

Millican Bench (41TV163)

A Multicomponent Site in Travis County, Texas



by

Raymond P. Mauldin, Steve A. Tomka, and Harry J. Shafer

with Contributions by

**Frank A. Weir, J. Philip Dering, Russell D. Greaves, Richard B. Mahoney,
Barbara A. Meissner, Jason D. Weston, and Marybeth S. F. Tomka**

Work Authorization No. 570 14 PD004

Contract No. 570 XX PD004



Environmental Affairs Division
Texas Department of Transportation
Archeological Studies Program, Report No. 66



Center for Archaeological Research
The University of Texas at San Antonio
Archaeological Survey Report, No. 351

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Mauldin et al.

Center for Archaeological Research -ASR #351
Texas Department of Transportation -ASPR #66

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ISBN: 1-930788-36-3

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Printed by Kwik Kopy Printing on Main, San Antonio
2004

jointly published by

Texas Department of Transportation
Environmental Affairs Division
Archeological Studies Program
Owen Lindauer, Ph.D., Supervisor

Archeological Studies Program, Report No. 66
A. McGraw, Series Editor

and

Center for Archaeological Research
The University of Texas at San Antonio
Archeological Survey Report, No. 351

Printed on acid-free, 60 lb. paper
ISBN: 1-930788-36-3

Abstract:

Between September of 1970 and February of 1971, the Texas Highway Department, now the Texas Department of Transportation (TxDOT), carried out extensive hand and mechanical excavations at 41TV163, the Millican Bench site. The highway maintenance crew was ably directed by Frank Weir. Millican Bench represented the first archeological site excavated by the then Texas Highway Department (THD) under their archeological program. In 2001, TxDOT contracted with the Center for Archaeological Research at The University of Texas at San Antonio to provide an assessment of the documents and data and develop research topics that may be successfully pursued with the materials from the site. Based on the assessment it was determined that dependent on data types, four broad analytical units could be defined (Late Prehistoric, and Late, Middle and Early Archaic), and two diachronic and one synchronic research topic would be pursued: changes in subsistence strategies and lithic technological organization, and the evaluation of Feature 3, a possible structure noted at the site. The analysis of the faunal material from the site and comparison with other archeological collections indicates that hunter-gatherers may have pursued a broad-spectrum adaptation, even when bison were present in the region. The lithic assemblage, characterized by predominantly expedient and minimally retouched tool forms, supports this contention. The percentages of what we think are non-local raw materials increases through time. This increase hints at changes in the level or scope of mobility. Patterns in projectile point discard and replacement strategies suggest some premium on preventive tool replacement. Although the photographic documentation strongly supports the likelihood of Feature 3 representing a structure, we have little surviving direct data in support of this possibility. The artifactual data that we can investigate suggests, however, that the circular area may have at least represented some type of maintained space.

All artifacts retained, in consultation with the Texas Historical Commission and TxDOT, and all site documentation are permanently curated at the Center for Archaeological Research. The remains of the single skeleton recovered from the site are also permanently curated at the Center.

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Acknowledgments:

The original data recovery investigations at 41TV163 were conducted by members of the Texas Department of Transportation, under the direction of Dr. Frank A. Weir. Subsequent to the excavations preliminary laboratory processing was carried out on a large portion of the collections by TxDOT staff. CAR would like to extend its thanks and appreciation to the staff of TxDOT who made it possible for us to learn about a piece of the history of Texas archeology and about the prehistory of central Texas. We are especially thankful to Frank Weir who provided useful memories of the excavations and reviewed aspects of the methods chapter.

The analyses and write-up presented in this report were facilitated by the hard work, dedication, and contributions of many individuals. We want to extend our sincere thanks to the personnel of the Environmental Affairs Division of the Texas Department of Transportation. Dr. Owen Lindauer, Dr. Nancy Kenmotsu, and Al McGraw worked closely with CAR personnel providing useful and constructive comments during the development of the research directions followed in this document. They have also been extremely helpful in scheduling progress report meetings and providing useful advice during these meetings, and approving changes in research direction on a timely basis.

Similarly, our thanks also are extended to the laboratory staff that initially scoured the numerous boxes and provided the raw data for the initial site assessment. They included Antonia Figueroa, Rebecca Galdeano, Jennifer Neel-Hartman, Cindy Muñoz, Bryant Saner, Matt Senn, Kristi Ulrich, Stacy Wagner, Jason Weston, José Zapata, and Marybeth Tomka who oversaw this large group.

Special analysts who contributed to this project include: Phil Dering, macrobotanical; Richard Mahoney, human osteology; Barbara Meissner and Russell Greaves, vertebrate faunal; Harry Shafer, Steve Tomka, and Jason Weston, lithics.

Bruce Moses and Rick Young of the CAR Graphics Department drafted the illustrations in the report. Johanna Hunziker edited and formatted the report, greatly improving the disjointed bits and pieces she was presented with (usually at the last minute). Our thanks and appreciation goes out to all.

Chapter 1: The Millican Bench Site

Harry J. Shafer, Frank A. Weir, and Raymond P. Mauldin

Located in Travis County, the Millican Bench site (41TV163) was the first archeological site excavated by the Texas Department of Transportation (TxDOT; then Texas Highway Department) as a mitigation effort for highway construction under the requirements of the National Environmental Protection Act of 1966. The excavation was conducted between September of 1970 and February of 1971 under the direction of Frank Weir, then of the Texas Highway Department. In August of 2002, TxDOT contracted with the Center for Archaeological Research (CAR) at The University of Texas at San Antonio (Work Authorization #57014PD004) to conduct an inventory and assessment of the archeological collections and documentation associated with site 41TV163, develop possible research questions that could be pursued with the site data, and to prepare the project material for permanent curation. Based on that assessment (Mahoney et al. 2003a), and following consultation with TxDOT, CAR further was directed to produce a final report. This document constitutes the final report on the TxDOT work at 41TV163. Included in this report are a description of the site, excavation procedures, and an analysis of selected components of the data collected over three decades ago.

To report on excavations and analyze data collected over 30 years ago presents several challenges. Foremost among these is that if one wishes to avoid a primarily historical perspective, data collected using earlier field methods to investigate earlier theoretical concerns must be molded to address current questions. In this case, the disconnect between the theoretical and methodological considerations that guided the excavation of 41TV163, which appear to have been focused on chronology and cultural history, and current research interests in Texas archeology is exacerbated by the loss of a large portion of the field notes, some photo logs, and some of the artifacts and samples during the intervening years. Nevertheless, in the assessment document (Mahoney et al. 2003a), we identified a series of current research issues that could be addressed using data generated by the work at 41TV163. These include investigating temporal changes in subsistence patterns and changes in lithic technology. In addition, we investigate several aspects of site use during the Late Prehistoric occupation of 41TV163.

The Excavation of Site 41TV163

Site 41TV163 was located in northwest Austin in Travis County. The site was about 0.6 km southwest of what is now the intersection of State Highway 183 with Loop 360 (N. Capital of Texas Highway; Figure 1-1). Preston Millican, a surveyor for the Lower Colorado River Authority, first recorded 41TV163 in the 1950s, and the site was named after Mr. Millican and a natural limestone bench that formed a prominent topographic feature within the site. Site 41TV163 covered an area roughly 235 meters by 85 meters. Burned rock and chipped stone were visible over most of the surface, with individual burned rock middens and several concentrations of chipping debris, bone, shell, and burned rock evident.

Work at Millican Bench was conducted in conjunction with the construction of Loop 360. As noted previously, 41TV163 was the first archeological site excavated by the then Texas Highway Department (THD) under their archeological program. That program was established in 1970 in an effort to comply with the National Environmental Protection Act (NEPA). No formal procedures or research designs were in place to provide basic guidelines for survey and salvage of archeological sites when 41TV163 was excavated. The general procedure consisted of verbal communication between THD and the Texas Antiquities Committee followed by letter agreement (Frank Weir, personal communication 2003). In the case of 41TV163, this letter of authorization was sent to Mr. J. C. Dingwall, State Highway Engineer, on September 22, 1970 and signed by Fred Wendorf, Chairman of the newly formed Texas Antiquities Committee. The procedures to require State Antiquities Permits for each highway archeological project had not yet been established. Therefore, decisions to mitigate were made solely by Weir's office, and the principal criterion was that a site contained intact deposits and appeared to be "promising." "Promising" usually meant that new information on the archeology of a particular region would be forthcoming. Thus, justification for excavating 41TV163 was based on the observation that burned rock middens, a terrace, and the topographic relief presented by the limestone bench were in close association creating a "unique site condition" (Frank Weir, personal communication 2003).



Figure 1-1. Location of 41TV163 in northwest Austin, Travis County, Texas.

Initially, seven discrete areas, designated A through G, were identified at Millican Bench. Figure 1-2 presents a section of an aerial photo with the sketched locations of these seven areas, along with the Loop 360 centerline. The photo appears to have been created at the time of the fieldwork. Area A consisted of a burned rock midden located on a topographic bench. Another probable burned rock midden, Area B, was situated on the slope and creek terrace below the bench. Located just to the west of Area B were two other areas, designated C and D. These appeared to be occupation areas with burned rock and other debris present. Three additional areas, designated E, F, and G, were located across the creek east of Areas A–D. Area E was a burned rock midden that measured approximately four meters in diameter. Area F contained a concentration of occupation refuse with burned rock and chipped stone, while Area G was a broad bedrock exposure containing scattered chipped stone debris.

With the exception of Area G, where only surface collection was conducted, all areas (A through F) had some level of excavation. At 41TV163, TxDOT personnel recorded 11 features, including a human burial (Feature 10) and a possible structure (Feature 3). In addition, more than 200 cores, 1,400 tools, 400 projectile points, and 42,500 pieces of debitage were collected. With the exception of any evidence for Paleoindian occupation, the 41TV163 materials seem to reflect most prehistoric periods. Collected projectile point types thought to be diagnostic include Wells, Early Split Stem, Early Triangular, Martindale, and Uvalde forms dating to much of the Early Archaic (8000–6000 BP); Nolan, Travis, and a single Andice point, all dating to the Middle Archaic (6000–4000 BP); Bulverde, Pedernales, Williams, Lange, Marshall, Montell, Castroville, Ensor, Frio, Fairland, and Darl forms dating throughout the Late Archaic (4000–1250 BP); and Scallorn points, dating to the early portion of

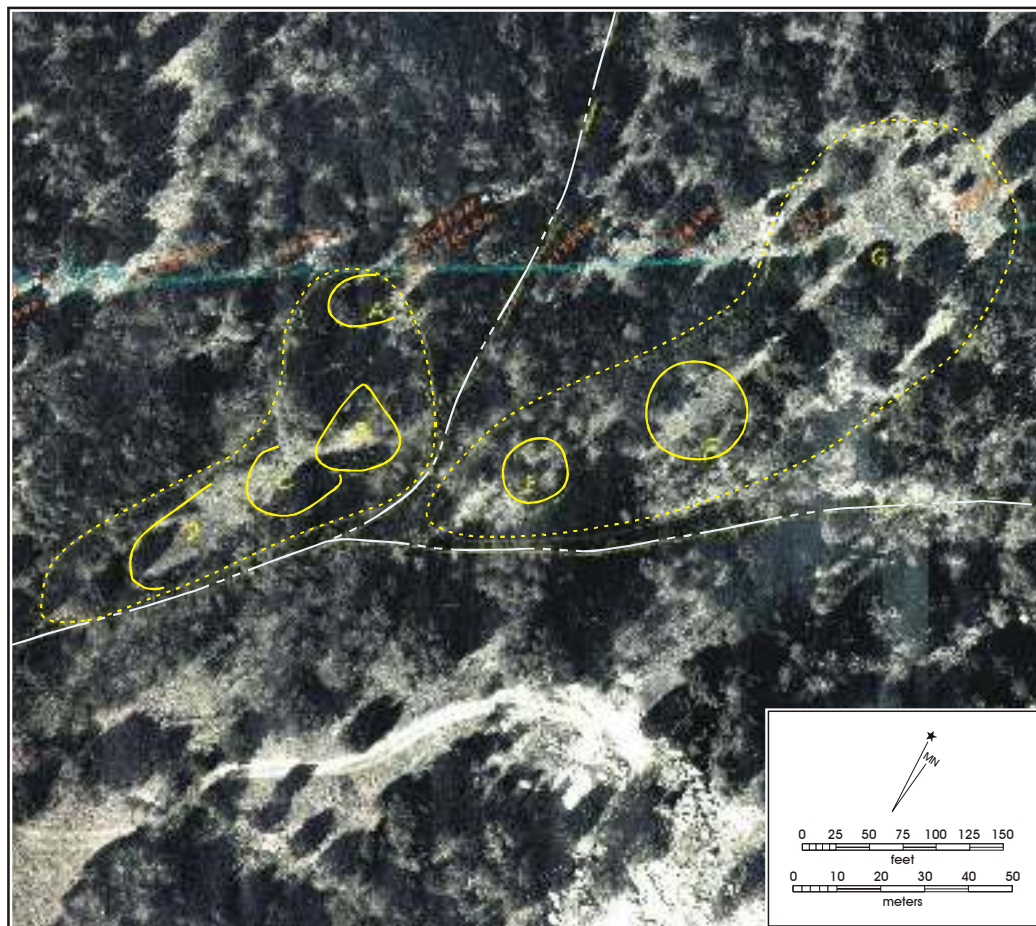


Figure 1-2. Portion of aerial photo with sketched locations of Areas A–G at 41TV163.

the Late Prehistoric (1250–700 BP). A small amount of historic and/or modern material was also collected, though it is not considered in any detail in this report.

Report Organization

This report contains 10 chapters. Following this introduction, Chapter 2 outlines the environmental setting of the site, including information on paleoenvironmental conditions. Chapter 3 provides an overview of cultural history concerns. Chapter 4 discusses the field methods employed in the 1970–1971 excavations and laboratory methods. Chapter 5 outlines the data recovered and includes a discussion of the 11 features identified on the site. Chapter 6 discusses research interests that guided the current analysis. Included in that chapter is the identification of several analytical units

that contain data from specific time periods that are used in subsequent chapters. Chapter 7 presents the results of our investigation into subsistence change between the Late Archaic and the Late Prehistoric at Millican Bench. Included in that chapter is comparative data on several other Late Archaic and Late Prehistoric sites. Chapter 8 discusses changes in the lithic assemblages at the site from the Early Archaic through the Late Prehistoric. The ninth chapter contains an investigation of data related to Feature 3, suggested to be a structure. Chapter 10 provides a summary of the report. The analyses conducted in Chapters 7, 8, and 9 are supported by a number of appendices. These include data on vertebrate faunal material (Appendix A), human remains (Appendix B), the results of recently obtained radiocarbon dates (Appendix C), and ethnobotanical analysis (Appendix D). Scans of selected projectile points from various areas of the site are presented in Appendix E.

Chapter 2: Environmental Setting

Raymond P. Mauldin

This chapter provides an overview of the environment of 41TV163. Included are discussions of the physiographic setting, climate, geology and soils, hydrology, vegetation, and faunal resources of the site area. The second section provides an overview of paleoenvironmental conditions during the long period of occupation at Millican Bench.

Aspects of the Modern Environment

As presented in Chapter 1, the site of Millican Bench (41TV163) was located in what is now northwest Austin in north-central Travis County (see Figure 1-1). The site was on the extreme eastern edge of the Edwards Plateau. While CAR personnel have visited the general site location, construction of Loop 360, and associated developments with that highway, have essentially destroyed the site and significantly altered the appearance of the landscape.

Physiographic Setting

The site of Millican Bench was located in the valley head of a tributary stream to Bull Creek that confluences with the Colorado River about 6 km to the southwest. The location is near the juncture of the Edwards Plateau with the Blackland Prairie (Figure 2-1). Along this eastern edge, the Plateau is characterized by an extensively dissected limestone uplift, known as the Balcones Escarpment. Many springs, seeps, and streams characterize the Escarpment area. The Blackland Prairie is a relatively low, flat landform underlain by limestone and marl. The black, limestone-derived soil from which the landform takes its name is easily cultivated and this region has been dominated by farming (see Riskind and Diamond 1988; Swanson 1995). To the northwest of the site is the Llano Uplift, a basin of metamorphic and granitic rocks surrounded by limestone, while the Oak Woods and Prairies region is to the east.

Climate

Presently, the climate is humid subtropical with hot summers and mild winters (Werchan et al. 1974:117). Figure 2-2 presents the average minimum and maximum temperatures for Austin between 1971 and 2000 (Southern Regional Climate Center [SRCC] 2003a, 2003b). During this period, July and August were the warmest months, with December

and January being the coolest. The growing season at Austin averages about 274 days per year. An average of 21 days a year are at or below freezing, although 44 such days were recorded in the winter of 1939–1940. Ten days a year are, on average, at or above 100°F. However, one of the hottest summers was in 1963, when 40 days were 100°F or above. Using pre-1995 records, the coldest temperature ever recorded was -2°F in late January of 1949, with the hottest being 109°F in July of 1994 (Bomar 1995:214–225).

The average annual precipitation between 1971 and 2000 at Austin was 33.65 inches. The data in Figure 2-3 show that the rainfall is, on average, bimodal during a year, with peaks in May and October and minimums in January, February, and July (SRCC 2003c). Figure 2-4 presents the yearly rainfall totals between 1951 and 1989 (National Climate Data Center [NCDC] 2003). These data suggest considerable yearly variability, with 51.3 inches of precipitation recorded in 1957 and a low of about 10 inches in 1954. Using pre-1995 records, the wettest day was on June 11 of 1981 when 5.66 inches of rain was recorded (Bomar 1995:227).

Geology and Soils

Figure 2-5, adapted from the Austin Sheet of the *Geological Atlas of Texas* (Barnes 1974), shows the geology of the general site area. With the exception of small deposits of recent Quaternary alluvium (Qal, Qt) associated with rivers and streams in the area, the geology is dominated by a variety of Cretaceous age deposits that are primarily chalk, limestone, marl, and dolomite. Deposits associated with the Fredericksburg Group (e.g., Kbc, Ked, Kft, Kc) commonly include a variety of abundant white to gray colored chert nodules. The younger Austin Chalk (Kau) deposits, as well as the limestone and dolomite of the older Glen Rose Formation (Kgr), however, do not appear to have chert present (Barnes 1974).

Figure 2-6 presents the soils of the immediate site area of 41TV163 (Werchan et al. 1974). The site appears to be located on Brackett soils with rock outcrops (BoF). Werchan et al. (1974:15–16) describe the surface of this mapping unit as dominated by “2 to 4 inch limestone fragments” with slopes in the range of 15 to 30 percent. The surface is “a light brownish-gray gravelly clay loam or gravelly loam about

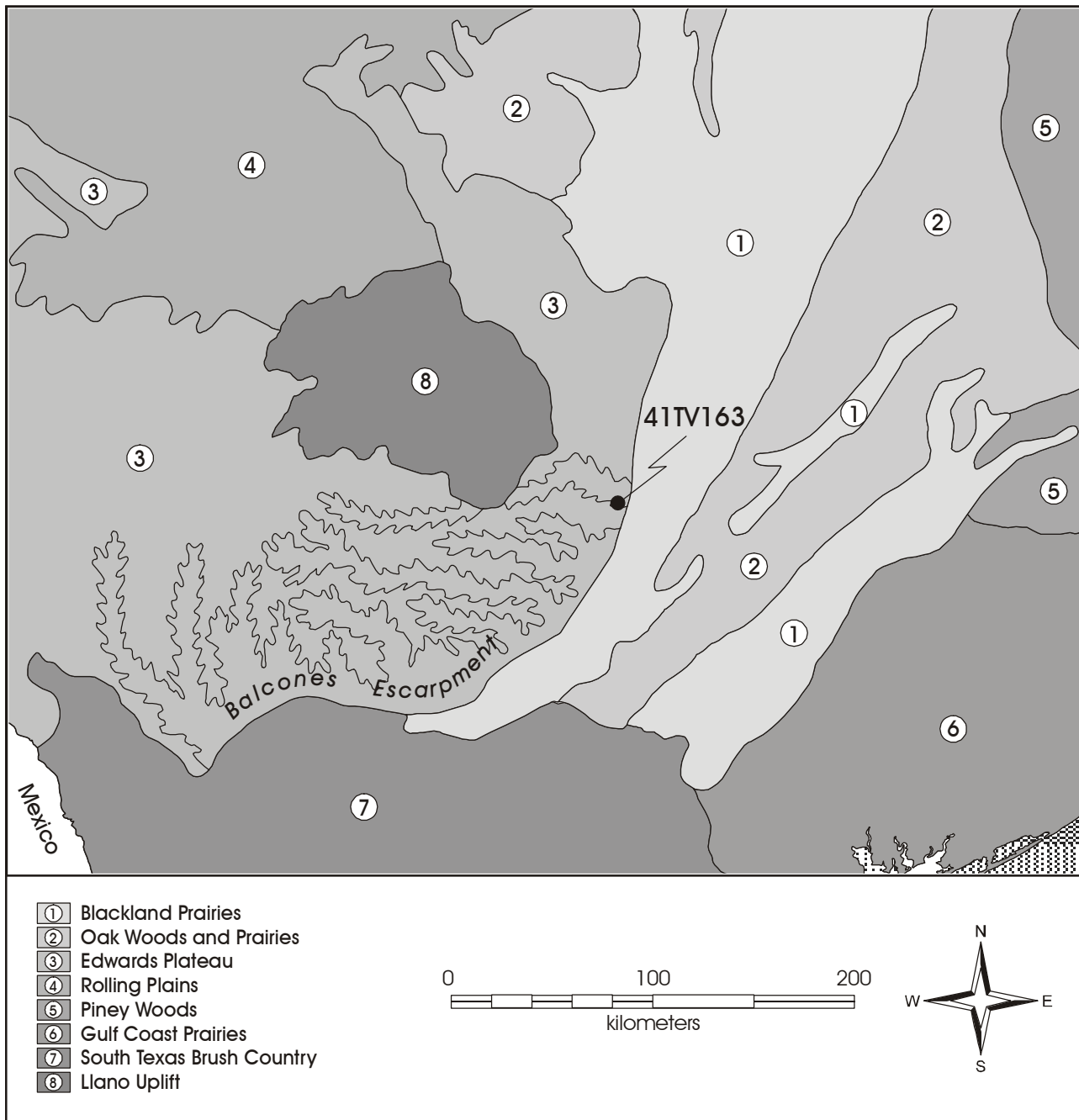


Figure 2-1. Location of 41TV163 relative to Natural Regions of Texas.

4 inches thick.” Below this layer is a pale-brown clay loam extending to roughly 15 inches. This deposit is resting on limestone and marl. Volente soils (VoD) are also present near the site location (Werchan et al. 1974:44). The Volente series are deeper, well-drained soils. Characterized by silty

clay loam and silty loam deposits, these soils have high water-holding capacity and slow permeability. Off the slope to the east of Millican Bench, Tarrant soils (TcA, TeA, TeE), characterized as “shallow to very shallow, well-drained, stony, clayey” deposits, are present (Werchan et al. 1974:39).

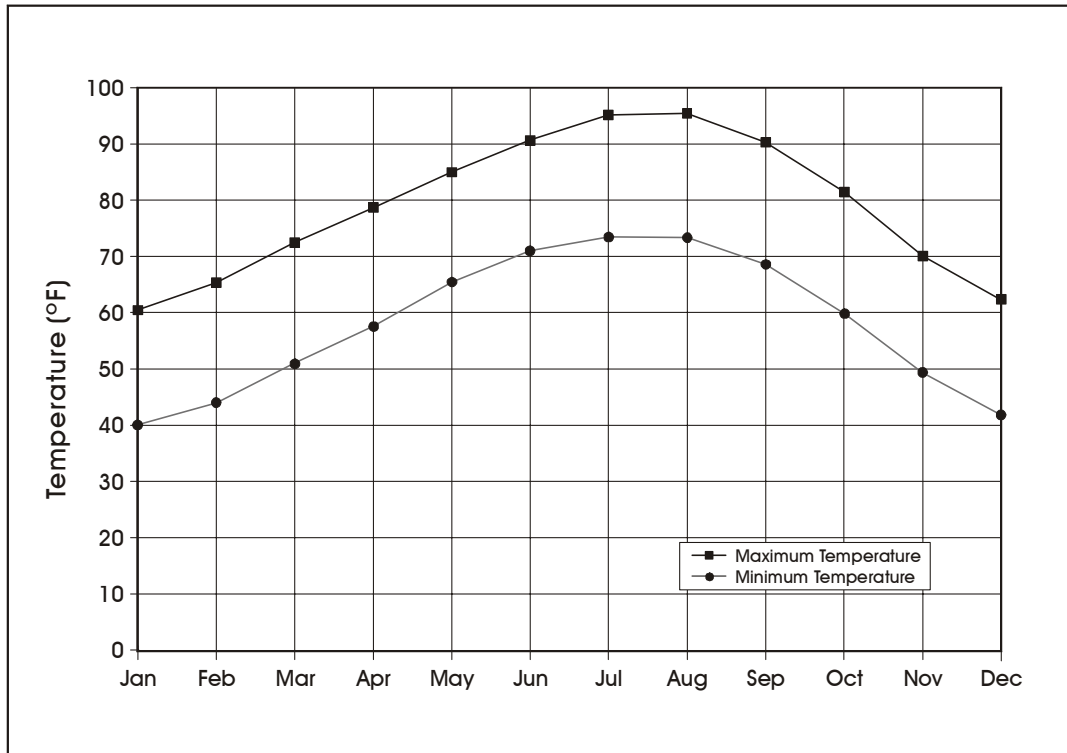


Figure 2-2. Average maximum and minimum temperatures for Austin, Texas (1971–2000).

