold. It measured 48 cm east-west, 45 cm north-south, and 35 cm deep.

Feature 16C

This was a circular pit with very dark brown-black loam fill disturbed at its base by a rodent burrow. It measured 80 cm north-south, 76 cm east-west, and 24 cm deep. The south half of the feature was excavated.

Feature 16D

This feature was a bell-shaped pit with dark brown organic fill containing periwinkle shell, pottery, and animal bone. The pit measured 85 cm north-south, 66 cm east-west, and 50 cm deep. The maximum interior east-west dimension (of the convex "bell" portion) was 82 cm. The south one-half was excavated.

Feature 16E

This feature was a refuse-filled pit that intruded an earlier burial (16F) at its southwest corner. The fill contained at least three strata with the top 15 cm containing dark brown-black fill with heavy concentrations of bone, artifacts, and periwinkle shell. It measured 104 cm north-south, 100 cm east-west, and reached a maximum of 40 cm deep.

Feature 16F

This was a small burial pit intruded by Feature 16E and disturbed by later looting. The cranium appeared about 35 cm from the surface. Disturbance had severely jumbled most of the human remains. The circular pit had a diameter of 60 cm and was between 32–58 cm deep (it was *beneath* Feature 16E).

Feature 17B

This was a shallow oval basin with mottled fill measuring 87 cm southeast-northwest, 150 cm northeast-southwest, and 10 cm deep. Its southwest half was excavated.

Feature 17C

This was a shallow oval infant burial pit. The human bones were confined to the southwest corner of the pit. The pit measured 41 cm north-south, 73 cm east-west, and 20 cm deep. The burial appeared undisturbed by looting.

Feature 17D

This was an oval looted burial pit with the human bones in a jumbled pile in the northeast quadrant. A few large disc shell beads were recovered from the dark mottled fill. The burial pit may also have been a refuse-filled pit due to the amounts of charcoal and periwinkle shell in its fill. The pit measured 31 cm north-south, 110 cm east-west, and 17 cm deep.

Feature 17G

This was a looted oval burial pit with black loam fill mottled with sandy yellow clay. The fill contained artifacts, charcoal, and periwinkle shells. Most of the human remains were in the northwest quadrant of the pit. However, several tubular shell beads were recovered from the rib area in the southwest quadrant. The pit measured 87 cm southeast-northwest, 63 cm northeast southwest, and 68 cm deep.

Feature 17H

This was an oval infant burial with mottled clay-loam fill measuring 64 cm southeast-northwest, 45 cm northeast-southwest, and 7 cm deep.

Feature 18A

This feature was a shaft-and-chamber burial pit. The opening was circular and 70 cm in diameter. The shaft was 35 cm deep, and the chamber was 48 cm deep.

Feature 18C

This feature was an oval pit with an irregular base intruded by a possible post or root mold. The feature measured 83 cm northeast-southwest, 75 cm southeast-northwest, and had a maximum depth of 35 cm.

Feature 18D

This was an oval looted burial pit measuring 65 cm northeast-southwest, 40 cm southeast-northwest, and 25 cm deep.

Feature 18E

This feature was a looter-disturbed shallow oval burial pit. The loose, sandy soil was screened for small bones and artifacts. The pit measured 95 cm southeast-northwest, 75 cm northeast-southwest, and 17 cm deep.

Feature 21A

This was an oval pit with a flat, bell-shaped base containing mottled gray-brown loam and sandy yellow clay with fair amounts of charcoal and periwinkle shell. An adult human burial (partially disturbed) was located near the base of the feature. The fill from this feature was not screened. The pit dimensions were 70 cm north-south, 81 cm east-west (top), 86 cm east-west (base), and 20 cm deep (Figure 25).

Feature 22C

This feature was a small circular pit with its northeast half containing dark brown organic fill with charcoal and red ash and lightly mottled with yellow sandy

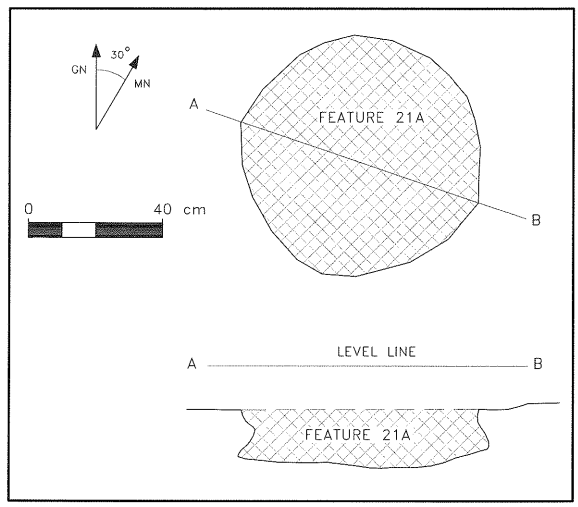

Figure 25. Feature 21A.

clay. Its southwest half contained yellow-brown sandy clay mottled with dark brown loam. The pit measured 52 cm north-south, 54 cm east-west, and 5 cm deep. Its south half was excavated.

Feature 22D

This was slightly bell-shaped refuse-filled pit. Two strata were defined:

Stratum 1 – dark organic fill containing snails and bone (dryscreened)

Stratum 2 – yellow mottled clay containing most of the pottery (trowel sorted)

The feature measured 90 cm northeast-southwest, 62 cm southeast-northwest (top), 74 cm southeast-northwest (maximum point of "bell"), and a maximum of 33 cm deep.

Feature 22E

This was an oval pit with a dark brown organic fill with yellow brown loam mottling. It measured 100 cm northeast-southwest, 102 cm southeast-northwest, and 15 cm deep. Its southeast half was excavated.

Feature 22F

This feature was an oval pit measuring 96 cm northeast-southwest, 110 cm southeast-northwest, and a maximum of 58 cm deep (Figure 26). Three different strata were noted:

Stratum 1 – dark brown organic loam with charcoal and mottled with yellow-brown sandy clay

Stratum 2 – yellow-brown sandy clay

Stratum 3 – very dark brown sandy loam mottled with yellow-brown loam

Feature 22G

This feature was a circular, flat-bottomed pit measuring 85 cm in diameter and 20 cm deep. Its fill was dark brown loam lightly mottled with yellow-brown loam. Its southeast half was excavated.

Feature 23A

This feature was an oval looted burial pit measuring 70 cm north-south, 58 cm east-west, and a maximum of 34 cm.

Feature 23B

This feature was an oval burial pit with orange mottled clay and silty brown-gray clay fill. Fill was not screened. The burial may have been a secondary bundled burial; however, the burial was looted and the "bundling" may have been the result of looters stacking the bones. Shell beads were found in the northwest portion of the pit. The pit measured 91 cm north-south, 80 cm east-west and 33 cm deep.

Feature 23C

This was an undisturbed shaft-and-chamber burial pit with a yellow clay lining and clay shelf forming the shaft. The bones were disarticulated, which may indicate a secondary burial. The fill around the burial was dryscreened and shell beads were recovered. Three distinct strata were also defined for the feature (Figure 27):

Stratum 1 – dark brown sandy loam lightly mottled with yellow clay

Stratum 2 – yellow clay pit lining mottled with dark brown sandy loam

Stratum 3 – brown sandy loam with orange clay pockets

The pit measured 65 cm north-south, 85 cm east-west, and the chamber reached a depth of 60 cm. A charcoal sample (Beta-105217) produced calibrated date ranges predominantly within the 15th and 16th centuries (Stuiver and Reimer 1993; Stuiver et al. 1998a, 1998b) (see Table 3).

Feature 25A

This was an oval pit with an irregular base containing a looter-disturbed burial as well as refuse. The upper zone of the feature contained dark brown organic fill with charcoal, shells, and animal bone and was 5–10 cm thick. The lower stratum was dark brown with yellow mottling, was 6–10 cm thick, and contained most of the human bone.

The feature dimensions were 107 cm north-south, 99 cm east-west and 16 cm deep. Two shell beads and one drilled canine were recovered from the fill.

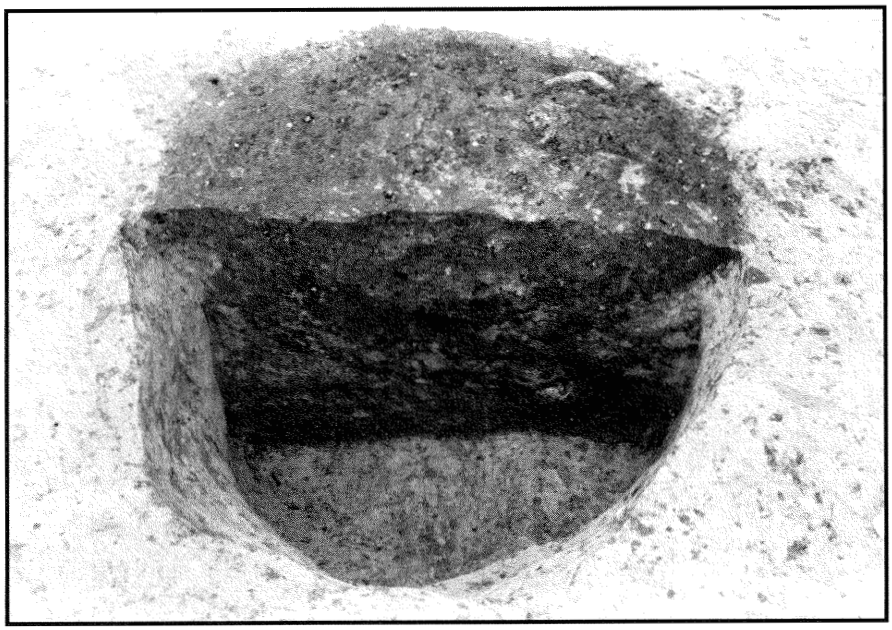

Figure 26. Feature 22F.

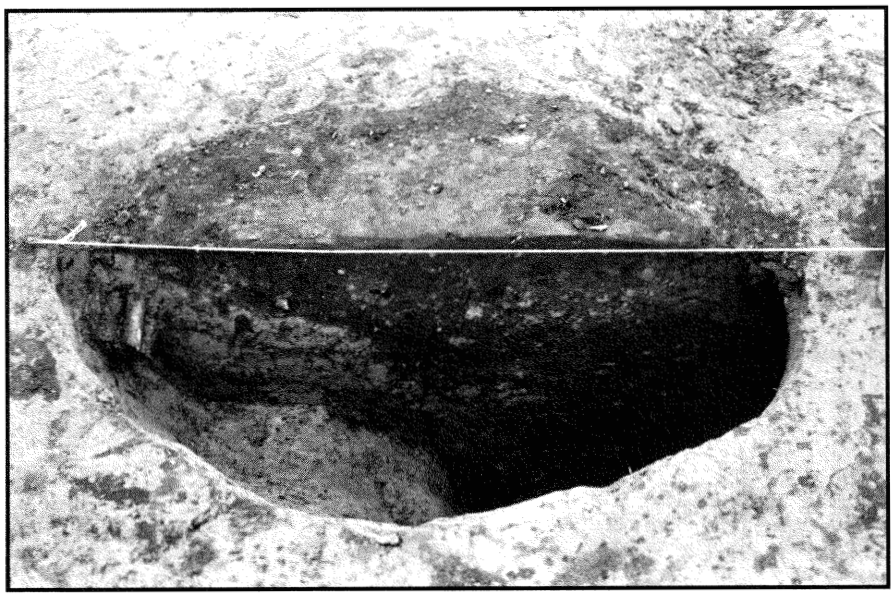

Figure 27. Feature 23C.

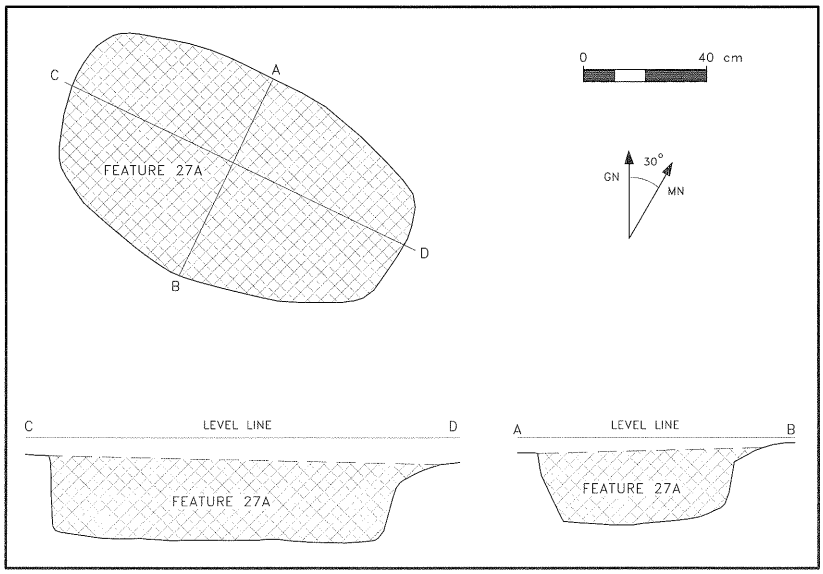

Figure 28. Feature 27A.

Feature 25D

This feature was a looted shaft-and-chamber burial pit with dark brown loam fill and artifacts, animal bone, and shell. Human bones were encountered starting at 20 cm below the surface. The pit measured 113 cm north-south (top), 134 cm east-west (top) and 123 cm deep. The bottom chamber was 90 cm wide.

Features 26B, C, D

These three features were postmolds along the palisade lines (see Figure 14). Features 26B and 26C were along the outer palisade, while 26D was in the innermost palisade at this point of the site. All three had fill of black sandy loam with some yellow clay mottling. 26D also had a large amount of periwinkle shells. 26B and 26C had sloping north sides, straight south sides, and pointed bottoms. Feature 26D had a rounded bottom.

Feature 27A

This was a looted oval burial pit with a flat bottom. The fill was mottled with clay and unscreened. However, a perforated shell disc, twelve bipointed small shell gorgets, and two conch columella ear pins were recovered near the skull (the gorgets were part of a necklace) (Figure 28) Marginella beads were also found near the pelvis. The pit measured 75 cm north-south, 120 cm east-west, and 22 cm deep.

Summary

Even though the focus of the 1989 and 1990 excavations of 44SM7 was on the definition of village dimensions and burial recovery, a variety of prehistoric features and feature forms were documented. In the 1989 trenches, 13 oval pits (two containing human remains), three circular pits, three bell-shaped pits (one containing human remains), a trench or ditch (containing a human bone), as well as three rectangular historic period livestock burials, were documented. In the 1990 excavations, 13 oval, nine circular, and one bell-shaped refuse-filled pit were identified. Twenty-six additional pits contained human remains. Of these burials, 15 were in oval pits, seven in shaft-and-chamber pits, two in bell-shaped pits, and two were in circular pits. At least nine of the pits with burials also had layers with substantial amounts of refuse, usually either mixed with the human bone or in zones above the bone. While looter disturbance of all but three of the burial features certainly resulted in mixing of burial fill with some midden or feature fill, it is likely that a refuse-filled midden covered (intentionally or not) many of the individual graves. Some graves (23C for example) also had clay linings. Thus, even though most of the burials have been disturbed, much information on pit form is still available.

Calibrated radiocarbon dates from one feature from Trench 2 (Feature 2G) and two features from the 1990 area excavations (Features 15C and 23C) clearly demonstrate that the original village identified and tested by the two backhoe trenches in 1989 likely dates a century earlier than the late 15th century village portion exposed and excavated in 1990 (see Table 3) Differences in the ceramic artifacts from features excavated in 1989 and 1990 (Chapter 6) further support the observation that 44SM7 is actually a village complex with at least two major, overlapping Late Woodland occupations.

4: Skeletal Analysis of Prehistoric Human Remains

Introduction

In this chapter, methods and results of the skeletal analysis of late prehistoric human remains excavated from the Bonham site (44SM7, Smyth County, Virginia) are presented. The objective of this report is to describe as completely as possible the biological characteristics of these individuals. Included in this analysis is a comprehensive bone inventory, listing and describing all identifiable human skeletal elements. In addition, there is a determination of the minimum number of individuals (MNI) represented at the site, their age, sex, and stature, and their state of health as reflected in frequencies of major pathological categories. Bonham site human skeletal remains are then compared to other contemporary prehistoric human skeletal remains from sites in Southwest Virginia. This is done in order to further define and understand the biological and demographic parameters of the Bonham site individuals that these skeletal remains represent.

Methods of Skeletal Analysis

Preservation of the Bonham site skeletal remains ranged from very good to average. Numerous skeletal remains represented most of the Bonham individuals; some nearly complete skeletons were preserved. As expected, subadult material was more fragile and less plentiful.

For each individual, after initial sorting of the skeletal remains into major categories (such as cranial, dental, long bone, axial, pectoral, pelvic, hands, and feet), specific bone identification and siding took place following Bass (1987) and White and Folkens (1991). Identifiable elements were tabulated in a bone inventory for each individual. Although the majority of the individuals had been disturbed, in most cases, each burial represented only one individual. Little mixing or jumbling of skeletal remains between burials apparently occurred. Thus, determination of MNI was fairly straightforward. However, in some instances, superfluous or incongruous skeletal elements were identified for a burial and led to an increase in the MNI. These will be discussed more fully in the results section.

Age determination for subadults was based on epiphyseal closure of major long bones (following McKern and Stewart 1957), dental eruption, and calcification (Schour and Massler 1941; Moorrees et al. 1963a, 1963b), and long bone length comparisons to those of Johnston's (1962) Indian Knoll and Merchant and Ubelaker's (1979) Arikara skeletal populations. Adult age estimation was based, when possible, on visual comparison of pubic symphysis morphology to standards developed by Gilbert and McKern (1973), McKern and Stewart (1957), and Todd (1920). Other, less reliable, degenerative indicators also were used, such as the degree of osteoarthritis (Stewart 1958), dental attrition and loss (Guagliardo 1982), and cranial suture closure (McKern and Stewart 1957; Todd and Lyon 1924).

Sex estimation cannot be determined for subadult skeletal material (less than about 18 years of age). Adult sex determination was based on visual observation of morphological features of the innominate and cranium following Bass (1987), Keen (1950), Krogman (1978), and Phenice (1969). These features include (for the innominate) the presence of a ventral arc and pre-auricular sulcus, width of the subpubic angle and sciatic notch, and degree of buildup of bone on the sacroiliac articular surface. Cranial features used included shape of chin, overall size dimensions of the mastoid process and supraorbital ridges, and shape of the upper eye orbit border. In addition, metric assessment of femoral midshaft circumference (Black 1978), femoral head diameter (Stewart 1979), and tibial nutrient foramen circumference (Symes and Jantz 1983) were also used to estimate adult sex.

Stature estimation was based on metric evaluation of major long bones and comparison to standards developed by Trotter and Gleser (1952, 1958). In most all cases, the left femur was measured for its maximum length. When not available, however, the right femur was used. In one instance, a right tibia was measured for determination of adult stature.

Pathological and nutritional stress indicators were identified by comparison to descriptions of disease states and their manifestations on bone following Ortner and Putschar (1981) as well as other reference material. The exact etiology of most of these pathological conditions cannot be precisely determined because often many different diseases leave similar effects on bone. Therefore, pathological *classes* containing many similar and related disease or pathology states were defined and used. These categories included trauma, infectious disease, congenital malformations, degenerative age-related processes (such as osteoarthritis), and dental disease and anomalies. In addition, special attention was paid to dietary and nutritional stress indicators that might possibly allow the assessment of the level of prehistoric health manifested by these remains.

Results of the Skeletal Analysis

Bone Inventory

Appendix A contains an inventory listing of all identifiable skeletal elements for each individual from 44SM7. Completeness of major elements as well as side of body represented (where appropriate and possible to determine) are also noted. As can be seen from this inventory, an entire range of skeletal elements is represented, from the very fragile hyoid to the more durable hand and foot bones. Only one burial (a subadult) produced cranial but no postcranial material. However, in 13 instances, under representation of cranial material was noted. In 11 of these 13 cases, *no* cranial material of any kind was identified. One of these was a subadult and, thus, its lack of associated cranial material may be explained by the overall greater fragility and poorer preservation of subadult remains. However, many of the other cases involved adults for which preservation of postcranial elements was good. It can only be assumed that postdepositional removal of these crania by looters may explain their absence here. This represents a significant bias in this skeletal sample, affecting nearly one-third of the total number of Bonham site individuals. And, when considering that only approximately one-fourth of the total Bonham site area may have been investigated, it becomes apparent that these remains do *not* reflect a complete population and, thus, will hereafter be referred to as a skeletal sample.

MNI

Bonham site human skeletal remains represent a minimum of 35 individuals. There were 22 documented burials. Nine additional features (1C, 1E, 2G, 2I, 15A, 18C, 20C, 22F and 22D) contained human bone. Five contexts showed idiosyncrasies in the form of supernumerary or incongruous skeletal elements. For example, Burial 11C was a 40+year-old robust male; however, a *female* innominate (with a pre-auricular sulcus and deep parturition pits) was also included in these remains. Contexts 2G, 11D and 2D contained extra skeletal elements (2G = an adult rib; 11D = an ulna; 25D = an adult clavicle, ulna, 2 femora, a lumbar vertebra, and a subadult rib) also indicating the presence of additional individuals. These irregularities most likely represent mixing occurring as a result of post-depositional looting rather than incidences of double burials. This is assumed because preservation of all of the remains within these burials was fairly good, yet no other evidence of the extra individuals was found.

Demographic Characteristics: Age and Sex Distribution

A formal demographic analysis of the Bonham site skeletal remains in not possible considering the small sample size, lack of completeness of the sample, and the presence of postdepositional disturbance. However, basic demographic dimensions for this sample can be investigated. Table 4 contains age and sex estimations for each individual recovered from the Bonham site. The good preservation of many of the remains allowed fairly precise age determination, especially for the subadults. Age for the entire Bonham site skeletal sample ranged from 0–6 months to 45+ years. The upper age limit for the Bonham site could not be determined accurately due to the lack of precise aging methods for older adult skeletal material. Twelve of the 35 individuals (approximately 34.3%

Context	Age	Sex	Stature	
			Mean	Range
1C	25–30	F		?
1E	adult	?		?
2G(a)	0–6 months	–		–
2G(b)	adult	?		?
2I	older adult	?		?
11C(a)	40+	M	169.88	166.61–173.15
11C(b)	adult	F		?
11D(a)	45+	M	167.60	163.80–171.40
11D(b)	adult	?		?
11E	45+	F	150.92	147.20–154.64
12F	13-14	–		–
13F	45+	F		?
15A	18-21	F		?
15B	6 mos.–1 yr	–		–
16F	1 1/2–2	–		–
17C	6-7 months	–		–
17D	45+	F		?
17G	25-35	M	162.87	159.07–166.67
17H	1.25–1 1/2	–		–
18A	35–39	M		?
18C	41/2–51/2	–		–
18D	1.25–1.75	–		–
18E	40+	M		?
20C	45+	F		?
21A	45+	F		?
22D	subadult	–		–
22F	25–30	?		?
23A	25–35	F		?
23B	15–18	M		?
23C	2–2 1/2	–		–
25A	25–30	F		?
25D(a)	45+	M	167.17	163.37–170.97
25D(b)	25+	M		?
25D(c)	subadult	–		–
27A	40–50	F		?

M=male; F=female; ? = indeterminate; stature in centimeters.

Table 4. Summary of age, sex, and stature determinations for 44SM7 individuals.

of the total sample) were subadults, below the age of 18 years. As expected, the majority of these were children below the age of five. These are traditionally very stressed times for prehistoric Amerindian populations and high mortality rates are often noted for this age range. However, two adolescents were also included in this subadult group. Of the adults that could be aged precisely (11 out of 23) were *older* adults, manifesting ages of at least 40 years. For four of the 23, age could not be determined precisely. Younger adults (18–40) were few (n=7) but were noted.

Nineteen sex determinations could be made. Of these, there was a fairly equal presence of males (8) and females (11). Subadult sex cannot normally be determined; however, an exception occurred with Burial 23B, a 15–18 year old who manifested clearly male cranial features.

Stature

Table 4 also presents adult stature means and ranges (in centimeters) for the five Bonham individuals for which this statistic could be determined. Four of the five were males, whose mean height was 166.88 cm, ranging from 162.87 cm (5'4") to 169.88 cm (5'6 1/2"). The only adult female for which stature could be determined stood 150.92 cm (or 4'11").

Pathologies and Anomalies

Perhaps the single most distinguishing feature of the Bonham site skeletal biology is the abundance of pathologies noted on these remains. Virtually every individual with appreciable preservation showed evidence of pathology. Table 5 lists and describes these conditions for each individual. As can be seen, the most common type of pathological category observed was that of degenerative age-related processes such as osteoarthritis of the major joint surfaces. This type of arthritis was noted at typical osteoarthritis locations like vertebral bodies (near intervertebral discs), sacrum and rib articulations, but was also seen in some individuals on nearly every major joint surface (Figure 29). In a few instances, these arthritic processes took the form of bony spurs (osteophytes) projecting from the joint surfaces of vertebrae, clavicles, innominates, femora, patellae, and hands and feet, often accompanied by eburnation (Figure 30). In some individuals, these arthritic conditions were extreme. Individual 11E, for example, showed almost complete destruction of both right and left distal ulnae (Figure 31). Osteoporosis and compression of skeletal elements, particularly vertebrae, were also noted.

Associated with these degenerative arthritic states in most older adults was significant evidence of periodontal disease. This took the form of considerable antemortem tooth loss concomitant with thinning and resorption of mandibles and maxillae. Some tooth loss was observed for all older adults (40+ years) for which mandibular or maxillary remains were preserved. Several individuals had complete or partially edentuous mandibles or maxillae. Dental loss was even noted in younger adults--Individuals 17G (a 25-35 year old male) and 18A (a 35-39 year old male) showed considerable dental loss with resorption.

Other dental pathologies noted included dental attrition, abscesses, caries, and hypoplasias. Dental attrition or wear was rated as extreme in most older adults and was even considerable in younger adults. An abscessive lesion of the mandible (near the mandibular symphysis) was noted in one older adult individual (17D) (Figure 32). Two subadults showed evidence of dental hypoplasias. Surprisingly, dental carie frequency was low, affecting only approximately 5.75% of the total teeth identified. All of these were located on adult teeth and were predominantly on molars, although canines and premolars were also affected. This caries rate is somewhat low considering the relatively late prehistoric date and assumed agricultural-dependent status of the Bonham site individuals. However, the underrepresentation of cranial and dental remains and the large number of older individuals with edentuous mandibles and maxillae may introduce a bias into this statistic. This may possibly explain this low carie frequency.

Incidences of nonspecific infectious pitting and/or lesions (such as periostitis, porotic hyperostosis, cribra orbitalia) were fairly common across the Bonham site skeletal sample, with 22 of the 35 individuals (62.8%) showing such conditions. Of these 22, 12 were adults and 10 were subadults. Subadult incidences of infection were characteristically located along the external and internal tables of cranial bones, above and inside the eye orbits (cribra orbitalia), and along long bone shafts (Figure 33). Some of these manifestations, particularly porotic hyperostosis, suggest nutritional deficiencies (El-Najjar and Robertson

Burial/ Individual	Pathology
1C	None observed
2G	Infectious pitting (slight to moderate) of internal and external tables of most cranial bones; periostitis (severe) of long bone shafts
2I	Antemortem tooth loss (maxillary left I2 and M2) with partial resorption
11C (a)	Porotic (infectious) pitting of external table of occipital, right and left parietals (slight); dental caries of maxillary M1 and M2 and PM; osteoarthritis (moderate) of cervical, thoracic, and lumbar vertebrae, scapula, radius, ulnae, metacarpals, and metatarsals
11C (b)	None observed
11D (a)	Partially edentuous left palate; completely edentuous mandible; porotic (infectious) pitting of external table of right and left parietals, above right and left supraorbital ridges, and superior and inferior vertebral bodies; osteoarthritis (moderate to severe) of most vertebrae, proximal ulnae, right scapula (acromion process), 3-4 ribs (vertebral ends), and 2 toe phalanges; arthritic bony spurs on several vertebrae, right clavicle (sternal end), right patella (anterior), and 2 toe phalanges; eburnation of lumbar vertebral inferior articular process; circular abscess of body of 1 rib; swelling along bodies of 3 ribs = possibly healed traumatic injury
11D (b)	Circular abscess along ulna shaft
11E	Antemortem tooth loss (maxillary left C, I2, I1; mandibular right M1, M2, I2, left PM2, M1, M2, M3) with resorption and osteoporosis; excessive plaque buildup on mandibular left I1; osteoarthritis (severe) of vertebrae, right scapula (acromion process), right and left distal radius and ulna (so much so that both distal ulnae are deformed and are nearly nonexistent), superior body of sacrum, numerous ribs; osteoporosis and compression of vertebral bodies, scapula (glenoid fossa) and right first rib; porotic (infectious) pitting of vertebral bodies
12F	Defoliation of tip of left mastoid process (mastoiditis?); enamel hypoplasia of maxillary and mandibular I; abscess of inferior sternal end of left clavicle; porotic (infectious) pitting (moderate to severe) of superior and inferior vertebral bodies and miscellaneous ribs (with swelling)
13F	Cribra orbitalia (slight) of left upper eye orbit border; antemortem tooth loss (mandibular left I1, I2, M1, right mandibular corpus primarily edentuous) with resorption; excessive plaque buildup on mandibular M3; osteoarthritis (moderate to severe) of many vertebrae and first sacral vertebra and ala; porotic (infectious) pitting of superior and inferior vertebral bodies; periostitis (slight) of left tibia shaft (infectious)
15A	None observed
15B	Infectious pitting (severe) of cranial frag.; periostitis (moderate) of long bone shafts
16F	Porotic (infectious) pitting on external table of occipital, temporals, mandible (slight); cribra orbitalia of zygomatics; periostitis (slight) of long bone shafts, vertebral body; swelling of radius
17C	Porotic (infectious) pitting (slight) along metopic suture of frontal; periostitis of proximal right tibia with swelling

Table 5 (part 1 of 3). Summary of pathology occurrence at 44SM7.