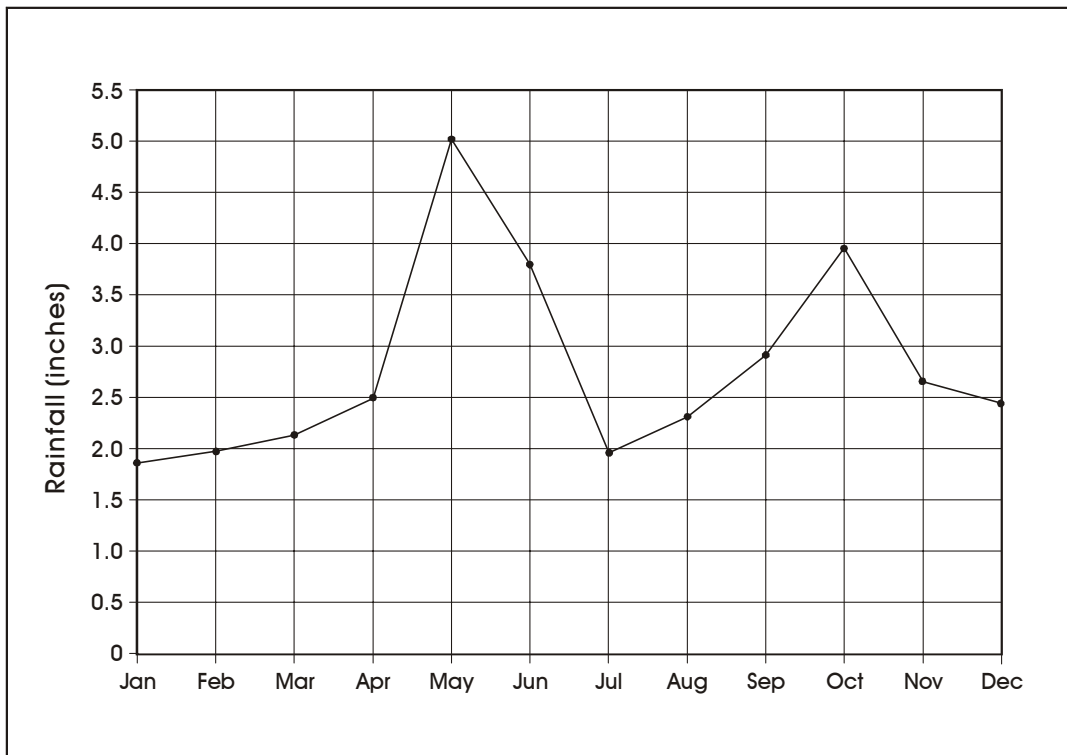


Figure 2-3. Average monthly rainfall for Austin, Texas (1971–2000).

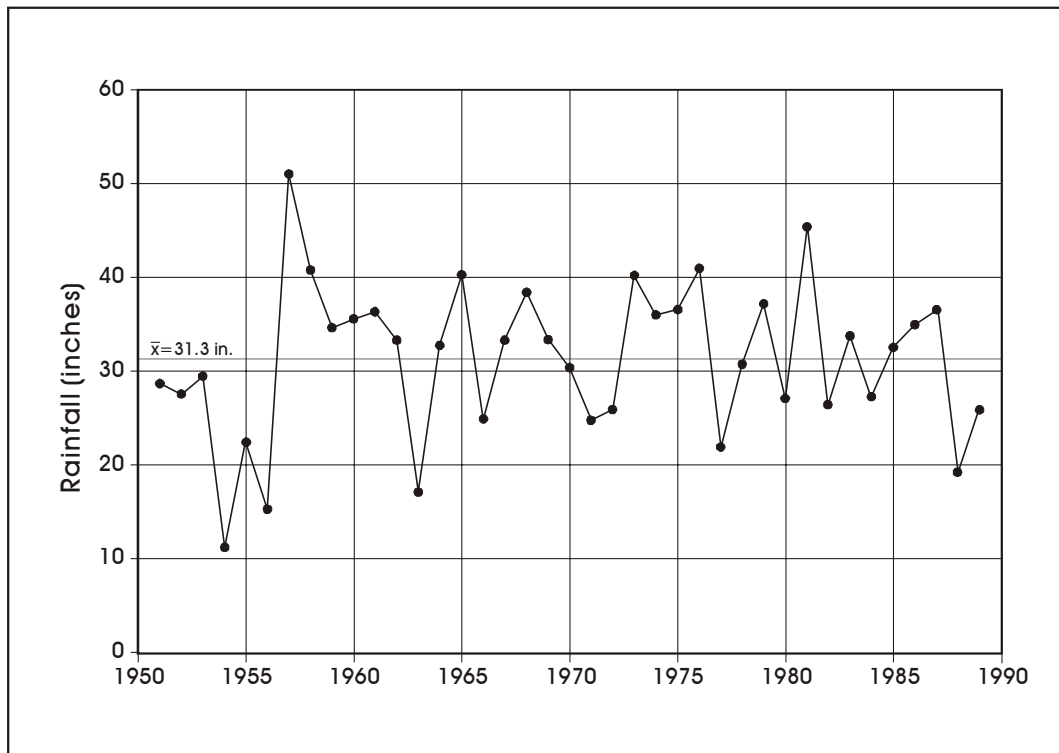


Figure 2-4. Yearly rainfall for Austin, Texas (1951–1989).

Hydrology

As noted previously, the edge of the Balcones Escarpment has a variety of springs, seeps, and drainages. Reference to Figures 2-5 and 2-6 will show that within a few kilometers of 41TV163, a variety of drainages, creeks, and rivers are present. Foremost among these is the Colorado River, located about 6 km to the southwest. Bull Creek is roughly 1.5 km to the west of the site, and several drainages into Bull Creek are in close proximity. In the immediate vicinity are two unnamed drainages with intermittent flows that eventually lead into Bull Creek and the Colorado River. Although several springs are noted on the *Jollyville* and *Austin West* USGS 1:24,000 quadrangles, none are noted within 2 km of 41TV163. However, Kelley (1971:3) notes that the drainage associated with the site was “spring-fed,” although the nearby creek beds were dry during the fieldwork (Weir 2004:1).

Floral and Faunal Resources

Riskind and Diamond (1988) provide an overview of the current vegetation of the Edwards Plateau, including the Balcones Escarpment. Much of the area can be described as a brushland. Dominant trees and shrubs found in the area

include ashe juniper (*Juniperus ashei*) and several species of oak (*Quercus* sp.), with cedar elm (*Ulmus crassifolia*), hackberry (*Celtis* sp.), and Arizona walnut (*Juglans major*) also present in many areas. The understory commonly includes yaupon (*Ilex vomitoria*), hoptree (*Ptelea trifoliata*), Mexican buckeye (*Ungnadia sacciosa*), and deciduous holly (*Ilex deciduas*). A variety of grasses are also present. A species list from the Balcones Canyonlands National Wildlife Refuge, an 80,000-acre refuge managed by the U.S. Fish and Wildlife Service (FWS) and located about 30 km to the northeast of the current site area, lists over 690 species and varieties of plants observed on the refuge (FWS 2003).

The modern vegetation in the general area of 41TV163 is depicted in Figure 2-7 (Texas Parks and Wildlife Department [TPWD] 1984). Oak, mesquite, juniper parkland and woods dominate the region, with the site located on the edge of a large expanse area characterized as Live Oak and Ashe Juniper woods and parkland. Coming off of the Plateau to the east, grasslands are present. It is likely that prior to European settlement of the region in the mid-1800s, grassland was much more common and juniper, along with woody brush and shrubs that dominate the region today, had a much more restricted distribution.

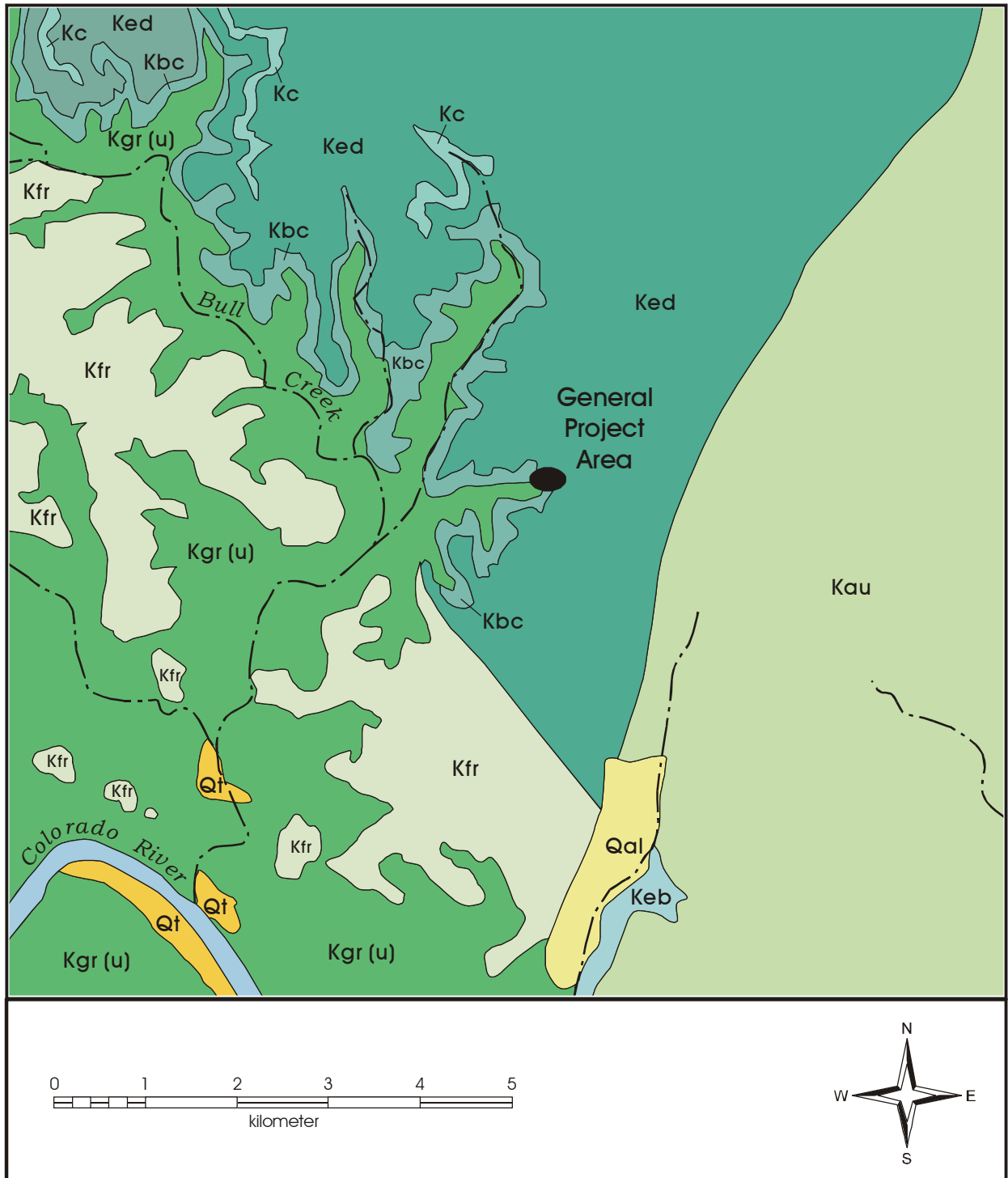


Figure 2-5. Geological setting of 41TV163.

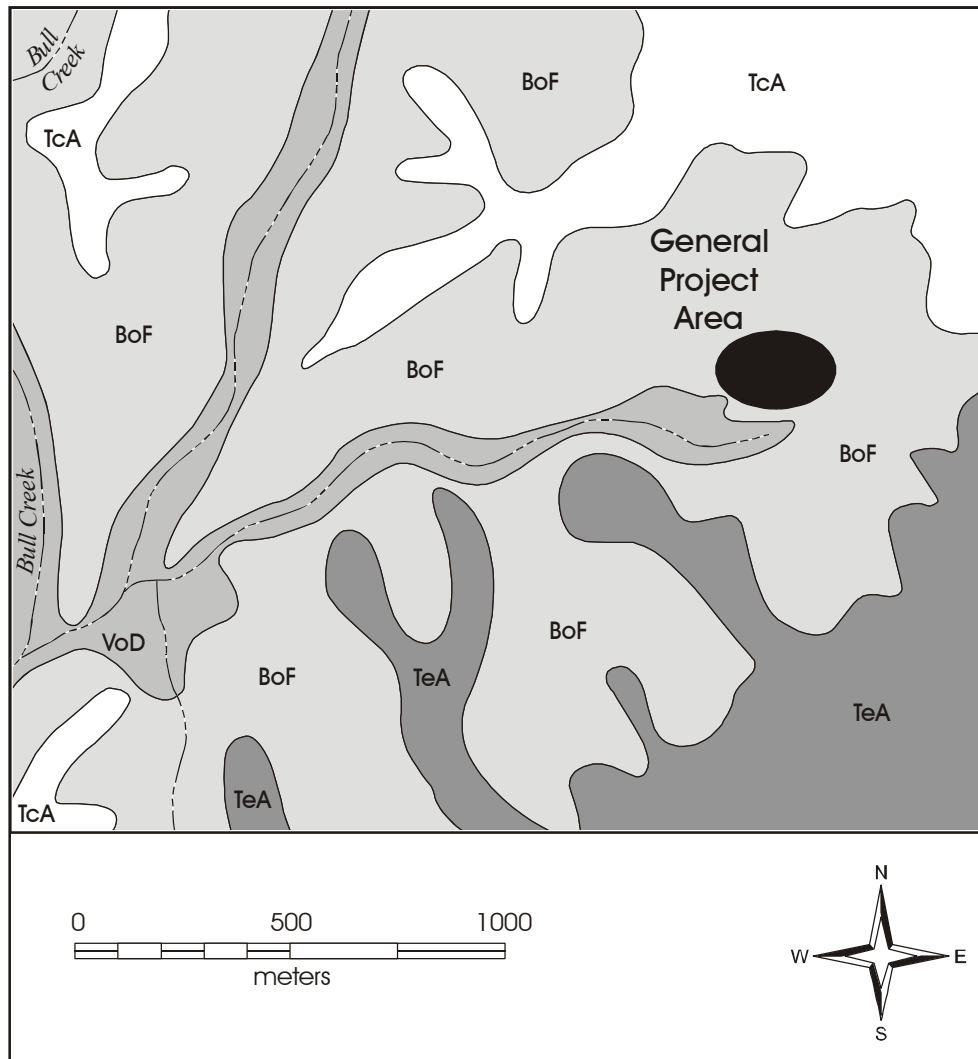


Figure 2-6. Soils in the project area.

Large numbers of white-tailed deer (*Odocoileus virginianus*) are currently present in the region. Estimates by the Texas Parks and Wildlife Department are that within a 25 county area on the Edwards Plateau, an area that includes Travis County, in excess of 1.5 million white-tailed deer are consistently present (TPWD 2003). However, it is unlikely that the abundance of this game animal is characteristic of the historic or prehistoric periods. Vegetation changes noted previously have clearly allowed the expansion of the deer population. Historically and prehistorically, the grassland savannah that characterized the Plateau probably had significant numbers of grazers such as bison and antelope that are not present today (see Davis and Schmidly 1994). The current vegetation does, however, support a variety of mammals, and Davis and Schmidly (1994) note that the

Plateau has one of the highest mammalian diversity within the state. The species lists from the Balcones Canyonlands National Wildlife Refuge note 35 mammalian species in the confines of the preserve. Some of the more common species listed include black-tailed jackrabbit (*Lepus californicus*), raccoon (*Procyon lotor*), eastern cottontail (*Sylvilagus floridanus*), and a variety of carnivores (FWS 2003).

Paleoenvironmental Conditions

During the long, though clearly intermittent occupation of the Millican Bench site, most aspects of the environment described in the previous section were certainly different. European settlement has altered the landscape in a number

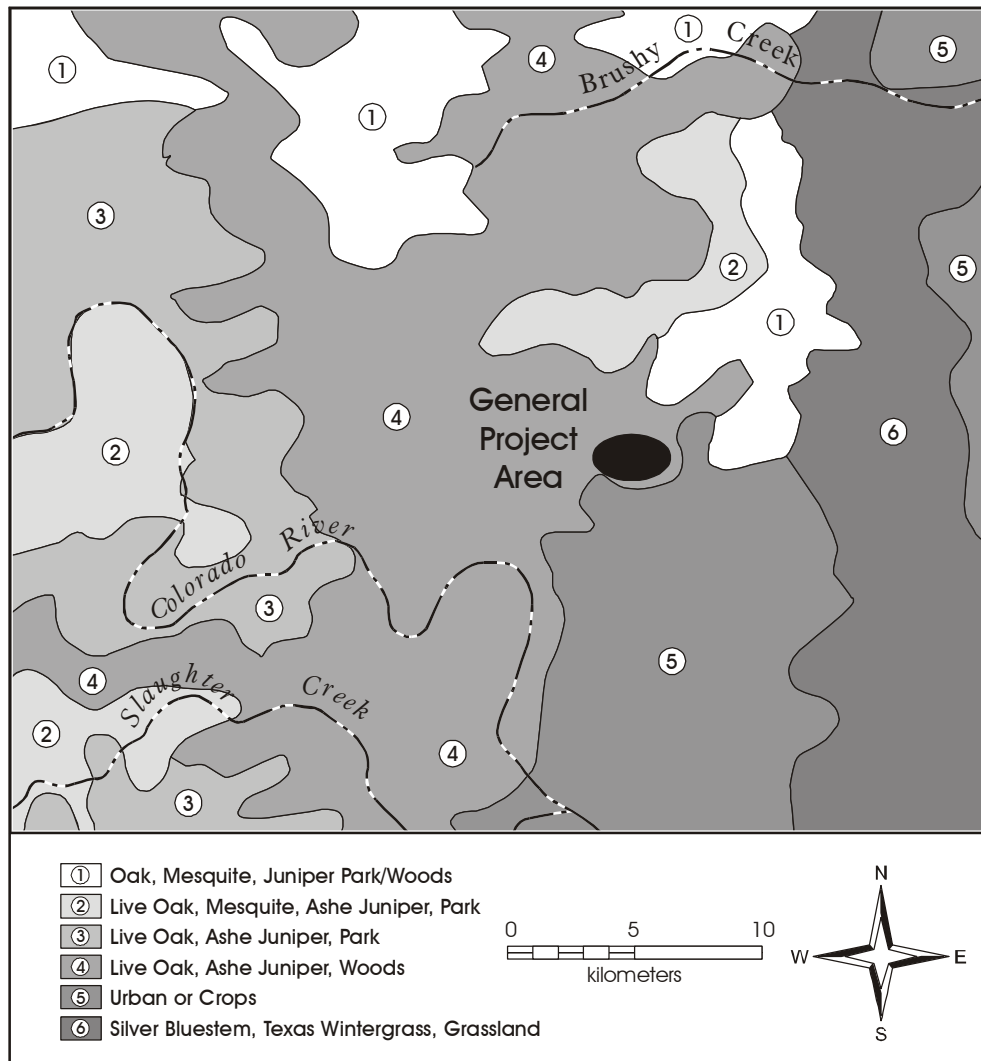


Figure 2-7. Vegetation in the project area.

of ways. The most significant impacts probably were related to the introduction of domestic livestock, fencing, and fire suppression. Several researchers have, using different proxy measures of temperature and precipitation, concluded that major changes have occurred in temperature and precipitation during the last 8,000 years (see Bousman 1998; Collins 1995; Johnson and Goode 1994; Toomey 1993; Toomey et al. 1993). What is not at all clear, however, is the exact nature of these temperature and precipitation changes. There is no consensus on when these changes began, their magnitude, or even the direction of change in some cases. Figure 2-8 makes this point by contrasting a variety of different climate reconstructions for the last 12,000 years in central Texas. Included in the figure are the arboreal

canopy estimates based on pollen from Boriack and Weakly bogs in Lee and Leon counties (Bousman 1998), temperature estimates that appear to be based on both changes in fluvial geomorphology and microfaunal remains (Johnson and Goode 1994), changes in moisture regimes based on the presence/absence of bison in archeological sites in Texas (Collins 1995; Dillehay 1974), and two versions of changes in temperature and moisture based on changes in microfaunal remains (Collins 1995; Toomey et al. 1993). While additional sources could have been presented, comparison of the various graphs demonstrates that for certain periods, there is good agreement from several of the models. However, there is a clear lack of consensus during certain periods (e.g., 6000 to 2000 BP).

In part, this lack of agreement regarding the nature of past climates in central Texas may be related to the use of different proxy measures that probably are responding to different temporal, moisture, and spatial scales, as well as problems with chronological assignment of specific data sets. For example, changes in effective moisture are measured by a variety of environmental proxies such as vegetation changes reflected in alterations in bog pollen frequencies, the relative abundance of bison recovered from archeological sites, and the frequencies of desert shrews relative to other shrews in cave deposits. It is unlikely that all of these will respond in a similar way given similar environmental changes. That is, differences in rainfall regimes that are of sufficient magnitude to cause threshold changes in the frequencies of certain species of shrews are probably of a different order from those necessary to cause changes in bison abundance, abundance of grass pollen in bog sequences, or changes in rates of flooding in certain streamflow regimes. While any detailed consideration of these types of concerns is beyond the ken of the current section of this chapter, we can limit the potential impact of the problems with scale by limiting the types of data that are investigated as well as focusing on data that may be operating at similar scales. Consequently,

in the remaining portion of this chapter we focus primarily on changes in pollen from a single bog, Patschke, located in Lee County (Camper 1991). The bog is relatively well dated and the dates span the occupation range of 41TV163. In addition, Patschke Bog is located only about 60 km to the east of Millican Bench. While additional paleoenvironmental sources are considered at the close of this section, the focus of our discussion is on Patschke Bog.

Patschke Bog

Located in Lee County in what is now at the margin of the Post Oak Savannah, Patschke Bog was originally investigated by Potzger and Tharp (1943, 1947) more than 50 years ago. Located next to Boriack Bog (Bousman 1998), the early work at Patschke produced evidence of spruce and fir pollen near the bottom of the peat deposits. In addition, Potzger and Tharp (1947) demonstrate shifts in pollen frequencies, especially in oak and grass pollen, which clearly suggest significant vegetation change over the life of the bog. Unfortunately, these early studies of Potzger and Tharp were hindered by a lack of chronometric dates.

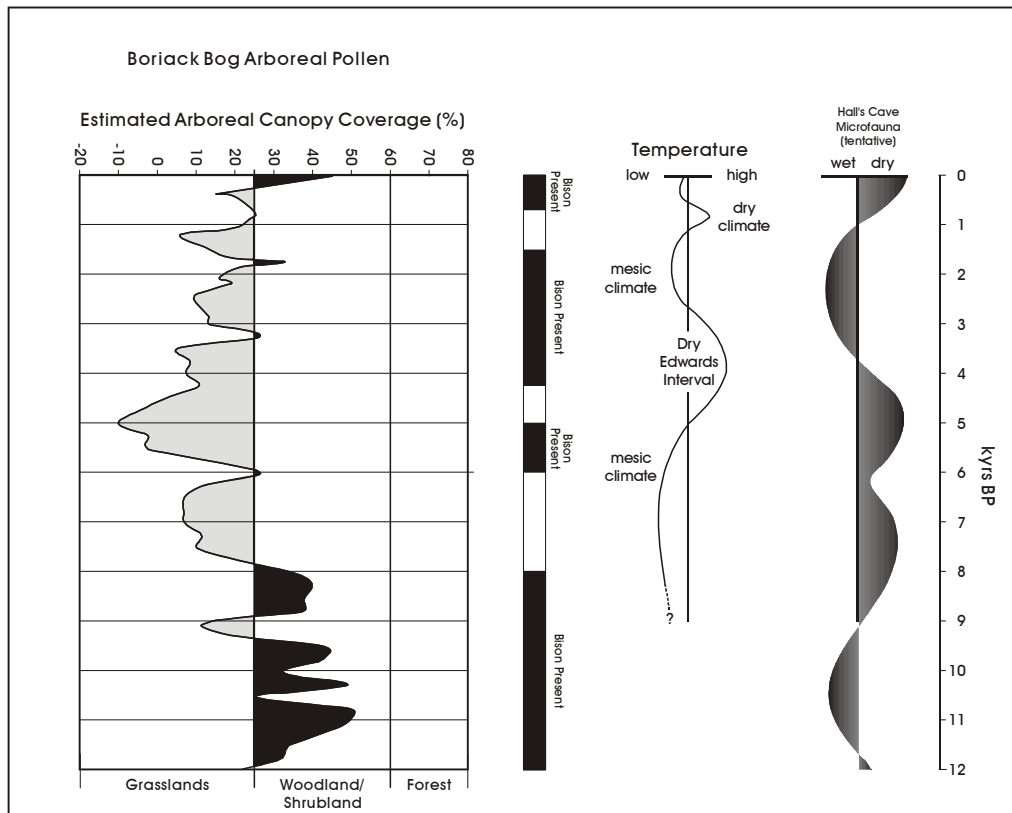


Figure 2-8. Comparison of several climatic reconstructions for central Texas.