Burial/ Individual	Pathology
17D	Antemortem tooth loss (mandibular right C, PM region) with resorption; large abscessed area in alveolar region of mandibular symphysis involving mandibular I; dental caries; osteoarthritis (moderate to severe) of vertebrae with compression and osteoporosis, especially of thoracic vertebrae; arthritic bony spur along sacroiliac articular surface of left innominate; severe cartilage loss and eburnation of right patella (with arthritic lipping of border) and distal condyle of right femur
17G	Antemortem dental loss (maxillary left PM1, right PM1) with resorption; dental caries (severe) of maxillary right C, mandibular M1, M3, M3; porotic (infectious) pitting (moderate) along supraorbital ridges; thickening of parietals along sagittal suture; abscess of inferior sternal end of both right and left clavicles; osteoarthritis (slight) of vertebrae with slight porotic (infectious) pitting of superior and inferior bodies; traumatic injury involving right leg (femur, patella, tibia) with subsequent infection: periostitis of distal right posterior femur, right patella and tibia; bony notch in right patella; severe swelling of right tibia; malalignment of right leg near knee
17H	Porotic (infectious) pitting of occipital, parietal (slight)
18A	Porotic (infectious) pitting along right portion of frontal (slight) and along 2 ribs; antemortem tooth loss (left mandibular corpus primarily edentuous) with resorption; osteoarthritis (slight) of vertebrae
18C	None observed
18D	Porotic (infectious) pitting (slight to moderate) above right and left supraorbital ridges, on frontal near metopic suture, on right and left temporals near the external auditory meati, on right and left zygomatics, right and left parietals and sphenoid; cribra orbitalia of right and left internal eye orbits; periostitis of tibia and femur shafts
18E	Antemortem tooth loss (mandibular right M1, M2, I1, I2, left M1, M2, PM1, PM2, I1) with osteoporosis and resorption; osteoarthritis (moderate) of vertebrae, ribs, proximal ulna; osteoporosis of left scapular body; swollen rib fragment (traumatic injury?); slight compression of vertebrae; possible traumatic injury to right foot: arthritic pitting at articulation surfaces of right 3rd metatarsal, right lateral cuneiform, and toe phalanx
20C	Osteoarthritis (severe) of vertebrae, sacroiliac articular surface and acetabulum of innominate, ribs, ulnar notch, heads of right and left 1st metacarpals, hand and foot phalanges, right and left patellae; compression of vertebral bodies; porotic (infectious) pitting (severe) of superior and inferior vertebral bodies; periostitis and buildup of bone on left ulna shaft (trauma?); probable traumatic injury to a left rib = 1.6 cm long diagonal cutmark just posterior to the costal articulation with little evidence of healing
21A	Antemortem tooth loss (mandibular right M1, M2, PM1, PM2, I2, left PM1, M1, and M2) with osteoporosis and resorption; osteoarthritis (moderate to severe) of vertebrae, right and left 1st metacarpals; arthritic bony spurs on right and left patellae, right and left distal femoral condyles (with eburnation)
22D	None observed
22F	Infectious pitting of vertebral bodies (moderate)
23A	Dental carie of maxillary PM fragment; porotic (infectious) lesions of superior and inferior vertebral bodies; bowing of femoral shafts (rachitic?)

Table 5 (part 2 of 3). Summary of pathology occurrence at 44SM7.

Burial/ Individual	Pathology
23B	Enamel hypoplasia of maxillary central I; dental carie of maxillary left PM1; porotic (infectious) pitting of internal table of frontal and parietals; periostitis and swelling of right humerus, possibly involving the marrow (osteomyelitis); swollen shaft of left ulna; probable traumatic injury to a rib fragment: perforated with some evidence of healing; arthritic bony buildup of another rib fragment
23C	Porotic (infectious) pitting (moderate) along external and internal tables of most of cranial bones (especially along suture lines), external surface of mandibular symphysis, and alveolar region of maxilla; cribra orbitalia (severe) in internal right and left eye orbits
25A	Porotic (infectious) pitting (severe) of superior and inferior and sides of vertebrae; extensive periostitis and swelling of femoral and fibula shafts; slight periostitis on distal humerus and radius
25D (a)	Porotic (infectious) pitting above supraorbital ridges (slight); antemortem tooth loss (edentuous palate) and resorption; osteoarthritis (severe) of vertebrae, ribs, proximal and distal ulnae, and scapula; arthritic bony spur on olecranon process of humerus; periosititis (slight) along tibia shaft
25D (b)	Osteoarthritis (slight) of lumbar vertebra
25D (c)	Periostitis (moderate) of subadult rib with swelling and malformation
27A	Antemortem tooth loss (mandibular right and left molar regions) and resorption; osteoarthritis (slight to moderate) of vertebrae, distal radius, proximal ulna, patella, scapula, 1st sacral vertebra, right talus, right navicular; periostitis (slight) of ribs; porotic (infectious) pitting of most all superior and inferior vertebral bodies

Table 5 (part 3 of 3). Summary of pathology occurrence at 44SM7.

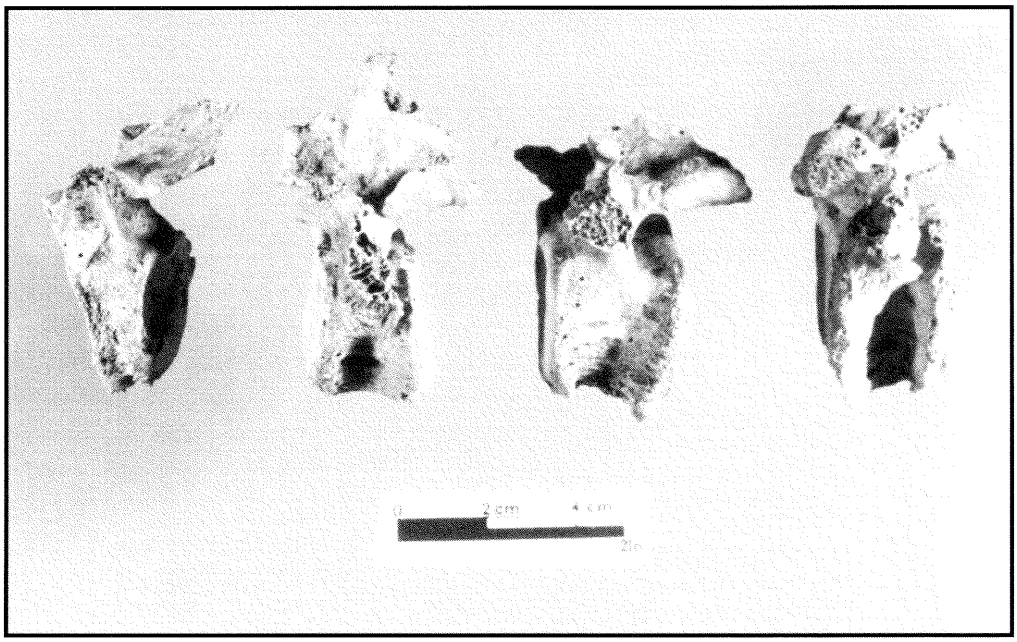

Figure 29. Vertebral osteoarthritis.

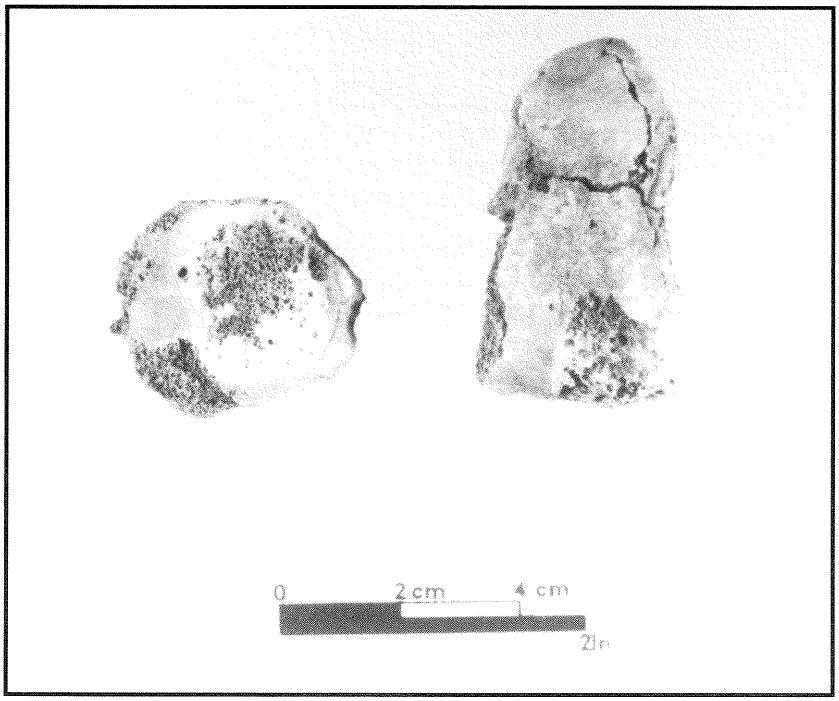

Figure 30. Arthritic deterioration of the right knee.

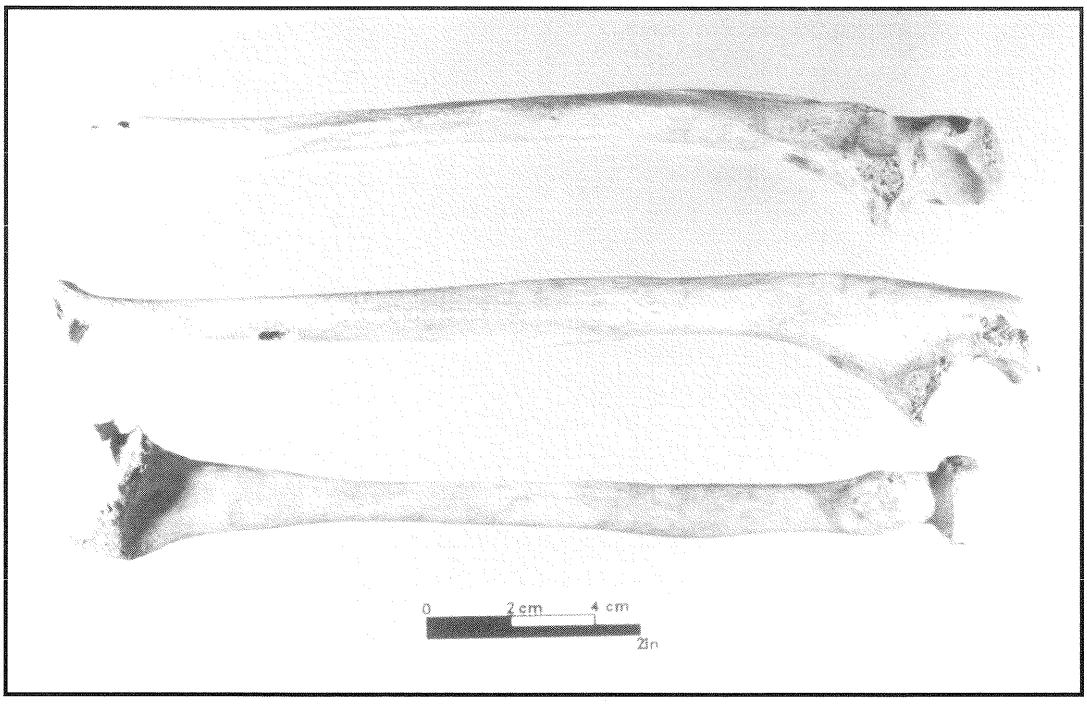

Figure 31. Bone loss and arthritis to arms of individual 11E.

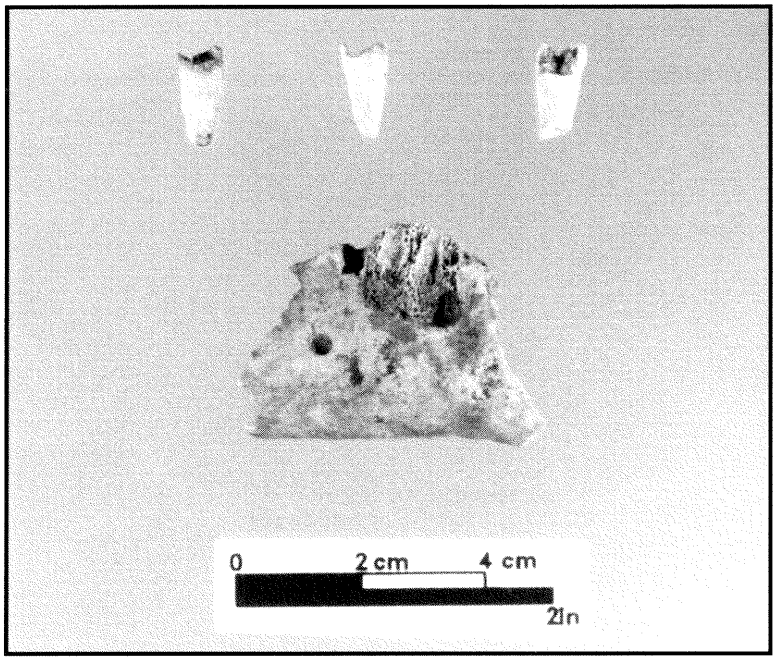

Figure 32. Dental abscess and caries of individual 17D.

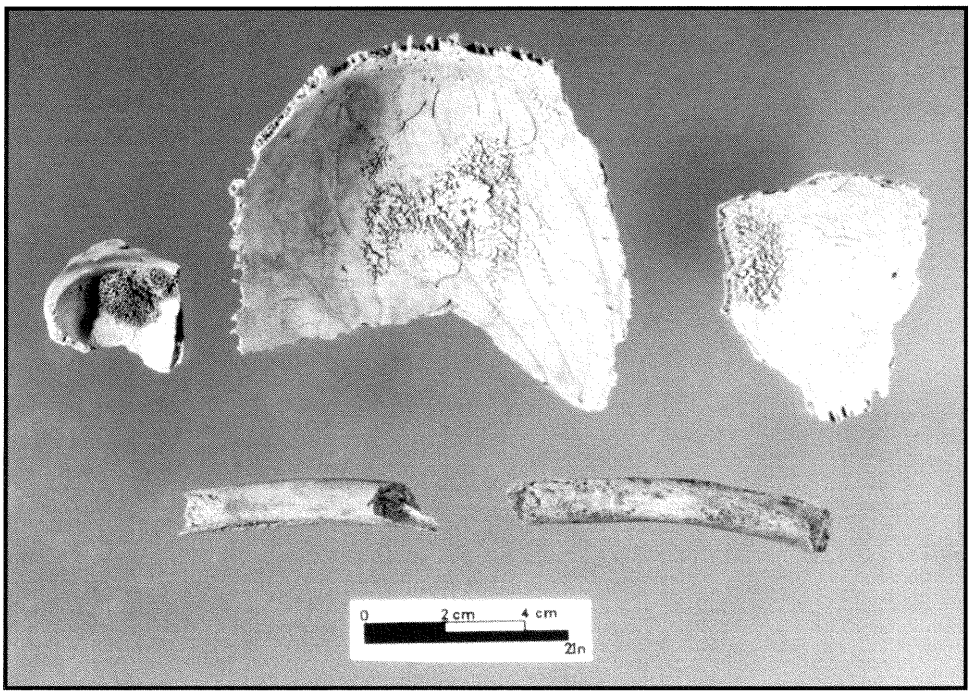

Figure 33. Subadult infectious pitting of cranial and postcranial bones.

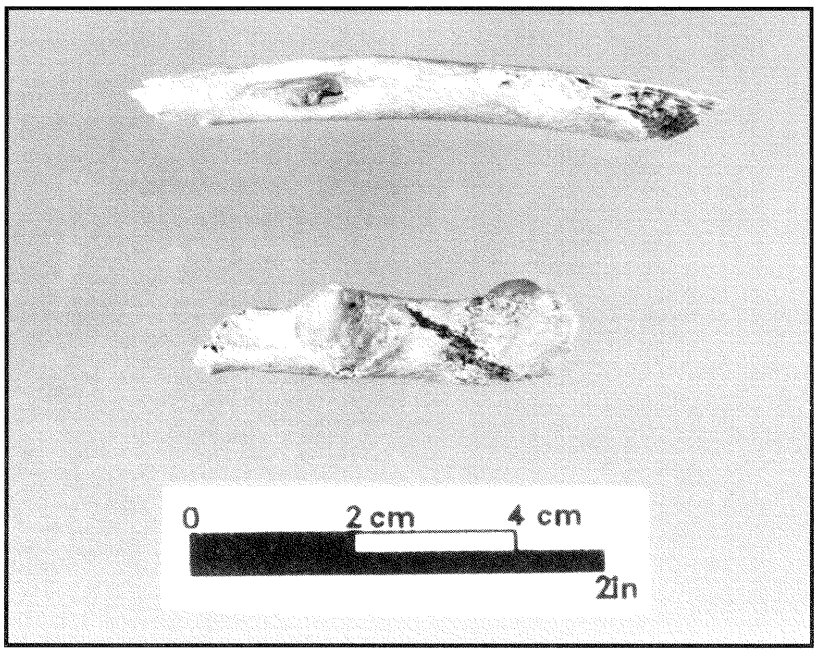

Figure 34. Traumatic injury to ribs.

1976; El-Najjar et al. 1975, 1976; Steinbock 1976; Stuart-Macadam 1991; Zimmerman and Kelley 1982). In the past, this condition has traditionally been correlated with iron deficiency anemia as a consequence of maize dependency, although other alternative explanations have been offered (Owsley 1984). This evidence, combined with the observed incidences of dental hypoplasias on two subadults, indicates a significant amount of stress in Bonham subadults, a feature reflected in the mortality profile for the site.

Adult incidences of infection affected both males and females equally. They overlapped in type and location with subadults, occurring along the cranial vault, above brow ridges, and along major long bone shafts. In addition, 10 of the 12 adults showing infectious pitting or lesions manifested involvement of the superior and inferior vertebral body surfaces. This condition ranged from slight to severe and in a few cases was accompanied by marked deterioration of the entire vertebral body. Abscessive lesions were also noted on four individuals involving a rib, an ulna shaft, and clavicles, with one individual (17G) showing abscessed sternal ends of both right and left clavicles near the location of the costoclavicular ligament. One individual (12F) showed deterioration of the left mastoid process, possibly representing an incidence of mastoiditis.

Some of these infectious states (particularly periostitis) may be correlated with traumatic injury to bone. For at least six individuals (all adult except for one adolescent), probable incidences of trauma were identified. These included swollen and malformed ribs (Individuals 11D and 18E), callus buildup on a left ulna shaft (Individual 20C), and a partially healed perforated rib (Individual 23B). In addition, Individual 20C manifested a 1.6 cm diagonal cutmark along a left rib fragment with little evidence of healing (Figure 34). Individuals 17D and 17G showed possible evidence of injury to their right legs. The distal condyle of the right femur and patella of 17D were affected, while trauma to 17G involved the right femur, patella, and tibia (Figure 35). Finally, Individual 18E manifested traumatic injury to his right foot, involving the 3rd metatarsal, lateral cuneiform, and toe phalanx. Nearly equal numbers of males and females were affected by these possible traumas (4 males, 2 females).

In sum, pathologies were common for the majority of 44SM7 individuals. Degenerative age-related conditions such as osteoarthritis and periodontal disease were predominant. This is not surprising considering the demographic data previously presented--with over half of the adults living into older age, higher frequencies of pathological conditions are expected. Incidences of infectious pitting and lesions, nutritional deficiency, and trauma were also quite common.

Inter-site Comparisons in Southwest Virginia

To gain a clearer perspective of the biological context of the 44SM7 skeletal sample, a comparison to other roughly contemporaneous and similar late prehistoric skeletal series in Southwest Virginia is needed. Only three such series have been well documented for this region and manifest large skeletal samples (greater than

100 individuals) for comparison: the Crab Orchard site (44TZ1) (Egloff and Reed 1979; MacCord and Buchanan 1980) in Tazewell County, and the Shannon (44MY8) (Benthall 1969) and Trigg (44MY3) (Buchanan 1986; Sternheimer 1983) sites in Montgomery County (also see Boyd and Boyd 1990). Of these, only the Shannon site individuals have undergone a formal and detailed skeletal biological analysis. It is primarily this information that is used in the intersite comparison.

In terms of most biological dimensions analyzed, Bonham site individuals are roughly comparable with those of Shannon. For example, Mecklenburg (1969) presents basic demographic data for Shannon that overlaps significantly with Bonham. Subadult mortality rates were very similar, with approximately 37.8% (Mecklenburg 1969:18) of Shannon individuals dying below the age of 18 years (compared to 34.3% at Bonham). As with Bonham, most of these deaths occurred in the early childhood years. Similar high subadult mortality rates can be gleaned from the Trigg and Crab Orchard sites.

For adults, however, some differences can be noted. Only approximately 25% of Shannon adults lived into the older age categories (45+ years), while over half of Bonham individuals that could be aged precisely survived beyond 40 years. Mortality of younger and middle-aged Shannon individuals (18-45) was higher than that seen at Bonham. While at a glance this may appear as if Bonham site adults enjoyed a greater longevity, it must be cautioned that small sample sizes, differential adult aging procedures, and sample incompleteness may explain these demographic discrepancies.

Stature estimates for the two sites are also very similar. Shannon site male mean height was calculated as 166.4 cm using Genoves (1967) regression formula for Mexican-Americans and 171.2 cm using Trotter and Gleser's (1952) regression formula for Mongoloids (Mecklenburg 1969:39, 89). Either way, these means compare favorably with the male stature mean noted for the Bonham site (166.88 cm) using the Trotter and Gleser (1952, 1958) formula. Shannon site female mean stature was 154.6 cm or 159.1 cm (using Genoves [1967] or Trotter and Gleser [1952], respectively) (Mecklenburg 1969:90). These estimates are slightly higher than the Bonham female height of 150.92 cm; however, Bonham site female stature was based only on one individual.

Finally, numerous pathologies were noted by Mecklenburg (1969) in her analysis of Shannon skeletal remains. As with Bonham, the majority of adults

Figure 35. Probable traumatic injury and healing in individual 17G.

showed some type of skeletal pathology. Degenerative age-related conditions were the most common, with 100% of adults over the age of 35 showing at least some evidence of osteoarthritis (Mecklenburg 1969:157). Incidences of trauma and infectious pitting and lesions were also comparable between the two sites. Interestingly, Mecklenburg (1969:137-137, 141) describes seven cases (all adult males) of abscessive lesions of the sternal end of the clavicle near the costoclavicular ligament. Four individuals had *bilateral* expression of this pathology very similar to the condition noted for 44SM7 Individual 17-G. Mecklenburg (1969:138) attributes this pathological state to strain in the ligamentous attachment of the clavicle.

One major discrepancy in pathology frequency between Shannon and Bonham concerns the incidence of dental caries. As previously stated, the Bonham caries frequency was very low (5.75%). Mecklenburg (1969:95, 109) reports an adult caries rate of 32.5%, with nearly 100% of all adults at Shannon affected. While it may be tempting to conclude from these data a lesser reliance on maize agriculture at the Bonham site, the paleobotanical analysis (Chapter 8) clearly indicates maize cultivation and use. Other dental pathologies such as dental attrition, loss, abscess, and hypoplasia were comparable between the two sites.

Summary and Conclusions

A minimum of 35 individuals was identified from the Bonham site, ranging in age from 0–6 months to 45+ years. Subadult mortality was high, comprising over one-third of all deaths. The majority of adults were older in age, but fairly equal in terms of their sex ratio. Mean stature estimates ranged from 150.92 cm (female) to 166.88 cm (males). Pathological frequencies were high, with degenerative age-related conditions the most predominant. Evidence for nutritional deficiency, infection, and trauma were also rather common. Dental caries, however, were few, a factor possibly relating to biases in the composition of the skeletal sample. Aside from the dental caries frequency, Bonham site human skeletal remains were comparable in most all other biological features to other Southwest Virginia late prehistoric skeletal series (specifically the Shannon site).

In spite of the disturbed context of the majority of the Bonham human skeletal remains, a tremendous amount of biological information has been gleaned from them. The Bonham site illustrates that even heavily looted Late Woodland sites can provide significant information about their past inhabitants and therefore should not be dismissed as being unworthy of research and study.

The Bonham site human skeletal remains, even though from disturbed contexts, contain a wealth of biocultural information about the Late Prehistoric period inhabitants they represent. In addition to the biological data learned from them in this study, much more information could be gained in future analyses. For example, questions about their diet and health status could be resolved through bone chemistry analyses. The discrepancy between supposed maize dependence and the low caries frequency observed in this report could be explained. Further information about the Bonham individuals' health status could be gained from a more in-depth study of the numerous pathological conditions noted on the majority of the remains. And, these incidences of pathologies, including trauma and infectious disease, could serve as an excellent teaching aid in the identification and diagnosis of prehistoric diseases and traumas and determination of prehistoric levels of health.

These human remains represent one of the few Late Prehistoric Late Woodland Southwest Virginia skeletal samples that has been formally biologically investigated. Thus, much of our knowledge about Late Woodland Southwest Virginia inhabitants rests on the more intensive study of these remains and skeletal samples from other sites. Their usefulness as a comparative collection is invaluable.

5: *Lithic Artifact Analysis*

Analysis Methods

Recovered lithic artifacts were analyzed using a nominal coding format which generally follows the Low-Level Lithic Analysis format developed for the Tellico Reservoir Archaeological Survey by Larry R. Kimball (Davis 1980) and used successfully to analyze artifacts on a number of archaeological projects (e.g., Boyd 1986; Schroedl et al. 1985). This nominal level coding format focuses on the recording of artifact-specific attribute states for three major attributes: lithic raw material, blank (or artifact "type") and function (or observable use-wear). Subsumed within the "blank" attribute are specific codes for projectile point morphological/temporal types and technomorphological classes (such as "bifacial thinning flake" or "blade"). The specific lithic analysis format used by the DHR was somewhat different, but still permitted the identification and analysis of the same basic attributes and attribute states as the Tellico format.

In this chapter, the results of the lithic artifact analysis are discussed and summarized in five tables. Table 6 presents the number of lithic artifacts from each context. Tables 7 and 8 summarize the correlation between technomorphological types and raw material and between artifact blank and raw material for the entire site. Tables 9 and 10 summarize projectile point types and other specialized tool types and the raw materials from which they were produced for each context investigated. Standard descriptive references for raw material and artifact types in Southwest Virginia, such as Holland (1970), were used as interpretive aids.