Subsequently, Camper (1991) analyzed an additional set of samples from this bog. These samples, taken from Core 4 at Patschke, reflected roughly 4.66 meters of sediment, and 51 separate samples were analyzed (Camper 1991). The dating of the samples is based on four radiocarbon dates taken from the core at 35 cm below surface (1590 ± 60 BP), 190 cm ($10,090 \pm 130$ BP), 274.5 cm ($13,470 \pm 170$ BP), and 462 cm ($17,280 \pm 270$ BP). These dates are consistent with others obtained from an additional core (Core 2) located less than two yards away from Core 4 (Camper 1991:31).

The samples analyzed by Camper appear to represent a continuous and relatively well-dated sequence stretching back to 17,000 BP. However, this particular core has frequently been downplayed in regional overviews as these data have significant frequencies of local marsh taxa, such as *Alnus* and *Cyperaceae* (see Bousman 1998:207–208). These local taxa make the identification of regional vegetation shifts difficult. In an attempt to clarify the pattern of regional change indicated at Patschke Bog, Nickels and Mauldin (2001) reviewed the raw pollen grain counts from Patschke (Camper 1991). While Bousman (1998) is correct in noting the high level of marsh taxa throughout the deposits, Nickels and Mauldin (2001) note that Camper's grain counts are extremely high, with an average of just over 370 grains per sample, and a minimum count of 270 grains for any single sample. They reworked the original data, eliminating the potential contaminants from the Patschke Bog pollen sequence (Nickels and Mauldin 2001:34–35). The reworked Patschke data have an average of 215 counted grains per sample, and in only three cases do counts fall below 100 grains. All three cases with counts of less than 100 pollen grains date before 11,000 BP, and two of these date well before any human occupation in the region.

The line graph in Figure 2-9 uses the revised counts of arboreal pollen to estimate habitat type over the last 12,000 years. Following Bousman's (1998:212) study of Boriack Bog and Weakly Bog pollen, the figure was derived using the linear regression formula of Shaw et al. (1980) that relates arboreal pollen percentages and arboreal canopy cover on the Edwards Plateau, as well as definitions of canopy cover and habitat type developed by Diamond et al. (1987). Surprisingly, the sequence presented in Figure 2-9 suggests that grasslands probably dominated much of what is now post oak woodland over the last 12,000 years. Woodlands and shrublands are the dominant habitat for much of the period between 12,000 and about 10,000 years ago, with forest habitats only reflected for a brief period around 10,500 BP. Between approximately 10,000 and 6,000 years ago, grasslands dominated the area, with a woodland/shrub

community indicated between about 6000 BP and 5000 BP. Over the next 3,000 years, the vegetation seems to have fluctuated between grasslands and woodland/shrub vegetation. Grasslands were clearly established after about 1800 BP. About 400 years ago, the woodland/shrub vegetation currently present in the region replaced that grassland community.

Note that multiple data points support several of the patterns summarized above, and the estimates of habitat type are strongly expressed. That is, they are, in most cases, not borderline interpretations. We suggest that the vegetation changes of sufficient magnitude to result in the strong patterns in Figure 2-9 probably reflect regional changes in effective moisture, with periods characterized as woodlands/shrub vegetation correlated with increased effective moisture, and grasslands characterized by reduced effective moisture. As such, these changes should be reflected in other data sets that operate at a similar scale. Below the Figure 2-9 line graph we present one such data set, derived from Dillehay (1974) and Collins (1995), which reflects the presence/absence of bison in Texas (see Figure 2-8). While the timing of bison presence/absence may certainly have as much to do with climate and vegetation conditions in the central plains as with conditions in Texas, there does seem to be some general relationship between the reconstructed vegetation and the presence of bison. Bison tend to be present during all periods when woodland/shrub vegetation is reflected by the Patschke arboreal pollen. While bison are also present in some cases with a grassland vegetation regime (e.g., 10,000–8,000 years ago), they are always present when a higher effective moisture regime is indicated in the Patschke sequence.

Finally, note that while there are general similarities between the reconstruction of habitat presented by Bousman (1998) from the combined Boriack and Weakly bogs (see Figure 2-8) and the reconstructions presented here based on Patschke (Figure 2-9), there are also several important differences. The two major differences in the sequences are the suggestions in the Patschke reconstruction of a brief woodland/shrub community between about 5,000 and 6,000 years ago, and a grassland setting between roughly 8,000 and 9,000 years ago. Reasons for these differences are not known, though it may certainly be related to the assignment of dates to the various sequences. While the four radiocarbon dates used to assign ages to the Boriack Bog samples probably are an accurate reflection of the Boriack pollen sequence ages, note that the dates are not from the pollen core, but rather from a second core (Core A) located just to the east of the pollen core.

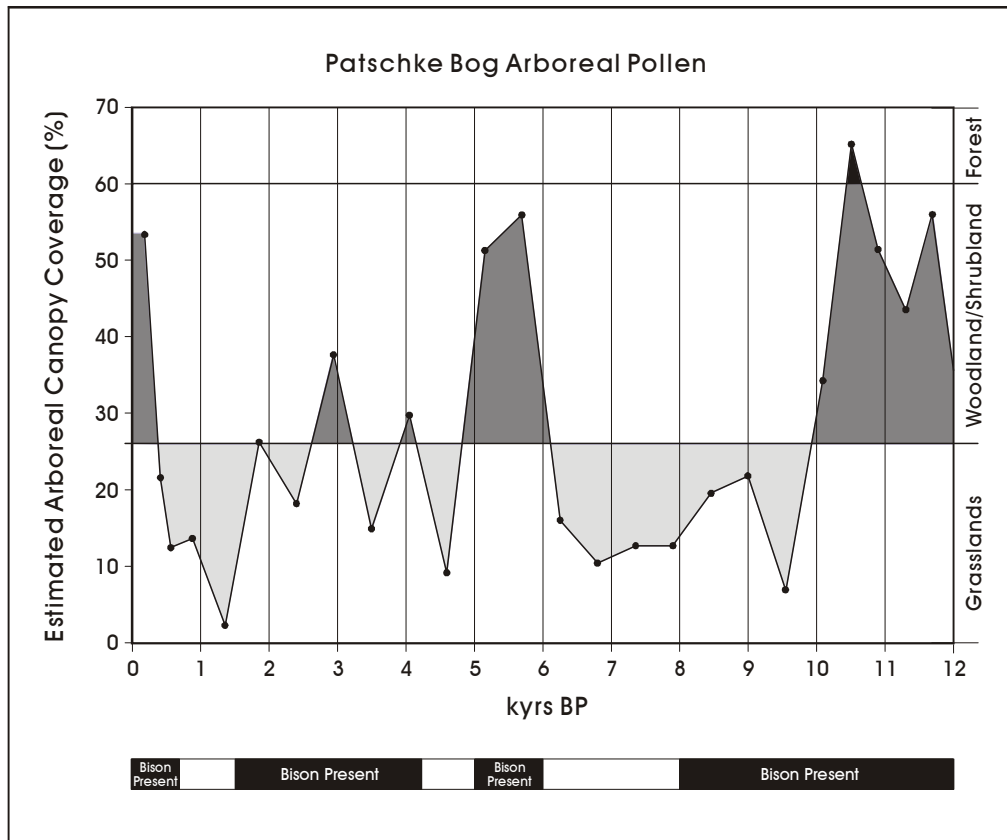


Figure 2-9. Estimated arboreal canopy coverage from the Patschke Bog pollen core.

Summary

As noted in the previous chapter, diagnostic projectile points from Millican Bench reflect occupation during most periods from the Early Archaic through the Late Prehistoric. Over this roughly 7,500-year period, the environment has clearly undergone a number of changes. Relying primarily on pollen data from Patschke Bog, we can suggest that the earliest occupation of the site, which seems to be reflected by the recovery of several Early Split Stem points (ca. 8000 BP), probably occurred during a relatively dry period in the Early Archaic. The presence of several Martindale and Uvalde points suggest that occupation probably continued throughout the dry Early Archaic. The early portion of the Middle Archaic, from roughly 6000 BP to 5000 BP, seems to be a relatively wet period as indicated by both the return of a woodland habitat to the Patschke area and the return of bison to the region. Interestingly, this relatively mesic period is not well represented at 41TV163, with only a single Andice point present. A return to a more xeric climate after 5000 BP

is accompanied by a substantial occupation at 41TV163 as reflected by the recovery of roughly 39 Travis and Nolan points (ca. 4800–4000 BP). Occupation continues through the Middle Archaic, the Late Archaic, and into the early Late Prehistoric (ca. 4000–1250 BP). The lack of Late Prehistoric point forms dating after 700 BP (e.g., Perdiz) at Millican Bench suggests the site may have not been used after that date. The early portion of this period (ca. 4000–1800 BP) was characterized by a climatic regime that seems to have fluctuated between slightly mesic and xeric conditions. The period between 1800 BP and roughly 400 BP seems to reflect primarily xeric conditions, after which a more mesic regime seems to have been present.

Chapter 3: Previous Research and Archeological Background

Harry J. Shafer and Steve A. Tomka

The eastern edge of the Edwards Plateau in central Texas has the best-defined cultural chronology within the state. This well-defined chronology is the result of three factors: (1) a region of intense archeological activity throughout much of the twentieth century; (2) well-preserved archeological sites, including deeply buried stratified deposits along streams; and (3) a continuous cultural chronology lasting about 11,500 years. In this chapter, we present a brief overview of the history of archeological research and a summary of the regional cultural chronology. As one reads this summary, however, it is worth remembering that in 1971, at the time of the fieldwork at 41TV163, much less was known both about the regional chronological sequence as well as the changes in land-use strategies and subsistence patterns documented subsequently from dozens of excavations throughout central Texas.

Previous Archeological Research

Archeologists have been active in Travis County, and indeed in the vicinity of 41TV163, for nearly a century. J. E. Pearce became interested in central Texas burned rock middens, or “kitchen middens” as he described them, as early as 1919. He, and later his primary field archeologist A. T. Jackson, excavated numerous burned rock middens in Travis, Williamson, Burnet, Llano, San Saba, and Hays counties prior to and during the Works Progress Administration projects (Collins 1972; Jackson 1938; Prewitt n.d.; Suhm 1957; Woolsey 1938). Among these sites was the Rogers Springs site that was located around a cluster of springs that formed the waters of Shoal Creek in north Austin not far from 41TV163. Rogers Springs had four burned rock middens, and Pearce and his crews excavated three (Prewitt n.d.). The Texas Archeological Survey excavated the fourth in 1973 (Prewitt n.d.).

Numerous archeological investigations of prehistoric sites have been conducted in Travis County and the surrounding region, and have provided a good resolution to the local archeology. Some of these studies helped to establish the basic foundation for central Texas archeology (Collins 1972; Greer and Benfer 1975; Kelley 1947; Kelley and Campbell 1942; Prewitt 1974, n.d.; Suhm 1955, 1957, 1959; Weir 1979; Wesolowski et al. 1976). Others contributed significantly to ongoing chronological refinements (Coffman et al. 1986;

Collins 1998a; Prewitt 1974; Ricklis and Collins 1994; Suhm 1955; among others), and to the study of burned rock middens (Black et al. 1998a, 1998b; Collins 1972, 1998b; Kelley and Campbell 1943; Nickels et al. 2001; Prewitt 1974; Ricklis and Collins 1994; Sorrow 1969).

On a regional scale, recent investigations have resulted in refined chronological models for the Edwards Plateau and the Canyonlands, of which 41TV163 and western Travis County are on the periphery (Collins 1995, 1998b; Collins et al. 1990; Henderson 2001; Johnson 1991, 2000; Johnson and Goode 1994; Kibler and Scott 2000; Mahoney et al. 2003b; Nickels et al. 2001; Shafer 1963; Sorrow et al. 1967; Wesolowski et al. 1976). Most significant of these are the investigations at the Gault Site (Collins 1999:185–190; Shafer and Waters 2001) and Wilson-Leonard (Collins 1998c) in Bell and Williamson counties, respectively. Together, these two sites have yielded evidence for an unbroken chronology from Clovis to Late Prehistoric times.

Cultural Chronology

On a regional scale, archeologists have divided this chronology into periods and intervals in order to better isolate blocks of time for study and interpretation (Black 1995; Collins 1995, 1998a; Hester 1995; Nickels et al. 2001). The broad periods are roughly defined on the basis of lifestyles and hunting and gathering technologies and are identified by general similarities in artifact assemblages. Four broad periods have been defined: Paleoindian, Archaic, Late Prehistoric, and Historic. Intervals within each of these time units are defined by diagnostic artifacts and artifact assemblages used during shorter increments of time.

Recent archeological summaries of central Texas have been presented by Collins (1995, 1998a), Nickels et al. (2001), and Ricklis and Collins (1994). The chronological model followed in this report is that of Collins (1998a:Figure 4.1). He used both the chronological data at the Wilson-Leonard site and comparative data from 31 sites across central Texas. This chronological model extends from the initial occupation of the state by Clovis hunters beginning about 11,500 radiocarbon years ago (Ferring 2001:205) to the period of European contact, which occurred in parts of central Texas by 1690 (Foster 1995; Gilmore 1969; Wade

2003). Although Collins' scheme differs from Weir's (1976) original divisions of the chronology, it is used here simply as a chronological anchor rather than a statement on the appropriateness of one scheme as opposed to another.

No Paleoindian or historic components were identified in the excavations at 41TV163. Prehistoric occupation at 41TV163 was confined to the Archaic and early part of the Late Prehistoric periods. While a small amount of glass and metal was found, suggesting the possibility of historic occupation, much of that material appears to be of fairly recent age. Therefore, the following brief review of the region's cultural history will not address the Paleoindian or Historic periods.

Archaic Period

The Archaic period, dating from 7000 B.C. to A.D. 800 (9000–1200 BP), marks a long time span of hunting and gathering as the main lifestyle (Black and McGraw 1985; Collins 1995, 1998a). Beginning the period at 9000 BP is arbitrary, and somewhat misleading. There was no sudden change from big game hunting to hunting and gathering. This was a gradual process that took place over many generations, and to varying degrees. Archeologists assume that sites that lack extinct fauna and contain stemmed points, burned rock, and white-tailed deer remains reflect Archaic land-use strategies and identify the Archaic period.

Early Archaic (9000 BP to 6000 BP)

Human populations in the Early Archaic were highly mobile (nomadic) groups sparsely scattered across the land. Projected population density was low (Weir 1976:119–140), but these estimates lack a quantitative basis. We will never know the rate or density of ancient populations since there is no way of correlating the number of people to various levels and characters of the archeological signatures without the benefit of culturally defined parameters (such as rooms, cemeteries, or villages).

The incipient stage for earth oven baking first documented in the late Paleoindian period continued in the Early Archaic, and eventually resulted in the formation of burned rock middens. One of the important characteristics of Early Archaic sites is the presence of burned rock features and the use of limestone in earth oven cooking, sometimes resulting in dense clusters of burned rocks or "proto burned rock middens" (Collins et al. 1998). Hearth features and/or dense concentrations of burned rock attest to the presence of earth ovens (Collins et al. 1998; Sorrow et al. 1967).

Deer, jackrabbits, cottontail rabbits, turtles, fishes, mollusks, and other small game provided the major resources for meat, while seasonal nuts and fruit, bulbous plants, and probably succulent green vegetables surely helped to provide a more balanced diet. Charred bulbs of wild hyacinth from hearth feature 181 at Wilson-Leonard and the presence of manos and metates provide solid evidence for plant use (Collins et al. 1998:216–239). It was during the Early Archaic that the Paleoindian lanceolate dart point forms gave way to stemmed forms. Diagnostic artifacts for the Early Archaic include projectile point forms and types such as Angostura, Early Split Stem, early bifurcated stem (Uvalde, Gower), Bandy, and Martindale. Other tools include triangular adze blades (Clear Fork tools), elongated or "trihedral" adzes (Guadalupe tools), unifacial flake knives, manos, and notched pebbles (Waco sinkers). Sites with Early Archaic components include the Barton Site (Ricklis and Collins 1994), Granite Beach (Crawford 1963), Landslide (Sorrow et al. 1967), Youngsport (Shafer 1963), Jetta Court (Wesolowski et al. 1976), Wilson-Leonard (Collins et al. 1998), Gault (Shafer and Waters 2001), Richard Beene (Thoms et al. 1996), and Panther Springs (Black and McGraw 1985). The only site with mortuary evidence dating to this period is Bering Sinkhole, where burials were deposited in the flesh, as cremations, or as secondary interments (Bement 1994). Human burials were deposited in this sinkhole throughout much of the Archaic period.

Middle Archaic (6000 BP to 4000 BP)

Middle Archaic artifact assemblages show a continuation of the broad hunting and gathering patterns established in the preceding period. Point styles change and the notched pebbles are no longer produced. The frequency of adze blades is greatly reduced, and they tend to be unifacially made (Collins et al. 1998). These changes suggest subtle shifts in regional ecology and lifeways, perhaps brought about by the presence of bison. Diagnostic artifacts include the projectile point types Andice, Bell, Early Triangular, Nolan, Travis, and (to the southwest) Pandale. Other tool types include manos, metates, and unifacial knives. The use of limestone in earth oven baking increased due to more intensive use of plant resources. Weir (1976) attributes the greater visibility of material remains at this time to population increase. Deer and bison were the larger animal species exploited; plant foods included bulbous plants, possibly sotol or other succulents, walnuts, pecans, acorns, and undoubtedly green and flowering vegetables. One hallmark of the Middle Archaic period is a more intensive use of local resources, presumably brought about, in part, by population increases and perhaps circumscription.

Middle Archaic components were documented at Landslide (Sorrow et al. 1967), Wilson-Leonard (Collins et al. 1998), Jetta Court (Wesolowski et al. 1976), Sleeper (Johnson 1991), Bering Sinkhole (Bement 1994), Camp Pearl Wheat (Collins et al. 1990), Crumley (Kelly 1961), and Cibolo Crossing (Kibler and Scott 2000). Recently, the Royal Coachman site (41CM11) produced a well-dated Early Archaic component consisting of Early Triangular points and radiocarbon dates of 5880–5320 BP (Mahoney et al. 2003b). Again, mortuary evidence is lacking except for Bering Sinkhole that was used as a depository during this period. Burials occurred in the flesh or as cremations (Bement 1994:Table 17).

Late Archaic (4000 BP to 1200 BP)

The Late Archaic period represents a further development of Middle Archaic patterns and probably the first archeological indication of established group territories. Weir (1976) sees the population approaching its peak at this time. The exploitation of local plant foods intensifies, perhaps in response to increased population sizes or reduced territory sizes. Climate becomes more mesic, and these conditions may have increased the natural populations of deer and economic plants, thus increasing the carrying capacity. The results are greater frequency of burned rock middens and other thermal features for cooking. Deer and bison were the larger game species exploited, but small game such as jackrabbits, cottontail rabbits, turtles, fishes, mollusks, and snails also were consumed. Plant lists are scant, but among those known to have been used were sotol (probably western Travis County and westward) and bulbous plants such as prairie turnip, wild onions, and camas (Black and Creel 1997; Dering 2000, 2003).

Diagnostic artifacts for the period include the projectile point types Bulverde, Pedernales, Montell, Castroville, Marshall, Marcos, Ensor, Fairland, and Darl, and knife forms such as the butted knife, corner tang, and base tang knives (Collins et al. 1998; Turner and Hester 1999:243). The generally accepted sequence for these point styles is (from earliest to latest) Bulverde, Pedernales, Montell/Castroville/Marshall/Marcos, Ensor/Fairland, and Darl.

Excavated Late Archaic components were recorded at Evox Terrace (Sorrow et al. 1967), John Ischy (Sorrow 1969), Wilson-Leonard (Collins et al. 1998), Jetta Court (Wesolowski et al. 1976), Jonas Terrace (Johnson 1995), Mustang Branch and Barton sites (Ricklis and Collins 1994), Kenyon Rockshelter (Coffman et al. 1986), Rogers Springs (Prewitt n.d.), Crumley (Kelly 1961), and Collins (Suhm 1955).

More information is available on mortuary patterns during this interval than the previous ones. Mortuary patterns varied somewhat according to location within the landscape. West of the Balcones Escarpment in the karstic limestone environment where solution cavities, rockshelters, and sinkholes occur, sinkholes and rockshelters were used as ossuaries (e.g., Bement 1994; Benfer and Benfer 1981; Givens 1968). Burials were deposited in the flesh (probably wrapped in bundles cf. Aveyra et al. 1956), or as cremations (Bement 1994:Table 17). Cemeteries are not generally present west of the escarpment although isolated single burials occur in burned rock middens and other open-air sites (Steele and Olive 1989:Table 7). Ossuaries do occur east of the escarpment (e.g., Polecat Hollow [Greer and Benfer 1975; Johnson 2000; Lukowski 1988; Prewitt 1974], 41BX1, Loeve-Fox, and Pat Parker). Burials tend to be tightly clustered, perhaps enclosed within a designated structure or marked space. This pattern begins in the Late Archaic and continues into the Austin Phase of the Late Prehistoric period. For instance, in a small burial pit at the Bessie Kruze site (41WM13) archeologists recovered the uncremated remains of at least three, and more likely four, individuals. The burials appear to be contemporaneous (1480 B.C.) with the manufacture of Pedernales points. At the Pat Parker site in eastern Travis County a small cemetery containing flexed burials dates to the Late Archaic and Late Prehistoric (Austin Phase; Greer and Benfer 1975). While the burials were assumed to belong to the Austin Phase, several Darl points also were found in association. Whether the latter were accidentally intermixed with the burial fill or dated the burials cannot be determined based on the information provided. More likely, the cemetery was used during both time intervals. An almost identical situation occurred at Polecat Hollow on Walnut Creek in Austin where burials were interred from deposits yielding Late Archaic (Darl and Fairland) and Austin Phase materials (notes in Travis County files at TARL). Other Late Archaic cemetery sites include Bering Sinkhole (Bement 1994:Table 17) and 41BX1 in Bexar County (Lukowski 1988).

Late Prehistoric Period

The Late Prehistoric (A.D. 800 to A.D. 1690, as per Collins 1995) is marked by a major technological change, the introduction of the bow and arrow. Archeologists have divided the period into two intervals or phases, Austin and Toyah, based on differences in the archeological assemblages (Henderson 2001; Jelks 1962; Kelley 1947; Shafer 1977). Evidence for the change is seen in the replacement of the larger Ensor, Fairland, and Darl points by small delicately shaped corner-notched arrow points.

Austin Phase

The first part of the Late Prehistoric shows no significant change in subsistence from the Late Archaic period, as extensive use of earth ovens continued along with the formation of burned rock middens (Black and Creel 1997). Deer and small game were the most important meat sources along with mollusks and snails. Plant resources included sotol (where available), pecans, acorns, walnuts, wild fruit, and various green vegetables. The corner-notched arrow points occur in three recognizable styles: Scallorn, Edwards, and Sabinal. Scallorn points are the earliest style in the northern half of central Texas (Jelks 1962), while Edwards may be the earliest in the southern Edwards Plateau (Henderson 2001; Hester 1978; Sollberger 1978). Sabinal was suggested to be the more recent form. Evidence from Rainey Sinkhole, however, suggests that while Edwards appeared in the earlier deposits, all three forms were contemporaneous in later lenses (Henderson 2001:221).

Austin Phase components were recorded at Collins Site (Suhm 1959), Smith Rockshelter (Suhm 1955), Mustang Branch (Ricklis and Collins 1994), Kenyon Rockshelter (Coffman et al. 1986), Frisch Auf! (Hester and Collins 1969), and Pat Parker (Greer and Benfer 1975).

Formal cemeteries or ossuaries suggest some adherence to territorial claims and seasonal settlements. Loeve-Fox in Williamson County (Prewitt 1974), Pat Parker (Greer and Benfer 1975) and Polecat Hollow in Travis County (notes on file at TARL), and Frisch Auf! in Fayette County (Hester and Collins 1969) are examples. Burials were mostly single, flexed, and in the flesh, but a small number were cremated.