Results

A total of 1,222 lithic artifacts was recovered from the surface or excavated contexts at 44SM7 (see Table 6). Most of the artifacts were products or byproducts of bifacial lithic reduction (see Table 7); however, 240 artifacts were clearly bipolar flakes or exhausted core fragments (see Kimball 1985:43–64 for definitions). Only a few drilled, ground, or pecked stone artifacts were recovered.

As can be seen in Table 8, most of the artifacts recovered were flakes (either modified or unmodified) or core fragments. Of the total flakes recovered with an identifiable technomorphology (n=887), 646 (72.8%) were decortication or bifacial thinning flakes produced by a bifacial reduction method. Most of these artifacts were the byproducts of projectile point or biface manufacture. In addition, 180 (20.3%) of the flakes were bipolar, having been produced by placing a nodule of stone on an anvil stone and striking the other end of the nodule with a hammerstone. This reduction method produces angular flakes with crushed ends and distinctive concentric bands of force emanating from both ends. Finally, 61 flakes were blades, with lengths at least twice their widths, which were produced from prepared blade cores.

The 86 cores and core fragments recovered from the Bonham site reflected the importance of bipolar reduction strategies at the site; 69.8% of these cores were bipolar cores. An equal number of amorphous bifacial and blade cores (n=13 each) were identified. Thus, while bifacial technology was prevalent, the frequencies of bipolar lithic artifacts and, to a lesser extent, blades and blade cores document a variety of lithic reduction strategies in use by the Bonham site inhabitants.

Tables 7 and 8 also clearly show that these three major lithic technologies were predominately used on the cryptocrystalline lithic raw materials of chert and chalcedony. These raw materials have extremely high silica content and their "glassy" quality makes them an ideal resource for the production of flaked or

Provenience	n
Surface collection (general)	22
1A	6
1B	25
1C	50
1D	68
1E	101
1F	9
1G	5
1H	19
1I	10
1J	9
1K	3
1L	24
2A	3
2B	5
2C	3
2D	5
2E	7
2F1	12
2F2	10
2G	43
2I	15
2J	4
2K	19
4A	37
10A	48
10B	14
10C	42
10D	2
10E	13
11A	57
11B	1
11C	22
11D	7
11E	20
12A	1
12F	29
12G	2
12K	4

Provenience	n
13A	11
13C	18
13F	2
13G	4
15A	5
15B	7
15C	23
16B	8
16C	11
16D	22
16E	19
16F	14
17A	6
17B	7
17C	4
17D	6
17G	36
17K	11
18A	13
18B	9
18D	3
18E	8
20C	5
21A	2
22C	3
22D	7
22E	17
22F	31
22G	17
23A	4
23B	5
23C	16
25A	47
25D	23
26B	1
27A	2
Postmolds (Trench 1-1989)	9
Total	1222

Table 6. Lithic artifact distribution at 44SM7.

Raw Material	Technomorphology Class						
Material	Bifacial	Bipolar	Drilled	Ground	Incised	Pecked	Blade
Chert	525	163	-	-	-	-	63
Chalcedony	150	72	-	-	-	-	10
Quartz	19	1	-	-	-	-	1
Quartzite	14	1	-	-	-	1	-
Mica	-	-	-	-	-	3	-
Argillite	2	-	-	-	-	-	-
Steatite	-	-	1	-	-	-	-
Jasper	1	-	-	-	-	-	-
Greenstone	-	-	-	1	-	1	-
Limestone/Dolomite	9	-	-	-	-	-	-
Quartz Crystal	2	3	-	-	-	-	-
Rhyolite	9	-	-	-	-	-	-
Sandstone	1	-	-	4	1	9	-
Basalt	1	-	-	1	-	1	-
Total	742	240	1	6	1	15	73

Table 7. Technomorphology and raw material for lithic artifacts from 44SM7.

chipped stone tools. These cherts and chalcedonies are usually locally available in the Ridge and Valley physiographic province, occurring in nodular form in sedimentary limestone and dolomite outcrops (Holland 1970: 106–109; Kimball 1985: 88–98). These materials usually occur as small nodules that are more easily split by bipolarization.

Other lithic raw materials, such as quartz and quartzite, probably originated in the Blue Ridge mountains to the east of 44SM7, but occurred locally as redeposited float in the Middle Fork of the Holston River. Igneous rhyolite was also probably locally available or nearby; Holland (1970:111) notes a number of sites in the Smyth County area that have produced rhyolite artifacts.

The most commonly recovered lithic tools were expedient tools—retouched and utilized flakes (see Table 8). This is a common pattern on most long-term occupation sites (e.g., Schroedl et al. 1985). However, it should be cautioned that the identification of utilized flakes in this report was based on the *macroscopic* identification of continuous, small chipping along flake edges. Young and Bamforth (1990) clearly show through a blind test experiment that even experienced lithic analysts will misclassify used flakes when only relying on visual observation unaided by magnification. Microscopic analysis shows that flakes with no microchipping may still have been used to cut meat or soft tissue. In fact, flake edges identified as "utilized" may represent edges intentionally "backed" or dulled for safer handling; the utilized edge would therefore be the sharp edge opposite the chipped one. Thus, the utilized flakes identified as such here represent flakes showing some form of modification. It should be stressed that some of the "unused" flakes may have been used on soft materials as well; a microwear analysis of a sample of these flakes would document such use.

The next most prevalent tools were projectile points (n=51) (Figure 36) (see Table 9). Several projectile points typologically dating to the Archaic period (ca. 8000–1000 B.C.) were recovered from the surface and from Features 1B, 1E, 2D, 10B, 10C, 11A and 15A (see Boyd 1986; Chapman 1975, 1977; Holland 1970 for artifact type definitions). Even though the major site occupation dates to the later Late Woodland period, these earlier artifacts attest to the use of the 44SM7 site area over several millennia. Paleoindian use of 44SM7 was also suggested by the unconfirmed report by a collector of the recovery of a fluted point from the site area. The Archaic points from features are probably intrusions resulting from the Late Wood-

Raw	Utiliz. Flake	Disc-oidal	Scraper	Retouch. Flake	Pre-form	Proj. Point	Pitted Stone	Ornam. Object	Pipe	Pestle/ Mano	Ground Stone	Flake	Drill	Denti-culate	Core	Celt	Biface	Abrader	Shatter Frag.
Sandstone	-	2	1	-	-	-	7	1	-	1	-	-	-	-	-	-	-	1	-
Rhyolite	1	-	-	-	-	4	-	-	-	-	-	4	-	-	-	-	-	-	-
Quartzite	2	-	-	-	-	-	1	-	-	-	-	11	-	1	1	-	-	-	1
Quartz	1	-	-	-	-	-	-	-	-	-	-	20	-	-	1	-	-	-	-
Chert	80	-	3	7	7	39	-	-	-	-	-	549	3	1	58	-	5	-	27
Chalcedony	9	-	-	3	1	8	-	-	-	-	-	188	-	-	23	-	-	-	12
Steatite	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Basalt	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-
Dolomite/ limestone	-	-	-	-	-	-	-	-	-	-	-	8	-	1	-	-	-	-	17
Quartz Crystal	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2	-	-	-	1
Mica	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-
Argillite	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Jasper	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Green-stone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Coal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Total	93	2	4	10	8	51	8	1	1	1	2	788	3	3	86	2	5	1	59

Note: 77 fire-cracked rock (mostly sandstone and quartzite) and 17 unmodified cobbles (sandstone, quartzite, quartz, limestone) are not listed above.

Table 8. Artifact name and raw material for lithic artifacts—44SM7.

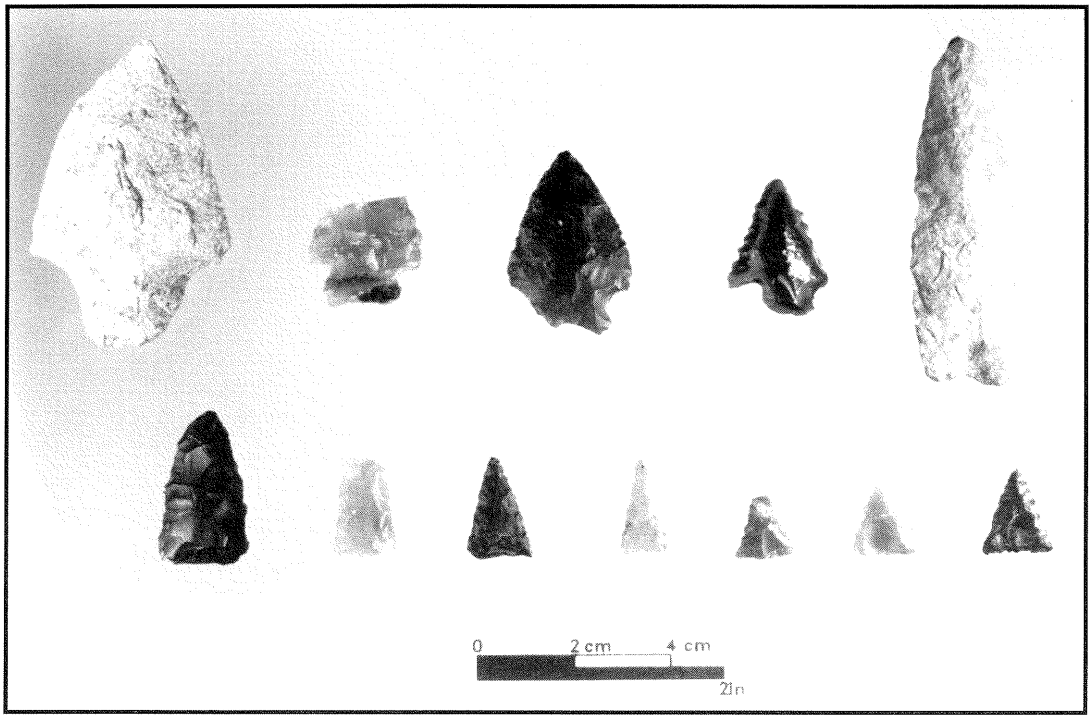

Figure 36. Projectile points.

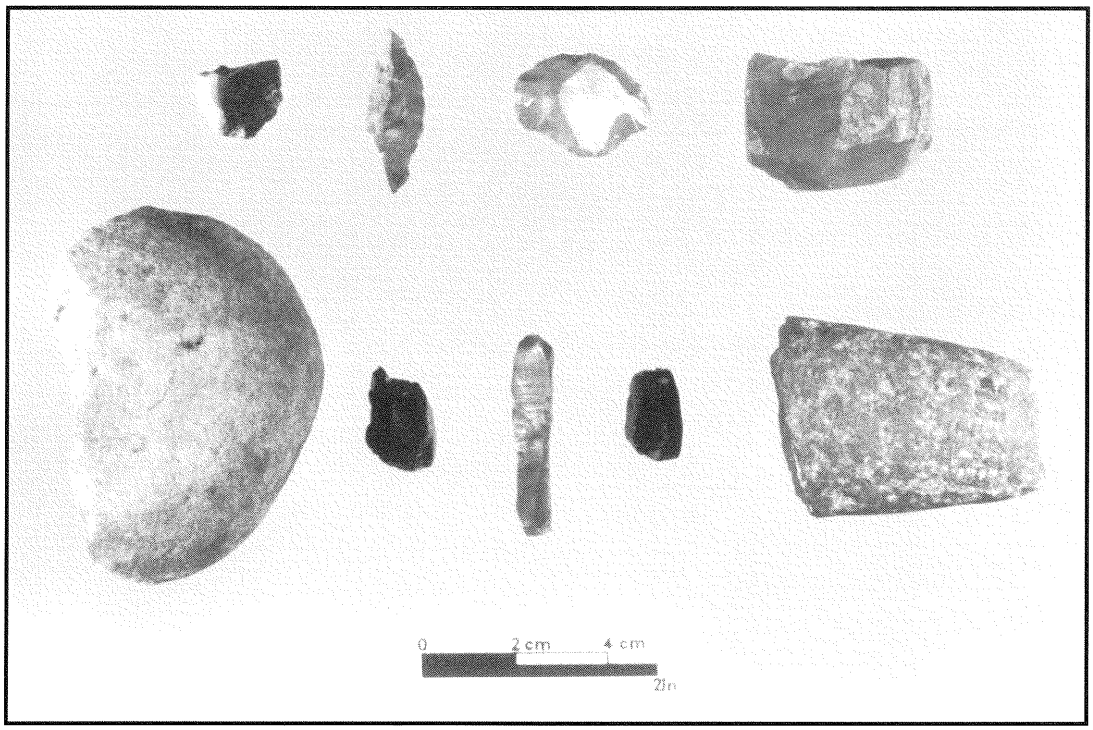

Figure 37. Formal lithic tools.

land inhabitants digging into earlier occupations, the collection of these points by Late Woodland people, or the modern disturbance by looters. Most of the Early Archaic corner-notched (Kirk) and Palmer points, Middle Archaic Halifax, side-notched and Guilford points and Late Archaic Lamoka points were produced from chert or chalcedony. However, the larger Late Archaic Savannah River stemmed points were produced from rhyolite. The large size requirements of these tools also required that raw materials other than small nodular cherts and chalcedonies be used for their manufacture. Such a pattern has also been noted in Late Archaic site collections from the Watauga Reservoir in upper East Tennessee (Boyd 1986:125–129).

By far the most common temporally diagnostic projectile point forms (n=28), representing 55% of the recovered points (see Figure 36), were small triangular arrow points comparable to the Hamilton, Madison, and Levanna types (Boyd 1986:116–117; Holland 1970:87–89). These point types are common on Late Woodland sites in Virginia and on Late Woodland (A.D. 700–900) and Mississippian (A.D. 900–1600) period sites in East Tennessee. It is therefore not surprising to see these points in the majority at 44SM7. Because of their small size these points were easily produced from chert and chalcedony flake blanks.

Other formal lithic tools were also recovered from the Bonham site (see Table 10) (Figure 37). In addition to the projectile points, point preforms, and cores discussed above, many of these tools—notably the bifaces, drills, and scrapers—were produced from chert.

Ground, pecked, and drilled stone tools, however, were produced from other lithic raw materials. Most pitted stones, the abrader, the pestle, the discoidals, and a ground stone ball (ornamental object), for example, were produced from sandstone. The number of pitted stones (n=8) was not surprising, considering their probable use as anvils in bipolar lithic reduction. These tools reflected many of the day-to-day activities surely conducted by the Bonham site inhabitants, including butchering and hide processing (scrapers, drills, denticulates), lithic tool manufacture (abrader, pitted stones), wood cutting and plant food processing (celts, pestle/mano), and religion or entertainment (pipe, ornamental ball, discoidals).

Summary and Inter-site Comparisons

The 1,222 lithic artifacts from the Bonham site demonstrate reliance by the site inhabitants on local, highly siliceous cherts and chalcedonies for their chipped stone tool industry. While bifacial chipping appears to be the dominant technology used in lithic reduction, bipolarization of the small chert and chalcedony nodules for the production of small flakes was also a significant technology. Ground, pecked, and abraded stoneworking methods were noted on metamorphic and igneous lithic tools. The projectile point sample was dominated by small triangular arrowpoints that are ubiquitous on Late Prehistoric sites throughout Virginia, Tennessee, and North Carolina (Boyd 1986; Schroedl et al., 1985; Keel 1976).

In addition to 44SM7, several Late Woodland village sites along the North, Middle, and South Forks of the Holston River in Smyth County are described by Holland (1970:33–40). Surface collections of many of these sites produced Madison and Levanna points and a predominance of chert debitage. Other characteristics of these sites, such as the grave good accompaniments of many burials (various kinds of shell beads, earpins, gorgets) suggest that many roughly contemporaneous late Late Woodland sites, along with 44SM7, were located on the forks of the Holston River in Smyth County.

Context	Lithic Tool Type	Raw Material
Surf. coll.	Core	Chert (n=3)
	Drill	Chert
1A	Core	Chert
1D	Core	Chalcedony (n=3)
	Core	Chert (n=6)
	Biface	Chert
	Denticulate	Limestone
	Side scraper	Sandstone
	Unifacial scraper	Chert
1I	Core	Chalcedony
	Pipe	Steatite
1L	Core	Chert
	Biface	Chert
2F1	Core	Chert
	Core	Chalcedony
2F2	Core	Chert
2G	Core	Chert (n=4)
2K	Core	Chert
4A	Core	Chert (n=2)
	Denticulate	Quartzite
10A	Pitted stone	Sandstone
	Biface	Chert
	Core	Chert (n=3)
	Drill	Chert
10B	Core	Chert
10C	Ornamental piece	Sandstone
11A	Pitted stone	Sandstone
	Core	Chalcedony (n=4)
11C	Core	Chalcedony
	Core	Quartz crystal
	Ground stone	Basalt
11D	Core	Chert
	Discoidal	Sandstone
11E	Core	Quartz crystal
12F	Core	Chalcedony
	Core	Chert
	Denticulate	Chert
12F	Ground Stone	Basalt
13C	Core	Chert (n=3)
15A	Biface	Chert
	Core	Chert
15C	Core	Chalcedony
16B	Core	Chalcedony (n=2)
	Core	Jasper
16D	Core	Chert
16E	Celt	Greenstone
	Biface	Chert
16F	Pitted stone	Sandstone
	Core	Chalcedony
17A	Pestle/Mano	Sandstone
17B	Core	Quartzite
17D	Core	Chert
17K	Bifacial scraper	Chert
18A	Discoidal	Sandstone
18E	Core	Chert (n=2)
22D	Core	Chalcedony
22E	Drill	Chert
22F	Celt	Greenstone
	Core	Chert (n=3)
	Unifacial scraper	Chert
22G	Core	Chert
23B	Pitted stone	Quartzite
	Pitted stone	Sandstone
23C	Core	Chalcedony (n=2)
	Core	Chert (n=4)
25A	Core	Chalcedony
	Core	Chert (n=2)
25D	Core	Chert (n=3)
	Core	Chalcedony (n=3)
	Core	Quartz

Table 10. Formal lithic tool types with raw material.

Context	Proj. Point/ Preform	Raw Material
Surf. coll.	Preform	Chert (n=2)
	CN (Kirk)	Chalcedony
	CN (Kirk)	Chert
	Halifax	Chalcedony
	Lamoka	Chert
	Lanceolate (Guilford)	Rhyolite
	Palmer	Chert
	Side-notched	Chert
	Triangular	Chert (n=2)
	Pentagonal	Chert
1B	CN (Kirk)	Chert
1E	Lanceolate (Guilford)	Chert
	Savannah River	Rhyolite
	Triangular	Chert (n=4)
1H	Triangular	Chert
2D	Lamoka	Chert
2G	Triangular	Chalcedony (n=2)
	Triangular	Chert (n=2)
	Point fragment	Chert (n=2)
4A	Preform	Chalcedony
10B	Lamoka	Chert
	Triangular	Chert
10C	Savannah River	Rhyolite (n=2)
	Triangular	Chert (n=2)
10E	Triangular	Chalcedony
11A	Halifax	Chert
	Triangular	Chert
	Point fragment	Chert
11C	Preform	Chert
11D	Triangular	Chert
13F	Triangular	Chert
13G	Preform	Chert
15A	SN	Chert
	Triangular	Chert
16B	Triangular	Chert
16C	Triangular	Chert
	Point fragment	Chert
16E	Triangular	Chert
	Point fragment	Chert
	Preform	Chert
17K	Triangular	Chert
	Preform	Chert
18A	Preform	Chert
18B	Point fragment	Chalcedony
22E	Triangular	Chert
22F	Triangular	Chalcedony
23A	Triangular	Chert
25A	Traingular	Chalcedony
25D	Triangular	Chert

CN = Corner-notched; SN = Side-notched

Table 9. Projectile point types and point performs with raw material.

6: Ceramic Artifact Analysis

Analysis Methods

A total of 5,590 ceramic artifacts was recovered during the 1989 and 1990 investigations of 44SM7. Nearly all of these artifacts were potsherds; however, one complete shell-tempered Mississippian-style vessel was recovered from Burial 25D (an obvious grave accompaniment). All ceramic artifacts were examined in terms of their temper and surface treatment/decoration attribute states. Then, a sample of features containing ca. 100 or more sherds was selected for more detailed analysis. In addition, the ceramic sample from Feature 15C (n=84 sherds) was analyzed in detail because carbonized plant remains from this feature were submitted for a C-14 date. Focusing the ceramic analysis on this sample not only speeded up the ceramic artifact study, but permitted more detailed observations to be made on the sherds examined. The features examined in detail and their sherd sample sizes are presented in the Table 11. The sherds and other ceramic artifacts analyzed in detail (n=3,447) represent 61.7% of the total sherds recovered (5,589). Because of their small size, ceramic artifacts from the flotation samples were not analyzed.

Ceramic artifacts from contexts analyzed in detail were first divided into rim, neck, and body sherd groups. Then, each of these groups was in turn examined for the specific temper attribute state they possessed (e.g., limestone temper, crushed-quartz temper) and subdivided accordingly. Finally, the individual temper/vessel portion groups were examined in terms of their surface treatment/decoration attribute states.

Seven tables are presented which summarize this information. First, ceramic temper frequencies for each context are presented. Then, temper/surface treatment combinations are presented for the entire site as they occur on rim, neck, and body sherds. Finally, surface treatment/decoration attribute state frequencies for each context are presented for rim, neck, and body sherds. Specific temper and surface treatment attribute states are described in relation to standard references on Southwest Virginia ceramics, such as Evans (1955), Holland (1970) and Egloff (1987). The distributions of attribute states at 44SM7 are compared to those from other Late Woodland sites in Southwest Virginia, such as the Shannon Site (44MY8) (Benthall 1969) and the Hall Site (44MY33) (Boyd 1992), and to ceramic assemblages from contemporaneous Mississippian sites to the south (see Dickens 1976; Guthe and Bistline 1978; Salo 1969; Schroedl 1986).

Results

The 3,447 sherds analyzed in detail from 44SM7 came from 16 features identified in the 1989 test trenches and the 1990 excavations (see Table 11). The ceramic artifacts from other features and from surface collections and postmolds manifest similar types of temper and surface treatment attribute states and temper/surface treatment combinations as the sample discussed in detail here. However, any unusual or rare artifacts noted in any of the contexts from 44SM7 are described as well.

Grit tempered ceramics dominated the analyzed samples, representing 50.4% of the 3,447 sherds (Table 12). Other commonly used tempering materials included gastropod shell (19.8%), limestone (15.5%) and sand (12.4%). The paste for most of the sherds was sandy; however, grit tempered sherds also had inclusions of crushed quartz or occasionally chalcedony usually 1–3 mm in maximum dimension. For nearly all sherds with crushed, burned gastropod shell or limestone tempering, temper particles were clearly visible. Only in Feature 2K, where most of the ceramics were limestone tempered, had the limestone leached away leaving large holes. In a few cases sherds had extremely large quartz inclusions and were distinguished under the *crushed quartz* temper attribute state.

Feature 2G was distinctive in its high frequency of limestone-tempered sherds. Several other features identified in the 1989 test trenches—notably 1A, 1G, 1H, 1I, 2F, 2I, and 2K—had mostly limestone-tempered sherds as well. Many of the rim sherds from these features also had unusual decorations, in comparison to the 1990 features excavated to the south and east of these trenches (see below). This information, along with the earlier radiocarbon date for Feature 2G (chapter 3), confirms that the excavations exposed two different village sites—the 15th century village area excavated in 1990 and dominated by grit tempered and gastropod shell tempered sherds and an earlier (14th century) occupation encompassing the originally defined 44SM7 boundaries.

The 3,447 sherds included 302 rim sherds, 129 neck sherds, and 3,016 body sherds (including pipe and ornamental fragments). Rim sherd surface treatments were predominately some form of net impression that extended to the lip of the vessel (Table 13). A knotted net pattern was most common, comprising 37.7% of the total rim sherds (Figure 38). In many cases the knots were clearly visible. The lips of these sherds were plain. Fifty-four net impressed sherds, however, did have fingernail or linear incisions on their lips. Most of these rim sherds were grit tempered (Table 14).

Some rim sherds manifested decorations more common on Late Mississippian sites to the south. For example, Feature 1E contained three sherds with parallel incised lines commonly defined as *Lamar incised* ceramics (Hally 1986). This feature also contained 9 grit tempered burnished sherds; burnishing is a form of surface treatment noted on Protohistoric period ceramics from 40GN9, located along the Nolichucky River in upper East Tennessee (Boyd 1986). Rim strips and applique strips noted on sherds from Features 1D, 1E, 11A, 15C, and 25D (Figure 39) are common decorative elements on Late Mississippian Dallas ceramics (Salo 1969: Plate XIV) and Overhill Cherokee ceramics (Bates 1986:292–299) from East Tennessee. As with the East Tennessee sherds, most of these elements on sherds from 44SM7 showed linear incisions (in the forms of diagonal parallel lines or "V"s or "X"s) or fingernail incisions. Sherds from Features 1E and 15C had clay nodes projecting from their rims which appeared to be individual clay balls applied to the vessel wall and pinched into shape, rather than portions of an entire clay coil, as was the case for other sherds. Finally, several limestone tempered sherds from Feature 2G and one rim sherd from 25D possessed decorative motifs that were clear copies of designs from Mississippian groups (see Figure 39). One limestone-tempered sherd from 2G had parallel incisions in a chevron form comparable to *Dallas* and *Overhill incised* sherds from Chota-Tanasee (40MR2–40MR62) (Bates 1986:306) and Tomotley (40MR5) (Guthe and Bistline 1978:109) in the lower Little Tennessee River Valley in East Tennessee (see Table 14). Three sherds from 2G and one collared sherd from 25D have diagonal chevron incisions comparable to Late Mississippian Pisgah phase rim forms from the southern Appalachian region of North Carolina (Dickens 1976). It is interesting to note that while Dallas and Overhill ceramics are shell tempered and Pisgah ceramics are grit or sand tempered these rim sherds from 44SM7 are associated with *limestone* tempering. Similar temper/surface treatment combinations were seen on some sherds from the Watauga Reservoir in upper East Tennessee (Boyd 1986:56).

Neck sherds were also predominately net impressed, with 47.3% again manifesting a clear knot-

Feature	n
1D	201
1E	646
2G	355
10A	241
10B	266
11A	413
11E	100
12F	228
15C	84
16D	104
16E	109
16F	103
17G	104
22F	119
23C	151
25D	223
Total	3,447

Table 11 Ceramic artifact frequencies for analyzed features.

Feature	Temper Class					
	Crushed Quartz	Sand	Grit	Limestone	Gastropod Shell	Soap-stone
1D	–	2	161	37	–	1
1E	–	5	598	42	1	–
2G	–	7	11	335	2	–
10A	–	63	102	9	57	10
10B	–	70	110	15	65	6
11A	3	56	190	44	113	7
11E	–	16	51	7	23	3
12F	–	40	108	10	68	2
15C	–	14	48	1	20	1
16D	–	21	36	4	41	2
16E	–	17	46	5	38	3
16F	–	16	39	3	34	11
17G	–	21	31	–	49	3
22F	2	22	34	9	48	4
23C	–	41	48	7	53	2
25D	–	18	124	6	71	4
Total	5	429	1737	534	683	59

Table 12. Ceramic temper frequencies for analyzed features.

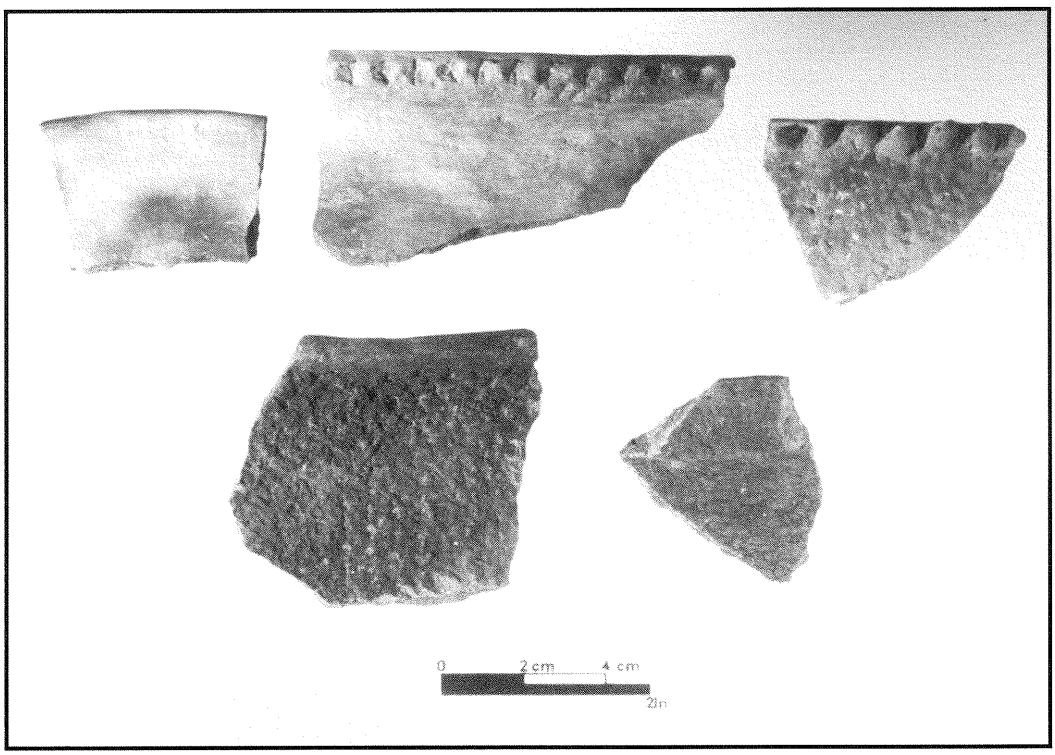

Figure 38. Grit tempered rim sherds.