Toyah Phase

The most significant change occurs in the latter part of the Late Prehistoric period with the Toyah Phase. There is little question that the Toyah “techno-complex” (Ricklis 1994a) is associated with the return of bison across central Texas and the Canyonlands. Henderson (2001), using the dated stratified deposits at Rainey Sinkhole, places the beginning of the Toyah Phase at about A.D. 1250. The Toyah Phase lasted at least until A.D. 1650 (or later; see Collins 1995 and Johnson 1994), and may have been absorbed into the Spanish Mission period (Hester 1995). Deer and antelope continued to be exploited, but the quest for bison may have changed traditional territorial ranges and the human landscape. Perdiz arrow points replace the corner-notched forms as the major arrow point style, and pottery was produced in the region for the first time. The overall artifact assemblage reflects an economy that emphasized hunting and hide processing. End

scrapers, flake perforators, large, thin bifaces (often with beveled edges), a blade technology, and locally made pottery constitute the diagnostic assemblage. Rock-lined hearths, ash basin hearths, and bone concentrations constitute the major site features (Henderson 2001; Johnson 1994). The fact that many Central Texas burned rock middens produce radiocarbon dates contemporary to the Toyah Phase suggests that bulk plant processing may have been practiced at least on a seasonal basis (Mauldin et al. 2003). Toyah material culture has been attributed historically to the Jumano and related groups (Kelley 1986). There is virtually no mortuary data for the Toyah Phase. Jelks (1962) reports a cremation at the Kyle Site. The dead may simply have been disposed on the surface covered with brush (Campbell 1983).

During the later part of the Late Archaic, the Woodland period, archeological evidence from northeast Texas suggests that hunter-gatherer adaptations took on a more sedentary nature (Perttula et al. 1993). This process of increased sedentism eventually appeared to culminate in the emergence of food producing adaptations and increased social complexity noted within the western Gulf Coastal Plains Caddoan area of northeast Texas (Perttula 1997: Figure 1). This development is critical because beginning with the Formative Caddoan period through the early Historic period, the Caddoan culture area plays a major roll in regional interaction spheres and the movement of prestige goods and economic resources (i.e., bow wood) across large areas. Because we have not noted any direct or indirect evidence of Caddoan materials within the collection from the Millican Bench site, we will not discuss in detail the cultural processes that unfolded in the Caddoan culture area contained within Texas. Rather, we refer the reader to the extensive and varied literature cited by Perttula (1997).

Chapter 4: Field and Laboratory Methods

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This chapter provides a review of the field and laboratory methods used to excavate and process the archeological material from site 41TV163. As noted in Chapter 1, the fieldwork, conducted in 1970 and 1971, was under the direction of Dr. Frank Weir. Unfortunately, a large portion of the Field Director's journal was lost, and no general description of the site exists in the available notes. The description of the excavation that follows was reconstructed primarily from unit/level forms, feature forms, profiles, specimen inventory forms, correspondence, photographs, and notes on field sacks. Additional information is taken from a preliminary hand-written draft manuscript by Weir penned sometime after the end of the 1971 season. The recollections of Dr. Weir, as well as those of Dr. Shafer who visited the site during excavation, supplemented these sources.

Field Work at 41TV163

The Millican Bench site was situated in a small, protected, steep-sided valley near the head of an unnamed dry tributary of the Colorado River. The site consisted of large concentrations of burned rock and chipped stone situated on a topographic bench, an adjoining slope, a creek terrace, and a topographic prominence, the last separated from the former by the creek (Figure 4-1). Area A was located at the northern extremity of the site on the topographic bench which extended south approximately 12 m from a low limestone bluff. The bluff, approximately 3.65 m high, consisted of thick layers of hard limestone sandwiching thin layers of chalky marls. No evidence of cultural materials existed above the bluff. The bench was a limestone outcrop topped with soils made up of decayed marls and humus at least 50 cm in thickness at the bluff with a south inclination of less than 15 degrees. In addition, a burned rock midden, roughly 12 m in diameter, was situated on the bench with a surface dip from 10 to 15 degrees. From the approximate south edge of the limestone bench, the slope broke in a 20-degree or more talus from the bench, flattening to a five-degree slope on the terrace below. A second burned rock midden (Area B) was situated on this slope. This burned rock midden measured about 7 m east-west and 12 m north-south. Located on the terrace immediately west of Area B was a scatter of burned rock and chipped stone that measured approximately 12 m north-south and 15 m east-west. This concentration

was identified with two different area designations, C and D. Area D consisted of a stony surface of scree deposit and severely diminished numbers of burned rock and chipping debris. The surface elevation of the terrace was less than 1.6 m above the adjoining creek bed. On a topographic prominence located southeast across the creek from Areas B and C, comparably situated on the same formation as Area A, were three additional areas, E, F, and G. Area E was a small burned rock midden that measured roughly 4 m in diameter. Area F, which measured about 30 m east-west, can best be described as an area of occupation refuse consisting of occasional burned rock and chipped stone. Area G, east of Area F (Figure 1-2), existed primarily as a lithic scatter on bedrock.

Excavation Strategy

Before excavations began, a vertical datum point was established and given the arbitrary elevation of 0.00 feet. Two separate horizontal grid systems, with north-south lines oriented parallel to the centerline of the then proposed Loop 360, were established on the site. Grid north was 90 degrees to that centerline. The grid system that served Areas A, B, C, and D consisted of 5-x-5-foot (1.5-x-1.5 m) squares with the S190/E100 point located at the extreme southwestern edge of the grid (Figure 4-1). The grid that served Areas E and F had different east-west reference points. These reference points were shot directly off of station markers along the highway right-of-way (e.g., 2+00=200 feet). Station markers record both horizontal and vertical datums along highway right-of-ways. The north-south grid lines were measured off of a S0 baseline that extended across both areas (Figure 4-1). Squares were designated by northeast corner grid intersections.

The excavation strategy employed at 41TV163 was designed to determine the areas of the site that were most intensively occupied and provide information on the chronology and material content for each area of occupation. Excavation procedures included backhoe trenching, hand excavation of units, and the use of a Gradall Excavator (hereinafter referred to as Gradall). Weir initiated work at 41TV163 by excavating a 100-foot-long backhoe trench across the terrace paralleling the creek (Figure 4-1). The trench, designed to expose the site stratigraphy in this location and determine

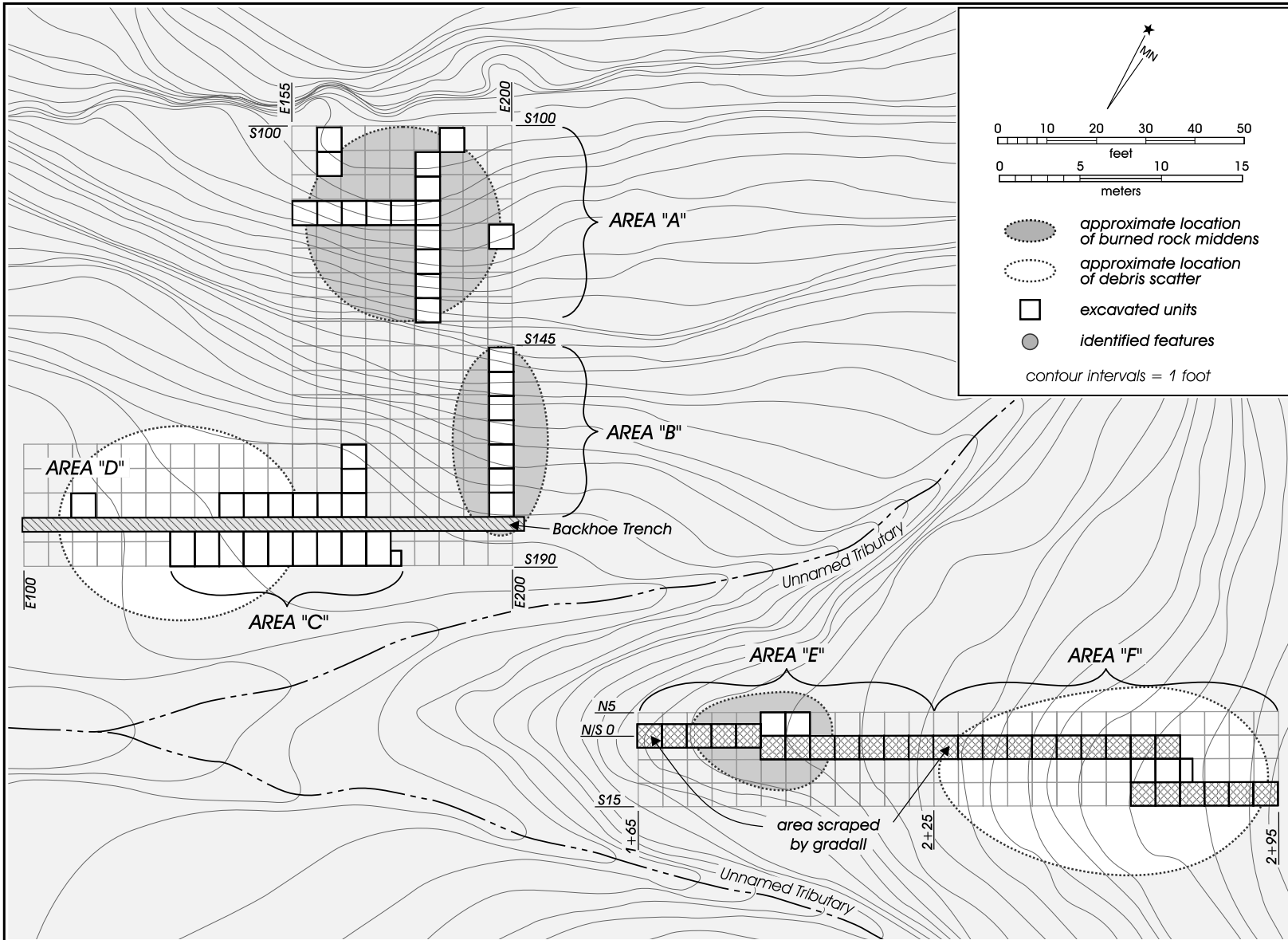


Figure 4-1. Site map showing distribution of excavation areas and units.

the depth of the deposits, was three feet wide and three feet deep (Figure 4-2). Hand-excavation units, placed in areas of the site designated B, C, and D, were located along this trench. Area A was entirely excavated by hand. Excavation in Areas E and F was carried out using a Gradall, supplemented by a small number of hand-excavated units (Figure 4-1). As was common at the time, most hand excavations used five-foot squares as the basic unit. Exceptions to this size were a series of units excavated in Area C off the south face of the backhoe trench, as well as a single unit measuring 2.5 feet by five feet excavated in Area F (see Figure 4-1). Possibly for the first time on burned rock midden sites in central Texas, contiguous units were opened simultaneously to provide horizontal exposures in an attempt to identify possible living surfaces and associated features. Due to various constraints, the exposed units were not explored as extensively as initially intended (Weir 2004:3).

Information recorded on the outside of excavation sacks indicates that excavation levels were commonly six inches in thickness, with level measurements taken from the ground surface. Relative elevations were recorded on the bags.

These elevations were shot from several different sub-datums, and reconstruction of the absolute elevations was not possible. The excavations were nominally conducted in six-inch levels. These levels were assigned to stratigraphic zones where possible and when recognized zones were crosscut, material from each zone was bagged separately within each level. Five to six different “zones” were identified on profile drawings. Identified by Roman numerals on profiles, detailed descriptions of these zones could not be located, though some information was present in the notes.

Excavations in Area A consisted of 16 5-x-5-foot squares. Units formed a north-south trench and an east-west trench across the burned rock midden, with four additional units, not connected to the trenches, also excavated (see Figure 4-1). A maximum depth of 3.5 feet was reached in units S115/E175, E180, and E185. Seventy-five arbitrary six-inch levels were excavated, removing about 937.5 cubic feet (26.5 cubic meters) of fill in Area A.

Excavations in Area B consisted of a north-south trench composed of seven 5-x-5-foot squares. Depths ranged from



Figure 4-2. Initial trench across Areas B, C, and D at 4ITV163. Looking west.

one foot in S145/E200 to five feet in S175/E200 (Figure 4-1 and Figure 4-3). Fifty six-inch levels are listed in the specimen catalog, and about 625 cubic feet (17.7 cubic meters) of fill were excavated by hand in this area.

Areas C and D probed the terrace deposits exposed along the center and western sections of the backhoe trench. Area C was considered the most promising choice for excavation. Excavations in Area C consisted of 17 designated units, with eight 5-x-5-foot squares excavated on the north side of the backhoe trench, and nine 5-x-7-foot units excavated on the south side of the backhoe trench (see Figure 4-1 and Figure 4-4). The odd dimension of the southern units was due to the backhoe trench location relative to the grid. The backhoe trench was approximately two feet north of the S180 line, and this additional fill was included in each unit with the S180 designation (Figure 4-1). The deepest unit, S175/E165, reached a depth of 3.5 feet. Roughly 882.5 cubic feet (25 cubic meters) of fill was removed in Area C. Excavation in Area D was located to the west of Area C along the S175 line and consisted of a single 5-x-5-foot square, S175/E115. Four levels were completed, with 50 cubic feet (1.4 cubic meters) of fill removed. The return in this area was minimal and no further work was done in Area D.

Time constraints forced Weir to use a Gradall to excavate in Areas E and F. Three trenches, each measuring five feet in width, were placed in Areas E and F. Note that the division between the two areas was arbitrary and was designated as the 2+25 grid line. Units to the west were in Area E; those to the east in Area F (Figure 4-1 and Figure 4-5). The trenches were skimmed in six-inch levels within five-foot sections defined by grid units. The dirt from each level was dumped directly into $\frac{1}{4}$ -inch hardware cloth screens set nearby, and the contents bagged in the same manner as in the case of the hand-excavated units (Figure 4-6). Area E consisted of 14 5-x-5-foot squares excavated along an east-west trench connecting the two burned rock middens. Twelve of the units were dug with the Gradall machine, and two units (1+95/N5 and 2+00/N5) were hand-dug. All units were excavated to a depth of 1.5 feet at which point bedrock was reached in some units. In all, approximately 537.5 cubic feet (15.2 cubic meters) of fill was removed in Area E. Area F consisted of 18 5-x-5-foot squares and one 2.5-x-5-foot unit oriented along an offset trench. All but three units in Area F were excavated with the Gradall. The hand-excavated units were 2+70/S5, 2+75/S5, and 2+77.5/S5. The deepest unit in this area was 1+70/S0, which reached a depth of three feet. Approximately 800 cubic feet (22.7 cubic meters) of fill was removed in Area F.



Figure 4-3. Backhoe trenches in Area B (foreground) and Area A (background) at 41TV163. Looking north.

Laboratory Work

The collection and records from the Millican Bench site (41TV163) arrived at CAR in 29 boxes of cultural materials and two boxes of notes. During initial lab processing by TxDOT in the early 1970s, the artifacts were washed and lot numbers were assigned. Inventory sheets were then prepared. These sheets, tied to lot numbers, contained a numerical listing of the contents of each bag. The information listed for each lot number included the unit designation and level number. Some of the lithic material had been labeled with site and lot number in India ink. Where appropriate, artifact labels were re-written onto a bottom coat of B-72 (with acetone) in archival ink and sealed with another coat of B-72. CAR lab staff repackaged the lithic materials into archival plastic bags with acid-free tags containing provenience and class information. In doing the repackaging, the lab staff also separated tools and points from the debitage and recorded the counts of all three classes of material along with the counts and weights of the small quantity of burned rock in the collection. The faunal materials (mussel shell, snail shell, and vertebrate bones) were removed from their field bags and placed into archival plastic bags with acid-free tags containing provenience and class information. The bone was identified, counted and weighed, and the snail and mussel shell was weighed. The re-inventory counts and weights for all material were used to create a Microsoft Access database of the collection. The acidic records and photographic materials were repackaged into appropriate archival holders.

In some cases, the negatives had been cut from negative strips and placed in envelopes onto which the print of the image had been glued. The prints were removed from the envelopes and placed into polyethylene photographic strip holders. Polaroid images had also been glued to pages. These were removed from the paper backings and placed into holders after being cleaned. Acid-free, foil-backed labels were applied to each photographic print and slide. The Polaroid photos were scanned and saved onto a



Figure 4-4. Overview of excavations in Area C at 41TV163. Looking south.



Figure 4-5. Excavations in Area F (foreground) and Area E (background) at 41TV163. Looking west.



Figure 4-6. Excavations in Area E: note screens and Gradall. Looking west.

CD. All paper records were copied onto acid-free paper and placed in archival folders. The labeled portions of the original paper bags were retained for cross-referencing, and copies were made to accompany the archival records because most of the field bags contained information not recorded elsewhere.

The analyses reported in the later chapters focus on a series of specific analytical units (defined in Chapter 6) and the materials that could be securely associated with them. Unfortunately, much of the material recovered from the site could not be attributed to even broad temporal analytical units. Therefore, in consultation with the Texas Department of Transportation and the Texas Historical Commission, selected artifacts from a number of categories were discarded following the completion of this report. The discarded materials include all debitage, cores and ground stone fragments, animal bones, snail shells, and mussel shells from proveniences not in the selected analytical units (ca. 33,918 items). In addition, all burned rock, regardless of location and analytical unit association, and all historic and modern road debris were discarded. The site database and all report tables include material counts established prior to discard.

Chapter 5: Recovered Data

Raymond P. Mauldin, Richard B. Mahoney, Harry J. Shafer, and Barbara A. Meissner

In this chapter we provide a summary of the results of the 1970–1971 TxDOT work at 41TV163. Included in this chapter are summaries of chipped stone debitage, cores, projectile points and other chipped stone tools, ground stone, historic/modern material, vertebrate faunal remains, mussel and snail shell, charcoal samples, soil samples, and human remains. Note that some types of collected material, such as burned rock, were present in the collections processed by CAR but are not summarized in this chapter. In the case of burned rock, this was because it was not systematically collected during the excavation.

Recovered Artifacts

Counts of the major artifact classes present in the collections in 2003 are provided in Table 5-1. The artifact classes are presented by each of the major excavation Areas (i.e., A, B, C, D, E, and F). Note that because only a single 5-x-5-foot (1.5-x-1.5-m) unit was excavated in Area D, we discuss the data from this unit in conjunction with Area C, located just to the west of Area D. In addition, Area G materials, along with a small number of items simply identified as “general surface” and a few items with unknown provenience, are included in the table. Each of these primary artifact classes is briefly discussed.

Projectile Points

Projectile points are common in the collection, with 431 specimens being identified (Table 5-1). With the exception of one item made from petrified wood, a variety of cherts are represented in this collection. Of the 428 items recovered from the six major areas of the site, 58 are complete. Thirty-seven (9%) of the 428 points were damaged by heat, with several specimens being badly burned. As can be seen in Table 5-1, 209 (49%) of the points came from Area C/D, with Area F having the fewest number of items, 13 (3%). Area C/D also had the highest density of points, with 7.9 projectile points recovered per cubic meter of fill. Area F had the lowest density, with only 0.6 points per cubic meter of excavation.

Of the 431 points, 310 (72%) could be assigned to a recognized type, with the remaining items being either too fragmentary to type, reflecting untyped and untypable arrow points and arrow point preforms (n=29, 7%), or reflecting untyped and untypable dart points and dart point preforms (n=56, 13%). Scans of many of the points are presented in Appendix E.

Table 5-1. Artifact Distribution by Area at 41TV163

Artifact Class	Area Designations						Total
	A	B	C/D	E	F	G and General Surface	
Projectile Points	45	81	209	80	13	3	431
Bifaces	74	175	485	140	56	24	954
Edge Modified Items	17	30	153	117	28	1	346
Battered Tools	2	3	12	4	2	1	24
Unifaces	4	41	28	18	18	2	111
Cores	9	31	125	32	3	7	207
Debitage	1,361	6,443	23,692	9,869	943	255	42,563
Ground Stone	2	3	12	0	2	0	19
Total Prehistoric	1,514	6,807	24,716	10,260	1,065	293	44,655
Glass	1	2	66	374	72	2	517
Metal	1	1	18	130	2	0	152
Ceramic	0	0	3	19	2	0	24
Total Historic/Modern	2	3	87	523	76	2	693

Table 5-2 provides a list of the diagnostic points grouped by types and by excavation area. Note that points assigned to a type that lacked an Area provenience are not included in Table 5-2. With the exception of any evidence for Paleoindian occupation, projectile points from 41TV163 reflect most prehistoric periods, with diagnostic points suggesting some level of use from the Early Archaic (8000–6000 BP) through the early portion of the Late Prehistoric (1250–700 BP). Points dating to the Late Archaic are by far the most common (n=201, 65%), with Late Prehistoric points also represented by numerous specimens (n=57, 18%). Areas C/D and E contained all of the Late Prehistoric point forms

recovered from the site, with most (86%) concentrated in Area C/D. In addition, all of the untyped and untypable arrow points and arrow point preforms (n=29) recovered from the site were in Areas C/D (n=26) and E (n=3). While Areas C/D and E, then, contained all of the Late Prehistoric forms, they also contained a variety of Late Archaic forms, ranging from Darl points, characteristic of the terminal Late Archaic, through Bulverde and Pedernales forms, characteristic of the beginning of the Late Archaic. Late Archaic occupation was also present in Areas A and B. Middle Archaic point forms were primarily concentrated in Areas A and B, with these two areas containing 39 of the 40 points. The remaining

Table 5-2. Distribution of Typed Projectile Points by Area, 41TV163

Point Type	Areas					Total
	A	B	C/D	E	F	
Late Prehistoric						
Alba			1			1
Bonham			1			1
Fresno			1			1
Scallorn			46	8		54
Late Archaic						
Darl	1	1	37	3		42
Ensor		1	11	1		13
Frio				2		2
Fairland			23			23
Marcos*			2	1		3
Montell		3	2	9		14
Castroville		1	2	4		7
Langtry	1					1
Lange	3	3	10	7		23
Marshall		4	1	1		6
Williams		1				1
Pedernales	11	13	7	21	1	53
Bulverde	3	7	1	2		13
Middle Archaic						
Nolan	7	17				24
Travis	10	5				15
Andice					1	1
Early Archaic						
Martindale					1	1
Uvalde					2	2
Early Split Stem		1			3	4
Early Triangular		2				2
Wells	2					2
Total	38	59	145	59	8	309

* 1 Marcos point is not shown in table as it lacked Area designation.

Middle Archaic point, an Andice usually assigned to the onset of that temporal period, was recovered from Area F. No Middle Archaic points, or points assignable to the Early Archaic, were recovered from Areas C/D or E. Early Archaic forms were present in small numbers in Areas A, B, and F. With the exception of the aforementioned Andice fragment and two Pedernales points found on the surface, Area F contained mainly Early Archaic typed points.

No area of the site, then, has artifacts reflecting only a single temporal period. Areas C/D and E appear to have roughly similar sequences, with both Late Archaic and Late Prehistoric projectile points present. Both areas also lacked Middle and Early Archaic forms. Areas A and B are also similar, with a variety of Middle Archaic and Late Archaic forms present. Both areas also contained a small number of Early Archaic forms. Finally, Early Archaic point forms dominated Area F, but two of the eight points recovered from this area date to other temporal periods. Spatially, then, all areas had points reflecting multiple time periods. However, as will be discussed in subsequent chapters, several locations within selected areas can be isolated that allow consideration of period-level assemblages.

Other Chipped Stone Tools

In addition to projectile points, a variety of other chipped stone tools are present in the 41TV163 collection (Table 5-1). Over 1,400 of these other tools were recovered from the site. This total includes a substantial number of bifaces (Figure 5-1), unifaces, and edge modified flakes. Several retouched tools with substantial battering along one or more edges were also recovered (Figure 5-2). Functional classification of the entire tool assemblage was not attempted; however, all tools that could be assigned to analytical units (as defined in Chapter 6) were classified according to function (see Chapter 8).

Bifaces were the most common chipped stone tool recovered from the site with over 950 specimens (Table 5-1). As can be seen in Figure 5-1, bifaces from the site reflect the full range of bifacial reduction technology as examples reflecting both early and late reduction are present. While many of the bifaces recovered represent abandoned or broken items, other specimens appear to have been used or designed for specific tasks. The highest number of bifaces was recovered from Area C/D. The highest density of bifaces was also from this Area, where roughly 18.4 items were recovered per cubic meter of fill. Recall that this area also had the highest density

of projectile points. The lowest bifacial densities were in Areas F (2.5 per cubic meter) and A (2.8 per cubic meter).

Unifaces were much less frequent than bifaces at this site, with only 111 of these items recovered (Table 5-1). The highest density of unifaces was recovered in Area B, with 2.3 items per cubic meter. The lowest density was in Area A, with 0.2 items per cubic meter of removed fill.

Edge modified items are much more common than unifaces in the assemblage, being represented by 346 items (Table 5-1). This class of tools includes a wide range of forms. The highest density of this class of tool was in Area E (7.7 per cubic meter), though Area C/D also had a significant number with 5.8 per cubic meter of fill. The lowest density of this tool form was in Area A, with 0.6 items per cubic meter.