Fea.	Plain	Smoothed	Scraped	Net-Roughened	Knotted Net	Looped Net	Fabric	Cord-marked	Cob-marked	Rim Strip	Applique Strip/ Nodes	Circul. Punctated	Fingernail Linear Incised	Burnished	Incised
1D	–	–	–	–	1	–	–	–	–	–	3	–	1	2	–
1E	–	8	–	–	15	1	–	–	–	5	4	–	26	9	3
2G	–	5	–	–	–	5	2	–	–	1	–	–	4	–	9
10A	2	2	–	1	5	–	–	–	1	–	–	–	1	–	–
10B	–	4	–	–	18	–	–	–	2	–	–	1	2	–	–
11A	–	5	–	1	25	–	–	1	1	5	–	–	5	1	–
11E	–	–	–	–	7	–	–	–	–	–	–	–	1	–	–
12F	1	–	3	–	8	–	–	–	–	–	–	1	–	–	–
15C	–	1	–	–	5	–	–	–	–	–	2	–	1	–	–
16D	1	–	–	–	7	–	–	–	–	–	–	–	2	–	–
16E	1	2	2	–	2	–	–	–	–	–	–	–	2	1	–
16F	1	1	–	1	2	–	–	–	–	–	–	2	–	–	–
17G	–	–	1	–	5	–	–	–	–	1	–	–	1	–	–
22F	–	–	–	1	3	2	–	–	–	–	–	–	2	–	–
23C	2	1	–	1	2	1	–	–	–	1	–	–	3	–	–
25D	2	3	–	1	9	8	–	–	1	3	–	1	3	–	–
Total	10	32	6	6	114	17	2	1	5	16	9	5	54	13	12

Table 13. Surface treatment/decoration attribute states for analyzed rim sherds.

Decoration	Temper				
	Grit	Gastropod Shell	Sand	Soapstone	Limestone
Plain	3	2	4	–	1
Smoothed	15	7	5	–	5
Scraped	3	–	3	–	–
Net-roughened	2	2	1	1	–
Knotted Net	62	28	16	4	4
Looped Net	8	5	–	–	4
Fabric	–	–	–	–	2
Cordmarked	1	–	–	–	–
Cobmarked	2	2	1	–	–
Rim Strip	14	1	–	–	1
Applique Strip/Nodes	8	–	–	–	1
Circular Punctated	5	–	–	–	–
Fingernail/Linear Incised	39	7	–	–	8
Burnished	11	–	2	–	–
Incised	3	–	–	–	9
Total	176	54	32	5	35

Table 14. Temper/decoration combinations for rim sherds from analyzed features at 44SM7.

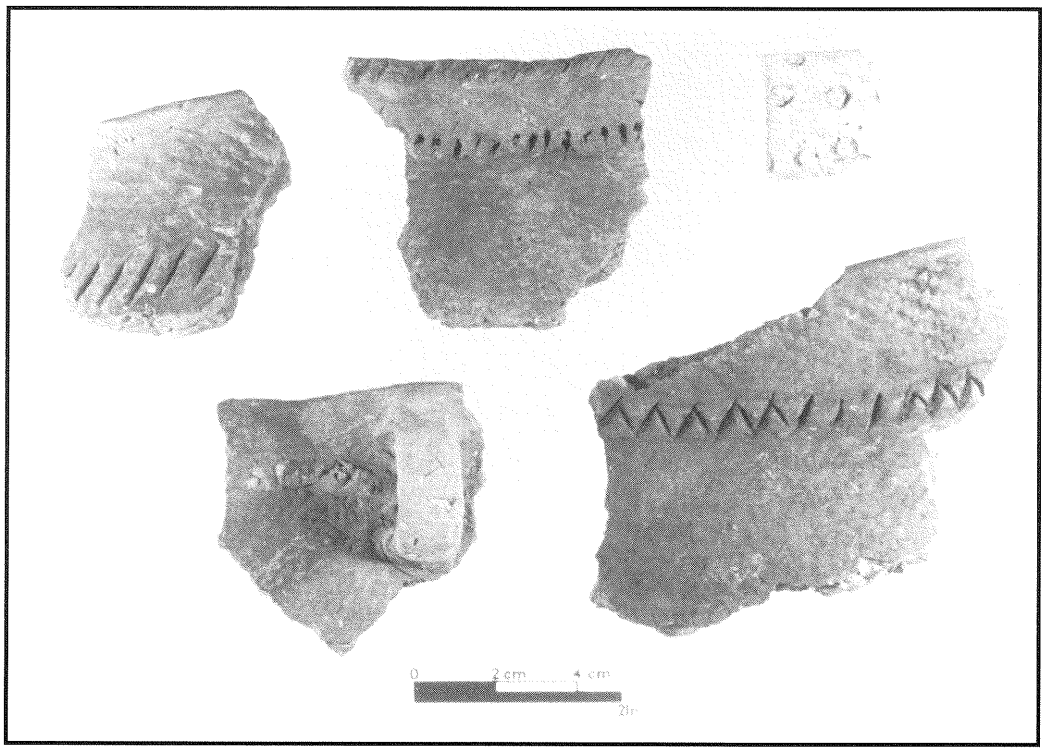

Figure 39. Limestone tempered rim sherds.

ted net impressed pattern (Table 15). The most common decorative element—seen on five sherds—was fingernail punctations along the neck. Most of the neck sherds were grit tempered (Table 16) (Figure 40); however, Feature 2G again had mostly limestone-tempered sherds. Two of the sherds from the sample had diagonal or "V" shaped incisions on applique strips placed on looped net-impressed vessel surfaces. Two neck sherds from 2G also had remaining attachments for strap handles and one rounded loop handle fragment (sand tempered) was recovered from Feature 10A. The curvature of the necks suggested that most vessels had everted rims, although some inverted bowl rim/neck fragments were recovered, notably from Features 1E and 15C.

As expected, body sherds dominated the ceramic sample (Table 17) (Figure 41; see Figure 40). Knotted net surface treatments comprised 45.8% of the body sherd surface treatments. Most of these artifacts (49.4%) (Table 18) were grit tempered. A common surface treatment for body sherds was smoothing (17.8%), wherein a net impressed pattern had been nearly obliterated by the potter while the clay was still moist. Usually only the impressions of the knots of the net were still visible on the vessel surface. The simple-twined fabric impression, while rare (n=17), was similar to that noted on a few sherds from the Hall Site (44MY33) (Boyd 1992). Little decoration occurred on these sherds; most incisions, fingernail punctations or other decorative motifs were reserved for the vessel necks and, especially, the rims.

Some ceramic artifacts reflected recreational or religious activities performed by the site inhabitants. Two grit-tempered sherd discs were recovered from Feature 1E, two from 10A, one limestone tempered disc each from 10E and 11C, and one shell tempered disc from 23B. These possible gaming pieces have been identified on other late prehistoric sites (e.g., see Guthe and Bistline 1978: 100; Holland 1970:98). Clay pipe fragments were also identified in five features: 10A had five grit tempered bowl and stem fragments, 11A had two sand tempered bowl fragments, 11E had one grit-tempered stem, 12F had grit-tempered stem and bowl fragments (one each), and 22D had a shell-tempered stem fragment. All of these pipe fragments had been smoothed or burnished, and one stem had a round, collared lip at its opening. Clay beads were also recovered from Features 1E and 2I.

Summary and Inter-site Comparisons

The Bonham site (44SM7) is one of a number of Late Woodland villages that have been recorded in Smyth County (Holland 1970:33–40). Unfortunately, a common characteristic these Late Woodland villages share is their extensive disturbance by looters. As with Bonham, many of these sites contain ceramic assemblages with a variety of tempering agents represented. Holland's (1970) surface collections and test excavations of these Late Woodland sites along the Middle Fork of the Holston River document the use of shell (New River series), limestone (Radford series), soapstone or steatite (Smyth series), and sand (Dan River or Wythe series) tempering. Variety in tempering has been noted in the ceramic assemblages from many other Late Woodland sites in Southwest Virginia (Egloff 1987; MacCord 1989). The fact that sherds with different tempers were recovered from the same features at 44SM7 suggests that a variety of tempers were in use contemporaneously. The one exception might be the features from the 1989 trenches (such as 2G) with a predominance of limestone tempering. These pits relate to a different, earlier (considering the time span for limestone tempered ceramics in Southwest Virginia) occupation.

Surface treatments and decorations seen on most of the sherds are common to most Late Woodland sites in Southwest Virginia. Ceramic artifacts from the Hall (44MY33) and Shannon (44MY8) sites, for example (Benthall 1969; Boyd 1992), manifest predominately net impressed surfaces with fingernail punctations or incisions as common decorations. The Lamar, Dallas, Overhill, and Pisgah rim forms and incisions noted on some of the rim sherds, however, suggest that the Bonham site inhabitants had at least intermittent trading contacts with Mississippian cultures to the south (Figure 42). The temper/surface treatment combinations seen on the 44SM7 ceramics, while dominated by grit tempered knotted net sherds which would be considered Dan River or Wythe variant of Dan River (Egloff 1987), do show notable variability, suggesting a complex pattern of interactions among the inhabitants of 44SM7 and their neighbors during the Late Woodland period.

Feature	Plain	Knotted Net	Looped Net	Smoothed	Scraped	Net Roughened	Incised	Burnished	Punctated	Fingernail Punctated	Cob-marked
1-D	–	6	2	2	–	1	–	–	–	–	–
1-E	3	2	–	–	–	–	1	1	–	–	–
2-G	–	–	3	5	–	–	2	–	–	–	–
10-A	2	5	–	2	–	1	–	–	1	–	–
10-B	–	11	–	4	–	–	–	1	–	1	–
11-A	–	8	–	1	–	–	–	–	–	1	1
11-E	1	1	–	–	1	–	–	–	–	1	–
12-F	–	7	1	1	–	–	–	–	–	–	–
15-C	1	2	–	2	1	–	–	–	–	–	–
16-D	1	2	–	–	–	–	–	1	–	–	–
16-E	–	4	–	–	–	–	–	–	–	–	–
16-F	–	2	–	1	1	–	–	–	–	1	–
17-G	–	2	1	1	–	–	–	–	1	1	–
22-F	1	–	2	–	–	–	–	–	–	–	–
23-C	–	8	–	1	1	–	–	–	–	–	–
25-D	1	1	3	1	2	–	–	2	–	–	1
Total	10	61	12	21	6	2	3	5	2	5	2

Table 15. Surface treatment/decoration attribute states for analyzed neck sherds.

Surface Treatment	Temper				
	Grit	Gastropod Shell	Sand	Limestone	Soapstone
Plain	6	–	4	–	–
Knotted Net	39	16	5	–	1
Looped Net	4	3	1	4	–
Smoothed	7	5	4	5	–
Scraped	3	3	–	–	–
Net-roughened	–	–	1	1	–
Incised	1	–	–	2	–
Burnished	4	–	–	–	1
Punctated	2	–	–	–	–
Fingernail-punctated	2	1	1	1	–
Cobmarked	–	2	–	–	–
Total	68	30	16	13	2

Table 16. Temper/surface treatment combinations for neck sherds from analyzed features at 44SM7.

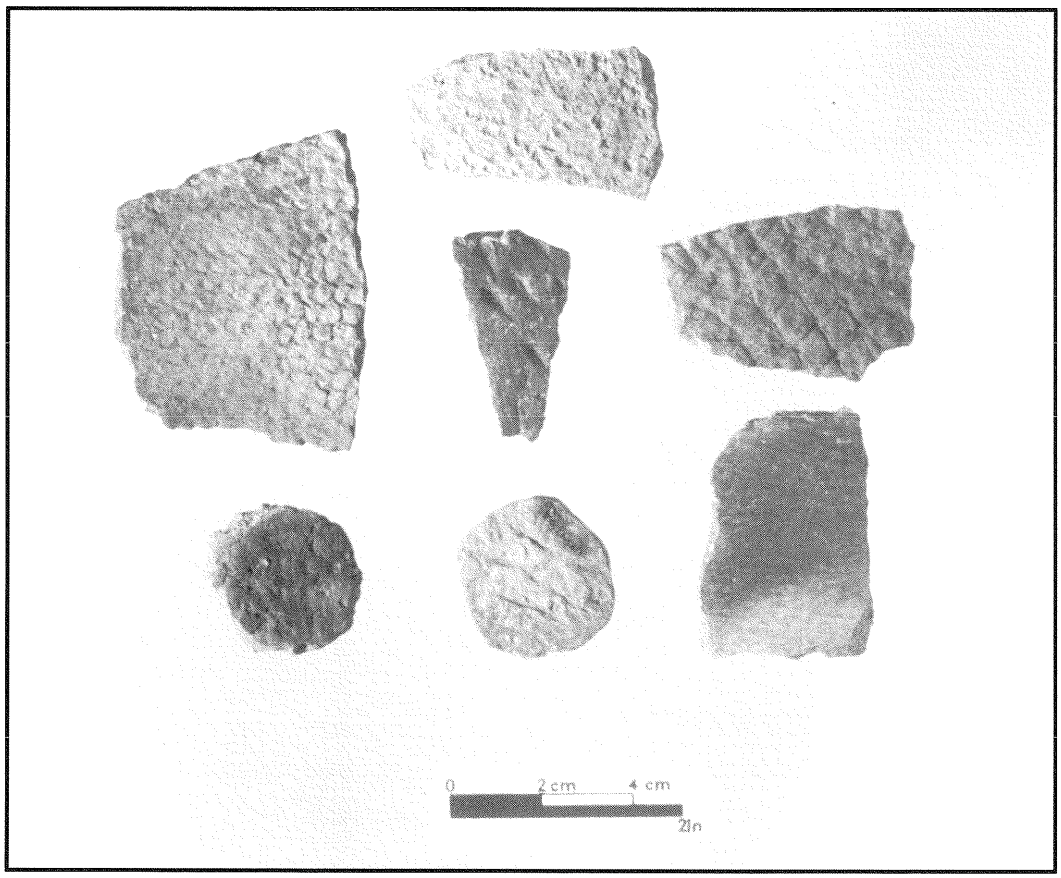

Figure 40. Grit tempered neck and body sherds.

Fea.	Plain	Smoothed	Scraped	Looped Net	Knotted Net	Net-Roughened	Burnished	Incised	Punc-tated	Simple-twined fabric	Cord-marked	Simple-Stamped	Check-stamped	Cob-marked	Residual/ Indeter-minate
1-D	5	37	–	12	85	36	5	–	–	–	–	–	–	–	4
1-E	16	79	–	47	266	94	20	3	–	7	2	1	–	–	32
2-G	3	70	2	164	15	14	1	1	–	1	–	–	–	–	47
10-A	10	33	8	5	120	13	7	–	–	1	1	–	–	1	19
10-B	2	45	–	–	131	4	1	–	–	1	–	–	–	2	34
11-A	17	83	9	4	203	11	2	–	–	–	1	–	–	3	25
11-E	1	22	2	11	42	3	3	–	1	–	2	–	–	2	5
12-F	9	41	5	6	82	–	–	–	1	1	2	1	–	–	52
15-C	1	14	2	2	44	–	–	–	–	–	1	–	–	–	3
16-D	1	17	2	–	57	2	4	–	1	–	–	–	–	1	4
16-E	–	9	7	–	61	12	3	–	1	1	–	–	–	–	10
16-F	2	19	3	4	55	1	2	–	–	–	–	–	–	1	4
17-G	8	8	4	11	48	–	–	–	–	2	–	–	–	–	7
22-F	–	21	20	11	43	4	–	–	–	1	–	–	–	–	8
23-C	2	20	8	8	56	1	–	1	–	–	1	1	–	–	32
25-D	7	20	11	51	74	1	1	1	–	2	–	–	1	1	10
Total	84	538	83	336	1382	196	49	6	4	17	10	3	1	11	296

Table 17. Surface treatment/decoration attribute states for analyzed body sherds.

Temper	Surface Treatment															
	Plain	Smoothed	Scraped	Looped	Knotted Net	Net-Net	Bur-Roughened	Incised nished	Punc-	Simple-tated	Cord-Twined	Simple marked	Check stamped Fabric	Cob-stamped	Residual/ marked	Total Indeter-
minate																
Crushed Quartz	–	2	–	–	3	–	–	–	–	–	–	–	–	–	–	5
Grit	33	258	31	133	752	136	31	4	2	14	7	–	1	3	86	1,491
Gastropod Shell	11	114	26	27	342	17	2	–	1	1	1	–	–	4	62	608
Sand	14	45	16	17	181	2	11	–	1	–	1	2	–	2	85	377
Soapstone	9	11	7	1	10	4	4	–	–	–	–	1	–	–	5	52
Limestone	17	108	3	158	94	37	1	2	–	2	1	–	–	2	58	483
Total	84	538	83	336	1,382	196	49	6	4	17	10	3	1	11	296	3,016

Table 18. Temper/surface treatment combinations for body sherds from analyzed features at 44SM7.

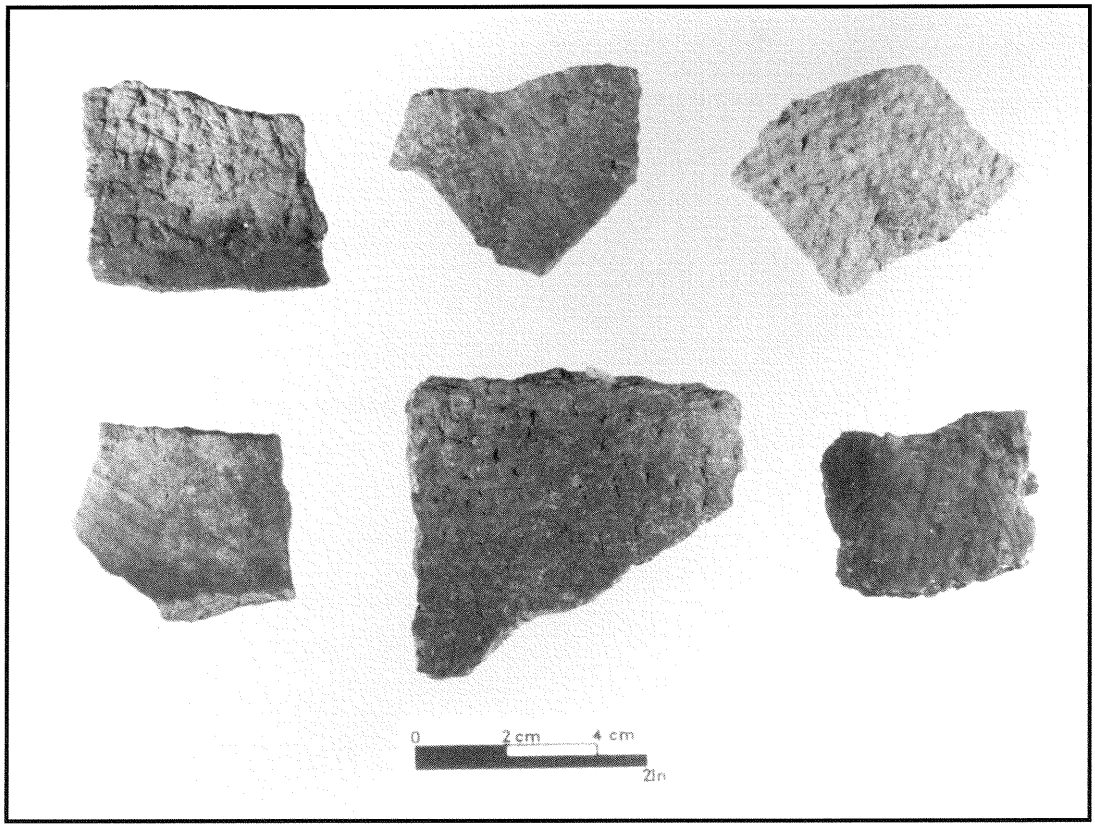

Figure 41. Sand, limestone, gastropod shell and soapstone or steatite tempered body sherds.

Figure 42. Shell-tempered burnished vessel.

7: *Analysis of Vertebrate Faunal Remains and Bone and Shell Artifacts*

Introduction

During the salvage excavations at the Bonham site (44SM7) in 1989 and 1990, 5,545 animal bones were recovered which related to the prehistoric, Late Woodland occupation. In addition, two, and probably three, complete mammalian skeletons were recovered which were not associated with the Native American occupation. Two, more or less, complete carcasses of *Bos taurus* (cattle) were recovered. Both were from immature individuals with the majority of the epiphyses of long bones remaining unfused. These were the result of local farmers' burial of barnyard rejects. The third mammalian skeleton uncovered was that of *Canis familiaris* (domestic dog). The dog was also immature with unfused epiphyses and juvenile dentition. Although it is possible that the animal dates to the Late Woodland occupation, the presence of small bits of hair would argue against this. These three individuals were not included in the tables or discussion below. Likewise, human skeletal remains were excluded from the analysis. As many of the pits functioned as burial chambers and as containment for refuse disposal, some bone mixing is to be expected. Human skeletal remains were sent to Dr. Donna Boyd at Radford University for analysis.

The Sample

In all, 5,545 bones or bone fragments from vertebrate fauna were recovered from the Bonham site. As with most late prehistoric sites, the assemblage was dominated by mammalian remains, which included 4,595 pieces or 83.64% of the total, recovered (Table 19). This was followed by 552 (10.05%) for birds, 210 (3.83%) for reptiles, 105 (1.91%) for fish, and 32 (0.58%) for amphibians. The identified sample mirrors this trend with a dominance by mammals with 1,170 fragments or 70.06% of the total followed by birds, reptiles, fish, and amphibians (Table 20).

Mammals

Mammals dominated the assemblage. Of the 40 taxa identified to a more precise level than class, 18 were mammalian. Although some overlap of identification occurs, [*Sciurus* sp. (gray or fox squirrel) and *Sciurus niger* (fox squirrel) and *Sciurus carolinensis* (grey squirrel) for example], this occurs across the classes and the dominance of mammals remains valid. A few of the species can be eliminated from further discussion due to their lack of dietary input, being incidental inclusions. These include the mice and rats as well as the chipmunk. Although it is possible that these species were consumed, it is unlikely due to small body size.

The foremost mammalian species recovered was *Odocoileus virginianus* (white-tailed deer). This single species accounted for almost half (49.04%) of the identified sample. The current deer population for Smyth County is high, and the population in prehistoric times was likely high as well due to field clearing by the Indians for horticultural pursuits which increased deciduous forest edge. The uncontrolled nature of forest fires would also have increased browse. Deer populations are also impressively prolific. As Turner (1976) alludes to, a healthy population of 400 animals can sustain an annual harvest of 150 and maintain the long-term population of 400 per year.

Eight hundred and nineteen white-tailed deer bones or fragments were recovered from Bonham (Table 21). Except for the tarsals, carpals, teeth, and, sometimes, phalanges, all bones were fragmented. This was the combined result of the butchering process, tool manufacture, marrow extraction, bone grease production, and carnivore scavenging. Carnivore scavenging was noted on 26 deer bones, primarily the softer

Class	Identified		Unidentifiable		Total	
	n	%	n	%	n	%
Mammalia	1170	21.30	3425	62.34	4595	83.64
Aves	215	2.91	337	6.13	552	10.05
Amphibia	32	0.58	0	–	32	0.58
Reptilia	208	3.79	2	.04	210	3.82
Pisces	45	8.12	60	1.09	105	1.91
Total	1670	30.40	3824	69.60	5494	100.00

Note: These totals do not include small bone beads unidentified as to class or other bone beads.

Table 19 Overall vertebrate fauna recovered listed by class.

long bone epiphyses. In addition, 17 bones were burned. Although taphonomy and cultural factors are always a factor in the formation of the residual archaeological sample, skeletal elements from all parts of the body including head (cranial fragments, maxillary, mandibles), front limb (humeri, ulnae, radii, metacarpals), hind limb (femora, tibias, metatarsals), and back (vertebrae) suggest that many of the animals were harvested in proximity to the site and the carcasses butchered on-site.

Based on the recovery of 16 left proximal radii the minimum number of individuals (MNI) present for white-tailed deer was 16. Not surprisingly, this was the highest MNI for the site. Although it is no longer acceptable to calculate estimated pounds of usable meat after White (1953) and no alternative acceptable means has been developed (Grayson 1984), the meat supplied by deer would have far outstripped other species. It should also be remembered that this species also supplied hides for clothing, shelter, and exchange, antler and bone for tool manufacture, brains for tanning, hooves for glue, and tendons for attachment, in addition to dietary input.

Through the mandibular aging technique developed by Severinghaus (1949), it was possible to determine the age at death of several individuals where mandibles were recovered. The age distribution is as follows:

1 year old – 1 left mandible
2 1/2 years old – 1 right, 2 left mandibles
3 1/2 years old – 2 left mandibles
4 years old– 1 right mandible
7 1/2 years old – 1 right, 1 left mandible
8 1/2 years old – 1 left mandible.

Of the 10 mandibles where age could be determined, 9 were older than 2 1/2 years. This apportionment would indicate two points of interest. First, the inhabitants of the Bonham site were not engaged in "typical" predator activity where the weakest, the very young and very old, were selected for ease of kill. The hunting process was selective for mature individuals with no young animals harvested (with the exception of an incidental fetal individual). This may be interpreted as an "individual" hunting strategy where independent hunters select for basically larger quarry. This is not to say that a group of hunters was not functioning, only that a communal surround technique where all deer of whatever age are killed was not the operative strategy.

The second point of interest is that a fully mature deer population was available for exploitation. This can be seen as indicative of long term human occupation of the area in general where the natural population of white-tailed deer has settled into the increased availability of browse resulting from the augmented deciduous edge provided by slash and burn horticulture. Such a situation can be contrasted to the Hall site (44MY33) in Montgomery County (Barber 1989), for example, where the deer harvested were young in age, indicative of an expanding population resulting from recently opened field edge. The local topography in the environs of Bonham with its rolling uplands flanked by high mountains would provide wide expanses not particularly suitable for horticulture, which were available for hunting. In the non-fire control era of prehistory, a more varied ecology would be expected to provide a moderate degree of browse.