Finally, a small number of items are classified as battered tools (Figure 5-2). Several of these appear to have been retouched to form a more acute edge angle. These items do not appear to reflect hammerstones involved in chipped stone reduction, but may have been used in more of a chopping or pounding activity or, in some cases, to refurbish ground stone. Battered tools were not common on the site relative to other tool types, with only 24 items (Table 5-1). The highest density of these tools was in Area C/D with 0.5 specimens per cubic meter. Rounded or ovate pebbles with marginal battering, specimens that would normally be identified as hammerstones, were not noted in the Millican Bench assemblage. Their absence may indicate that hammerstones were a very highly curated element of personal gear. Interestingly, unifacially or bifacially flaked distally beveled tools, that constitute gouges and possibly adzes in functional terms, also are not present in the Millican Bench collection. Although many unifacial end scrapers are present, the angle of the distal retouch and the shape of the working edge suggest that these tools represent scrapers rather than gouges or adzes. The absence of gouges in the Millican Bench collection suggests a functionally distinct tool kit compared to that commonly seen in assemblages from along the southern edge of central Texas (i.e., Choke Canyon).

Debitage and Cores

By far the most common item recovered during the excavation at 41TV163 was chipped stone debitage (Table 5-1). While petrified wood, quartzite, and limestone are represented in the debitage, chert is by far the most common raw material. Of the over 42,500 items in the collection, almost 56% of

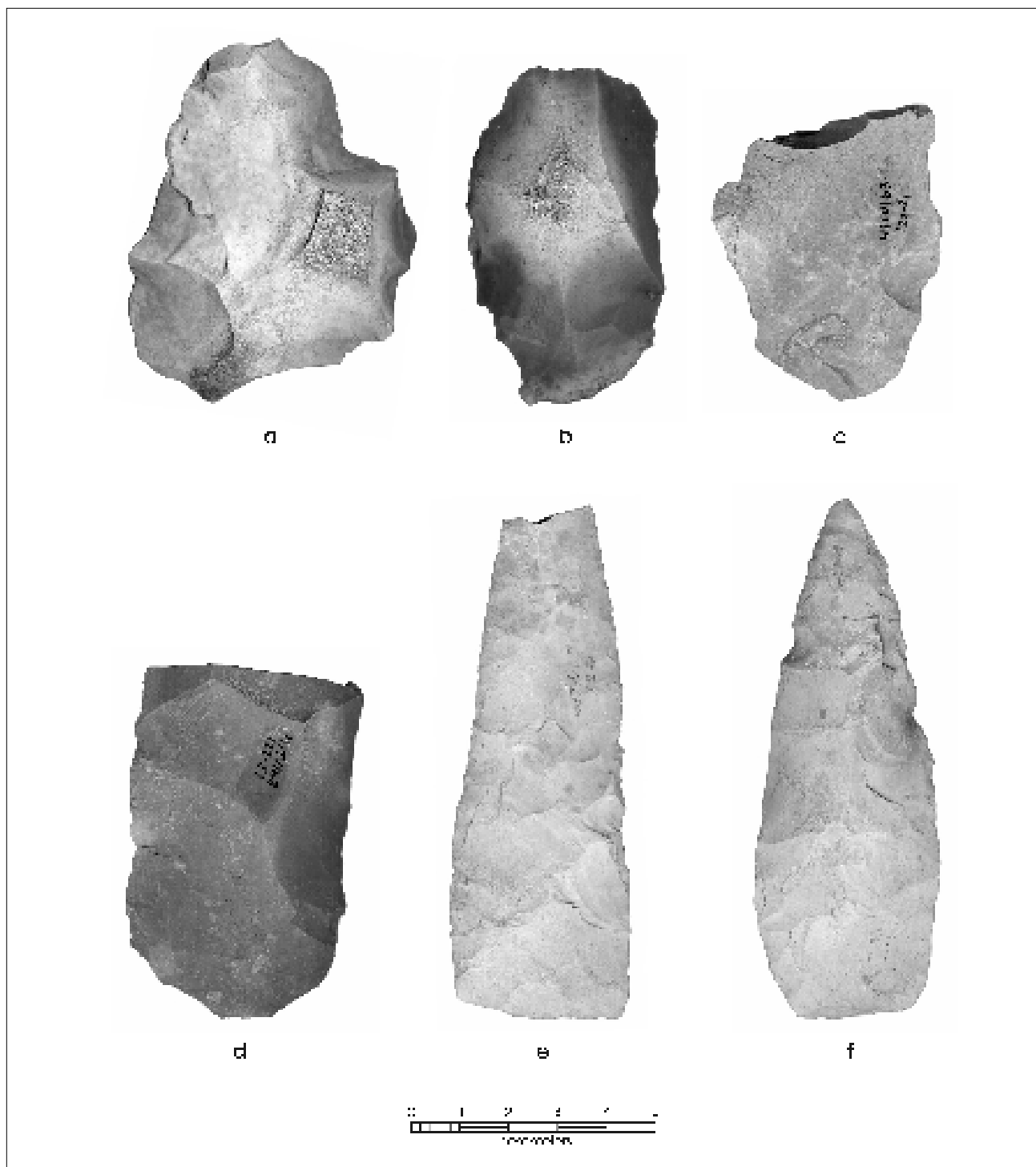


Figure 5-1. *Selected bifaces from 41TV163. a, b) early stage reduction bifaces, Area E; c, d) middle reduction stage bifaces, Area B; e, f) late reduction stage bifaces, Area B.*

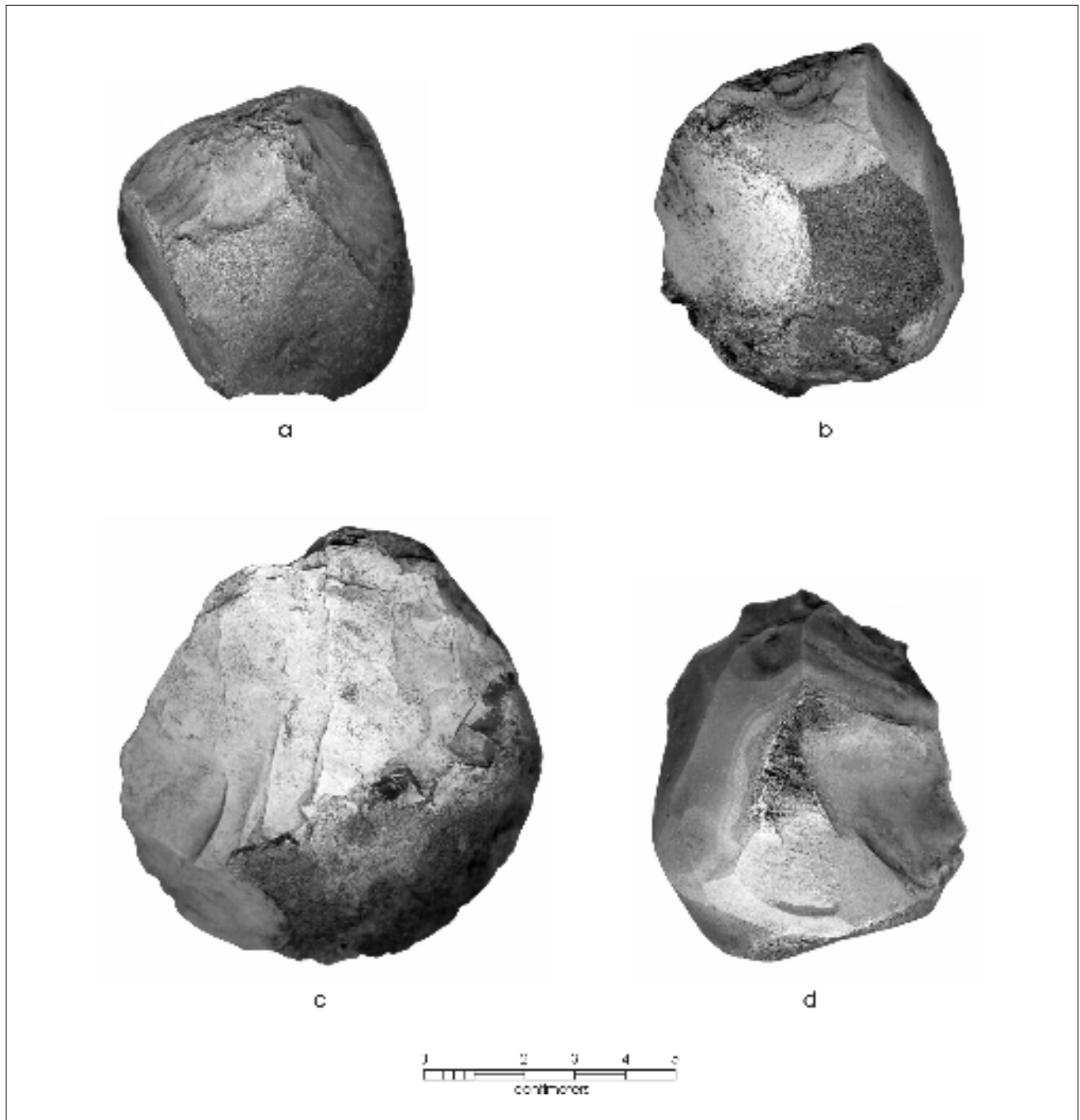


Figure 5-2. Selected battered tools from 41TV163. a, d) Area B; b, c) Area C.

that total was associated with the excavations in Area C/D. This area also had the highest overall density, with almost 950 pieces of debitage per cubic meter of fill. In contrast, both areas F and A had low debitage densities, with densities of 41.5 and 51.0 items per cubic meter, respectively.

Two hundred seven items in the assemblage were recorded as cores (Table 5-1). All of the cores in the collection were chert. As with many of the other classes of items, cores were most common in Area C/D. This single excavation area accounted for 60% of the cores, with a density of 4.5 cores per cubic meter of excavated fill. Area F had only three cores recovered, and an overall density of only 0.13 cores per cubic meter of sediment.

Ground Stone

Reference to Table 5-1 will show that 19 items classified as ground stone are present in the collections from 41TV163. Thirteen of these are classified as manos or mano fragments and there are six metate fragments in the collection. Quartzites and sandstones dominates the raw materials used to produce these items. As with most other artifacts, Area C/D produced both the highest number of specimens (n=12) as well as the highest overall density (0.45 per cubic meter). Areas E and G had no ground stone recovered (Table 5-1).

Historic/Modern Artifacts

Finally, a variety of modern and historic items were recovered during the excavation (Table 5-1). For the current discussion, these have been broken down into glass (n=517), metal (n=152), and ceramics (n=24). The metal category includes a variety of cartridge casings, a metal door hinge, barbed wire, a nail, and a variety of miscellaneous metal fragments. Glass fragments represent a variety of colors, including amber, aqua, brown, green, and purple, along with shards of clear glass. The small number of ceramics include whitewares and brownwares. Reference to Table 5-1 will show that over 75% of the metal, glass, and ceramic material came from Area E. This class of material was primarily

restricted to the surface and the upper six inches of the deposits across the site. Of the 690 items with provenience data, 647 (ca. 93.8%) were found either on the surface or within the upper six inches, and only 24 items were at a depth below 30 cm (1 ft.). All 24 of these deeper items were in Area E, suggesting that the context of much of the prehistoric material collected from this area is suspect.

Other Samples

A variety of other samples, including vertebrate faunal material, snail and mussel shells, sediment samples, charcoal samples, and human remains were collected from 41TV163. These are briefly discussed in this section. Table 5-3 presents the weights of animal bone, snail shell, and mussel shell recovered from the site for each of the primary excavation areas. Table 5-4 lists the radiocarbon dates derived from the charcoal samples recovered from 41TV163.

Vertebrate Faunal Remains

Vertebrate faunal remains recovered during the project consist of 4,072 specimens weighing 3,218.7 grams. The bone is in good condition, with only a few lots showing changes that suggest atmospheric weathering. Some minor root etching and minor pitting caused by biological activity (especially fungi) was noted on some bones. As shown in Table 5-3, most of the animal bone was recovered from excavation Area C/D. Roughly 81% of the animal bone, both by weight and by number (n=3,321), was collected in this area. No animal bone was recovered from Area F, and only four specimens were present in the excavations in Area A. The inspection of the faunal remains did, however, identify several possible bone and antler tools (Figure 5-3). Appendix A provides additional information on this material, and a portion of this assemblage is analyzed in detail in Chapter 7.

Although the animal bone is in good condition, and there are few signs of serious postdepositional destruction of the bone, the collection is highly fragmented. Examination of the bone suggests that most of the fragmentation may have

Table 5-3. Other Sample Distributions by Area at 41TV163

Sample	Area Designations					Total
	A	B	C/D	E	F	
Bone (grams)	8.09	218.6	2611.8	380.2	0	3218.7
Mussel Shell (grams)	105.4	11.1	590.7	145.3	15.9	868.4
Snail Shell (grams)	2198.5	6596.8	7466.5	5449	1207.6	22918.4

Table 5-4. University of Georgia (UGA) Radiocarbon Dates from 41TV163

UGA #	Area	Unit	Feature	Depth (ft.)	Radiocarbon Age (YBP)	Corrected Age (YBP)	2-Sigma Range
12300	B	S180/E200	-----	ca. 4.0-5.0	3040+/- 80	3050+/-80	1500 BC-1040 BC
12301	B	S175/E200	-----	3-3.5	2830+/- 110	2840+/- 110	1400 BC- 800 BC
12302	C	S175/E145	2	uk	1270+/- 40	1270+/- 40	AD 660-880
12303	C	S175/E150	1	uk	1510+/- 40	1520+/- 40	AD 430-640
12304	C	S185/E165	-----	2.5-3.0	1630+/- 100	1610+/- 100	AD 230-650
12305	C	S175/E160	-----	0-.5	570 +/- 40	580 +/- 40	AD 1300-1430
12306	C	S185/E160	-----	0-.5	40+/- 40	20+/- 40	-----
12307	C	S175/E155	10	1.0-1.5	1640+/- 40	1590+/- 40	AD 380- 570
12308	E	1+70/N+2.50	-----	0-.5	60 +/- 40	60+/- 40	-----

occurred before deposition. Our preliminary analysis of a sample of the faunal remains suggests that a large percentage, perhaps over 50 percent, was heat altered. David’s (1990) experiments have confirmed those of Shipman et al. (1984), which indicate that cooking of meat, even over a direct fire, is unlikely to do more than char bone, and only where there is no meat. The large percentage of burned bone in the assemblage that is calcined and partially calcined suggests that the burned bone was subjected to much higher heat for a much longer duration than would normally be seen in campfire cooking. It seems likely that at least some of the bone was added, either incidentally or deliberately, to fires.

Because the bone is in relatively good condition, one would expect butcher marks to be easily identified. A cursory inspection in fact indicates that butchering scars and impact marks derived from bone breakage are present on some specimens. The impact scars tend to be found on the shafts of long bones of deer-sized animals. The preliminary analysis of the sample of faunal remains recovered from 41TV163 indicates that roughly one-third of the bone inspected represents deer-sized animals and a significant portion of these remains are splinters of long bone diaphyses, with the bone broken while it was fresh. This is evidence of intensive processing of the long bones of large mammals, especially since in order to acquire marrow from a long bone it is necessary only to break it in half. There are few long bone epiphyses identified in this collection, and the few present are all fragments. Tools such as the battered flakes and cobbles described in the previous section (see Figure 5-2) would certainly have been effective in bone breakage of this type, though we have no direct evidence that these tools were used in this manner. The fact that deer bone, which does not contain a great deal of fat during most seasons, was processed in this way suggests that some of the occupation of Millican Bench occurred during seasons when other food sources were not abundant.

Mussel and Snail Shell

Roughly 868 grams of mussel shell was collected from 41TV163. Most of this is highly fragmentary. The mussel shell was concentrated in Area C/D, with a weight of 590.71 grams recovered in this area. Area C/D had an overall density of 22.38 grams of mussel per cubic meter of fill. This density was significantly higher than any other area of the site. With the exception of Area E, with a density of 9.56 grams per cubic meter of fill, no other area had a density of more than 4 grams per cubic meter. While this distribution may reflect cultural factors, note that both Areas C/D and E are located closest to the unnamed tributaries that drained the area, and

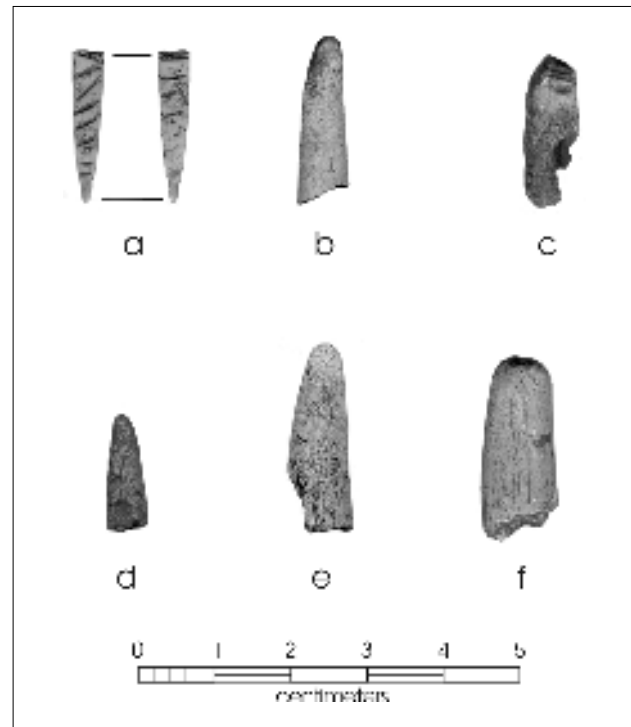


Figure 5-3. Possible bone tool tips found in Area C.

some of the concentration of mussel shell may represent natural deposits associated with that tributary.

Almost 23 kilograms of snail shell were collected at the site. A cursory inspection of the snails suggest that the genus *Rabdotus* dominates the assemblage. An examination of several proveniences failed to identify any other genus. Unfortunately, this pattern could be due to the ¼-inch screens employed, since *Helicina* and *Polygyra* specimens would not be recovered. Similarly, it is likely that only the adult *Rabdotus* specimens have been systematically recovered in the available samples. Like many of the other classes of material discussed in this chapter, snail shells, by weight, were concentrated in Area C/D (Table 5-3). However, the relative density of snails was highest in Areas B (372.7 grams per cubic meter) and E (358.5 grams per cubic meter). Area C/D had a density of 282.8 grams per cubic meter of fill. The lowest snail shell densities were in Areas A (83.0 grams per cubic meter) and F (53.2 grams per cubic meter).

Sediment Samples

Twenty-six individual sediment samples were received by CAR as part of the materials from 41TV163. Areas A and B were best represented, with a total of 14 samples, seven coming from each area. In addition, five samples were collected from Area C/D, two samples from Area E, and five samples from Area F. With the exception of a single sample from a feature (Feature 10), all other matrix samples are from general excavation levels. Nine of these samples from selected areas were floated at CAR and the light fraction submitted to Dr. J. Philip Dering of Shumla Archeobotanical Services for ethnobotanical analysis. The results of this analysis are discussed in Chapter 7, and additional information can be found in Appendix D.

Charcoal Samples

While a number of charcoal samples were collected during the initial work at the site, and most were submitted to the Radiocarbon Laboratory at The University of Texas for dating, only a single date was obtained prior to this report. This sample (TX. #1511), from Level 2 in unit S175/E155, produced an uncorrected date of 500 ± 80 BP. The sample was collected near Feature 10 (see the feature discussion in this chapter). Seven charcoal samples were present in the collection when CAR received the materials for assessment. CAR extracted sufficient charcoal from two sediment samples for two additional dates, producing a total of nine radiocarbon samples. Of these nine, two were from Area B, six came from Area C, and a single sample was present from Area E. All nine samples were submitted to the Center for

Applied Isotopic Studies at the University of Georgia. Discounting two modern dates, the corrected dates for the remaining samples range in age from 3050 ± 80 BP to 580 ± 40 BP. Table 5-4 presents these dates. Details of these dates are presented in Appendix C. While these dates are discussed in more detail in the subsequent chapter, note that one of the two modern dates, UGA #12308, is from Area E, an area that contained the majority of the historic/modern items recovered during the 1970–1971 excavations. Weir (2004:5) notes that due to the extent of bioturbation at the site, most dates should be viewed with skepticism. In addition to the charcoal samples submitted for radiocarbon dating, a single charred item, identified as a possible nut fragment, was found in the collection. That sample was submitted to Shumla Archeobotanical Services for ethnobotanical analysis (see Chapter 7 and Appendix D).

Human Remains

The partial remains of a single burial were encountered in Area C (Feature 10). The remains are represented primarily by elements of the skull and arms (Figure 5-4). Specific cranial elements present include the frontal, both parietals, the temporals, the occipital, both malars, a portion of the palatine and maxilla, the left half of the mandible, two sphenoid fragments, and five teeth. Postcranial elements include both humeri, the left ulna, the left radius, 13 hand phalanges, four metacarpals of the left hand (MC-1 through MC-4), two carpals of the right hand, 10 vertebral fragments, two rib fragments, and a portion of the right scapula. It cannot be determined whether the burial represents a primary or secondary interment.

A complete inventory of the human remains is presented in Appendix B. The analyses comport with the minimum reporting standards as set forth in Standards for Data Collection from Human Skeletal Remains (Buikstra and Ubelaker 1994). The feature notes and numerous photographs document that only the upper portion of the individual was well represented in the feature. Approximately 40 grams of small (<1 cm in diameter) unidentifiable fragments comprise the balance of human skeletal material recovered. No duplication exists in the collection, and the remains appear to be of a single individual.

Features

Eleven features were defined during the excavations at 41TV163. These features consisted of stone-lined pits or thermal features (Features 1, 5, and 8), a possible pit or tree root mold (Feature 2), a possible structure (Feature 3),

natural layers of cobbles (Features 4, 7, and probably 9), a concentration of points and debitage (Feature 6), a cairn burial (Feature 10), and a biface cache (Feature 11). The burned rock middens in Area A and Area E, and the potential burned rock midden in Area B, were not assigned feature numbers during the excavation. Figure 5-5 provides the locations of the features. Nine of the 11 features assigned in the field were located in Area C. Figure 5-6 is an enlargement of Area C that shows these nine features. Feature 6 was located in Area B, and Feature 8 was located in Area F (Figure 5-5).

Feature 1

Feature 1 was recorded in Area C, in units S175/E145 and S175/E150 (Figures 5-6 and 5-7). The backhoe trench through this section of the site truncated the southern portion of the feature. The feature was a slab-lined, stone-filled pit with evidence of burning. The pit, which appeared to originate beneath the dark A horizon in Area C, was roughly circular in plan and approximately 1.5 m in diameter. Below the A horizon, a dense, roughly 10-cm-thick lens of *Rabdotus* shells capped the feature and in approximately the same configuration as the top of the basin (Figure 5-7). Stones lining the pit were not discovered until the snail mass had been removed. The topmost stones occurred about 30 cm beneath the surface. The stones remaining in the pit, after the feature had been bisected by the backhoe, were large pebble to large cobble in size and numbered about 30. All stones were burned and dipped toward the center of the pit except for three stones which were on edge and one limestone slab which lay flat at the top of the pit. The stone slabs did not extend to the maximum depth of the pit which was about 75 cm deep and roughly formed a deep basin in profile (Figure 5-7). It appeared that some of the stones had been dislocated by an animal burrow which exited near the bottom west side of the basin. A single radiocarbon date, UGA #12303, was obtained from within the feature, though the exact location is not known (see Table 5-4). The corrected, calibrated date at a two-sigma range, using the OxCal calibration program (Ramsey 2000), is A.D. 430 to 640, suggesting that the feature was probably used during the end of the Late Archaic period. Lithic debitage, utilized flakes, an untypable medial fragment of a projectile point, animal bone fragments, and about three pounds of

snail shells were removed from the feature. In addition, a small cache consisting of a large uniface and two large mussel shell valves was also found near the top of the feature among the rocks lining the pit.

Feature 2

This feature was a pit recognized in the north face of the backhoe trench at the S180/E140 grid intersection (Figure 5-6). The pit, defined by dark brown sediment, had no clear boundaries (Figure 5-8). Weir speculated at the time of recording that the pit might represent a tree-root mold, but acknowledged that the inhabitants of 41TV163 may also have produced the feature. The pit measured 73 cm (2.4 ft.)

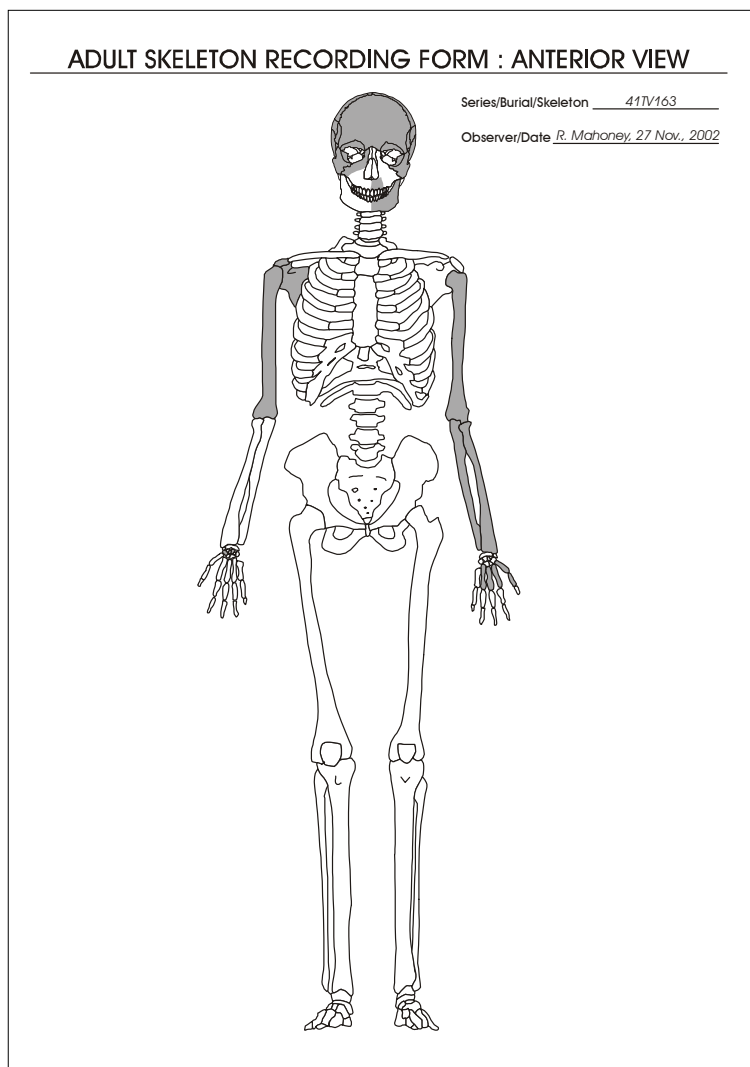


Figure 5-4. Adult skeleton recording form showing elements recovered from the burial, Feature 10, at 41TV163.

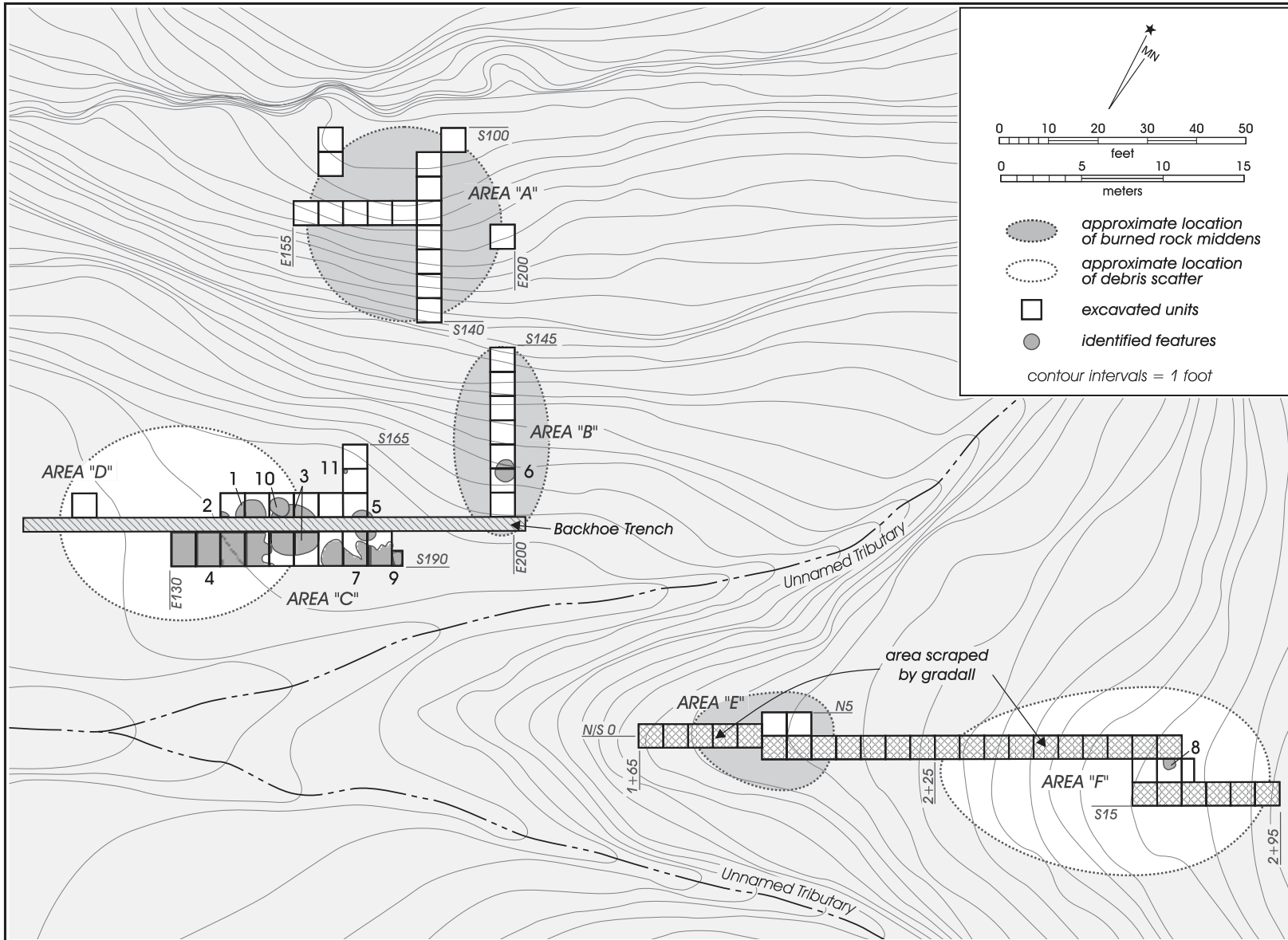


Figure 5-5. Site map showing midden areas and feature locations at 41TV163.

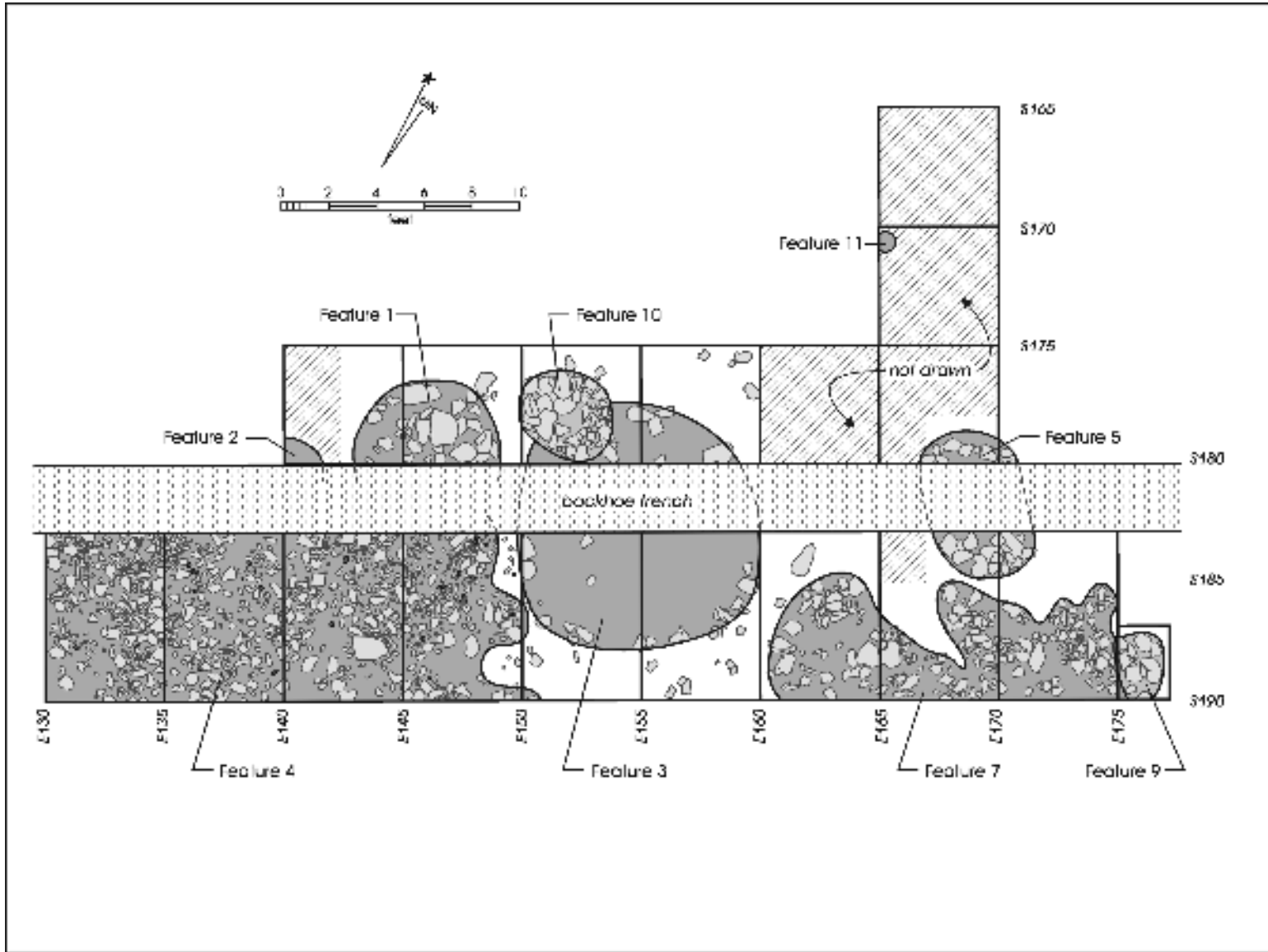


Figure 5-6. Feature distribution in Area C, 41TV163.

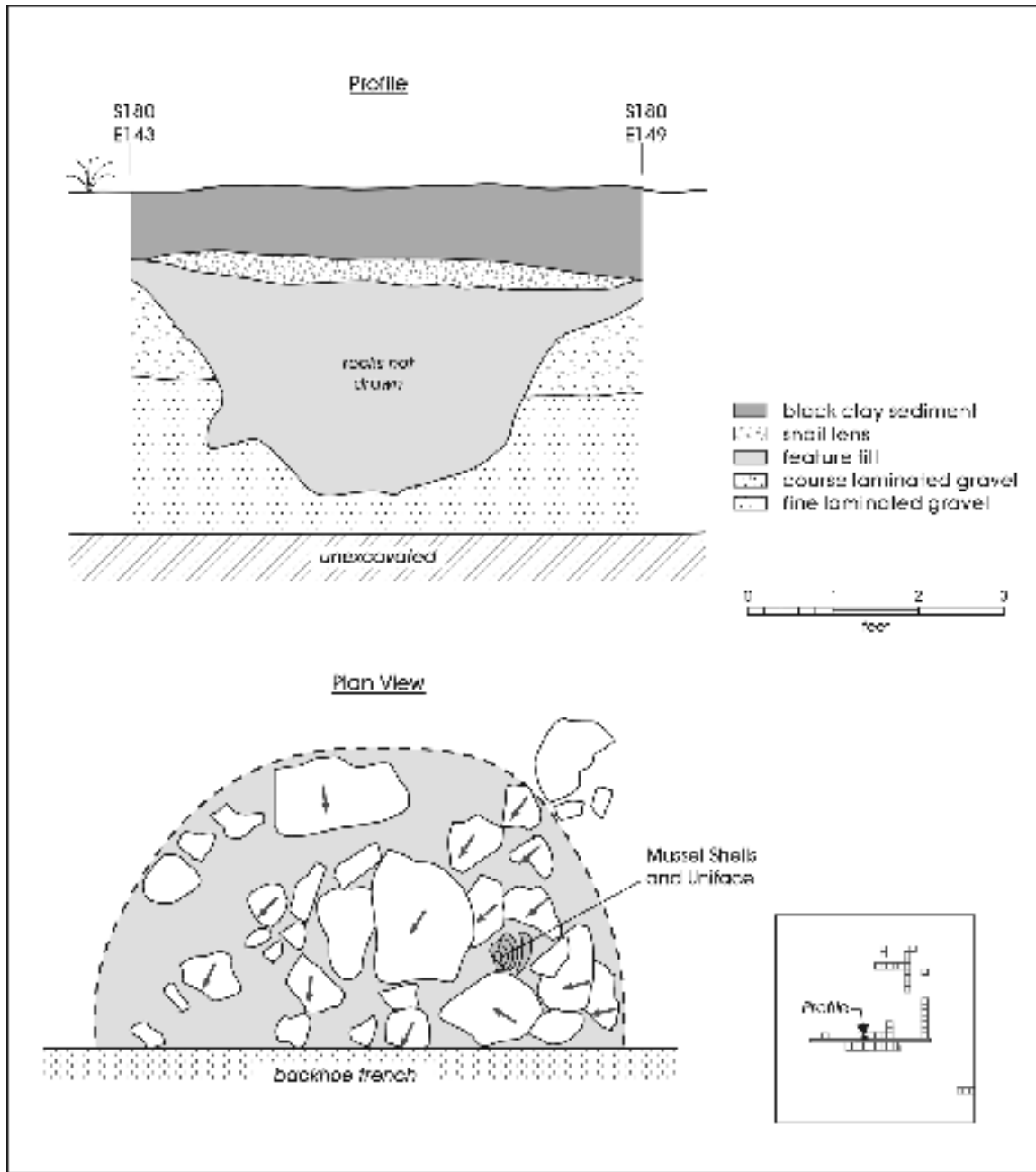


Figure 5-7. Feature 1, a slab-lined pit in Area C. Note uniface/mussel shell cache among burned rock.

in diameter and was 82 cm (2.7 ft.) deep. Temporally diagnostic dart points (Ensor and Darl) suggest the pit fill is Late Archaic in age. Reference to Table 5-4 will confirm this suggestion. A single radiocarbon date, UGA #12302, was obtained from within the feature, though the exact

location is not known. The corrected, calibrated date at a two-sigma range, using the OxCal calibration program (Ramsey 2000), is A.D. 660 to 880, suggesting that the feature was probably used during the end of the Late Archaic or early in the Late Prehistoric.

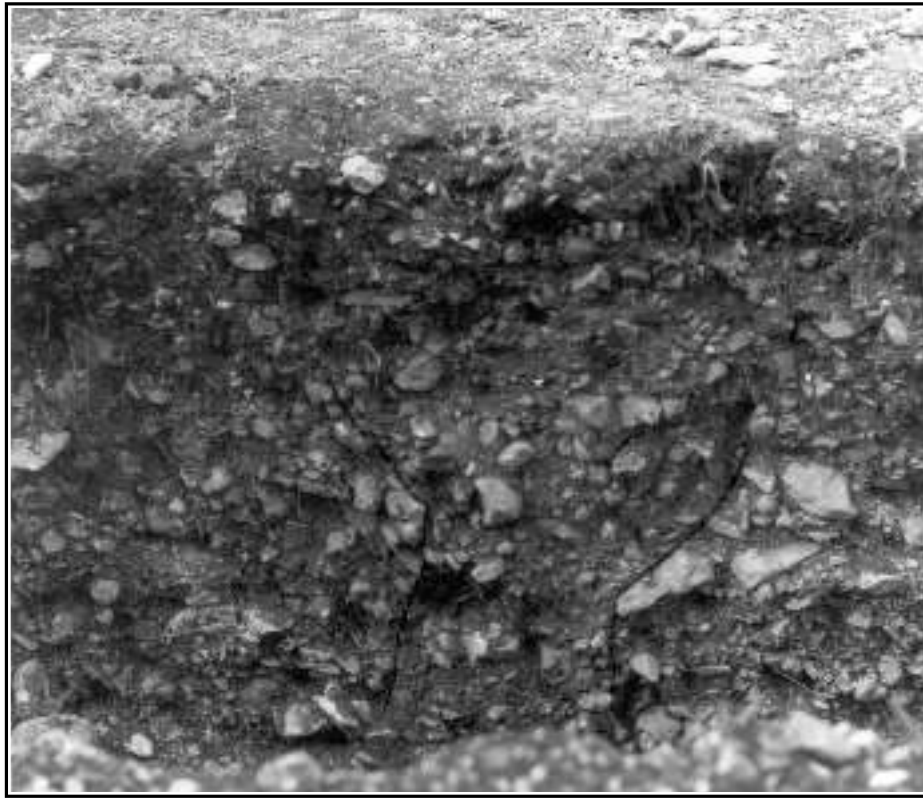


Figure 5-8. Feature 2, pit feature in backhoe trench wall, Area C.

Feature 3

Feature 3 consisted of the remains of a possible habitation structure in Area C (Figure 5-6). The feature was marked by a series of cobbles forming a circular pattern roughly 2.5 m to 3 m (8–10 ft.) in diameter (Figure 5-9). The feature was bisected by the backhoe trench excavated through this area. The circular pattern did not become apparent until manual excavations exposed the cobbles in Level 2 (0.5 to 1.0 ft. below surface). The feature was encountered in portions of units S185/E155, S185/E160, S175/E155, and S175/E160, with the approximate center of the pattern at S183/E155. The pattern of cobbles appeared intact and no evidence of significant disturbance was noted (Figure 5-10). During excavations, no postholes or clearly defined floors were encountered, although the notes suggest a dearth of artifacts within the circle relative to the surrounding squares.

The likelihood that this feature was a habitation area is supported by the lack of an interior scatter of cobbles and small boulders that characterized the equivalent surface to the east (Feature 7), south and west (Feature 4) of Feature 3.

The surface upon which the stones rested may have been the same surface extant at the time of occupation.

The deposits that contained the possible structure yielded predominantly Late Prehistoric Scallorn arrow points, though some Late Archaic materials, including Darl and Fairland dart points, were also recovered. The single radiocarbon date obtained soon after the 1970–1971 excavation, TX #1511, was from a sample collected just outside of this structure at Level 2 in unit S175/E155. While the date has not been corrected for fractionation, the calibrated date, using OxCal (Ramsey 2000), is A.D. 1310 to 1490. An additional date, from Level 1 (0–0.5 ft.) of square S175/E160, was obtained by CAR (see Table 5-4; UGA #12305). That calibrated, corrected date, at a two-sigma range, is A.D. 1300 to 1430. Finally, a second CAR obtained date, UGA #12306, came from Level 1 of S185/E160 (Table 5-4). This sample returned a modern date. However, it is unclear if either the modern date or the A.D. 1300–1430 date are from within the structure. We can only assign the samples to their respective 5-x-5-foot excavation squares. Nevertheless, two Late Prehistoric dates, along with the predominance of Late Prehistoric points,



Figure 5-9. Oblique view of Feature 3. Crew members are working in Area C, Area B midden is at upper right.

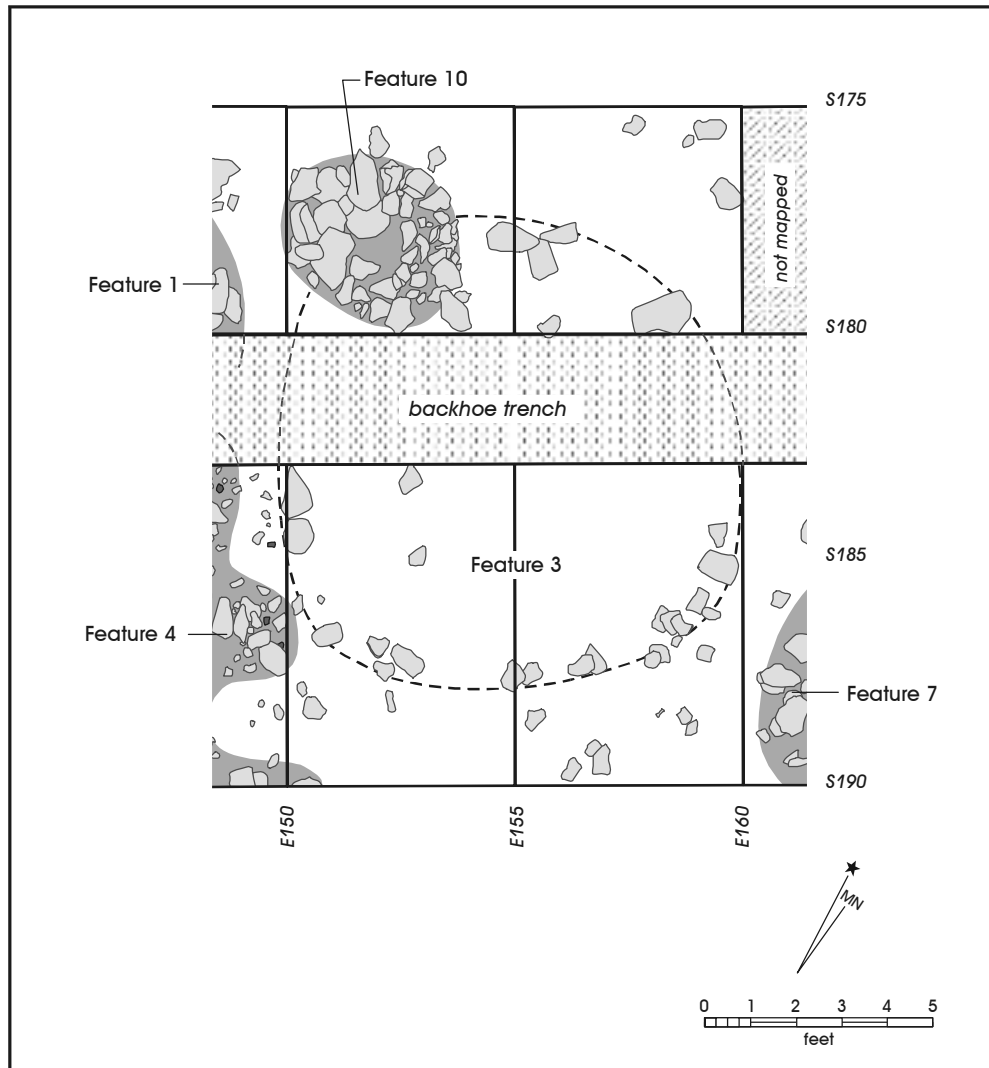


Figure 5-10. Feature 3, a possible structure in Area C.

suggests that the feature was probably used during the Late Prehistoric period.

Feature 4

This feature consisted of an accumulation of cobbles and pebble-sized limestone rocks in Area C (Figure 5-6). The feature extended over units S175/E135 through E150 in Level 2. As can be seen in Figure 5-11, the area for Feature 3 appeared to have been deliberately cleared of cobbles. Only 29 of the 1,267 rocks shown in Feature 4 at the site (Figure 5-6) were noted as being burned. The rock pattern that comprised Feature 4, then, was determined to be a natural colluvial slope or scree deposit that had accumulated

on the terrace prior to the late occupations. This stony pavement extended westward through Area D where it was exposed on the surface. Excavation in the units of Area C containing Feature 4 were terminated at Level 2 and the rocks comprising this feature were never removed during the fieldwork.

Feature 5

The backhoe trench in Area C bisected this oval slab-lined pit, destroying much of the feature (Figure 5-6). The approximate center of the feature was at grid intersection S182/E169. Originally, the pit probably measured about 1.5 m (5 ft.) by 1.8 m (6 ft.) and was about 30 cm (1 ft.) deep.



Figure 5-11. Feature 4, limestone pavement of primarily unburned cobbles, Feature 3 is to the right in the photo. Field crew working in Area C, midden in Area B behind crew members.

As can be seen in the photograph (Figure 5-12), as well as in Figure 5-13, most of the extant rocks are sloping toward the center of the feature, and many are large, with several in excess of 30 cm in maximum dimension. The feature was lined with rock, and was a large hearth; however, no charcoal was observed during excavation. Artifacts thought to be associated with Feature 5 included a Fairland dart point, suggesting a possible Late Archaic age for the feature fill. A cluster of three mussel shell valves and a “scraper plane” were recovered from Level 2 immediately adjacent to the perimeter of the circular line of rocks. This apparent cache was similar to the grouping of items recovered from Feature 1. This tight association of a uniface between two mussel valves has not been recognized or reported on before in other reports. Because of the idiosyncratic nature of the caches, Weir suggests that the two features may not only be contemporaneous but may also be the work of the same individual. Given the two mussel shell/uniface caches found in direct association with separate stone-lined features, Weir speculates that there may be more to these features than simply cooking (Weir 2004:7).

Feature 6

This feature in Area B (Figure 5-5) was a concentration of debitage and projectile points clustered around and near the base of a boulder (Figures 5-14 and 5-15). It was discovered in Levels 5 and 6 in unit S170/E200, and continued into S165/E200. When discovered, the excavators described the feature as a chipping location. Several of the points associated with the concentration are shown in Figure 5-16. In all, 21 points were assigned to this feature, with Middle Archaic Nolan forms dominating ($n=12$). Also present were a single Late Archaic Bulverde point, two Early Triangular points dating to the Early Archaic, and two Middle Archaic Travis points. There were also four untyped and untypable dart points. Bifaces were common, with 25 items being assigned to this feature, along with five unifaces, five cores, and several edge modified tools. In addition, over 1,000 pieces of debitage were associated with this feature. The number of projectile points, bifaces in the late stages of reduction, unifaces and cores suggests that the feature had accumulated over a considerable period of reuse.