Species	NISP		MNI		
	n	%	n	%	
Didelphis marsupialis (opossum)	6	.36	1	.85	
Lynx rufus (bobcat)	2	.12	1	.85	
Urocyon cinereoargenteus (grey fox)	83	4.97	4	3.42	
Canis familiaris (domestic dog)	2	.12	1	.85	
Procyon lotor (raccoon)	26	1.55	3	2.56	
Ursus americanus (black bear)	23	1.38	2	1.71	
Peromyscus sp. (deer or white footed mouse)	70	4.19	13	11.11	
Neotoma floridana (Eastern woodrat)	41	2.45	8	6.84	
Tamias striatus (chipmunk)	1	.06	1	.85	
Glaucomys sp. (flying squirrel)	3	.18	1	.85	
Sciurus niger (fox squirrel)	2	.12	1	.85	
Sciurus carolinensis (gray squirrel)	5	.30	2	1.71	
Sciurus sp. (fox/gray squirrel)	60	3.59	5	4.27	
Sylvilagus floridana (cottontail rabbit)	14	.84	4	3.42	
Marmota monax (woodchuck)	7	.42	1	.85	
Castor canadensis (beaver)	4	.24	1	.85	
Odocoileus virginianus (white-tailed deer)	819	49.04	16	13.68	
Cervus canadensis (wapiti)	2	.12	1	.85	
Mammalia Subtotal	1170	70.06	66	56.41	
Toxostoma rufus (brown thrasher)	1	.06	1	.85	
Charadrius vociferus (killdeer)	1	.06	1	.85	
Colinus virginianus (bobwhite quail)	47	2.81	6	5.13	
Ectopistes migratorius (passenger pigeon)	11	.65	2	1.71	
Meleagris gallopavo (turkey)	155	9.28	9	7.69	
Aves Subtotal	215	12.87	19	16.24	
Rana sp.	4	.24	1	.85	(frog)
Rana catesbiana (bullfrog)	5	.30	1	.85	
Bufo sp. (toad)	22	1.32	4	3.42	
Necturus maculosus	1	.06	1	.85	
Amphibia Subtotal	32	1.92	7	5.98	
Chrysemys picta (painted turtle)	1	.06	1	.85	
Sternotherus odoratus	4	.24	1	.85	(stinkpot)
Terrapene carolina (Eastern box turtle)	195	11.68	9	7.69	
Colubridae (non-poisonous snake)	3	.18	1	.85	
Elaphe obsoleta (black rat snake)	1	.06	1	.85	
Natrix sipedon (Northern water snake)	2	.12	1	.85	
Crotalus horridus (timber rattlesnake)	2	.12	1	.85	
Reptilia Subtotal	208	12.46	15	12.82	
Catostomus commersonii (common white sucker)	1	.06	1	.85	
Moxostoma anisurum (white-nosed sucker)	4	.24	1	.85	
Moxostoma sp. (redhorse)	14	.84	3	2.56	
Catostomidae (sucker)	23	1.37	3	2.56	
Centrarchidae (bass / sunfish)	3	.12	2	1.70	
Pisces subtotal	45	2.69	10	8.55	
Total	1670	100.00	117	100.00	

Table 20. Overall list of vertebrate fauna recovered by species identified.

	Right Side	Left Side	Shaft	Other	Fragment
Antler	–	–	–	–	16
Cranial	–	–	–	–	24
Maxillary	–	–	–	8	–
Mandible	7	3	–	–	10
Incisor	–	–	–	1	–
Molar	–	–	–	22	–
Premolar	–	–	–	–	8
Hyoid	–	–	–	3	–
Sternum	–	–	–	2	–
Scapula	5	10	–	–	23
Humerus, proximal	2	3	2	–	–
Humerus, distal	9	10	–	–	–
Radius, proximal	8	16	2	–	–
Radius, distal	4	9	–	–	–
Ulna	6	14	1	–	–
Metacarpal-proximal	9	7	1	–	–
Metacarpal-distal	–	–	–	8	–
Innominate	9	8	–	–	5
Femur, proximal	3	6	1	–	–
Femur, distal	1	3	–	–	–
Tibia, proximal	4	6	1	–	–
Tibia, distal	9	2	–	–	–
Metatarsal-proximal	9	3	2	–	–
Metatarsal-distal	–	–	–	3	–
Metapodial, distal	–	–	–	14	–
Metapodial shaft	–	–	4	–	–
Calcaneum	6	10	–	–	–
Astragalus	9	8	–	–	–
T/c	22	–	–	–	–
1st phalange	11	–	–	–	–
2nd phalange	11	–	–	–	–
3rd phalange	10	–	–	–	–
Phalange	–	–	–	–	14
Atlas	–	–	–	2	–
Axis	–	–	–	4	–
Cervical	–	–	–	23	–
Thoracic	–	–	–	23	–
Lumbar	–	–	–	12	–
Vertebrae	–	–	–	–	50
Rib	–	–	–	15	–
Miscellaneous	–	–	–	4	–
NSPI: 819	MNI: 16				

Table 21. Distribution of Odocoileus virginianus *elements by identified bone.*

Other large mammals hunted included *Ursus americanus* (black bear) and *Cervus canadensis* (wapiti or elk). The black bear was represented by 23 (1.38%) of the bones recovered and by an MNI of 2 (1.71%) individuals. In addition to cranial elements and the paw tarsals, carpals, and phalanges which may be indicative of bear skins, a number of other elements including long bones (radius, femur, tibia, and fibula), flat bones (scapula and innominate), and one axial element point to the butchering of the complete carcass at the Bonham site. Three of the recovered bones showed evidence of carnivore scavenging. As the black bear is primarily a deep deciduous forest dweller, a hunting pattern involving this habitat was in operation. The nearby mountains would have provided adequate mature deciduous forest for the black bear population.

Cervus canadensis (wapiti or elk) was represented by only two elements, a first phalange and a second maxillary molar. The historically expatriated elk may have been rare to the area in prehistoric times due to a lack of the preferred broad valleys, plains, and upland meadows (Burt and Grossenheider 1964:228) in the site area. In any case, *Cervus canadensis* was not a frequently harvested species at Bonham.

Other mammalian food species of importance were *Urocyon cinereoargenteus* (gray fox), *Procyon lotor* (raccoon), 2 sciurian species – *Sciurus carolinensis* (gray squirrel) and *Sciurus niger* (fox squirrel), and *Sylvilagus floridana* (Eastern cottontail rabbit). *Urocyon cinereoargenteus* is highly represented with 83 (4.97%) bones or bone fragments recovered. Of interest is the relative completeness of the 4 individuals recovered and their collection from a single pit feature: all the gray fox bones were found in Feature 2G. Meat may have been a primary consideration in their capture although fox pelts may also have been desired. It is suggested that the foxes were the result of a single episode hunt, consumed in an isolated context, and discarded into the refuse in quick fashion. This quick deposition is supported by a lack of carnivore damage. As no fox bones were recovered from the site in any other context, the gray fox can be viewed as a species of only episodic use.

Twenty-six bones or bone fragments represented a minimum of three *Procyon lotor* (raccoon). Fifteen of the bones were collected from Feature 2G and were associated with the foxes. This expands the focus of this hunt from a complete focus on fox to that of a quest for small to medium sized game.

Squirrels, both grey (*Sciurus carolinensis*) and fox (*Sciurus niger*), were taken. Due to an overlap in size and a close evolutionary history, most of elements recovered from the two squirrel species were difficult to assign below the genus level. Both species were harvested pointing to deciduous forest edge and deep forest habitat utilization. While meat was the major focus of the exploitation system, squirrel mandibles were also perforated for suspension as beads (Figure 43).

Remaining mammals, which were eaten, included *Didelphis marsupialis* (opossum), *Lynx rufus* (bobcat), *Glaucomys* sp. (flying squirrel), *Marmota monax* (woodchuck), and *Castor canadensis* (beaver). Recovered in small numbers, these species were likely harvested when encountered and provided dietary variety. In addition to food, the beaver provided incisors that were used by the Late Woodland people as chisels. Two such tools were recovered from Bonham.

Birds

Five avian species were recovered from the Bonham site. *Meleagris gallopavo* (turkey) was the most important with 155 (9.28% of the total) bones or bone fragments recovered. A minimum number of 9 (7.69%) individuals were present based on the recovery of 9 left coracoid. Turkey has been noted as one of the most important game species recovered in the mountainous region of the Commonwealth (Barfield and Barber 1992; Barber 1991). *Colinus virginianus* (bobwhite quail) was also a relatively frequently recovered species with 47 (2.81%) identified elements and 6 (5.13%) individuals. *Ectopistes migratorius* (passenger pigeon) was present with 11 (0.65%) bones and 2 (1.71%) individuals. A single element of *Toxostoma rufus* (brown thrasher) and *Charadrius vociferus* (killdeer) were identified suggesting that these two species were incidental to subsistence.

Amphibians

The four species of amphibians recovered were inconsequential with regard to subsistence and it is likely that they found their way into the pit fill on their own volition. They included *Rana* sp. (frog), *Rana*

Figure 43. Perforated squirrel mandibles and turkey wing phalanx.

catesbiana (bullfrog), *Bufo* sp. (toad), and *Necturus maculosus* (mudpuppy).

Reptiles

Seven reptilian taxa were identified. The foremost was the common *Terrapene carolina* (Eastern box turtle). One hundred and ninety-five (11.68%) elements were identified for this species with an MNI of 9 (7.69%). The minimum number of individuals was arrived at through a repetition of plastron fragments. Along with the white-tailed deer and wild turkey, the box turtle has been identified as one of the prime vertebrate species captured by Native Americans in the mountainous portion of Virginia (Barfield and Barber 1992; Barber 1991). In addition to meat recovered and ease of capture, the carapace was sometimes altered into a cup. Other turtles identified for Bonham included Chrysemys picta (pained turtle) and *Sternotherus odoratus* (stinkpot).

Three species of snake were recovered along with 3 vertebrae that would not be identified below the family Colubridae. Snakes present were the non-poisonous *Elaphe obsoleta* (black rate snake) and *Natrix sipedon* (Northern water snake) as well as the poisonous *Crotalus horridus* (timber rattlesnake). As none was represented more than 2 vertebrae, the snakes were not sought after species but slithered into the sample on their own.

Fish

Only sucker and bass were identified from the sample. Suckers included *Catostomus commersonii* (common white sucker), *Moxostoma aniserum* (white-nosed sucker), *Moxostoma* sp. (redhorse), and the family Catestomidae (sucker). Suckers, of any species, seldom take a hook and the method of capture usually involves netting (Jordan and Everman 1923:37). Bottom feeders containing copious small bones, suckers are deemed "trash" fish today. However, their presence on virtually all Southwest Virginia sites analyzed which involved excavation techniques capable of refined recovery (Whyte 1991) indicates that suckers were eaten. Rostlund (1952: 31–31) points out that suckers make up a food resource "very great in quantity and pretty fair in quality." As all suckers engage in spring spawning runs, capture at the Bonham site was during this season. Centrarchidae (bass) were also recovered although in low numbers.

Summary

A total of 40 taxa were identified below the class level at the Bonham site. Of those consumed, *Odocoileus virginianus* (white-tailed deer), *Meleagris gallopavo* (turkey), and *Terrapene carolina* (Eastern box turtle) were the most important species harvested. *Urocyon cinereoargenteus* (gray fox), *Sciurus carolinensis* (grey squirrel) and *Sciurus niger* (fox squirrel), *Colinus virginianus* (bobwhite quail), *Procyon lotor* (raccoon), *Ursus americanus* (black bear) and *Catestomidafrom* (sucker fish) were also of some importance.

Modified Faunal Remains

The vertebrate faunal material from the Bonham site represented more than the remains of hunted and consumed animals but also a source of raw material for the production of both utilitarian and ornamental items (see Figure 43). These bone artifacts will be discussed by taxon. It should be noted that bone artifacts recovered from refuse filled pits were included in the overall elemental totals for the site and, hence, affected NISP and MNI. Artifacts recovered from a burial context, however, were not included. This procedure was premised on the concept that not all vertebrate species would have equal opportunity to be altered into a burial item whereas general village debris would be more representative in its distribution.

Ursus americanus. A single element of black bear was altered into a tool. This was the right proximal fibula that was manufactured into an awl. A rare tool type, the awl measured 89.65 mm in length.

Odocoileus virginianus. A number of white-tailed deer elements are robust enough to supply raw material for the production of tools. In the Bonham sample, four categories of utilitarian artifacts were constructed. The first were ulnar awls manufactured with no modification to the proximal end and sharpening to the naturally tapering distal end (Figure 44). One right and one left ulnae of this type were recovered. The left example was from a mature individual with the proximal epiphysis fused and the right example was also mature although the proximal end suffered extensive carnivore damage.

The second tool type was also an awl. This single example was manufactured from a immature metatarsal lacking epiphyses (presence of the vascular groove) and was sharpened to a point at approximately midshaft. The third tool type was also a metatarsal tool, a broken beamer with the distal end collected. Such tools are recovered in a higher frequency in the southwestern part of the Commonwealth and demonstrate ties to more western cultures.

Third phalanx projectile points were the fourth tool type recovered at Bonham manufactured from white-tailed deer. The proximal articulations were removed, the central cavity enlarged, and the bone altered into a more streamlined form. Four of these points were recovered. Maximum length varied from 22.98 to 25.76 mm.

Canis lupus. The remains of wolves were also altered; in this case, the mandibular canines were made into beads. The canines were not altered except for the circular perforation of the root base to facilitate suspension (Figure 45). Four such beads were recovered.

Procyon lotor. Raccoon canines were similarly treated. Three mandibular canines and one maxillary canine were recovered which had been perforated for suspension. In addition, the left radius from a raccoon was modified into a small awl. It is highly pol-

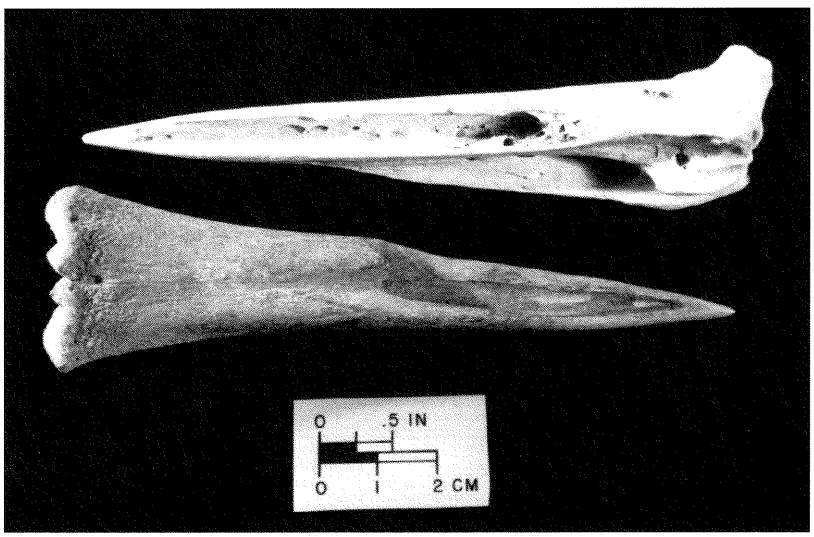

Figure 44. Bone awls.

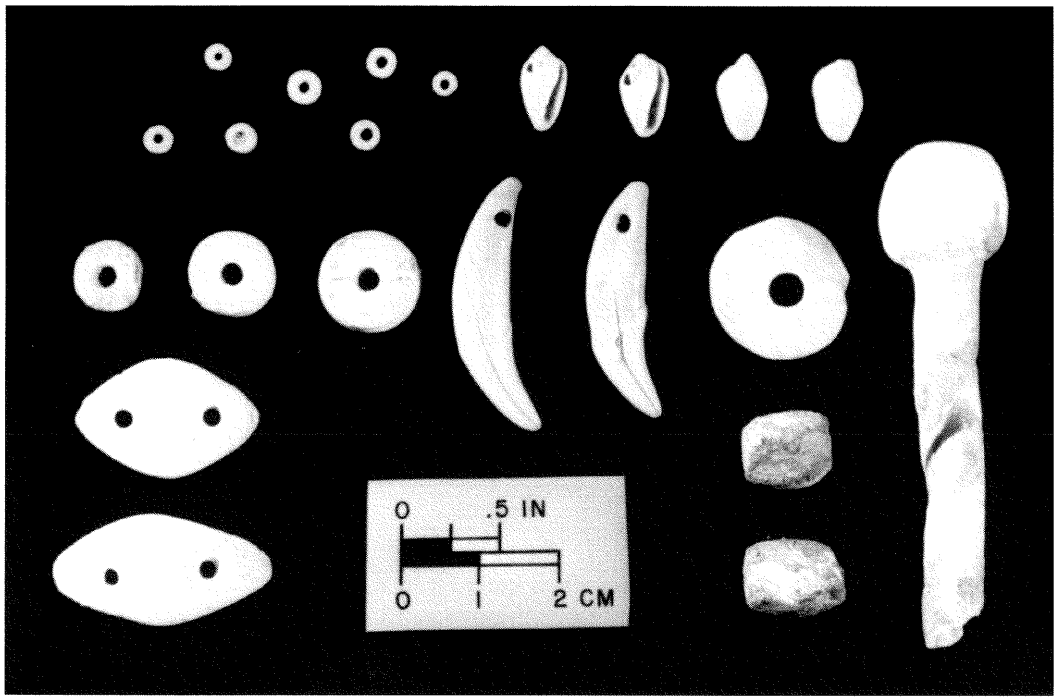

Figure 45. Bone and shell ornamental items.

ished and measures 60.70 mm in length. Of interest, the long bone is from an immature individual with the proximal epiphysis unfused and missing.

Castor canadensis. The mandibular incisors of beaver were modified into chisel tools. Natural "chisels," two such tools were recovered from the site. One demonstrated root modification where it had been ringed and snapped; the second was a broken example.

Scurius sp. A total of 87 squirrel mandibles were recovered from the Bonham site that had been perforated for suspension (see Figure 43). The process involved the perforation of the exterior cheek surface into the basal cavity of the lower incisor. The incisor was removed and the "bead" was strung through the hole. The distribution of mandibles was as follows:

Sciurus sp. (squirrel) 17 right, 17 left
Sciurus carolinensis (grey squirrel) 16 right, 13 left
Sciurus niger (fox squirrel) 11 right, 13 left.

The minimum number of squirrels involved in the production of beads was 44. All examples came from a single disturbed burial, (Feature 11E), possibly suggesting idiosyncratic activity. The only other site in Virginia from which squirrel mandible beads have been recovered is the ca. AD 1250 Hall site (44MY33) in Montgomery County.

Mammals. A number of bone tools had been adequately modified so as to remove all indicators of lower taxa identification than class. Two long bone splinter awls from smashed mammal bones fit this category. In addition, one elongated, flat, narrow long bone fragment had been highly polished and perforated. Possibly referred to as a "hair pin" the exact function of this item remains unknown. Two broken tips from awls were also recovered.

Meleagris gallopavo. Three right side and one left side wild turkey tarsometatarsal awls were recovered from the site (see Figure 44). Three were complete although worn and one was broken at midshaft. One of the right side examples was notched on the exterior of the hypotarsus.

Forty-one examples of the manufacture of phalanx I of wing digit II into perforated beads were recovered (see Figure 43). Twenty-three were from the left wing and eighteen were from the right wing. All were recovered from a single disturbed burial (Feature 11E). Two elongated bird bone beads were also recovered from 11E. These were probably manufactured from turkey ulnae.

Context	Artifact Type	N
1C	*Marginella* shell bead	1
11C	Large shell disk beads	2
11D	Tubular shell beads	5
11E	Barrel-shaped columella beads	6
	Shell tubular bead	1
	Small shell disk beads	438
15C	*Marginella* bead	1
16F	Barrel-shaped columella bead	1
17D	Barrel-shaped columella beads	2
	Shell disk beads	9
17G	Tubular shell beads	12
18C	*Marginella* shell beads	4
	Tubular shell beads	3
	Small shell disk beads	70
23B	*Marginella* beads	36
	Small shell disk beads	21
23C	*Marginella* beads	8
	Tubular shell bead	1
25A	*Marginella* beads	7
	Large disk shell bead	1
27A	Conch columella ear pins	2
	Small bipointed shell gorgets	12
	Marginella shell beads	27

Table 22. Shell beads and ear pins.

Bird. Several modified aves elements could not be identified beyond class. Four bird bone splinter awls were recovered. Five elongated avian bone beads were also recovered. Exhibiting pronounced papillae, these were manufactured form the ulnae of a goose-sized bird and were from Feature 11E. Modification prohibits more refined identification. Length varied from 134.86 to 141.45 mm. Diameter varied from 9.43 to 12.41 mm. Also from 11E were five other cylindrical ulnae beads of smaller species of bird. In addition one small cylindrical bird bone bead was recovered (25.33 mm long, 7.28 mm diameter).

Terrapene carolina. One complete and one fragment from Eastern box turtle carapace cups were recovered. In each case, the periphery had been cut off and the remaining edge polished The residual vertebrae were removed and interior surface polished as well.

Overall, the modified bone recovered from the Bonham site fell into two categories. The first were those every day artifacts which functioned as tools. These became worn or broken and found their way into the common village refuse deposits. The second category was grave offerings in the human interments that functioned on a more symbol loaded level.

In addition to these artifacts, several small bone beads unidentifiable as to species or class were recovered from several features. These included Features 1E (one disk bone bead), 11C (38 small disk "seed" beads), 22E (one small barrel-shaped bead), 10C (one small barrel-shaped bead) and 16F (10 small disk "seed" beads).

Finally, many decorative or ornamental items (mostly beads) were produced from shell (see Figure 45). These items are listed by feature in Table 22. Of course, these items are not included in the counts for the *vertebrate* fauna examined. Except for an isolated *marginella* shell bead from Feature 15C, all other shell beads or artifacts came from burials. Thus, the beads and the earpins (from Feature 27A) were all intentional grave inclusions of decorative items. No distinct pattern of inclusion of these items occurred; all ages and sexes are represented in these burials with non-utilitarian grave goods. However, the old adult females in Features 11E and 27A certainly had the most unusual and (in the case of 11E) highest numbers of these artifacts. Conch columella beads and earpins are noted as grave inclusions on many Late Prehistoric sites (e.g., Dickens 1976: Plates 55–59). The beads were strung to form necklaces and bracelets, or formed decorative parts of garments.

Seasonality

Taken as a whole, the vertebrate faunal assemblage recovered from the Bonham site soundly supports year round occupation. The recovery of suckers relates to a spring occupation. Warm weather is further underscored by the harvesting of woodchuck, turtles, and squirrels either unavailable or less available in winter. White-tailed deer antlers recovered included examples of both attached and unattached specimens suggesting year round capture. If the assumption is made that all fawns are born circa June 1 (Guilday 1971:22), the

one-year old aged mandible through dental eruption was killed in the summer. Although dental attrition is less accurate in establishing exact age, the distribution by even year and six-month periods within the aged deer mandibles would suggest year round harvesting.

The extensive nature of the site features with its many burials, numerous refuse filled pits, and series of palisades provides powerful evidence for a sedentary village. Generally the vertebrate faunal assemblage supports such permanence.

Human Ecology

Vertebrate faunal species are, by and large, specialized in their utilization of the environment. Humans, likewise, interact with environment in a controlled manner following cultural parameters while selecting environmental possibilities. The ecological utilization of species recovered from the Bonham site are listed in Table 23. As can be seen, three major habitats were utilized: deciduous forest edge, deciduous forest, and aquatic environments. Grasslands were also exploited but to a lesser extent. The topographic nature of southwest Virginia almost forcibly threw its human inhabitants into an ecotonal situation. This was particularly true in the Late Woodland where primarily, although not exclusively, rich, alluvial riverine soils were settled upon for horticultural purposes. Such placement, an example being the Bonham site, positions the settlement in proximity to the aquatic riverine habitat, the deciduous forest edge of the floodplain and terrace systems encouraged by swidden agriculture, and the deciduous forest flanking the site in the uplands, sideslope, and mountain ridges. Grasslands may also have been present due to fire or human intervention in clearing. In any case, the ecotonal location of the Bonham site allowed for the exploitation of a number of broad habitats and myriad of econiches.

Inter-site Comparisons

In a comparison of the Bonham sample with that of other sites in the Ridge and Valley of Virginia, a certain consistency appears. The Bonham sample is dominated by *Odocoileus virginianus* (white-tailed deer), *Terrapene carolina* (Eastern box turtle), and *Meleagris gallopavo* (turkey). When considering other analyzed Late Woodland sites for the Ridge and Valley of Virginia (Table 24), the same three species appear with regularity in the top five species recovered at each site by number of elements identified. This has been recognized in the past (Barber 1990) although differences arise when attempting to include meat weight predictions or diachronics (Barber 1991). As one moves further to the west, the importance of *Ursus americanus* (black bear) also seems to increase. On the whole, however, the data suggest that the vertebrate triad of deer, turkey, and turtle dominate the vertebrate faunal subsistence pattern of southwest Virginia.

Conclusion

Emergency excavations at the Bonham site (44SM7) yielded a total of 5,545 bones or bone fragments. Of these, 1,670 could be identified to 40 lower taxa than class. The vertebrate fauna suggests a year round occupation of the sedentary village. Although a number of species were harvested, the combination of deer, turkey, and turtle dominated the assemblage. The diversity of bone and marine shell ornaments interred with several individuals, especially the older adult females in Features 11E and 27A, attests to long distance trade contacts and a rich tradition of ornamental craft production and use. The preponderance of these artifacts in Features 11E and 27A may reflect the achieved status of these individuals.

Species	Ecological Preference
Didelphis marsupialis	Deciduous forest edge
Lynx rufus	Deciduous forest Deciduous forest edge
Urocyon cinereoargenteus	Deciduous forest Deciduous forest edge
Procyon lotor	Deciduous forest Deciduous forest edge Aquatic
Ursus americanus	Deciduous forest
Glaucomys sp.	Deciduous forest Mixed deciduous/ conifer forest
Sciurus niger	Deciduous forest edge
Sciurus carolinensis	Deciduous forest Deciduous forest edge
Sylvilagus floridana	Deciduous forest edge Grasslands
Marmota monax	Deciduous forest edge
Castor canadensis	Aquatic
Odocoileus virginianus	Deciduous forest edge
Cervus canadensis	Deciduous forest edge Grasslands
Colinus virginianus	Grasslands
Ectopistes migratorius	Deciduous forest edge
Meleagris gallopavo	Deciduous forest Deciduous forest edge
Chrysemys picta	Aquatic
Sternotherus odoratus	Aquatic
Terrapene carolina	Deciduous forest edge
Elaphe obsoleta	Deciduous forest Deciduous forest edge Grasslands
Natrix sipedon	Aquatic
Crotalus horridus	Deciduous forest edge
Catostomus commersonii	Aquatic
Moxostoma anisurum	Aquatic

Table 23 Habitat preferences for vertebrate subsistence fauna genus and species identified at 44SM7, (after Burt and Grossenheider 1964; Cleland 1966; Conant 1975; Peterson 1947).

Bonham Site (44SM7), Smyth Co., Va.
Late Woodland; n = 166

- **Odocoileus virginianus* (white-tailed deer)
- **Terrapene carolina* (Eastern box turtle)
- **Meleagris gallopavo* (turkey)
- *Urocyon cinereoargenteus* (gray fox)
- *Peromyscus* sp. (deer or white footed mouse)

Shannon Site (44MY8), Montgomery Co., Va.
(Barber and Baroody 1977)
AD 1200–1300; n = 2787

- **Odocoileus virginianus* (white-tailed deer)
- **Terrapene carolina* (Eastern box turtle)
- *Chrysemys picta* (painted turtle)
- **Meleagris gallopavo* (turkey)
- *Cervus canadensis* (wapiti)

Hall Site (44MY33), Montgomery Co., Va.
(Barber 1989)
AD 1210–1270; n = 965

- **Terrapene carolina* (Eastern box turtle)
- **Odocoileus virginianus* (white-tailed deer)
- **Meleagris gallopavo* (turkey)
- *Sciurus* spp. (gray/fox squirrel)
- *Ectopistes migratorius* (passenger pigeon)

Sawyer Site (44RN39), Roanoke County, Va.
(Barber and Barber 2004) AD 1600–1630; n = 235

- **Odocoileus virginianus* (white-tailed deer)
- **Terrapene carolina* (Eastern box turtle)
- *Centrarchidae* (bass/sunfish)
- *Bufo* sp. (toad)
- **Meleagris gallopavo* (turkey)

Snidow Site (46MC1), Mercer County, WVa.
(Barber 1990) AD 1200–1300; n = 1272

- **Odocoileus virginianus* (white-tailed deer)
- **Terrapene carolina* (Eastern box turtle)
- **Meleagris gallopavo* (turkey)
- *Ursus americanus* (black bear)
- Small rodents

Table 24. Comparison of the vertebrate faunal assemblages recovered from sites in the southern Ridge and Valley of Virginia and environs (species ranked by number of elements identified per species).

8: Carbonized Plant Remains

During the archaeological excavations at the Bonham site, 46 flotation samples and 52 trowel-sorted or dry-screened samples were obtained for the analysis of carbonized plant remains. The results of the analysis of the flotation samples (Tables 25–27) and of the trowel-sorted/dryscreened material (Table 28) are reported here.

The flotation samples were generally small, ranging from 0.25 liters to 6.0 liters with a median size of 2.0 liters. Nonetheless, a substantial range of economic plant species was recovered. These include four cultigens: maize, beans, squash, and tobacco. A tentatively identified specimen of little barley may represent a fifth cultigen. Wild plant foods in the Bonham samples include hickory nuts, walnuts, hazel nuts, acorns, blackberry, strawberry, huckleberry, and perhaps ground-cherry. In addition, cleavers, vervain, smartweed and foxtail grass were identified but are presumed to be commensal weeds that were incidentally carbonized.

Procedures

Recovery

During excavation of the Bonham site, soil samples ranging from 0.25 L to 10 L were saved from burial and feature contexts and later floated with a SMAP-type machine (Watson 1976). Heavy fractions were retained on 1/16 inch window screen while light fractions were caught in nylon "window drape" cloth (Cliff Boyd, personal communication 1992). Although the mesh size of the nylon cloth has not been measured, the recovery of tobacco and strawberry seeds indicates it was sufficiently fine to provide impeccable recovery.

Analysis

The flotation heavy fraction material was not submitted for paleoethnobotanical analysis, as a prior examination revealed it to contain negligible charcoal. The author analyzed the light fraction material as follows. The material was screened through stacked geologic sieve screens with meshes ranging from 2.4 mm to 0.5 mm. The material was examined using a binocular microscope at 10X and 30X magnification. All material greater than 2.0 mm was identified, sorted into categories, and quantified by weight. The remaining material less than 2.0 mm but greater than 0.5 mm in size was examined microscopically but only seeds and Curcurbitaceae rind were removed. These were sorted into taxonomic categories and counted. Finally, the residue less than 0.5 mm in size was not examined, as this was almost entirely comprised of fine sand and silt.

The trowel-sorted and dryscreened material was analyzed in the same manner as the flotation material except that only material greater than 2.0 mm was examined.

Results

Cultigens

Tobacco. Three seeds of tobacco (*Nicotiana* cf. *rustica*) were recovered from two proveniences at the Bonham site. The seeds measure 1.0 mm x 0.7 mm x 0.7 mm. Tobacco was, of course, an important ceremonial plant grown by Native Americans as a source of smoking material (Swanton 1946). Tobacco seeds have been recovered archaeologically from first century B.C. contexts in Illinois but are more widespread in sites postdating A.D. 300 (Wagner 1991). Tobacco seeds

Feature	Float Vol. (liters)	Residue <0.5 mm (grams)	Residue <2.0 mm (grams)	Plant Remains (grams)	Total Analyzed (grams)
1A	1.0	0.02	0.10	0.16	0.26
1B	1.0	0.03	0.09	0.12	0.21
1C	2.0	0.20	0.47	0.52	0.99
1D	1.5	0.03	0.17	0.18	0.35
1E	1.5	0.19	0.93	1.55	2.48
1F	1.5	0.13	0.44	0.42	0.86
1G	1.0	0.14	0.29	0.48	0.77
1H	1.5	0.04	0.07	0.20	0.27
1I	1.5	0.04	0.13	0.09	0.22
1K	1.0	0.02	0.03	0.02	0.05
1L	1.0	0.02	0.07	0.17	0.24
1M	0.5	0.02	0.03	0.01	0.04
1N	1.5	0.00	0.01	0.02	0.03
2B	1.5	0.05	0.04	0.03	0.07
2C	1.5	0.20	0.76	1.03	1.79
2C-PM	1.0	0.15	0.76	0.69	1.45
2D	1.5	0.10	0.26	0.22	0.48
2E	1.0	0.06	0.13	0.06	0.19
2F-2	1.0	0.01	0.04	0.07	0.11
2G	0.3	0.10	0.38	0.47	0.85
2H	1.0	0.03	0.02	0.00	0.02
2I	2.0	0.10	0.37	0.54	0.91
2J	1.0	0.01	0.05	0.05	0.10
2K	1.0	0.05	0.11	0.31	0.42
4A	2.0	0.31	0.47	0.27	0.74
10B	3.0	0.78	1.33	1.44	2.77
10C	2.5	0.18	0.43	0.75	1.18
11A	5.0	1.05	3.69	3.83	7.52
11A-1	2.5	0.12	0.24	0.20	0.44
11B	3.0	0.03	0.08	0.15	0.23
11C	2.0	0.09	0.36	0.41	0.77
12F	2.3	0.26	1.37	1.09	2.46
13A	2.0	0.30	1.09	1.04	2.13
13C	2.5	0.11	0.25	0.15	0.40
13G	2.0	0.16	0.44	0.31	0.75
13G-2	3.0	0.13	0.32	0.42	0.74
15B	2.0	0.15	0.60	0.54	1.14
16C	2.0	0.18	0.20	0.19	0.39
17A	2.5	0.45	2.00	2.24	4.24
22D	2.0	0.20	0.14	0.20	0.34
22F	2.0	0.10	0.43	0.37	0.80
22G	2.0	0.27	1.26	2.55	3.81
23A	2.0	0.09	0.26	0.10	0.36
23B	2.0	0.06	0.23	0.55	0.78
23C	2.5	0.27	1.57	1.19	2.76
25A	6.0	0.21	1.23	2.12	3.35
Total	86.0	7.24	23.74	27.54	51.28

Note: 11A-1 is Stratum 1 in Feature 11-A; 13G-2 is from a Stratum below Feature 13-G.

Table 25. Flotation sample volumes and compositions.

Fea.	Unid. Frag.	Wood	Maize Cupule	Maize Kernel	Squash Rind	Bean	Hickory	Acorn	Walnut	Hazel	Total
1A	0.00	0.15	0.00	–	–	–	–	0.00	–	–	0.16
1B	0.02	0.08	0.02	–	–	–	–	–	–	–	0.12
1C	0.02	0.46	0.01	0.02	–	–	0.01	–	–	–	0.52
1D	0.01	0.17	0.00	–	–	–	–	–	–	–	0.18
1E	0.07	0.56	0.48	0.07	–	0.01	–	0.00	0.36	–	1.55
1F	0.01	0.40	–	–	0.00	–	0.00	0.00	–	–	0.42
1G	0.01	0.45	0.01	0.01	–	–	–	–	–	–	0.48
1H	0.01	0.19	–	–	–	–	–	–	–	–	0.20
1I	–	0.08	0.01	–	–	–	–	–	–	–	0.09
1K	–	0.02	0.00	–	–	–	–	–	–	–	0.02
1L	–	0.17	–	–	–	–	0.00	–	–	–	0.17
1M	–	0.01	–	–	–	–	–	–	–	–	0.01
1N	0.01	0.01	–	–	–	–	–	–	–	–	0.02
2B	0.01	0.02	0.00	–	–	–	–	–	–	–	0.03
2C	–	1.03	–	–	–	–	–	–	–	–	1.03
2C-PM	0.06	0.62	0.01	–	–	–	–	–	–	–	0.69
2D	0.00	0.19	0.01	0.01	–	–	–	0.00	–	–	0.22
2E	–	0.06	–	0.00	–	–	–	–	–	–	0.06
2F2	–	0.07	–	–	–	–	–	–	–	–	0.07
2G	0.00	0.46	0.00	0.00	–	–	–	–	–	–	0.47
2H	–	–	–	–	–	–	–	–	–	–	0.00
2I	0.02	0.51	0.01	–	–	–	–	0.00	–	–	0.54
2J	–	0.05	–	–	–	–	–	–	–	–	0.05
2K	–	0.31	–	–	–	–	–	–	–	–	0.31
4A	0.02	0.25	–	–	–	–	–	–	–	–	0.27
10B	0.04	1.36	0.00	0.00	–	–	0.03	0.00	–	–	1.44
10C	–	0.74	0.00	0.00	–	–	–	–	–	–	0.75
11A	0.07	3.53	0.03	0.07	0.00	–	0.13	–	–	–	3.83
11A1	0.02	0.16	0.02	0.00	–	–	–	–	–	–	0.20
11B	0.01	0.14	–	–	–	–	0.00	–	–	–	0.15
11C	–	0.40	0.01	–	–	–	–	–	–	–	0.41
12F	0.01	1.07	0.01	0.00	–	–	–	–	–	–	1.09
13A	0.01	0.99	0.02	–	0.00		0.02	–	–	–	1.04
13C	0.01	0.14	–	–	–	–	–	–	–	–	0.15
13G1	–	0.31	0.00	–	–	–	–	–	–	–	0.31
13G2	0.01	0.38	–	–	–	–	0.01	–	–	0.02	0.42
15B	–	0.53	–	0.01	–	–	–	–	–	–	0.54
16C	0.00	0.19	–	–	–	–	–	–	–	–	0.19
17A	0.01	2.19	0.00	0.02	–	–	0.01	0.00	–	–	2.24
22D	0.01	0.19	–	–	–	–	–	–	–	–	0.20
22F	0.00	0.36	0.01	–	–	–	–	–	–	–	0.37
22G	0.01	2.30	–	0.00	–	–	0.24	–	–	–	2.55
23A	0.01	0.09	–	–	–	–	–	–	–	–	0.10
23B	–	0.55	–	–	0.00	–	–	–	–	–	0.55
23C	0.02	1.14	0.01	0.00	–	–	0.02	–	–	–	1.19
25A	0.04	1.90	0.04	0.04	–	0.09	0.01	–	–	0.00	2.12
Total	0.56	24.98	0.73	0.27	0.01	0.10	0.49	0.02	0.36	0.02	27.54
Ubiquity	67	98	54	35	9	4	26	15	2	4	

Table 26. Contents of flotation sample light fractions (grams). Weights given as 0.00 indicate an item weighing less than 0.005 g. Ubiquity is the percentage of samples containing a remain.

Feature	Cultigens		Fruits			Commensals						Total
	Tobacco	Little Barley ?	Black-berry	Straw-berry	Huckle-berry	Cleavers	Vervain	Smart-Weed	Foxtail Grass	Unid. Grass	Unid. Seed	
1D			1									1
1E									1			1
2C-PM			1									1
2E						1						1
2G				4								4
2I						1						1
2K										1		1
4A								1				1
11A-1			1								2	3
11C	2		1									3
12F		1					1					2
13G											1	1
17A								1				1
22F											1	1
23A				1								1
25A	1				1						1	3
Total	3	1	4	5	1	2	2	1	1	1	5	26
Ubiquity	4	2	9	4	2	4	4	2	2	2	9	35

Table 27. Seeds from flotation sample light fractions. Ubiquity is the percentage of samples containing a remain.

	Wood	Hickory	Cupule	Kernel	Bean	Unid.	Total
Features							
1A	0.70	–	–	–	–	–	0.70
1C	2.76	–	–	–	–	–	2.76
1D	5.83	–	–	–	–	–	5.83
1E	1.37	–	–	–	–	–	1.37
1H	1.42	–	–	–	–	–	1.42
1I	3.06	–	–	–	–	–	3.06
1L	3.31	–	–	–	–	–	3.31
2D	1.90	–	–	–	–	0.07	1.97
2E	1.27	–	–	–	–	–	1.27
2F1	0.09	–	–	–	–	–	0.09
2F2	0.08	–	–	–	–	–	0.08
2G	11.74	–	–	–	–	–	11.74
2I	1.23	–	–	–	–	–	1.23
4A	4.17	–	–	–	–	0.35	4.52
10A	9.63	–	0.01	–	–	–	9.64
10B	1.29	0.07	–	–	–	–	1.36
10C	18.04	0.32	–	–	–	–	18.36
10E	2.83	1.04	–	–	–	–	3.87
11A	9.20	0.06	–	–	–	0.01	9.27
11C	0.42	–	–	–	–	–	0.42
11D	0.55	–	–	–	–	–	0.55
11E	0.43	–	–	–	–	–	0.43
12F	4.34	–	–	–	–	0.02	4.36
12G	2.06	–	–	–	–	–	2.06
12K	0.23	–	–	–	–	–	0.23
13G	0.51	–	–	–	–	–	0.51
15B	0.72	–	–	–	–	–	0.72
16B	0.37	–	–	–	–	–	0.37
16C	0.58	–	–	–	–	–	0.58
16D	1.05	–	–	–	–	–	1.05
17A	0.44	0.03	–	0.01	–	0.14	0.62
17C	1.65	–	–	–	–	–	1.65
17E	0.50	–	–	–	–	–	0.50
17H	0.25	–	–	–	–	–	0.25
17K	0.38	–	–	–	–	–	0.38
18B	0.88	–	–	–	–	–	0.88
18D	0.09	–	–	–	–	–	0.09
20C	2.05	–	–	–	–	–	2.05
21A	1.12	–	–	–	–	0.13	1.25
22D	0.74	–	–	–	–	–	0.74
22E	2.90	0.00	–	–	–	0.02	2.92
22F	7.59	–	–	–	–	–	7.59
22G	7.69	0.66	–	–	–	–	8.35
23A	0.28	–	–	–	–	–	0.28
23B	0.30	–	–	–	–	–	0.30
23C	8.90	0.08	–	–	–	0.11	9.09
25D	1.75	–	–	–	–	–	1.75
27A	1.71	–	–	–	–	–	1.71
Postmolds							
1-1	5.82	–	–	–	–	–	5.82
2-3	1.44	–	–	–	0.04	–	1.48
2-4	2.62	–	–	–	–	–	2.62
Total	140.28	2.26	0.01	0.01	0.04	0.85	143.45

Table 28. Contents of non-floated samples.

are not particularly common archaeologically, especially in sites outside of the Midwestern United States or Ontario (Wagner 1991). The infrequent recovery of tobacco seeds is probably due to the difficulty of recovering and identifying such minute remains in the absence of concerted paleoethnobotanical effort. From elsewhere in Virginia, a single seed of tobacco was recovered from a historically disturbed stratum of the Daugherty's Cave rockshelter (44RU14) in the Clinch River drainage (Gardner 1992). Of course, smoking pipes are frequent archaeological finds and probably were commonly used to smoke tobacco. However, the wide array of plants smoked by Native American precludes a one-to-one correlation of smoking pipes and tobacco. For example, Yarnell (1964) lists 27 other plants smoked by Native Americans in the Great Lakes region alone.

Maize. Maize (*Zea mays*) was found in 61% of the light fractions and 4% of the screened samples. It is the most common food plant remain in the samples, which is in accord with its role as the staple food of the late prehistoric Eastern Woodlands. Maize is represented in the samples by kernel fragments and individual, usually fragmentary, cupules, the small cup-like structure of the cob from whence two kernels arise. No cob segments or conjoined cupules were recovered, so reconstruction of cob morphology is not feasible. However, the cupules are generally wide and shallow suggesting Eastern Eight-Row maize, the typical maize of the late prehistoric Eastern Woodlands (Cutler and Blake 1976).

Measurements taken from individual cupules are generally less accurate than those averaged from several conjoined cupules. Nonetheless, eleven complete cupules were measured and found to have widths ranging from 3.0 mm to 10.0 mm with a median of 7.9 mm. Cupule internode distance (or kernel thickness) ranges from 1.8 mm to 3.8 mm with a median of 2.7 mm. Ratios of cupule width to kernel thickness ranges from 1.5 to 3.9 with median of 2.9. The medians of the measurements are typical of Eastern Eight-Row corn (Wagner 1986).

Two cupules seem atypical. One is 5.8 mm wide by 3.8 mm thick, which is unusually short and broad (w:t = 1.5). I suspect it may derive from the butt or tip area of a cob. These areas frequently produce abnormal cupules. The other unusual cupule is 3.0 mm wide by 1.8 mm thick (w:t =1.7). In appearance this cupule is not only unusually narrow, but is also relatively deep (2.9 mm). Furthermore, the angle formed by its sides seems to be about 60 degrees, which suggests it derives from a 12-rowed cob. This cupule may represent a race of maize other than Eastern Eight-row. Cutler and Blake (1976) have described a presumably early race of maize, North American Pop, which is characterized by narrow deep cupules and 12-rowed cobs. While this description fits the unusual Bonham site cupule, it must be remembered that only a single, isolated cupule of this description was found. Conclusions must await a larger sample.

Cucurbits. Minute fragments of squash (*Cucurbita pepo*) rind were recovered from nine percent of the light fraction samples. In my experience, this is a unusually high representation of this fragile remain. Squash was, of course, an important food of Eastern Woodlands Native Americans during the Historic period (Swanton 1946). It probably was an important food at the Bonham site as well. However, like the bottle gourd (*Lagernaria siceraria*), it was likely used as a source of containers as well. The absence of bottle gourd from the Bonham site is probably more apparent than real. Bottle gourd has been recovered from Daugherty's Cave (44RU14) in southwestern Virginia in a level dated to the third millennium B.C. (Gardner 1991). Hence, it is unlikely to have been absent from the region in the late prehistoric period.

Beans. Fragmentary beans (*Phaseolus vulgaris*) were recovered from four percent of the light fractions and from two percent of the screened samples. As beans are not particularly common archaeologically outside of the Fort Ancient area, this is a fair representation in the samples. The Bonham site beans are not complete enough to be reconstructed, but they seem to be entire to reniform in shape and about 6 mm to 10 mm long and about 3 mm to 6 mm wide. Their length to width ratio is probably close to 2:1. Overall, they seem quite similar to the typical Fort Ancient beans (Wagner 1986).

Beans are frequently reported from Virginia sites (e.g., Benthall 1969; MacCord 1981) apparently as a result of more or less casual observation of dryscreened material. I am skeptical of these reports. Carbonized Native American beans are much smaller than typical modern varieties and when recovered archaeologically have most often split into their component cotyledons. As a result, not only are they somewhat unlikely

to be recovered by dryscreening, but when observed with the naked eye they do not appear very "bean-like". Rather, they are quite inconspicuous. On the other hand, carbonized seeds of persimmon (*Diospyros virginiana*) are large and superficially similar to beans in shape. They are quite commonly recovered by dryscreening and to the naked eye look more like beans than carbonized beans usually do. I strongly suspect that most identification of Virginia beans made without benefit of microscopic examination are in fact persimmon seeds.

Little barley. Little barley (*Hordeum pusillum*) is a grass native to the western and Midwestern United States. It is not uncommon in Eastern Woodlands archaeological sites dating to the Middle Woodland period or later and is usually found in archaeological association with known domesticates (Asch and Asch 1985). This association and its recovery from sites far outside of its natural range (Gremillion 1989; Gardner 1990) indicate it to have been a Native American cultigen as well. At the Bonham site a single caryopsis midsection is tentatively identified as little barley. The surviving section of caryopsis is 2.5 mm x 1.1 mm x 0.9 mm in size and has the narrow dorsal groove typical of little barley. However, the embryo area of the caryopsis is missing. Without this diagnostic character, I do not feel comfortable making more than a tentative identification.

Mast

Hickory nutshell occurs in 26% of the flotation samples, acorn shell in 15%, hazel nutshell in 4%, and walnut shell in 2%. Since the heavy fractions were not analyzed microscopically, nutshell, which often tends to sink, may be somewhat under-represented. However, at the Bonham site hickory nutshell is second only to maize in percentage occurrence and in weight. This is typical of late prehistoric sites in the Eastern Woodlands (Gardner 1985; Gremillion 1989). It seems the case that the native nuts, particularly hickory nuts and acorns, remained important foods in the Eastern Woodlands even after the adoption of corn agriculture. Historic accounts of Eastern Woodlands subsistence likewise indicate the importance of gathered nuts to Native American agriculturalists (Swanton 1946: 364–367).

Fleshy Fruits

Three, perhaps four, fleshy fruits are present in the Bonham site samples. Blackberry (Rubus sp.) was found in 9% of the samples, strawberry (*Fragaria* sp.) in 4%, and huckleberry (*Gaylussacia* sp.) in 2%. In addition, one unidentified seed in sample 11A1 may be groundcherry (*Physalis* sp.). The seed is similar to groundcherry in shape and in the reticulations of its seed coat, but measures only 1.0 mm x 0.7 mm x 0.5 mm in size. This seems somewhat small for groundcherry (Montgomery 1977). It may be the result of carbonization-induced shrinkage of an already small groundcherry seed. Certainly groundcherry would not be out of place in the Bonham site samples. It is a fairly common weed of disturbed places and produces an edible berry in summer to early fall (Radford et al. 1968).

Fleshy fruits are probably the best archaeobotanical indicators of seasonality of site occupation, as most were probably consumed during their period of fruiting, although Native American did dry fruits for storage and later consumption (Swanton 1946). Strawberry ripens from spring to early summer, blackberry from spring to late summer, and huckleberry from summer to fall (Radford et al., 1968). Thus the Bonham site fruits suggest a resident population throughout the warm season. This is not a particularly surprising result. Since it is assumed the agricultural products were produced in nearby fields and gardens, it is expected that the Native Americans would have resided nearby to tend them during the growing season. Some produce could have been harvested during the summer, but the bulk of the crops, along with the nuts, would have been harvested in the fall. Unfortunately, since no edible plants fruit in winter, it cannot be determined from archaeobotanical evidence if the site was occupied following the fall harvest. Certainly, however, the plant remains cannot be interpreted as supporting an inference of a less than year-round occupation.

Commensal Weeds

Seeds of five plants, cleavers (*Galium* sp.), vervain (*Verbena* sp.) smartweed (*Polygonum* sp.), foxtail grass (*Setaria* sp.) and an unidentified grass were recovered

from the flotation samples. Although these plants may have had some economic use, such as providing potherbs or medicine, their scant presence—one or two seeds each—does not support such an inference. It seems more likely that these remains represent weeds that colonized the disturbed environs of the human habitation and which were fortuitously carbonized.

Trowel-Sorted/Dry Screened Material

The trowel-sorted/dryscreened material was found to be about 98% wood charcoal by weight. Eight samples (15%) contained hickory nutshell, and maize cupule, maize kernel and beans were recovered from one sample each (2%). As usual, relatively large and dense botanical remains dominate the material recovered without benefit of flotation.

Discussion

Although a broad array of economic plants were recovered from the Bonham site including the Eastern Woodlands staple crops of maize, beans, and squash as well as tobacco, a considerable number of known Eastern Woodlands cultigens are not present in the samples. These include bottle gourd and the native cultigens sunflower, sumpweed, chenopod, and maygrass. The relatively small amount of soil floated from the Bonham site makes generalization about the absent cultigens somewhat suspect. Their absence may reflect nothing more than sampling bias. However, the fact that the flotation did successfully recover so many other plants suggests this may not be the case. The absence of native cultigens (with the possible exception of little barley) invites discussion.

On one hand, bottle gourd, sumpweed, chenopod, and maygrass have been recovered from Daugherty's Cave in Russell County (Gardner 1992), so it cannot be argued that the Native American populations of southwestern Virginia were somehow isolated from the Eastern Woodlands tradition of native plant cultivation. In fact, such isolation seems quite unlikely given that the principal rivers of southwestern Virginia—including the Middle fork of the Holston River on which the Bonham site is located—form the headwaters of the Tennessee River. Prehistoric cultural interchange between southwestern Virginia and eastern Tennessee would have thus been greatly facilitated, and the Tennessee River area of eastern Tennessee has produced an especially rich body of prehistoric native cultigens (Chapman and Shea 1981). In short, the apparent absence of native cultigens (with the possible exception of little barley) from the Bonham site is unlikely to be a result of geographical factors. There is no reason to think prehistoric southwestern Virginia constituted an agricultural backwater.

On the other hand, as paleoethnobotanical data accumulate, it is becoming increasingly clear that agricultural origins and adoptions in the Eastern Woodlands were not a unitary phenomenon. Not only did different regions adopt food production at different times, but there was considerable interregional variation in the cultigens that were grown (Fritz 1990). For example, in the lower Southeast, native cultigens seem never to have been important; maize was apparently the first significant cultigen (Fritz 1990). Further north in eastern Tennessee, native cultigens appear to have been important by the Middle Woodland period and to have remained relatively common even after the adoption of intensive maize agriculture in the Mississippian period (Chapman and Shea 1981). From North Carolina there is some evidence of native cultigens in the Mississippian (Yarnell 1976) and post-Contact periods (Gremillion 1989) but at levels that are overshadowed by maize. In the Fort Ancient area, native cultigens were quite important during the Middle and Late Woodland periods, only to be replaced almost completely by maize and beans in the succeeding Fort Ancient period (Wagner 1987; Fritz 1990).

From southwestern Virginia, Daugherty's Cave (Gardner 1991) is the only site other than Bonham that has benefited from the flotation recovery of plant remains, so no firm conclusions are warranted. However, the pattern seen so far is congruent with that of the Fort Ancient area. Native cultigens are well represented in the Early and Middle Woodland components of Daugherty's Cave, but are absent from the overlying Mississippian component that yields maize and beans (Gardner 1991). The Bonham site supports the inference from Daugherty's Cave that native cultigens were apparently insignificant in southwestern Virginia during the Mississippian period. The similarity of Mississippian period southwestern Virginia agricultural strategies and those of the Fort Ancient

area rather than those of eastern Tennessee is somewhat surprising. Certainly in terms of artifact assemblages, southwestern Virginia is more similar to the Tennessee area (Egloff 1989; Gardner 1991, 1992). Hence, the paleoethnobotanical investigation of southwestern Virginia, although still in its initial stages, has already begun to produce interesting, counterintuitive results.

9: Summary and Recommendations

The Bonham site (44SM7) was actually a Late Woodland (ca. A.D. 1300–1600) village complex, representing at least two overlapping occupations. The originally defined site area was documented by a surface survey in 1988 and by two test trenches excavated in the fall of 1989. Several features partially excavated in these trenches contained predominately limestone or grit tempered ceramic artifacts. However, the extent of material exposed at the base of the plowzone in these trenches suggested an additional site area to the east of the defined boundary of 44SM7.

Since the site area was going to be impacted by the construction of the Deer Valley Industrial Park, and since this additional village area was not to be protected by a cap of fill dirt, the plowzone of a ca. 60 x 60 meter area south of the industrial park access road and east of the originally defined site boundary was mechanically stripped to expose features. Salvage excavations of this site area, conducted in the spring of 1990, exposed multiple palisade lines, features, and burials.

The focus of these excavations was on the identification and removal of human burials before they were destroyed by construction of the industrial park. In addition, a site plan of this new area was produced and several refuse-filled pits as well as burials were excavated. From the 1989 testing and 1990 excavations 79 Native American features were either partially or completely excavated. One of the features from the 1989 work and 21 of the features from 1990 were human burials, while nine additional refuse-filled features contained fragments of human bone.

The burials showed some variety in form, from simple oval or circular pits (sometimes also filled with refuse) to bell-shaped or shaft-and-chamber pits. Thirty-five individuals were identified from the 29 pits containing human remains. Twelve of these individuals were subadults (under 18 years old) and 23 were adults. Of the adults, 11 were female, seven were male and four were of indeterminate sex. One 15–18 year old subadult was determined to be male. Most of the individuals manifested some type of pathological condition on their skeletons. Even though degenerative conditions (such as arthritis) and infectious lesions were very common on the adults, most of these individuals did live to fairly advanced ages for prehistoric populations (40 years or more). Also, as in the most prehistoric populations, infant mortality was high. Many individuals had decorative items (such as shell beads) as grave offerings.

The lithic and ceramic artifacts recovered showed many similarities to artifacts recovered from other Late Woodland sites in Southwest Virginia. Most of the over 1,200 lithic artifacts were the products or by-products of chipped stone tool manufacture. The most common raw materials used were locally available cherts (usually black or gray in color) and chalcedony. Most of the projectile points were small triangular arrowtips. Most of the nearly 5,600 ceramic artifacts were grit tempered, containing aplastic inclusions of crushed quartz and chalcedony in a sandy, gritty paste. Gastropod shell tempered ceramics were also common. Several features, however, contained mostly limestone-tempered pottery. These latter features were located in the 1989 test trenches and relate to the originally defined boundaries of 44SM7 (the 14th century village). The additional site area excavated in 1990 produced few limestone-tempered sherds and dates at least a century later. Rim decorations on several sherds suggested contact with Mississippian culture groups to the south.

The over 5,500 vertebrate fauna remains examined showed a predominant use of white-tailed deer as the major meat source. Of course, this is a common pattern for all post-Pleistocene aboriginal sites in eastern North America. The ethnobotanical remains

showed that the Bonham site inhabitants were dependent on domesticated crops—principally maize—but also squash, beans, and tobacco. Wild plant foods (mainly hickory nuts), however, were still procured and consumed.