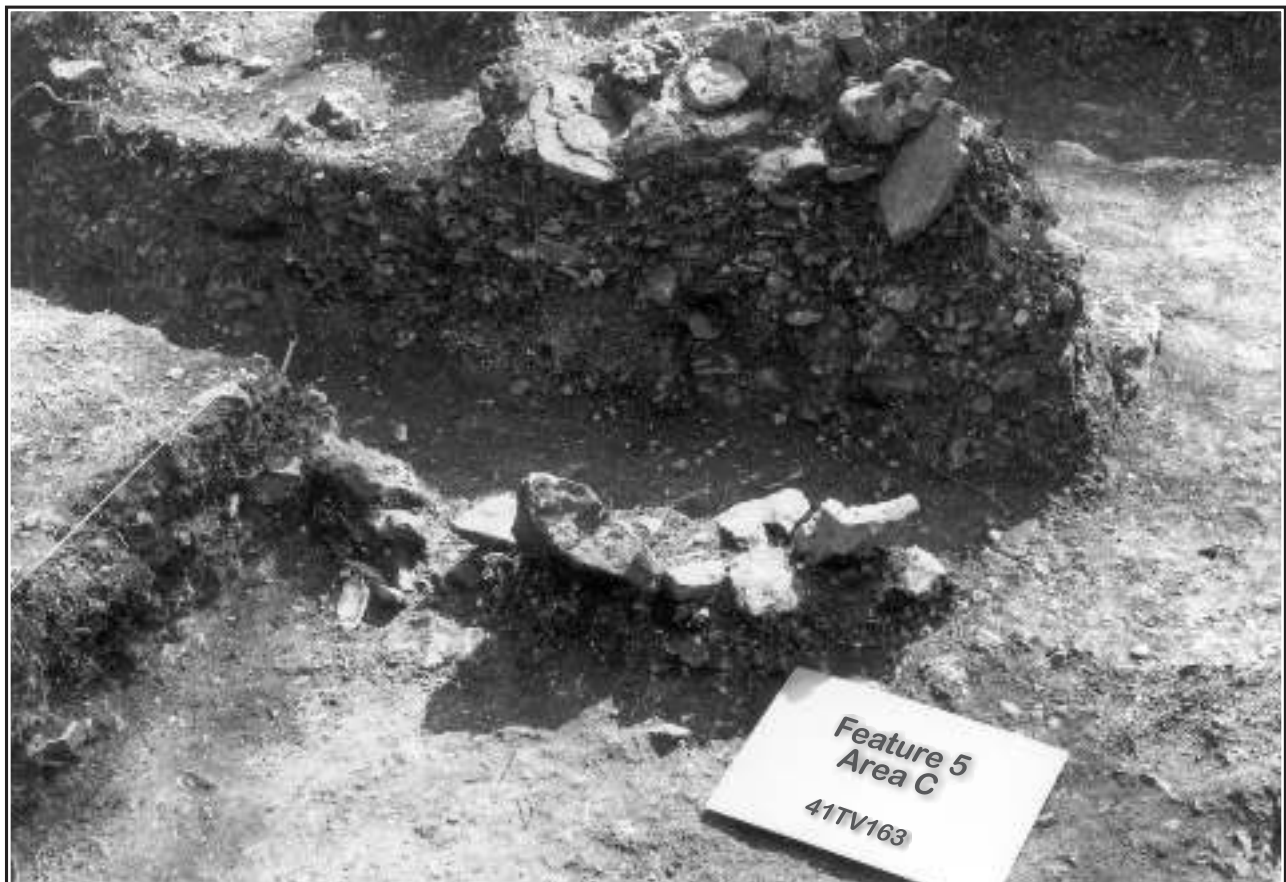


Figure 5-12. Feature 5, slab-lined pit bisected by backhoe trench. Note uniface/mussel shell cache in foreground at left-center of photo.

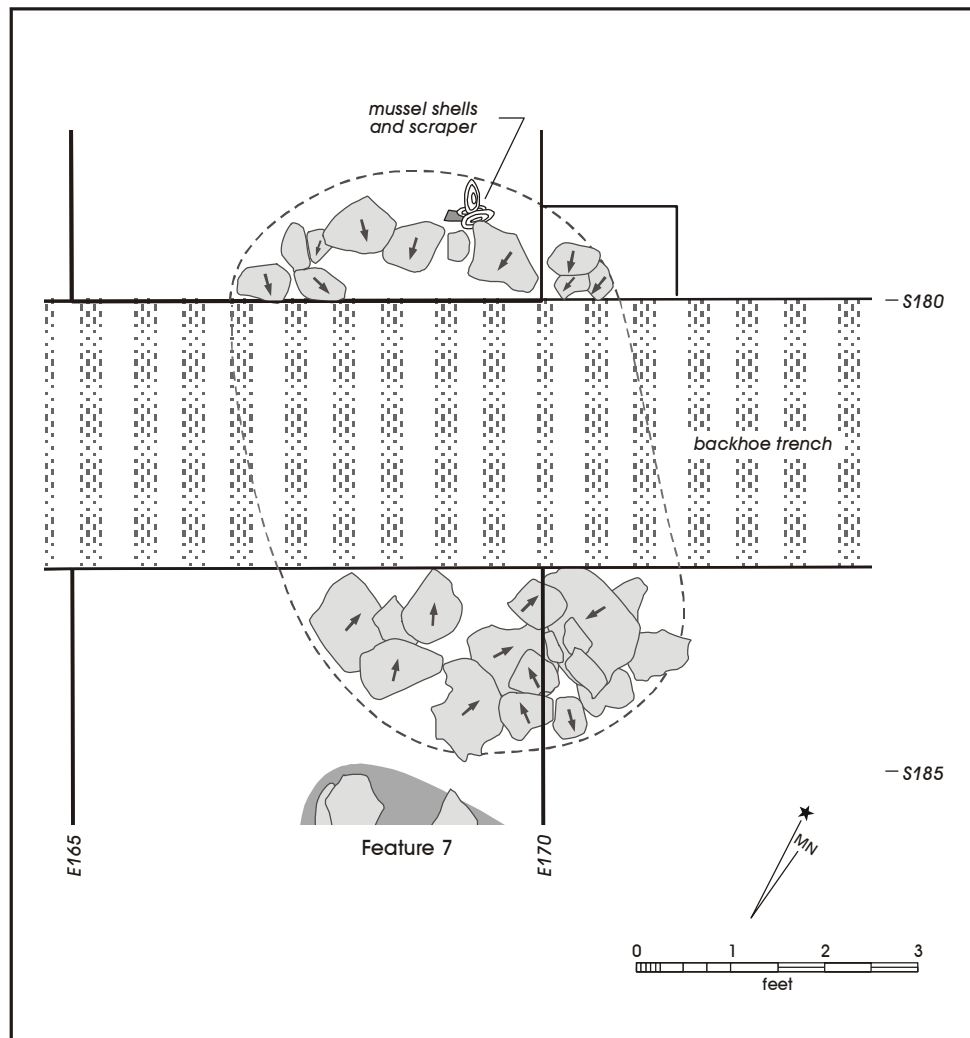


Figure 5-13. Feature 5, Area C. Note uniface/mussel shell cache at edge of feature.

Feature 7

This feature was a rock concentration in Area C recorded in Level 2 of units S185/E170–E175 (Figure 5-6). Only a plan view (Figure 5-6) and photographs (Figure 5-17) exist of the feature. No descriptive information was present in the field notes. The feature consisted of a small semicircular arrangement of cobbles in the southeast quadrant of S185/E165 and apparent piles of cobbles and small boulders in the adjacent units S185/E170 and S185/E175. Weir speculates that these stone piles could have been deposited during aboriginal clearing of work and habitation spaces in the area. While such piles of rocks were not noted in Feature 4, Weir suggests that Feature 7 is a continuation of Feature 4 (Weir 2004:8).

Feature 8

Although there were isolated burned cobbles found within Area F, this possible hearth, located in unit 2+70/S0+5.5, was the only feature recorded in the area (Figure 5-5). It was revealed in the third level of the unit and consisted of a cluster of 41 pebble- to cobble-sized burned rock with some cracked in place (Figure 5-18). Originally about 45 cm in diameter, the feature probably extended into the adjacent unit, 2+70/S+0, and was cut by the Gradall. The stones were flatly distributed at the same elevation within the unit. No basin or pit was noted. Although the rocks were fire cracked, no charcoal or soil stain was observed during the excavation of this feature. Since only Early Archaic projectile points were found in the same soil formation and level as this

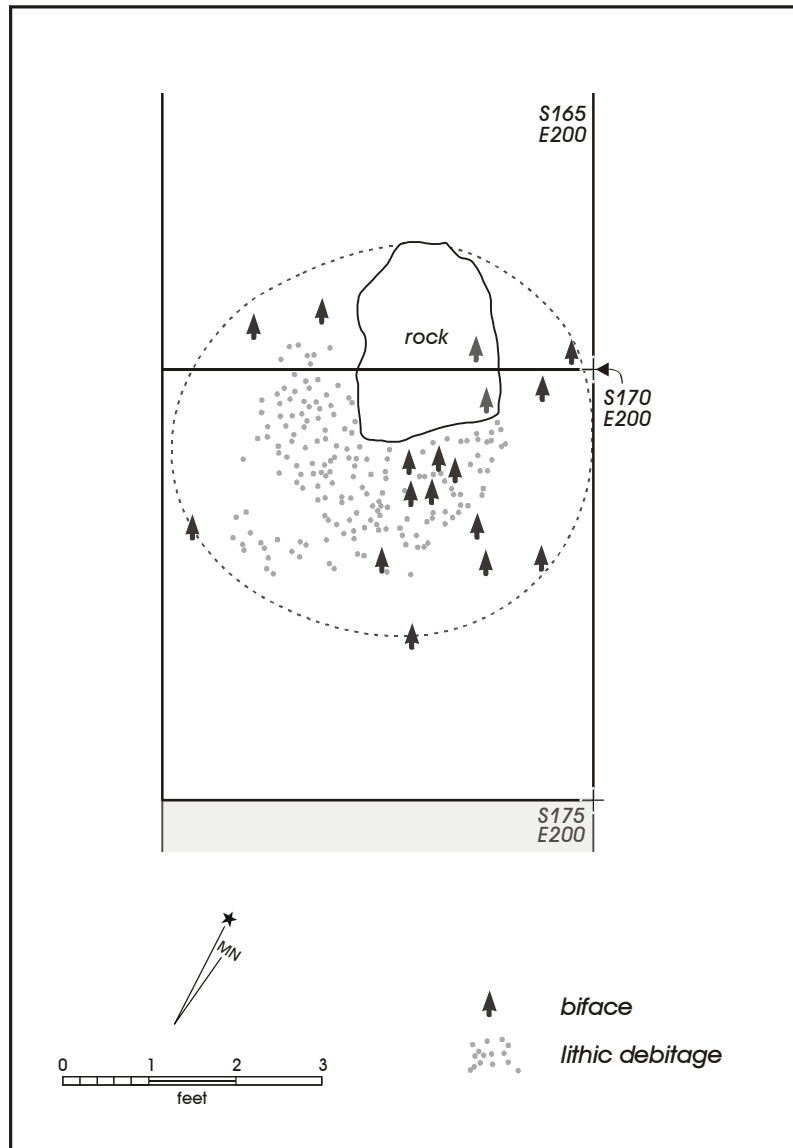


Figure 5-14. Plan view of Feature 6, Area B.

feature, in Levels 3 and 4 of the adjoining unit (see Figure E-5, #15, #17, and #18 in Appendix E), it is assumed that the hearth was also Early Archaic.

Feature 9

A small alignment of burned rock was noticed protruding from the east profile of unit S185/E175. Although the unit in which the alignment was located was not planned for excavation, an abbreviated excavation was conducted to expose this feature. This was done at the end of the fieldwork. No feature form exists for Feature 9 other than a plan view

drawing included on the Feature 7 form. Located in Area C (Figure 5-6), this feature appeared to have been a cluster of seven cobble-sized slabs of limestone contained in an area approximately 60 by 70 cm in dimension (Figure 5-19). All of the slabs seemed to have been burned and cooled in place with three of the larger stones exhibiting severe thermal cracks, but still articulated. Because the cracked stones were articulated, each was counted as a single stone rather than counting each fragment. The cluster was not sectioned, therefore it is unknown what lay within or below the feature (Weir 2004:8). The only attributes that distinguish this feature is the slightly elevated and apparent undisturbed and

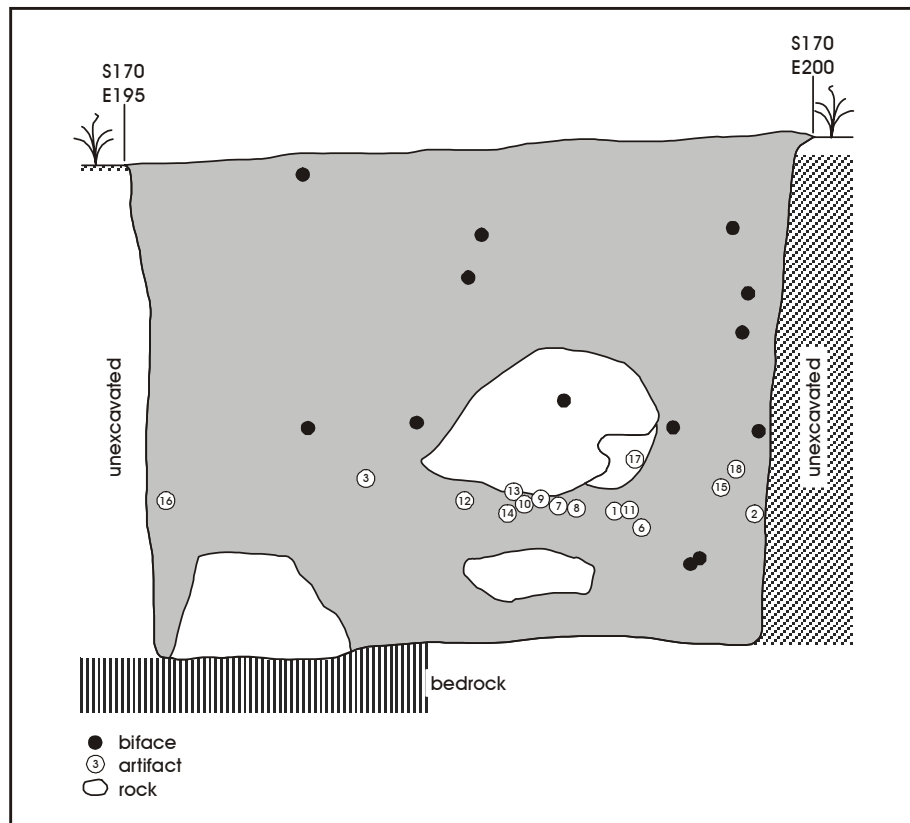


Figure 5-15. Schematic profile of Feature 6 showing the vertical position of artifacts relative to the boulder.

burned condition of the stones contained within. There was no physical separation between Features 9 and 7, and it is likely that Feature 9 is a continuation of the rock distribution of Feature 7.

Feature 10

The partial remains of a human burial were discovered beneath a rock cairn in Area C in unit S175/E155, Levels 2 and 3 (Figures 5-6 and 5-20). The rock cairn over the burial measured approximately 1.2 m (4 ft.) in diameter. Weir suspects that the individual was buried in an existing slab-lined pit. He recalls that the boulders of the cairn covered only the position of the body, while the circular diameter of the pit was larger than the interment (Weir 2004:9). It appears as though the cairn was incorporated into the wall and/or wall support system of the circular pattern of Feature 3, although Weir feels the burial feature was not part of Feature 3, the possible structure (Weir 2004:9). The burial was flexed on its left side with the head to the east and face directed toward the south. As discussed previously, many postcranial

bones were missing, but those present suggest the majority, if not the entire skeleton was once present (see Figure 5-4). It remains unclear whether this represents a primary or secondary burial; however, both humeri are present and occur in relative position to the cranium consistent with a flexed burial. Postdepositional trauma is evident on some skeletal elements that may account for the absence of the inferior portion of the interment. During the excavation, Weir had surmised that the burial was in a primary flexed context (Weir 2004:9).

Associated artifacts with the burial included one Darl point, although the point was removed from the collection some time in the 1970s and is no longer contained in the artifact assemblage. The presence of this point suggests that the burial may date to the later part of the Late Archaic. A single radiocarbon date was obtained on charcoal found in the burial pit. The calibrated, corrected date range at two-sigma is A.D. 380–570 (Table 5-4). In January 1980, Richard Shoup of TxDOT completed a preliminary report on the human skeletal material from the site. This report is curated with all other documentation from 41TV163.

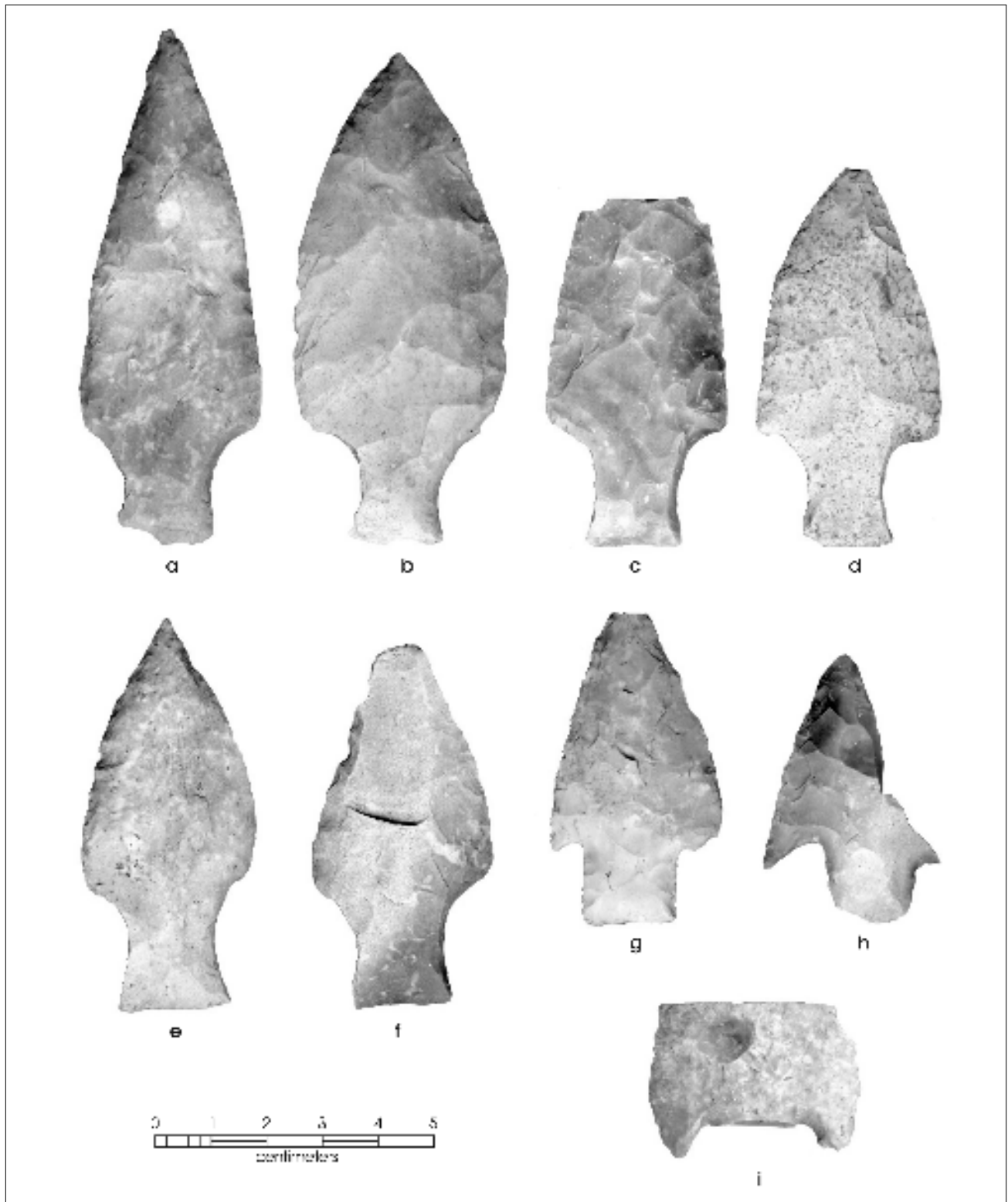


Figure 5-16. Selected projectile points recovered from Feature 6, Area B. a-f) Nolan; g) Bulverde; h, i) untypable fragments.



Figure 5-17. Feature 7, rock concentration in unit S185/E170–175, Area C.

Feature 11

Feature 11, also discovered in Area C, consisted of a cluster or cache of nine items, including two bifaces, two edge-modified flakes, a core, and four large flakes (Figure 5-21). These were found in S170/E165 in Level 5 (Figure 5-6). The two bifaces appear to be blanks. We have no information on when this feature may date as none of the material was diagnostic of any single time period. However, an early Late Archaic Pedernales point (Figure E-3, #296) was found in unit S165/E170 at the same level and within 30 cm of the cache.

Additional Features

There were three additional features on this site, the burned rock middens in Areas A and E. In addition, a possible burned rock midden was identified in Area B.

Figure 5-22 presents a profile of the east-west trench through the Area A midden. The Area A midden appears to have been primarily confined to Zones 2, 3 and 4 in the profile. A possible edge of the feature is visible between E160 and E155. Artifacts and other samples collected from this midden have been described previously. The midden appears, based on the diagnostic points recovered, to have been primarily used during the Middle Archaic with use continuing into the early portion of the Late Archaic (see Table 5-2). Unfortunately, no charcoal samples were available from this midden to confirm this temporal assignment.

Figure 5-23 presents a profile of the west wall through Area B. Burned rock is most abundant in Zones 3 and 4, although it is noted in some quantity in Zones 2 and 5. Small burned rocks seem to dominate the zone descriptions for this area. Weir states that burned rock appeared to extend from Zone 2 through Zone 5 (Weir 2004:11). It is probable, given the small size of the rock, that the burned limestone is a

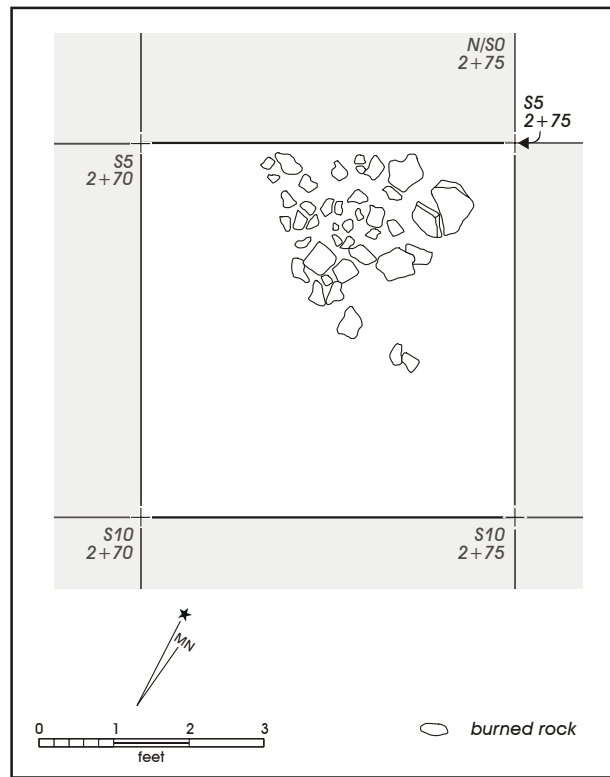


Figure 5-18. Plan view of Feature 8, a possible slab-lined hearth, Area F.

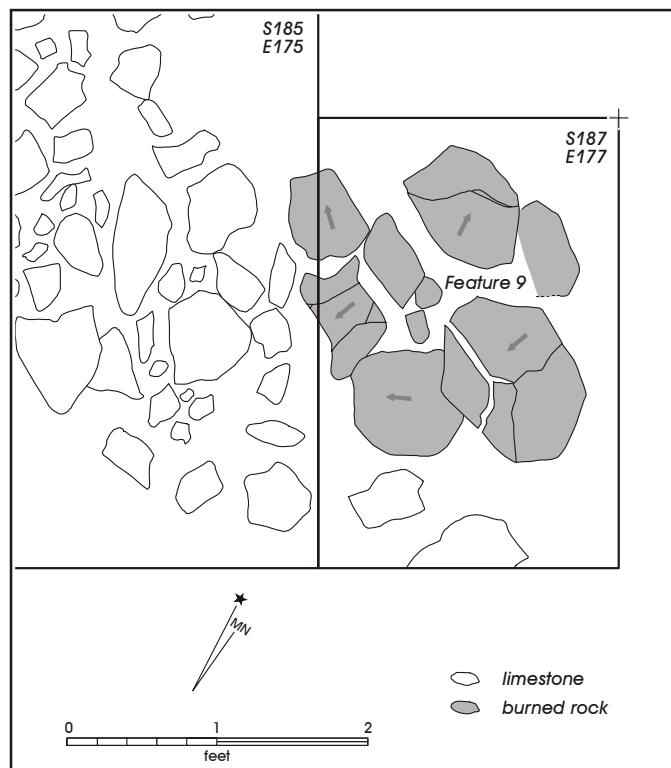


Figure 5-19. Plan view of Feature 9, cluster of burned rocks in association with Feature 7, Area C.

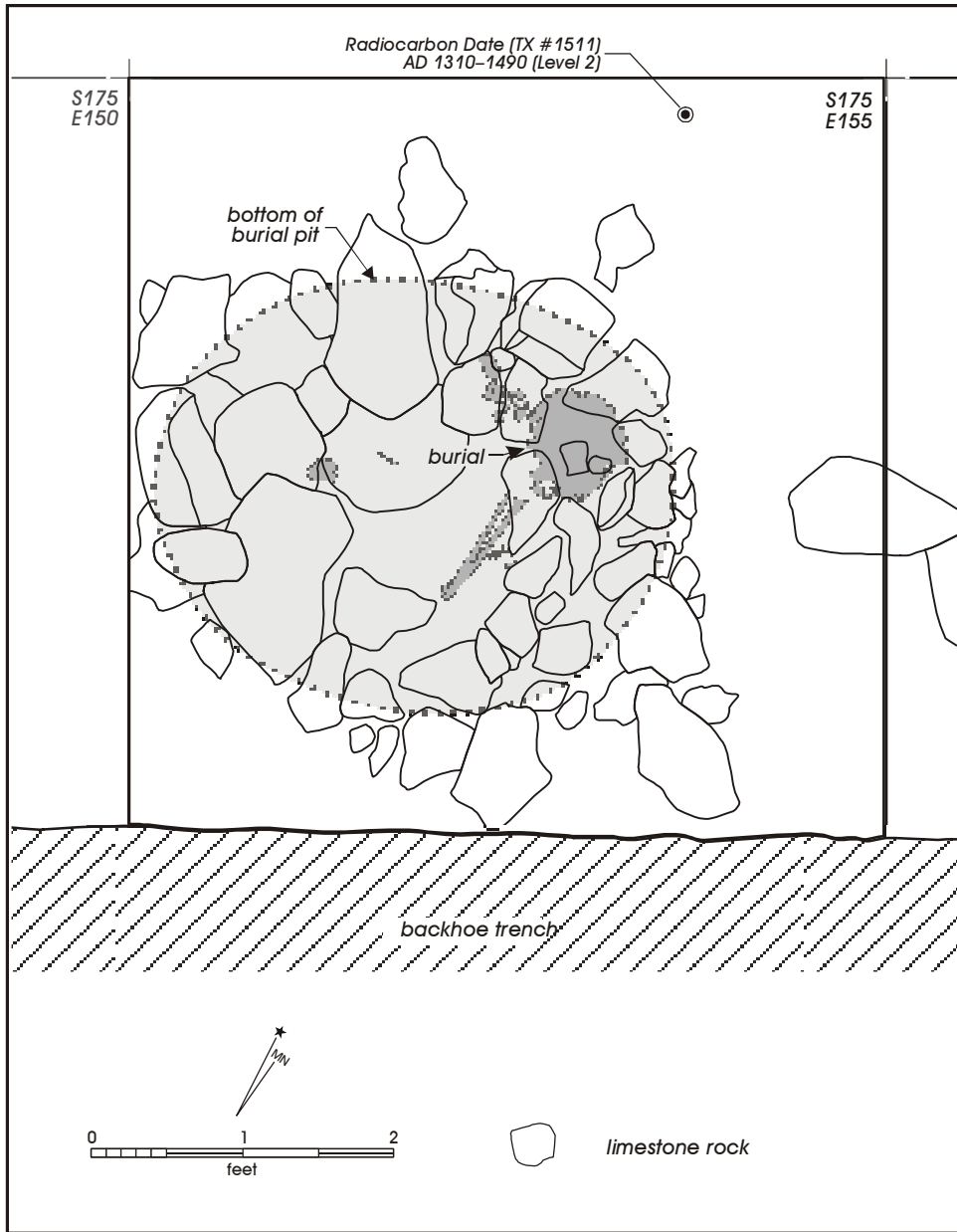


Figure 5-20. Feature 10, plan view of burial pit capped by slabs of rocks, Area C. Note boulder-sized rocks above postcranial portion of burial.

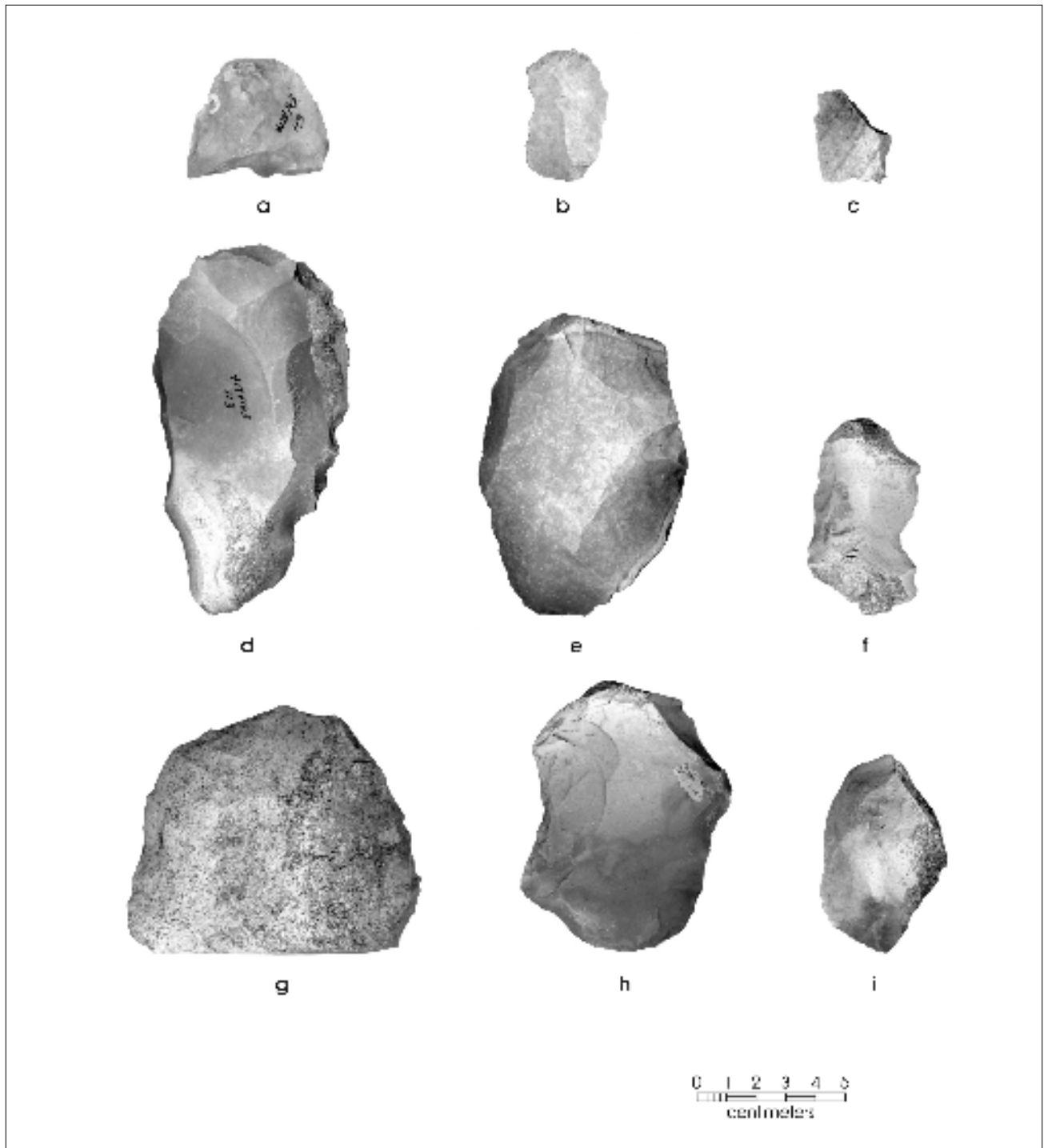


Figure 5-21. *Artifacts from Feature 11 cache, Area C.* a) early reduction stage biface; b) expedient knife on biface thinning flake; c) unmodified debitage; d, e) middle reduction stage bifaces; f) minimally retouched uniface (spoke shave); g) early reduction stage biface; h) core; i) unmodified debitage.

secondary deposit related to the burned rock midden in Area A and does not constitute a separate feature. Support for this suggestion can be seen in Figure 5-24, a profile of the upper portion of Area C. Note that Zone 8 in this profile is dominated by small burned rock. The presence of these rocks, and the overall shape of the zone, clearly suggests that the sediment is being deposited from the Area A midden, located upslope. Weir disagrees with this interpretation and maintains that there was clear separation between the Area A and Area B middens. The Area A midden was entirely contained on an upper bench while the Area B midden was on the slope below this bench making it an entirely separate feature (Weir 2004:11).

Figure 5-25 presents a profile of the north wall through Area E, a second area identified as containing a burned rock midden. Recall that this area also had a high frequency of modern/historic material (see Table 5-1), and a modern radiocarbon date was obtained from Level 1 (0–0.5 ft.) in square 1+70/N+2.50 (see Table 5-4). An examination of the profile, as well as the description of the zones in Figure 5-25, shows some evidence for a burned rock midden being present in the Zone 3 deposits, though the description is not compelling. If the Zone 3 deposits do represent a burned rock midden, the prehistoric materials from this area (see Table 5-2) suggest Late Archaic and possibly Late Prehistoric use. Weir indicates that Zones 2 and 3 in this area were part of a burned rock midden that extended from 1+60 to 1+95. The size of the burned rock was apparently smaller than that noted in the middens in Area A and Area B (Weir 2004:11).

Summary

Using the field methods described in the previous chapter, TxDOT removed and screened roughly 108.5 cubic meters of fill from the site of Millican Bench (41TV163). A variety of prehistoric artifacts, as well as some historic/modern material, were collected from the site. In addition, 11 features were recorded, including a possible structure (Feature 3) and a burial (Feature 10), and two burned rock middens were tested. Also collected were vertebrate faunal remains, snail and mussel shell, as well as charcoal and sediment samples. While aspects of these data, collected to pursue questions of chronology and culture history, are limited for consideration of many current research questions, the data are amenable to several specific research domains. These domains are discussed in the subsequent chapter.

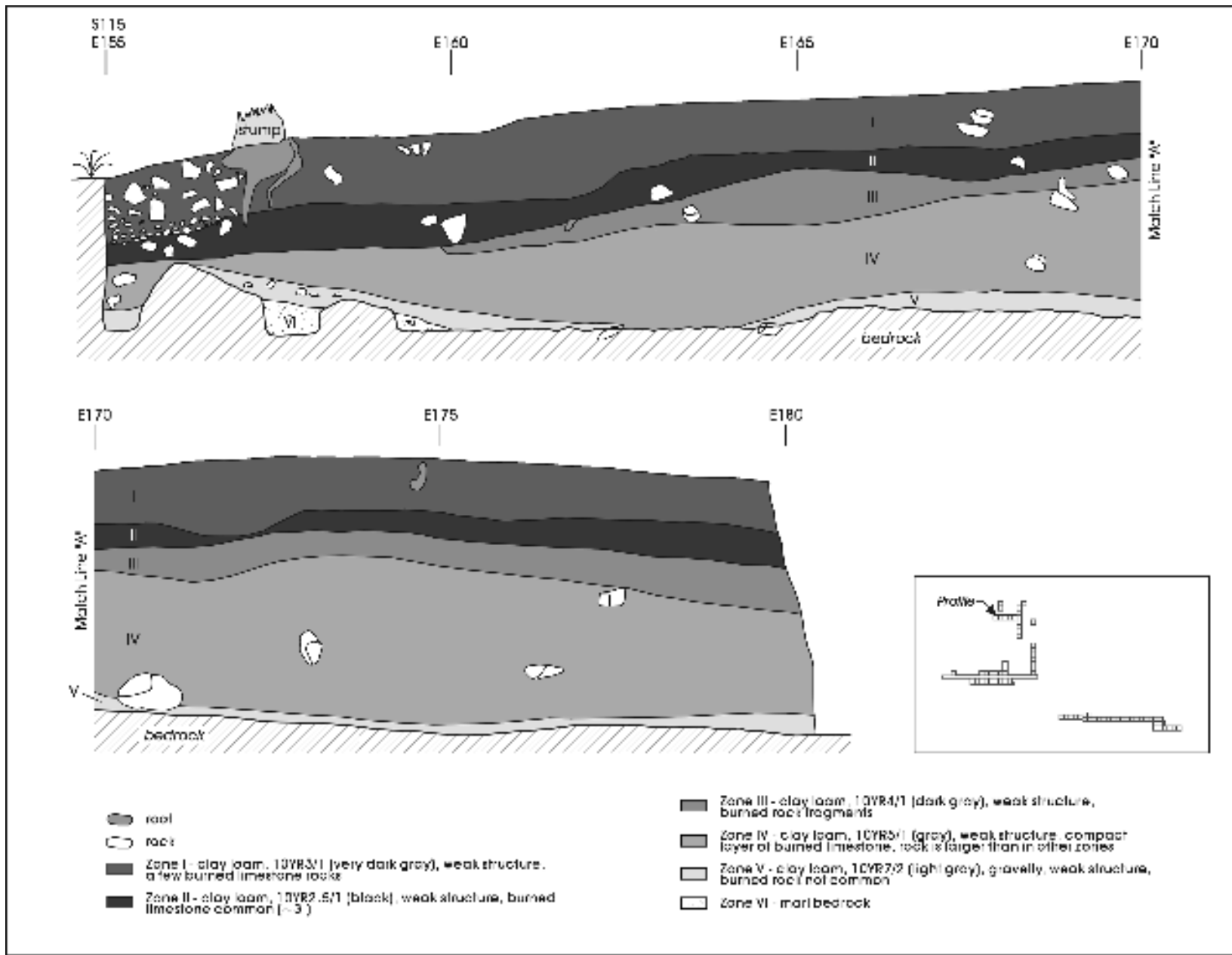


Figure 5-22. Profile of north wall of east-west trench in Area A.

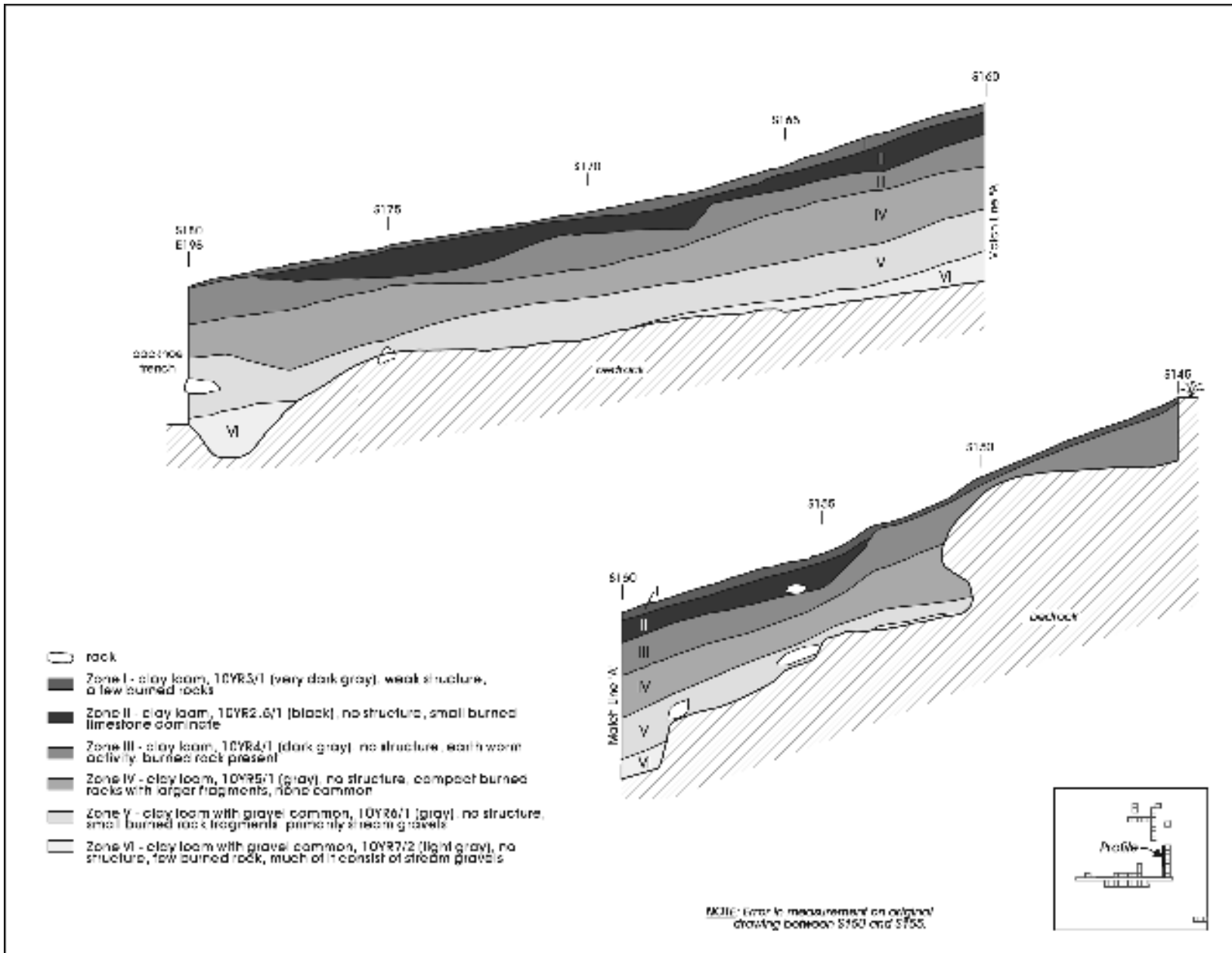


Figure 5-23. Profile of west wall of north-south trench in Area B.

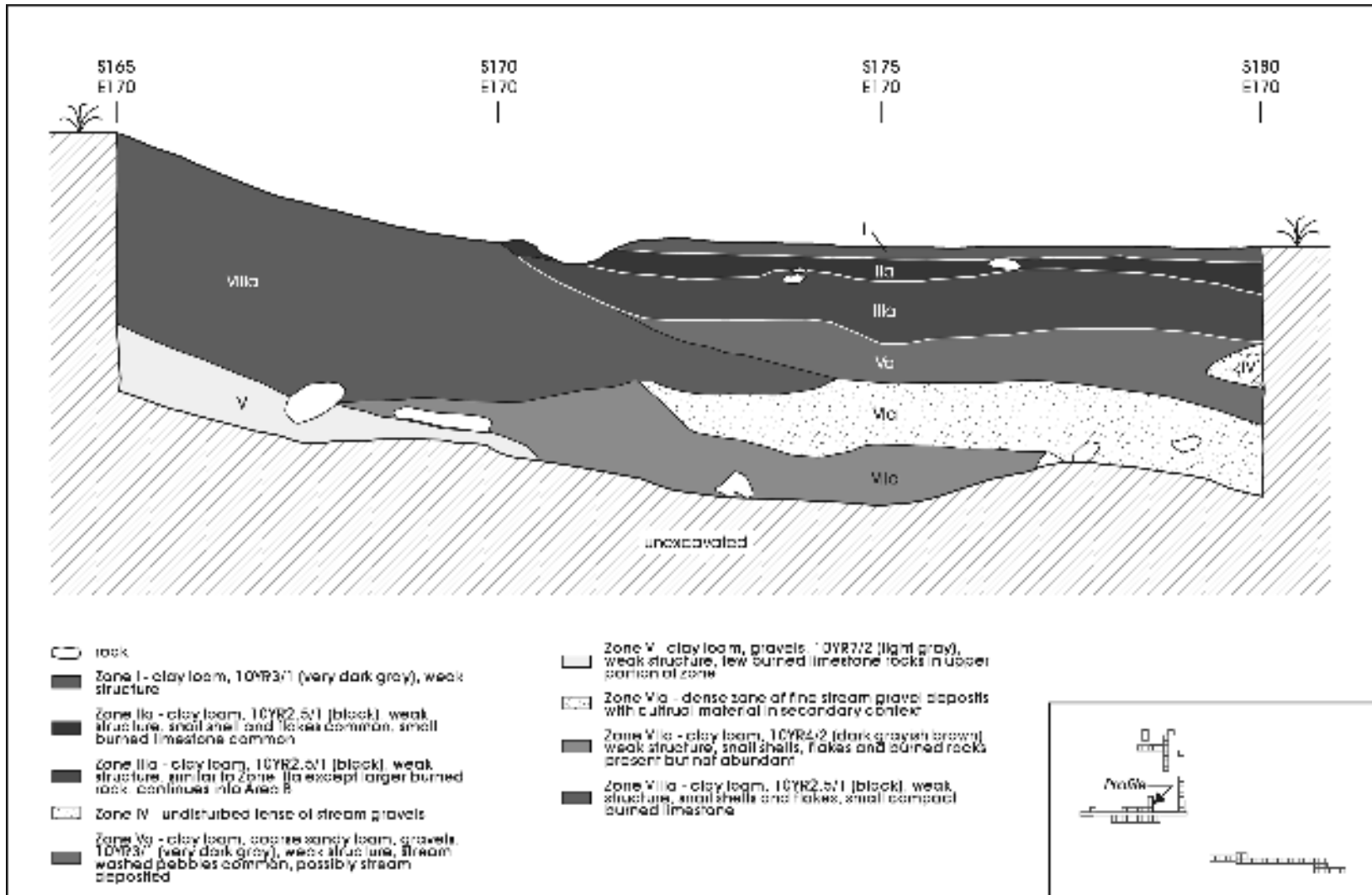


Figure 5-24. Profile of east wall of northwestern-most three units in Area C.

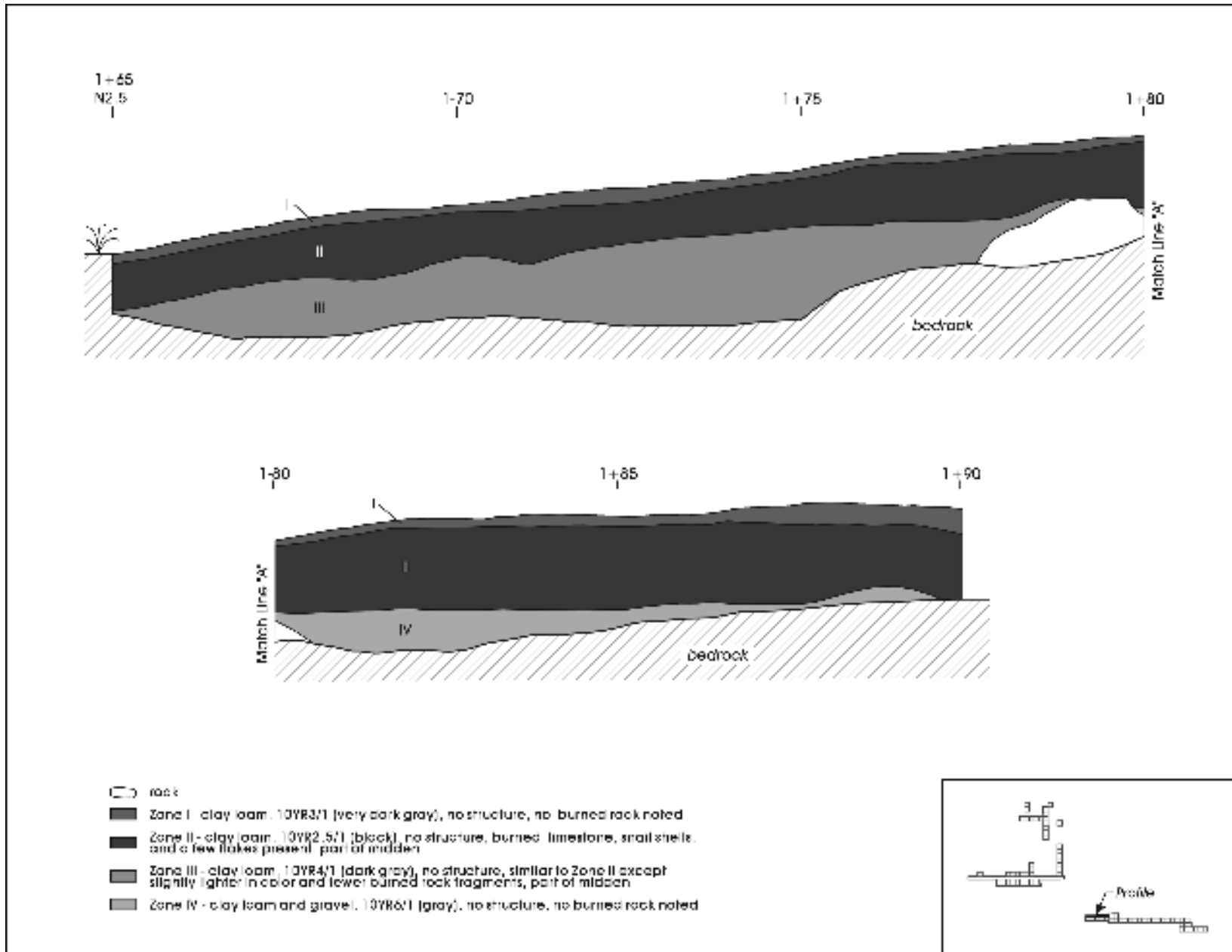


Figure 5-25. Profile of north wall of westernmost five units in Area E.