In sum, the Bonham site, although heavily looted, still produced a wealth of information on Late Woodland Native American lifeways in this part of Southwest Virginia. The site is extremely significant, particularly in terms of the information on site plan, diversity in ceramic artifacts, and the ethnobotanical samples it has produced. The generally well-preserved human remains and the recovered grave inclusions give a detailed picture of the life, health, and treatment at death of the site occupants.

The final conclusion from the Bonham site investigations is that even though a site has been looted, it should not be "written off" as unworthy of scientific investigation. Testing of such sites should document the extent of looting and the extent of intact features. If, as in the case of the Bonham site, many important features have no or minimal disturbance, then a great deal can still be learned from the controlled excavation of such a site. Nearly every Late Woodland site in Southwest Virginia has been looted to some extent. However, the continued examination of these sites is still the only way that archaeologists can study the process of culture change and the development of sociopolitical complexity that occurred during the Late Prehistoric period in this region. These questions are currently areas of great interest for archaeologists working in Virginia (Egloff 1990; Turner 1983).

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Appendix A: Human Skeletal Inventory

Context/ Individual	Bone/Description	Side
1C	*Cranial*	
	4 possible cranial frags. (unidentifiable)	
	Postcranial	
	innominate frags (5)	L
	ulna (shaft and distal)	L
	fibula (shaft and distal)	R
	vertebrae (5=3 lumbar, 1 thoracic, 1 coccyxgeal)	
	Hand: 1st metacarpal	L
	3rd, 5th metacarpal	R
	hand phalanx	?
	unidentifiable hand frag. (1)	?
1E	*Postcranial*	
	foot phalange frag. (proximal, shaft)	?
2G (a)	*Cranial*	
	subadult cranial frags. (temporals, sphenoid, occipital, parietals, frontal);	
	subadult maxillary frags. (2) - no teeth;	
	subadult mandibular corpus with right dm1 (erupted), dm2 (unerupted), left dm1 (erupted), dm2 (unerupted)	R,L
	Postcranial	
	vertebral arches (2)	
	ilium	L
	rib frags. (16)	
	clavicle	L
	femora (proximal, shaft)	R,L
	tibiae (shafts)	R,L
	humerus (shaft)	?
	fibulae (shafts)	?,?
	unidentifiable long bone shafts (2)	?
2G (b)	Postcranial	
	adult rib	L
2I	*Cranial*	
	maxillary frag. with left M1, PM1, PM2, I1	L
	Dental	
	unidentifiable dental root (1)	
	Postcranial	
	rib frags. (3)	
	patella	L

Context/ Individual	Bone/Description	Side
11C (a)	*Cranial*	
	partially reconstructed calvarium (including most all major cranial portions);	
	maxilla frag. with right I2, C; left C;	
	mandible (complete) with right C, PM1, M1; left PM1	
	Dental	
	maxillary M1, M2, PM, C;	
	mandibular right and left I2, left C; M, PM frags.	
	Postcranial	
	hyoid (complete)	
	humerus (complete)	L
	humerus (shaft, distal, proximal)	R
	ulnae (complete)	R,L
	radii (complete)	R,L
	tibia (complete)	R
	tibia (shaft, distal)	L
	fibula (shaft)	L
	fibula (shaft, distal)	R
	clavicle (complete)	L
	clavicle (shaft)	R
	femur frags. (shaft, distal, proximal)	?
	miscellaneous rib frags.	
	miscellaneous vertebral frags.	
	sternum frags. (manubrium)	
	scapular frags.	R,L
	Hand: triquetral, pisiform, trapezium, trapezoid, lunate, hamate, capitate;	R
	triquetral, scaphoid, trapezium, hamate	L
	1st metacarpal;	
	miscellaneous metacarpals	?
	hand phalanges (20)	?
	Foot: calcaneus, talus, medial cuneiform, lateral cuneiform, intermediate cuneiform, navicular, cuboid, 1st metatarsal, miscellaneous metatarsals (7);	R,L
	foot phalanges (8)	?
11C (b)	*Postcranial*	
	innominate frags. (ilium, acetabulum)	
11D (a)	*Cranial*	
	miscellaneous cranial frags (including most all of cranium)	

Context/ Individual	Bone/Description	Side
	maxillary frag. with right M1, M2, M3, C, I1, I2; mandible (complete) (edentuous)	
	Postcranial	
	clavicles (complete)	R,L
	humerii (shaft, distal, proximal)	R,L
	radius (complete)	L
	radius (shaft, proximal)	R
	ulna (complete)	R
	ulna (shaft, proximal)	L
	tibiae (complete)	R,L
	femora (complete)	R,L
	patella	R
	fibulae (shaft, distal)	R,L
	innominates (ilium, ischium)	R,L
	sacrum frags.	
	sternum frags.	
	scapula frags.	R,L
	miscellaneous vertebrae, ribs	
	Hand: scaphoid, hamate, capitate, 1st, 3rd, 4th metacarpal;	R
	lunate, capitate trapezium, 1st - 5th metacarpals; 15 hand phalanges;	L
	Foot: talus, calcaneus, navicular, cuboid, intermediate, lateral, medial cuneiforms, 1st - 5th metatarsals;	R
	talus, calcaneus, navicular, cuboid, intermediate, lateral, medial cuneiforms, 1st, 3rd, 5th metatarsals;	L
	foot phalanges (5)	?
11D (b)	*Postcranial*	
	ulna (shaft)	?
11E	*Cranial*	
	miscellaneous cranial frags (11), including right temporal (petrous portion, mastoid)	
	Dental	
	maxillary frag. with left PM2, M1, M2; mandible (complete except for right condyle) with right C, PM1, M3; left C, I2, I1	L
	Postcranial	
	clavicle (complete, but fragmented)	L
	scapula frags.	R,L
	humerus (shaft, distal, proximal)	R

Context/ Individual	Bone/Description	Side
	humerus (shaft, distal)	L
	radii (complete)	R,L
	ulnae (complete)	R,L
	innominate frags.	R,L
	sacrum (nearly complete)	
	femora (complete)	R,L
	tibiae (complete)	R,L
	fibulae (shaft, distal)	R,L
	miscellaneous ribs	
	miscellaneous vertebrae (10—thoracic, lumbar)	
	Hand: 1st, 2nd, 5th metacarpals;	R
	2nd, 5th metacarpals, trapezoid;	L
	hand phalanges (8);	?
	unidentifiable phalange frags. (7);	?
	Foot: navicular, medial and lateral cuneiforms, 4th metatarsal;	R
	navicular, cuboid, 5th metatarsal;	L
	foot phalanx (1)	?
12F	*Cranial*	
	miscellaneous cranial frags. (all major areas represented);	
	Dental	
	maxilla (complete) with all teeth present except left M3;	
	mandible (complete) with all teeth present	
	Postcranial	
	femora (complete)	R,L
	scapula frags.	R,L
	humeri (complete)	R,L
	radii (complete)	R,L
	ulnae (complete)	R,L
	patellae (complete)	R,L
	tibiae (complete)	R,L
	fibulae (complete)	R,L
	clavicles (complete)	R,L
	sacrum	
	sternum	
	miscellaneous ribs, vertebrae	
	innominates (fragmented, but complete)	R,L
	hyoid	
	Hand: scaphoid, hamate, 1-5th metacarpals;	R
	trapezium, scaphoid, hamate, 1-5th metacarpals;	L
	hand phalanges (16)	?

Context/ Individual	Bone/Description	Side
	Foot: talus, calcaneus, navicular, medial and lateral and intermediate cuneiforms; 1-5th metatarsals;	L
	foot phalanges (9)	?
13F	*Cranial*	
	miscellaneous cranial frags. (all major areas represented);	
	mandible frags. (2) = symphysis, right corpus with no teeth present	
	Dental	
	probable C; mandibular M3	
	Postcranial	
	humeri (shafts)	R,L
	humerus (proximal)	?
	femur (shaft)	L
	femur (proximal, shaft)	R,L
	scapula frags.	R,?
	radii (shafts)	R,L
	clavicle (shaft)	?
	tibiae (shaft, distal)	R,L
	miscellaneous ribs, vertebrae	
	innominate frags.	R,L
	ulna (complete)	L
	Hand: trapezium, capitate, triquetral, 1-3 metacarpals, scaphoid;	R
	lunate, trapezoid, hamate;	L
	5th metacarpal;	?
	hand phalanges (15)	?
	Foot: 3rd, 5th metatarsals;	R
	cuboid, 5th metatarsal;	L
	1st metatarsal;	?
	unidentifiable tarsal bones (2)	?
	foot phalanges (14)	?
15A	*Dental*	
	maxillary PM2 (?); two mandibular I2	
	Postcranial	
	clavicle (complete)	L
	clavicle (shaft, sternal end)	R
	ulna (shaft, proximal)	L
	fibula (shaft)	?
	innominate frags. (ilium, ischium)	L
	patellae (complete)	R,L

Context/ Individual	Bone/Description	Side
	miscellaneous ribs, vertebrae	
	Hand: 1st, 3rd, 5th metacarpals;	R
	3rd, 5th metacarpals;	L
	hand phalanges (10)	?
	unidentifiable carpal frags. (5)	?
	Foot: cuboid, lateral cuneiform, 3rd-5th metatarsals, talus;	R
	navicular, cuboid, calcaneus, talus, lateral and intermediate cuneiforms, 1st, 3rd, 4th metatarsals;	L
	foot phalanges (6)	?
15B	*Cranial*	
	subadult occipital frag. (basilar portion); subadult unidentifiable cranial frag.	
	Dental	
	maxillary di	
	Postcranial (all subadult)	
	scapular frag.	?
	vertebral frags. (body, arches)	
	rib frags. (2)	
	clavicle frag. (scapular end)	?
	unidentifiable long bone shaft frags.	?
16F	*Cranial*	
	miscellaneous subadult cranial frags. (most major areas represented);	
	mandibular frag. (corpus)	R
	Dental	
	maxillary dm2; mandibular dm1, dm2; adult canine cap (unerupted);	
	Postcranial (all subadult)	
	scapula (complete)	L
	scapula frag.	R
	innominates	R,L
	tibiae	R,L
	femur (shaft, proximal)	R
	femur (shaft, distal)	L
	fibula (complete)	R,L
	ulnae (shaft, proximal)	R,L
	radius (shaft, proximal)	R,L
	humerus (shaft, proximal)	R
	humerus (distal)	L
	rib frags. (6)	

Context/ Individual	Bone/Description	Side
	vertebral frags.	
	unidentifiable long bone shaft frags.	?
17C	*Cranial*	
	miscellaneous subadult cranial frags. (most major areas represented, but fragile);	
	Dental	
	dm1 frag.; dm2 cap; adult M cap; maxillary dm1, three dm2; mandibular di;	
	Postcranial	
	clavicle (proximal, distal)	L
	clavicle (complete)	R
	femora (shaft, proximal)	R,L
	tibiae (shaft, proximal)	R,L
	humerii (shafts)	R,L
	ulna (shaft, proximal)	R
	fibula (shaft)	?
	innominate (ilia)	R,L
	innominate (ischium)	L
	scapula (nearly complete)	R
	scapula frags.	L
	miscellaneous ribs, vertebrae	
	Hand/Foot: unidentifiable bones (2)	?
17D	*Dental*	
	mandibular symphysis frag. with no teeth; loose teeth = maxillary PM; mandibular I, C, PM; 2 unidentifiable tooth roots	
	Postcranial	
	scapula frags.	R
	femur (shaft, distal)	R
	femur (shaft, proximal)	L
	clavicles (scapular ends)	R,L
	patellae (complete)	R,L
	humerii (shaft, distal)	R,L
	ulna (fragmented but complete)	R
	ulna (shaft, distal)	L
	radii (shaft, proximal)	R,L
	fibula frags. (shaft)	?
	tibia (shaft, proximal)	?
	innominate frags. (pubis, ilium)	L
	Postcranial	
	miscellaneous ribs, vertebrae	
	Hand: trapezium, 1st, 2nd, 3rd metacarpal;	R

Context/ Individual	Bone/Description	Side
	scaphoid, capitate, 2nd, 4th, 5th metacarpal;	L
	unidentifiable carpal frags. (5)	?
	hand phalanges (11)	?
	Foot: right and left complete tarsal and metatarsal components;	R,L
	foot phalanges (7)	?
17G	*Cranial*	
	miscellaneous cranial frags. (including most major cranial areas)	
	maxillary frags. (with left M1, M2, M3, C, I2; right I2, C, PM2, M1)	R,L
	Dental	
	mandibular M1, M3, PM1, M3 (?)	
	Postcranial	
	humerii (complete)	R,L
	ulna (complete)	L
	ulna (shaft, proximal)	R
	radii (complete)	R,L
	clavicles (complete)	R,L
	tibiae (complete)	R,L
	femora (complete)	R,L
	fibulae (shaft, distal)	R,L
	patellae (frags.)	R,L
	scapula frags.	R,L
	sternum	
	sacrum	
	innominates (nearly complete)	R,L
	miscellaneous ribs, vertebrae	
	Hand: scaphoid, lunate, capitate, hamate, 1-5 metacarpals;	R
	scaphoid, capitate, hamate, trapezium, trapezoid, 1-5 metacarpals;	L
	hand phalanges (19)	?
	unidentifiable carpal frags. (5)	?
	Foot: talus, calcaneus, navicular, cuboid, medial and intermediate and lateral cuneiforms, 1-5 metatarsals;	R
	talus, calcaneus, navicular, cuboid, medial and intermediate and lateral cuneiforms, 1-5 metatarsals;	L
	foot phalanges (16)	?

Context/ Individual	Bone/Description	Side
17H	*Cranial*	
	miscellaneous subadult cranial frags. (including most all major areas, but fragile); maxillary, mandibular frags.	
	Dental	
	maxillary di (4), dc (2), dm1 (2), dm2 (2); mandibular di (4), dc (1), dm1 (2), dm2 (2); adult molar, incisor caps (unerupted)	
	Postcranial (all subadult)	
	scapula frag.	R
	clavicle (shaft, distal)	R
	humerus (complete)	R
	humerus (shaft, distal)	L
	ulna (shaft, proximal)	R
	tibia (complete)	R
	tibia (shaft, distal)	L
	femora (fragmented, but complete)	R,L
	ilium, ischium, pubis	R,L
	fibula (shaft)	?
	radius (proximal)	?
	unidentifiable frag. (1)	
18A	*Cranial*	
	miscellaneous cranial frags. (parietals, frontal); mandibular corpus	
	Dental	
	maxillary PM1 (?); mandibular M1	
	Postcranial	
	scapula frags.	R,L
	clavicle (complete)	L
	humerus (shaft, distal)	R
	humerus (distal, proximal)	?
	ulnae (complete)	R,L
	radius (shaft, proximal)	R
	radius (complete)	L
	tibiae (shaft, proximal, distal)	R,L
	femora (shaft, proximal, distal)	R,L
	patellae (complete)	R,L
	fibula (shaft, distal)	R,L
	sternum	
	innominate frags.	R,L
	miscellaneous ribs, vertebrae	
	Hand: 1-5 metacarpals;	R
	trapezium, 1st, 2nd, 4th metacarpals;	L

Context/ Individual	Bone/Description	Side
	hand phalanges (18)	?
	Foot: talus, calcaneus, navicular, medial and lateral cuneiforms, 1st, 2nd, 4th, and 5th metatarsals;	R
	talus, calcaneus, navicular, medial and lateral and intermediate cuneiforms, 1-5 metatarsals;	L
	cuboid	?
	foot phalanges (12)	?
	sesamoid bone (1)	?
	unidentifiable hand/foot bones (9)	?
18C	*Cranial*	
	two subadult unidentifiable cranial frags.	
	Dental	
	maxillary di; probable di	
	Postcranial (all subadult)	
	scapula (complete)	L
	scapula frags. (3)	R
	ilium, ischium, pubis	L
	ilium, ischium	R
	clavicles (complete)	R,L
	humerii (complete)	R,L
	ulnae (nearly complete)	R,L
	radii (nearly complete)	R,L
	femur (complete)	R
	femur (shaft, proximal)	L
	tibiae (shaft, proximal)	R,L
	fibula (complete)	?
	fibula (shaft)	?
	sacral segments (2)	
	miscellaneous ribs, vertebrae	
	Hand: hand phalanx (1)	?
	Foot: talus	R
	calcaneus, talus	L
	unidentifiable hand/foot phalanges (12)	?
18D	*Cranial*	
	miscellaneous subadult cranial frags. (most all of cranium represented);	
	maxillary frags. with right dc, dm1, dm2; left dc, di2, dm1, dm2; adult I cap; mandibular frags. with right dm1, dm2, adult M1, I caps; left dm1, dm2, di2, adult M1, I caps	R,L

Context/ Individual	Bone/Description	Side
	Dental	
	maxillary di1; mandibular di2, di1; adult M1 cap	
	Postcranial (all subadult)	
	clavicle (shaft, distal)	R
	fibula frags. (4) (shaft, distal)	?
	ulnae (shafts)	R,L
	humerus (shaft, proximal)	R
	humerus (shaft, distal)	L
	tibia (shaft, distal)	?
	ischium	L
	radii (complete)	R,L
	femur (shaft)	?
	Hand/Foot: unidentifiable phalanges (6)	?
18E	*Dental*	
	maxillary I (?); mandibular frags. (3) with	
	right C, PM2; mandibular left C, I2	
	Postcranial	
	hyoid body	
	scapula frags.	R,L
	clavicle (shaft)	L
	ulna (shaft, proximal)	R
	radius (shaft, proximal)	R
	femur (shaft)	R
	femur (proximal, distal)	L
	fibula frags. (4) (shaft, distal)	L
	fibula (shaft)	R
	sternum	
	innominate frags. (6)	R,L
	miscellaneous ribs, vertebrae	
	Hand: 3rd metacarpal;	R
	trapezium, 3rd, 5th metacarpals;	L
	hand phalanges (10)	?
	unidentifiable carpal frags. (4)	?
	Foot: talus, calcaneus, lateral and medial	R
	and intermediate cuneiforms, 3rd, 5th metatarsals;	
	talus, calcaneus, cuboid, 4th metatarsal;	L
	foot phalanges (3)	?
20C	*Postcranial*	
	ulna (shaft, proximal)	R
	patellae	R,L
	radius (complete)	L
	fibula (shaft, distal)	L

Context/ Individual	Bone/Description	Side
	fibula (shaft)	R
	clavicles (shafts)	R,L
	innominate frags.	R,L
	miscellaneous ribs, vertebrae	
	Hand: scaphoid, 1st, 3rd metacarpals;	R
	1st, 2nd, 3rd, 5th metacarpals;	L
	miscellaneous hand phalanges	?
	unidentifiable carpal frags.	?
	Foot: talus, calcaneus, navicular, cuboid, medial and intermediate and lateral cuneiforms, 1st metatarsal frag., 4th, 5th metatarsals;	R
	talus, calcaneus, navicular, medial and intermediate and lateral cuneiforms, cuboid, 1st, 2nd, 3rd, 5th metatarsals;	L
	miscellaneous foot phalanges	?
	sesamoid bone (1)	?
21A	*Cranial*	
	miscellaneous cranial frags. (representing most of cranium, but no maxilla);	
	Dental	
	complete mandible with left C, I2; loose teeth = maxillary I (2), mandibular right C	
	Postcranial	
	clavicle (shaft, distal)	R
	clavicle (distal)	L
	humerus (shaft, distal)	R
	humerus (shaft)	L
	ulnae (shaft, proximal)	R,L
	radius (proximal)	R
	radius (shaft, proximal)	L
	femur (shaft)	R
	femur frags. (proximal, distal)	?
	patellae	R,L
	scapula frags. (3)	L
	innominate frags (12)	R,L
	sacral ala (1)	
	miscellaneous ribs, vertebrae	
	unidentifiable long bone shaft frags.	
	Hand: scaphoid, lunate, hamate, capitate, trapezoid, 1st, 2nd, 5th metacarpals;	R
	scaphoid, 1st, 2nd, 3rd, 5th metacarpals;	L
	hand phalanges (10)	?

Context/ Individual	Bone/Description	Side
	Foot: talus, calcaneus, navicular, medial and lateral cuneiforms, 2-5 metatarsals;	R
	talus, calcaneus, cuboid, intermediate cuneiform, 2nd, 5th metatarsals;	L
	unidentifiable metatarsal frags. (4)	?
	foot phalanges (11)	?
	sesamoid bone (1)	?
22D	*Cranial*	
	subadult unidentifiable cranial frags. (3)	
	Postcranial	
	subadult rib frag.	
	unidentifiable subadult frag.	
22F	*Postcranial*	
	vertebral frags. (9) - bodies, arches	
23A	*Dental*	
	maxillary I2, PM; mandibular M1	
	Postcranial	
	scapula frag.	?
	femora (shafts)	R,L
	femur (proximal)	?
	radius (complete)	L
	radius (shaft)	R
	ulnae (shafts)	R,L
	fibula (shaft)	?
	ilium frag.	L
	vertebral body frag.	
	unidentifiable long bone shaft frags.	?
	Hand: lunate, trapezium, hamate, 1st, 3rd metacarpals;	R
	capitate, scaphoid, lunate, hamate, trapezium, 2nd, 3rd metacarpals;	L
	unidentifiable metacarpal shaft frags. (6)	?
	hand phalanges (8)	?
	Foot: talus, calcaneus, navicular, lateral cuneiform;	R
	navicular, calcaneus, medial cuneiform, 1st, 3rd, 5th metatarsals;	L
	unidentifiable metatarsal frags. (3)	?
	foot phalanges (9)	?
23B	*Cranial*	
	miscellaneous cranial frags. (representing most of cranium);	

Context/ Individual	Bone/Description	Side
	maxilla frags. with right M1, M2, PM1, PM2, I2, C; left M1, M2, PM1	R,L
	mandible with right M3, M2, M1, I2; left I1, PM1, PM2, M1, M2, M3	
	Dental	
	maxillary M3, I1, left PM2, left C	
	Postcranial	
	clavicle (complete)	L
	clavicle (distal)	R
	scapula frags.	R,L
	humerii (shaft, distal, proximal)	R,L
	ulnae (shaft, proximal)	R,L
	femur (shaft, proximal, distal)	L
	patellae	R,L
	tibia (shaft)	?
	radii (shafts)	?
	fibula (shaft)	?
	sternum	
	innominate frags.	L
	fibula (distal)	R
	miscellaneous ribs, vertebrae	
	Hand: scaphoid, lunate, capitate, 2nd, 3rd metacarpals;	R
	scaphoid, capitate, hamate, trapezoid, 2nd, 3rd metacarpals;	L
	hand phalanges (13)	?
	Foot: medial, lateral cuneiforms, 5th metatarsal;	R
	foot phalanges (2)	?
	unidentifiable hand/foot frags. (14)	?
23C	*Cranial*	
	miscellaneous subadult cranial frags. (representing most of cranium)	
	Dental	
	maxillary frag. with left dm1, dm2;	
	mandible (complete) with right dc, dm1, dm2; left di2, dc, dm1, dm2;	
	loose teeth = maxillary dc, di2; adult I caps	
	Postcranial (all subadult)	
	femur (shaft, proximal)	R
	femur (shaft, distal)	L
	tibia (complete)	R

Context/ Individual	Bone/Description	Side
	tibia (shaft, proximal)	L
	fibula (complete)	R
	fibula (shaft)	L
	clavicle (complete)	R
	ulna (complete)	L
	ulna (shaft, proximal)	R
	scapula frag.	L
	humerus (shaft, distal)	R
	humerus (shaft)	L
	ilia	R,L
	ischium	R
	miscellaneous ribs, vertebrae	
	unidentifiable long bone shaft frags. (2)	?
	Hand/Foot: unidentifiable bones (10)	?
25A	*Cranial*	
	miscellaneous cranial frags. (6) (occipital, parietal)	
	Dental	
	mandibular M3	
	Postcranial	
	humerus (shaft, distal)	R
	ulna (shaft, proximal)	R
	femur (shaft)	R
	fibula (shaft, distal)	R
	ulna (proximal)	?
	humerus (proximal)	?
	clavicle (complete)	L
	radius (shaft, proximal)	L
	innominate frags. (3 = ilium, pubis)	?
	miscellaneous ribs, vertebrae	
	Hand: 2nd metacarpal	R
	capitate, 3rd metacarpal	L
	hand phalanges (7)	?
	Foot: foot phalanges (7)	?
25D (a)	*Cranial*	
	partially reconstructed calvarium and face and miscellaneous cranial frags. (most all cranial portions represented); edentuous maxillary palate	
	Postcranial	
	clavicle (shaft)	R
	scapula frags.	R,L
	ulnae (shaft, proximal, distal)	R,L

Context/ Individual	Bone/Description	Side
	femora (complete)	R,L
	humerus (shaft, distal)	R
	radius (shaft, proximal)	R
	radius (distal)	?
	tibiae (shafts)	R,L
	tibia (distal)	R
	tibia (proximal)	?
	sternum frags. (2)	
	sacrum frag. (dorsal)	
	innominate frags. (ilium)	R,L
	fibula (shaft)	?
	miscellaneous ribs, vertebrae	
	unidentifiable long bone shaft frags.	
	Hand: trapezoid, 1st, 2nd, 5th metacarpals;	R
	1st, 3rd, 5th metacarpals;	L
	hand phalanges (8)	?
	unidentifiable metacarpals (3)	?
	Foot: talus, 1st, 3rd, 4th metatarsals;	R
	calcaneus, 2nd, 3rd metatarsals;	L
	foot phalanges (2)	?
25D (b)	*Postcranial*	
	clavicle (shaft)	L
	ulna (shaft, proximal)	R
	femora (shaft, proximal, distal)	R,L
	vertebra (1 = lumbar)	
	Hand: 1st metacarpal	L
	1 unidentifiable hand bone - metacarpal?	?
25D (c)	*Postcranial*	
	subadult rib frag.	
27A	*Cranial*	
	miscellaneous cranial frags. including most of cranium;	
	maxillary frag. (1)	
	mandibular corpus frags. (2)	
	Dental	
	maxillary M3 (2), M1; mandibular PM (3), PM1, I1, I2, C	
	Postcranial	
	radius (complete)	L
	radius (shaft, proximal, distal)	R
	ulnae (shafts, proximal)	R,L
	humerii (shaft, proximal, distal)	R,L

Context/ Individual	Bone/Description	Side
	tibiae (shaft, distal)	R,L
	femur (proximal)	L
	patella	L
	clavicles (shaft, distal)	R,L
	fibula (shaft, distal)	?
	scapula frags.	R,L
	innominate frags. (15)	R,L
	miscellaneous rib, vertebrae frags.	
	unidentifiable long bone frags.	
	Hand: scaphoid, lunate, capitate, triquetral, hamate, 1st, 3-5 metacarpals;	R
	scaphoid, lunate, hamate, trapezoid, capitate, trapezium, triquetral, 1-3, 5th metacarpals;	L
	hand phalanges (20);	?
	Foot: talus, calcaneus, navicular, cuboid, medial and lateral and intermediate cuneiforms, 1-5 metatarsals;	R
	talus, calcaneus, navicular, medial and lateral and intermediate cuneiforms, 1st, 2nd, 4th, 5th metatarsals;	L
	foot phalanges (16)	?
	sesamoid bones (4)	?
	unidentifiable tarsal frags. (14)	?

Appendix B: Inventory of Ceramic Artifacts from Contexts Discussed in Chapter 6

44SM7, 1C

Rims

Grit tempered knotted net (plain lip)	2
Grit tempered burnished	1
Grit tempered pinched	1
Grit tempered folded rim smoothed	1
Grit tempered knotted net (fingernail punctated lip)	1

Necks

Grit tempered knotted net	1
Grit tempered smoothed	1
Grit tempered burnished	1
Sand/grit tempered knot roughened	1

Body Sherds

Grit (chalcedony) tempered curvilinear complicated stamp	1
Limestone tempered plain	1
Limestone tempered knotted net	5
Limestone tempered smoothed	6
Grit tempered looped net	2
Grit tempered knotted net	22
Grit tempered knot-roughened	9
Grit tempered fabric impressed	1
Grit tempered looped net	1
Grit tempered plain	13
Grit tempered smoothed	1
Grit tempered residual	3
Grit/chalcedony tempered stamped	1
Sand tempered fabric impressed	1
Sand tempered knot-roughened	1
Limestone tempered stamped	1
Limestone tempered knotted net	6
Limestone tempered smoothed	3
Limestone tempered knot roughened	3
Limestone tempered residual	2
Limestone tempered burnished	1

44SM7, 1D

Rims

Grit tempered knotted net with applique nodes on rim strip	2
Grit tempered burnished	2
Limestone tempered fingernail punctated knotted net	1
Limestone tempered looped net with small applique nodes on rim strip	1
Grit tempered knotted net	1

Necks

Grit tempered knotted net	4
Limestone tempered net impressed	1
Sand tempered smoothed	1
Limestone tempered looped net	1
Sand tempered looped net	1
Sand/grit tempered smoothed	1
Sand/grit tempered knotted net	1
Grit tempered knotted net	1

Body Sherds

Grit tempered knot roughened	21
Grit tempered looped net	8
Grit tempered plain	2
Grit tempered knotted net	57
Grit tempered smoothed	23
Soapstone tempered smoothed	1
Sand/grit tempered plain	2
Sand/grit tempered knotted net	20

Notes for Interpretation of Appendix B:

1. All sherds are inventoried under their respective feature numbers and are further subdivided into rim, neck and body sherds.
2. The temper and then the surface treatment attribute states of the sherds are listed. The surface treatments for the lips of rim sherds are noted in parentheses.
3. Gastropod shell tempered sherds are referred to as either "Gastropod tempered" or "Gastropod shell tempered."
4. Sherds with "residual" or "indeterminate" surface treatments were either too small or had surfaces too eroded to determine their exact surface treatment.

Sand/grit tempered knot roughened	6
Sand/grit tempered knot roughened/ interior burnished	1
Sand/grit tempered burnished	3
Gastropod shell tempered knot roughened	2
Grit tempered burnished	2
Grit tempered residual	1
Grit tempered looped net	2
Limestone tempered knotted net	7
Limestone tempered looped net	2
Limestone tempered plain	1
Limestone tempered residual	4
Limestone tempered smoothed	13
Limestone tempered knot roughened	6

44SM7, lE

Rims

Mussel shell tempered plain	1
Limestone tempered plain	1
Grit tempered smoothed (cazuela)	1
Grit tempered (Lamar) incised (parallel lines)	1
Grit tempered small inverted rim-net roughened	1
Grit tempered smoothed with rim strip	1
Grit tempered knotted net (also on flat lip)	2
Grit tempered cord marked	1
Grit tempered scraped with fingernail punctation, lip (side)	1
Grit tempered knotted net with fingernail punctated lips (on side of rim)	3
Grit tempered knotted net, with fingernail pinched nodes on side of lip	1
Grit tempered Lamar incised (1 burnished)	4
Grit tempered burnished (1 inverted rim)	9
Grit tempered knotted net	15
Grit tempered smoothed	8
Grit tempered smoothed with rim strip	1
Grit tempered knotted net with rim strips	2
Grit tempered knotted net with fingernail punctations on lips	14
Grit tempered looped net	1
Grit tempered plain (pinch pot)	1
Grit tempered knotted net with fingernail punctation	4
Grit tempered burnished with fingernail punctation	1
Grit tempered plain with fingernail punctation	4
Grit tempered looped net with fingernail punctation	3
Grit tempered knotted net with applique nodes	3
Grit tempered burnished with applique nodes on rim strip	1

Necks

Limestone tempered net roughened	1
Grit tempered horizontal incised strap handle	1
Grit tempered smoothed everted strap handle	1
Sand tempered diagonal stamped (rectilinear)	1
Grit tempered smoothed	1
Grit tempered applique on knotted net	1
Grit tempered cord marked	2
Grit tempered roughened	3
Grit tempered burnished	2
Grit tempered smoothed	10
Grit tempered knotted net	32
Grit tempered plain	2
Grit tempered knotted net with rim strip	1
Grit tempered incised	1
Grit tempered burnished	1
Grit tempered coil fragment	1
Grit tempered residual	1

Body Sherds

Gastropod shell tempered knotted net	1
Grit tempered knot roughened	84
Limestone residual	4
Sand residual	1
Grit tempered residual	26
Limestone tempered looped net	2
Limestone tempered knot roughened	8
Limestone tempered smoothed	8
Grit tempered knot roughened	1
Grit tempered incised (two parallel lines)	2
Grit tempered fabric impressed	7
Limestone/grit tempered cord marked	1
Grit tempered looped net	41
Grit tempered knotted net	250

Grit tempered smoothed	70
Sand tempered knot roughened	1
Grit tempered plain	8
Grit tempered burnished	20
Limestone tempered plain	7
Limestone tempered knotted net	12
Grit tempered cord marked	1
Grit tempered looped net	4
Grit tempered knotted net with cord marked neck	2
Sand tempered linear stamped	1
Limestone tempered incised	1
Fired clay ball	1
Grit tempered smoothed disc	1
Grit tempered knotted net disc	1

44SM7, 2G

Rims

Grit tempered looped net (plain lip)	1
Limestone tempered fabric (plain lip)	2
Limestone tempered looped net (plain lip)	4
Limestone tempered looped net (fingernail incised lip)	3
Limestone tempered diagonal incised lip	1
Limestone tempered smoothed	5
Limestone tempered incised over looped net (Dallas-like)	1
Limestone tempered diagonal/ chevron incised	3
Limestone tempered diagonal incised applique strip on looped net (1 with strap handle)	3
Limestone tempered diagonal/incised/ punctated rim strip on looped net body	1
Limestone tempered "V" incised applique strip on looped net (or fabric)	1

Necks

Limestone tempered "V" incisions along applique strip on looped net body	1
Limestone tempered diagonal incisions along applique strip on looped net body	1
Limestone tempered looped net	3
Limestone tempered smoothed (2 with handle attachments)	5

Body Sherds

Limestone tempered loose simple twined fabric	1
Limestone tempered plain	3
Limestone tempered burnished	1
Limestone tempered scraped	2
Limestone tempered incised (2 diagonal lines)	1
Limestone tempered residual	45
Daub	2
Limestone tempered knotted net	15
Limestone tempered knot roughened	14
Limestone tempered smoothed	67
Limestone tempered looped net	151
Shell and limestone tempered smoothed	2
Sand tempered looped net	3
Sand tempered smoothed	1
Sand tempered residual	1
Grit tempered looped net	10

44SM7, 4A

Rims

Grit tempered knotted net (plain lip)	2
Sand tempered knotted net (plain lip)	1
Sand tempered smoothed (plain lip)	2
Sand tempered scraped (plain lip)	1
Grit tempered inverted rim cazuela with multiple reed punctations	1
Grit tempered plain	1
Grit tempered smoothed	1
Grit tempered smoothed (over net)	1
Sand tempered smoothed (over net)	1
Sand tempered scraped	1
Sand tempered knotted net	1
Gastropod shell tempered plain	1
Gastropod shell tempered smoothed (over net)	1
Gastropod shell tempered knotted net	1
Gastropod shell tempered smoothed over net with slightly folded and fingernail incised lip	1

Necks

Grit tempered knotted net	2
Grit tempered scraped	1
Grit tempered punctate	2
Grit tempered knotted net	1

Sand tempered smoothed (over net)	1
Limestone tempered knotted net	1
Gastropod shell tempered knotted net	1

Body Sherds

Limestone tempered knotted net	1
Limestone tempered punctate	1
Gastropod shell tempered knotted net	5
Gastropod shell tempered looped net	1
Gastropod shell tempered smoothed (over net)	1
Sand tempered residual	1
Sand tempered cob marked	1
Sand tempered knotted net	5
Sand tempered smoothed (over net)	5
Sand tempered smoothed	2
Sand tempered scraped	5
Grit tempered residual	1
Grit tempered plain	1
Grit tempered looped net	1
Grit tempered smoothed (over net)	3
Grit tempered scraped (over net)	22
Grit tempered knotted net	14
Limestone tempered residual	3
Limestone tempered net roughened	1
Limestone tempered knotted net	2
Limestone tempered looped net	1
Sand tempered knotted net	3
Sand tempered scraped	3
Sand tempered smoothed (over net)	9
Grit tempered knotted net	3
Grit tempered residual	6
Grit tempered looped net	1
Grit tempered scraped	1
Grit tempered net roughened	3
Grit tempered smoothed (over net)	6
Grit tempered knotted net	8
Gastropod shell tempered knotted net	8
Gastropod shell tempered knot roughened	1
Gastropod shell tempered residual	4

44SM7, 10A

Rims

Sand tempered smoothed/scraped (plain lip)	2
Gastropod tempered knotted net (plain lip)	3
Sand tempered plain	1
Gastropod tempered plain	1
Gastropod tempered knot roughened (plain lip)	1
Gastropod tempered cob marked with strap fragment	1
Grit tempered knotted net (plain lip)	2
Grit tempered knotted net (fingernail punctated lip)	1

Necks

Grit tempered knotted net	5
Sand tempered plain	1
Sand tempered smoothed	2
Sand tempered net roughened	1
Grit tempered punctated	1
Grit tempered handle fragment (loop)	1

Body Sherds

Soapstone tempered plain	2
Soapstone tempered burnished	2
Soapstone tempered net roughened	3
Soapstone tempered residual	3
Daub	3
Limestone tempered knotted net	3
Limestone tempered net roughened	3
Limestone tempered plain	1
Limestone tempered smoothed	1
Limestone tempered scraped	1
Sand tempered residual	5
Grit tempered plain	1
Grit tempered cord marked	1
Grit tempered scraped	6
Grit tempered simple twined fabric	1
Grit tempered burnished	1
Grit tempered looped net	5
Grit tempered net roughened	3
Grit tempered smoothed	13
Grit tempered knotted net	52
Sand tempered knotted net	32
Sand tempered scraped	1
Sand tempered burnished	4
Sand tempered plain	1
Sand tempered knotted net	1

Sand tempered smoothed	5
Sand tempered residual	3
Gastropod tempered knotted net	32
Gastropod tempered residual	2
Gastropod tempered smoothed	13
Gastropod tempered net roughened	2
Gastropod tempered cob marked	1
Gastropod tempered scraped	1
Grit tempered net roughened discs	2

44SM7, 10B

Rims

Grit tempered smoothed (plain lip)	1
Grit tempered knotted net (plain lip)	10
Grit tempered knotted net (incised l.ip)	1
Grit tempered knotted net (punctated lip)	1
Grit tempered cob marked (plain lip)	1
Soapstone tempered knotted net (plain lip)	1
Gastropod tempered knotted net (plain lip)	6
Gastropod tempered knotted net (incised lip)	1
Gastropod tempered smoothed	1
Sand tempered smoothed (plain lip)	2
Sand tempered knotted net (plain lip)	1
Sand tempered cob marked	1

Necks

Gastropod shell tempered knotted net	3
Gastropod shell tempered smoothed	2
Sand tempered knotted net	1
Sand tempered knotted net with fingernail punctation	1
Grit tempered knotted net	7
Grit tempered smoothed	2
Grit tempered burnished	1

Body Sherds

Sand/grit tempered residual	17
Soapstone tempered burnished	2
Soapstone tempered plain	1
Soapstone tempered knotted net	1
Soapstone tempered residual	1
Limestone tempered smoothed	3
Limestone tempered knotted net	10
Limestone tempered residual	1
Limestone tempered net roughened	1
Sand tempered residual	9
Sand tempered knotted net	30
Sand tempered plain	1
Sand tempered smoothed	7
Gastropod shell tempered residual	4
Gastropod shell tempered net roughened	2
Gastropod shell tempered smoothed	13
Gastropod shell tempered knotted net	33
Grit tempered residual	2
Grit tempered net roughened	1
Grit tempered cob marked	2
Grit tempered simple twined fabric	2
Grit tempered smoothed	22
Grit tempered knotted net	57

44SM7, 11A

Rims

Grit tempered knotted net (plain lip)	13
Grit tempered knotted net (fingernail punctation on lip)	2
Grit tempered smoothed (fingernail punctation on lip and "O" reed punctations on neck)	1
Grit tempered knotted net with smoothed "collar"	4
Grit tempered scraped (fingernail pwnctated lip)	2
Grit tempered knotted net (net impressed lip)	1
Grit tempered net roughened (plain lip)	1
Grit tempered plain (collared lip)	1
Grit tempered cord marked (plain lip)	1
Grit tempered smoothed (plain lip)	2
Gastropod shell tempered knotted net (plain lip)	2
Gastropod shell tempered cob marked	1
Gastropod shell tempered smoothed	1
Limestone tempered knotted net (fingernail punctation on neck)	1
Limestone tempered knotted net (plain lip)	4
Sand tempered burnished (pipe?)	1
Sand tempered knotted net (plain lip)	3
Sand tempered knotted net (net impressed lip)	1
Sand tempered smoothed (plain lip)	2

Necks

Limestone tempered fingernail punctate	1
Gastropod shell tempered cob marked	1
Grit tempered smoothed	1
Grit tempered knotted net	6
Sand tempered knotted net	2

Body Sherds

Daub	3
Sand tempered pipe bowl	1
Crushed quartz tempered smoothed	2
Crushed quartz tempered knotted net	1
Soapstone tempered plain	3
Soapstone tempered scraped	1
Soapstone tempered smoothed	1
Soapstone tempered indeterminate (with some shell)	1
Soapstone tempered net roughened	1
Sand tempered plain	1
Sand tempered cob marked	1
Sand tempered scraped	1
Sand tempered smoothed	4
Sand tempered residual	1
Sand tempered knotted net	34
Sand tempered smoothed	1
Limestone tempered cord marked	1
Limestone tempered plain	4
Limestone tempered smoothed	6
Limestone tempered cob marked	1
Limestone tempered residual	2
Limestone tempered knotted net	24
Gastropod shell tempered residual	7
Gastropod shell tempered net roughened	5
Gastropod shell tempered plain	3
Gastropod shell tempered scraped	4
Gastropod shell tempered smoothed	23
Gastropod shell tempered knotted net	66
Grit tempered residual	12
Grit tempered burnished	2
Grit tempered scraped	3
Grit tempered looped net	4
Grit tempered net roughened	5
Grit tempered plain	5
Grit tempered cob marked	1
Grit tempered smoothed	46
Grit tempered knotted net	77

44SM7, 11E

Rims

Gastropod shell tempered knotted net (plain lip)	1
Gastropod shell tempered (plain lip)	1
Sand tempered knotted net (plain lip)	1
Grit tempered knotted net (plain lip)	3
Grit tempered knotted net (net impressed lip)	1
Grit tempered knotted net (fingernail punctated lip)	1

Necks

Sand tempered residual	1
Grit tempered scraped	1
Grit tempered fingernail punctated	1
Gastropod shell tempered knotted net	1

Body Sherds

Soapstone tempered smoothed	2
Soapstone tempered knotted net	1
Daub	1
Limestone tempered knotted net	2
Limestone tempered scraped	1
Limestone tempered smoothed	2
Limestone tempered net roughened	2
Sand tempered burnished	1
Sand tempered residual	2
Sand tempered smoothed	1
Sand tempered with multiple "O" punctations	1
Sand tempered knotted net	4
Sand tempered looped net	3
Sand tempered cord marked	1
Grit tempered residual	3
Grit tempered scraped	1
Grit tempered burnished	1
Grit tempered cord marked	1
Grit tempered smoothed	11
Grit tempered looped net	6
Grit tempered knotted net	21
Gastropod shell tempered net roughened	1
Gastropod shell tempered cob marked	2

Gastropod shell tempered burnished	1
Gastropod shell tempered looped net	2
Gastropod shell tempered knotted net	14
Gastropod shell tempered smoothed	6

44SM7, 12F

Rims

Gastropod shell tempered plain	1
Gastropod shell tempered knotted net (plain lip)	4
Grit tempered knotted net (plain lip)	3
Grit tempered looped net (punctated lip)	1
Sand tempered knotted net (plain lip)	1
Sand tempered scraped (plain lip)	2
Sand tempered scraped (knotted net lip)	1

Necks

Grit tempered knotted net	4
Grit tempered looped net	1
Grit tempered smoothed	1
Gastropod shell tempered knotted net	3

Body Sherds

Grit tempered residual	26
Sand tempered residual	8
Limestone tempered residual	2
Gastropod shell tempered residual	18
Daub	2
Soapstone tempered knotted net	1
Soapstone tempered scraped	1
Limestone tempered knotted net	8
Sand tempered simple stamped	1
Sand tempered plain	1
Sand tempered scraped	1
Sand tempered knotted net	16
Sand tempered smoothed	7
Gastropod shell tempered looped net	3
Gastropod shell tempered smoothed	8
Gastropod shell tempered plain	5
Gastropod shell tempered scraped	3
Gastropod shell tempered knotted net	23
Grit tempered cord marked	2
Grit tempered simple twined fabric	1
Grit tempered looped net	3
Grit tempered punctated "0"	1
Grit tempered plain	3
Grit tempered smoothed	26
Grit tempered knotted net	34
Grit tempered burnished pipe stem with circular collar	1
Grit tempered smoothed pipe bowl fragment	1

44SM7, 15C

Rims

Gastropod shell tempered knotted net (plain lip)	1
Sand tempered knotted net (plain lip)	1
Grit tempered knotted net (plain lip)	1
Grit tempered smoothed (plain lip)	1
Grit tempered knotted net (net impressed lip)	1
Grit tempered knotted net (drag-and-punch comb marks on lip)	1
Grit tempered knotted net (plain lip)	1
Grit tempered knotted net (plain lip with applique nodes just below lip)	2

Necks

Sand tempered knotted net	1
Gastropod tempered smoothed	1
Grit tempered plain	1
Grit tempered knotted net	1
Grit tempered scraped	1
Grit tempered smoothed	1

Body Sherds

Limestone tempered smoothed	1
Soapstone tempered scraped over knotted net	1
Grit tempered residual	2
Gastropod tempered residual	3
Gastropod tempered smoothed	2
Gastropod tempered knotted net	13
Sand tempered smoothed	4
Sand tempered plain	1
Sand tempered looped net	1
Sand tempered knotted net	6
Grit tempered cord marked	1
Grit tempered looped net	1
Grit tempered scraped	1
Grit tempered smoothed	7
Grit tempered knotted net	25

44SM7, 16D

Rims

Sand tempered knotted net (plain lip)	5
Grit tempered knotted net (plain lip)	2
Limestone tempered plain	1
Gastropod shell tempered scraped (fingernail punctated lip)	1
Gastropod shell tempered net roughened (fingernail punctated lip)	1

Necks

Grit tempered burnished	1
Grit tempered knotted net	2
Grit tempered residual	1

Body Sherds

Grit tempered burnished	3
Soapstone tempered knotted net	1
Soapstone tempered smoothed	1
Limestone tempered knotted net	1
Limestone tempered net roughened	2
Sand tempered knotted net	11
Sand tempered smoothed	2
Sand tempered cob marked	1
Sand tempered residual	2
Grit tempered plain	2
Grit tempered fingernail incised/punctated	1
Grit tempered smoothed	5
Grit tempered knotted net	19
Gastropod shell tempered knotted net	25
Gastropod shell tempered smoothed	9
Gastropod shell tempered burnished	1
Gastropod shell tempered scraped	2
Gastropod shell tempered residual	2

44SM7, 16E

Rims

Sand tempered burnished	1
Grit tempered scraped (cazuela)	1
Grit tempered plain	1
Grit tempered scraped	1
Grit tempered knotted net	1
Limestone tempered smoothed (punctated lip)	1
Limestone tempered knotted net (fingernail punctation)	1
Gastropod shell tempered smoothed	1
Gastropod shell tempered knotted net (plain lip)	1
Gastropod shell tempered knotted net (fingernail punctation)	1
Gastropod shell tempered smoothed (over net) (plain lip)	1

Necks

Gastropod shell tempered knotted net	2
Grit tempered knotted net	2

Body Sherds

Grit tempered knotted net	8
Grit tempered smoothed	1
Sand tempered burnished	1
Sand tempered knotted net	2
Grit tempered residual	2
Gastropod shell tempered scraped	1
Gastropod shell tempered knotted net	9
Sand tempered knotted net	7
Sand tempered burnished	2
Sand tempered smoothed	1
Sand tempered scraped	2
Grit tempered residual	5
Grit tempered net roughened	2
Grit tempered knotted net	12
Grit tempered scraped	1
Gastropod shell tempered knotted nets	9
Limestone tempered simple twined fabric	1
Limestone tempered knotted net	1
Gastropod shell tempered residual	3
Gastropod shell tempered scraped	3
Gastropod shell tempered scraped with "O" hole punctation	1
Gastropod shell tempered smoothed	1
Grit tempered knotted net	8
Grit tempered smoothed	1
Sand tempered knotted net	1
Soapstone tempered smoothed (over net)	3
Limestone tempered knotted net	1
Gastropod shell tempered knotted net	3
Gastropod shell tempered smoothed	2

44SM7, 16F

Rims

Soapstone tempered knotted net (plain lip)	1
Grit tempered burnished ("O" punctations near lip)	1
Sand tempered knotted (plain lip)	1
Sand tempered (plain lip)	1
Sand tempered smoothed (folded plain lip)	1
Grit tempered knot roughened (plain lip)	1
Grit tempered knot roughened (punctated lip)	1

Necks

Gastropod shell tempered scraped	1
Soapstone tempered knotted net with some exterior scraping	1
Gastropod tempered knotted net	1
Gastropod tempered smoothed	1
Grit tempered scraped (fingernail punctation)	1

Body Sherds

Soapstone tempered knotted net	1
Limestone tempered knotted net	1
Sand tempered knotted net	1
Sand tempered burnished (cazuela)	1
Sand tempered net roughened	1
Gastropod shell tempered smoothed	2
Gastropod shell tempered cob marked	1
Gastropod shell tempered knotted net	10
Grit tempered residual	1
Grit tempered smoothed	4
Grit tempered knotted net	6
Limestone tempered knotted net	1
Limestone tempered residual	1
Soapstone tempered smoothed	3
Soapstone tempered knotted net	5
Grit tempered knotted net	14
Grit tempered looped net	1
Grit tempered residual	2
Grit tempered smoothed	7
Sand tempered knotted net	2
Sand tempered plain	2
Sand tempered scraped	2
Sand tempered burnished	1
Sand tempered looped net	3
Gastropod shell tempered scraped	1
Gastropod shell tempered smoothed	3
Gastropod shell tempered knotted net	14

44SM7, 17G

Rims

Sand tempered knotted net (plain lip)	1
Gastropod tempered knotted net (plain lip)	4
Grit tempered scraped	1
Grit tempered with rim strip (plain lip)	1
Grit tempered knotted net (fingernail punctated lip)	1

Necks

Gastropod tempered looped net	1
Gastropod tempered fingernail punctated	1
Sand tempered knotted net	1
Grit tempered smoothed	1
Grit tempered knotted net	1
Grit tempered scraped with drag-and-punch comb marks	1

Body Sherds

Sand tempered residual	2
Sand tempered smoothed	1
Sand tempered plain	4
Sand tempered knotted net	12
Grit tempered residual	1
Grit tempered plain	2
Grit tempered scraped	2
Grit tempered smoothed	4
Grit tempered simple twined fabric	1
Grit tempered looped net	2
Grit tempered knotted net	13
Soapstone tempered plain	1
Soapstone tempered scraped (1 over knotted net)	2
Gastropod tempered residual	4
Gastropod tempered simple twined fabric	1
Gastropod tempered plain	1
Gastropod tempered smoothed	3
Gastropod tempered looped net	11
Gastropod tempered knotted net	23

44SM7, 22F

Rims

Gastropod shell tempered net roughened (plain lip)	1
Gastropod shell tempered looped net (plain lip)	2
Gastropod shell tempered knotted net (plain lip)	2
Gastropod shell tempered knotted net (fingernail punctated lip)	1
Gastropod shell tempered cob marked (fingernail punctated lip)	1
Soapstone tempered knotted net (net impressed lip)	1

Necks

Sand tempered residual	1
Gastropod shell tempered looped net	2

Body Sherds

Soapstone tempered smoothed	1
Soapstone tempered scraped	2
Crushed quartz tempered knotted net	2
Limestone tempered looped net	3
Limestone tempered knotted net	3
Limestone tempered smoothed	3
Gastropod shell tempered residual	5
Gastropod shell tempered net roughened	4
Gastropod shell tempered smoothed	11
Gastropod shell tempered looped net	4
Gastropod shell tempered knotted net	15
Grit tempered simple twined fabric	1
Grit tempered looped net	1
Grit tempered smoothed	4
Grit tempered knotted net	17
Grit tempered scraped	11
Sand tempered looped net	3
Sand tempered residual	3
Sand tempered knotted net	6
Sand tempered smoothed	2
Sand tempered scraped	7

44SM7, 23C

Rims

Gastropod tempered scraped on rim strip with curved lip	1
Gastropod tempered knotted net (plain lip)	1
Gastropod tempered knotted net (net impressed lip)	1
Gastropod tempered smoothed	1
Gastropod tempered looped net (fingernail punctated lip)	1
Sand tempered plain	2
Sand tempered net roughened	1
Grit tempered knotted net (linear punctated lip)	1
Grit tempered looped net (fingernail punctated lip)	1
Grit tempered looped net (plain lip)	1

Necks

Gastropod tempered scraped	1
Gastropod tempered knotted net	5
Sand tempered smoothed	1
Grit tempered knotted net	3

Body Sherds

Grit/Sand tempered residual	20
Gastropod shell tempered residual	2
Soapstone tempered simple stamped	1
Soapstone tempered smoothed	1
Limestone tempered plain	1
Limestone tempered smoothed	1
Limestone tempered looped net	1
Limestone tempered net roughened	1
Limestone tempered knotted net	3
Gastropod shell tempered cord marked	1
Gastropod shell tempered scraped	3
Gastropod shell tempered residual	9
Gastropod shell tempered smoothed	8
Gastropod shell tempered knotted net	19
Grit tempered residual	1
Grit tempered plain	1
Grit tempered smoothed	6
Grit tempered scraped	3
Grit tempered scraped with parallel incised lines	1
Grit tempered looped net	6
Grit tempered knotted net	24
Sand tempered smoothed	4
Sand tempered scraped	2

Sand tempered looped net	1
Sand tempered knotted net	10

44SM7, 25D

Rims

Limestone tempered looped net neck with Pisgah chevron collared rim	1
Gastropod tempered looped net (plain lip)	3
Soapstone tempered net roughened (plain lip)	1
Grit tempered looped net (plain lip)	3
Grit tempered looped net (fingernail punctated lip)	1
Grit tempered smoothed	1
Grit tempered knotted net (plain lip)	4
Grit tempered knotted net (fingernail punctated lip)	2
Gastropod shell tempered smoothed	1
Gastropod shell tempered knotted net (plain lip)	1
Soapstone tempered knotted net (plain lip)	1
Grit tempered plain	2
Grit tempered smoothed	1
Grit tempered plain with net roughened collar and plain lip	2
Grit tempered plain with net roughened collar and fingernail punctated lip	1
Grit tempered plain cazuela with circular punctations	1
Grit tempered knotted net (plain lip)	3
Grit tempered looped net (plain lip)	2
Grit tempered cob marked (plain lip)	1

Necks

Soapstone tempered burnished	1
Grit tempered burnished	1
Grit tempered looped net	1
Grit tempered scraped	1
Gastropod tempered knotted net	1
Grit tempered plain	1
Grit tempered looped net	2
Gastropod shell tempered scraped	1
Gastropod shell tempered smoothed	1
Gastropod shell tempered cob marked	1

Body Sherds

Limestone tempered smoothed	1
Soapstone tempered looped net	1
Sand tempered residual	1
Sand tempered burnished	1
Sand tempered smoothed	2
Sand tempered looped net	1
Sand tempered knotted net	3
Sand tempered plain pinch pot	1
Grit tempered plain	1
Grit tempered smoothed	3
Grit tempered looped net	16
Grit tempered knotted net	19
Gastropod tempered scraped	8
Gastropod tempered smoothed	8
Gastropod tempered net roughened	1
Gastropod tempered looped net	7
Gastropod tempered knotted net	33
Limestone tempered cob marked	1
Limestone tempered knotted net	2
Limestone tempered smoothed	1
Grit tempered residual	6
Sand tempered looped net	2
Sand tempered scraped	1
Sand tempered plain	1
Sand tempered smoothed	2
Sand tempered knotted net	3
Grit tempered simple twined fabric	2
Grit tempered check stamped	1
Grit tempered scraped	2
Grit tempered smoothed	3
Grit tempered plain (1 with faint incised lines)	3
Grit tempered knotted net	14
Grit tempered looped net	24
Gastropod tempered residual	3
Gastropod tempered plain	2