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Evelyn Lewis
Editor

About the Cover: Photo taken at the STAA field school on the Medina River south of San Antonio. See report starting on page 8. Drawings by Richard McReynolds are found on pages 38, 40 and 52.

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NOTES ON SOUTH TEXAS ARCHAEOLOGY 1996-4:

Archaeological Investigations at Mission Espíritu Santo De Zuñiga (41VT11): a Status Report

Thomas R. Hester, Tamra L. Walter, E. H. Schmiedlin, Susan deFrance and Betty J. Inman

On a knoll overlooking the Guadalupe River in Victoria County, there are standing sandstone ruins long thought to be the site of the second location of Mission Espíritu Santo De Zuñiga, occupied from 1726-1749. The site has been recorded as 41VT11. This mission was first established in 1722, apparently on Garcitas Creek in Jackson County. Its location has been the subject of intensive search in recent years by the Office of the State Archeologist, assisted by E. H. Schmiedlin and Kay Hindes. In 1749, the mission was moved to a final location at Goliad; a much larger mission complex was established there (Mounger 1959) and is now a state park.

Site 41VT11 lies on private property, off limits to archaeologists for decades, although E. H. Schmiedlin and Bill Birmingham have monitored the site for many years. With a landowner change in 1994, staff from the Office of the State Archeologist (OSA), along with Anne Fox, E. H. Schmiedlin, Bill Birmingham, and others carried out limited testing and site mapping at 41VT11 in Fall 1994 and Spring 1995. The Texas Archeological Research Laboratory (TARL) provided Total Data Station (TDS) mapping of the site as part of the fieldwork. These initial investigations exposed segments of wall foundations and other portions of the ruins, but yielded little in the way of material culture. Due to landowner enthusiasm, the State Archeologist's office encouraged further, more intensive research at the site. Thus, plans were made for Tamra Walter (MA student at the University of Montana) to work at the site, under the direction of Hester, in conjunction with the 1995 UT-Austin summer field school held in Victoria County.

Reconnaissance of the site in June 1995 clearly indicated extensive surface indications of mission Indian occupation to the east and west of the mission ruins, and a locality with artifacts and faunal remains just to the northwest. Plans were made to test these areas in order to learn more about the mission Indian occupation. In addition, more mapping was planned, as was limited excavation of selected areas of the ruins.

The UT-Austin fieldwork was conducted from June 22 to July 11 (Hester and Walter 1995). Invaluable assistance was provided by E. H. Schmiedlin, who shared his considerable knowledge of the site and the surrounding ranch. We were further aided by Patsy Goebel (Cuero), C. A. Calhoun (Victoria) , Jimmy Bluhm (Goliad), and Bill Birmingham (Victoria). Anne A. Fox visited the site and provided expertise in the identification of Spanish colonial artifacts.

The fieldwork was begun with a series of test pits dug in a grove of anaqua trees west of the mission ruins (Figure 1). A zone of mission Indian materials was found buried in this area, yielding faunal remains, mussel shell, marine shell ornaments and fragments, bone-tempered pottery (including loop handles), flakes, end scrapers, hammerstones, tubular bone beads and Guerrero arrow points (Figure 2). Some Spanish ceramics were also recovered, dated by Fox to the early 18th century. Other Spanish artifacts were few, consisting mainly of bits of copper and two glass beads.

The mission Indian occupation is thus both well preserved and extensive in this area (apparently with a Transitional Archaic occupation underlying it) and may have well been the major locale of Indian habitation areas during the 23 years the mission was in operation. This possibility is bolstered by the fact that test pits east of the ruin yielded diffuse and scattered mission Indian remains.

Two 1x1-meter units were placed in an area just northwest of the mission ruins, which as noted above, had surface evidence of artifacts and animal bones. This area soon became known as the "bone bed." (Feature 3)—a deposit of faunal remains and associated mission Indian artifacts, lying just below the surface and resting on the caliche bedrock. Careful exposure of this deposit exposed abundant broken bones, mostly of bison- or cow-sized mammals, though bones of smaller animals were also found

Figure 1. Test Excavations in the Mission Indian Occupation Area, 1995. This area is west of the structures shown in Figure 4.

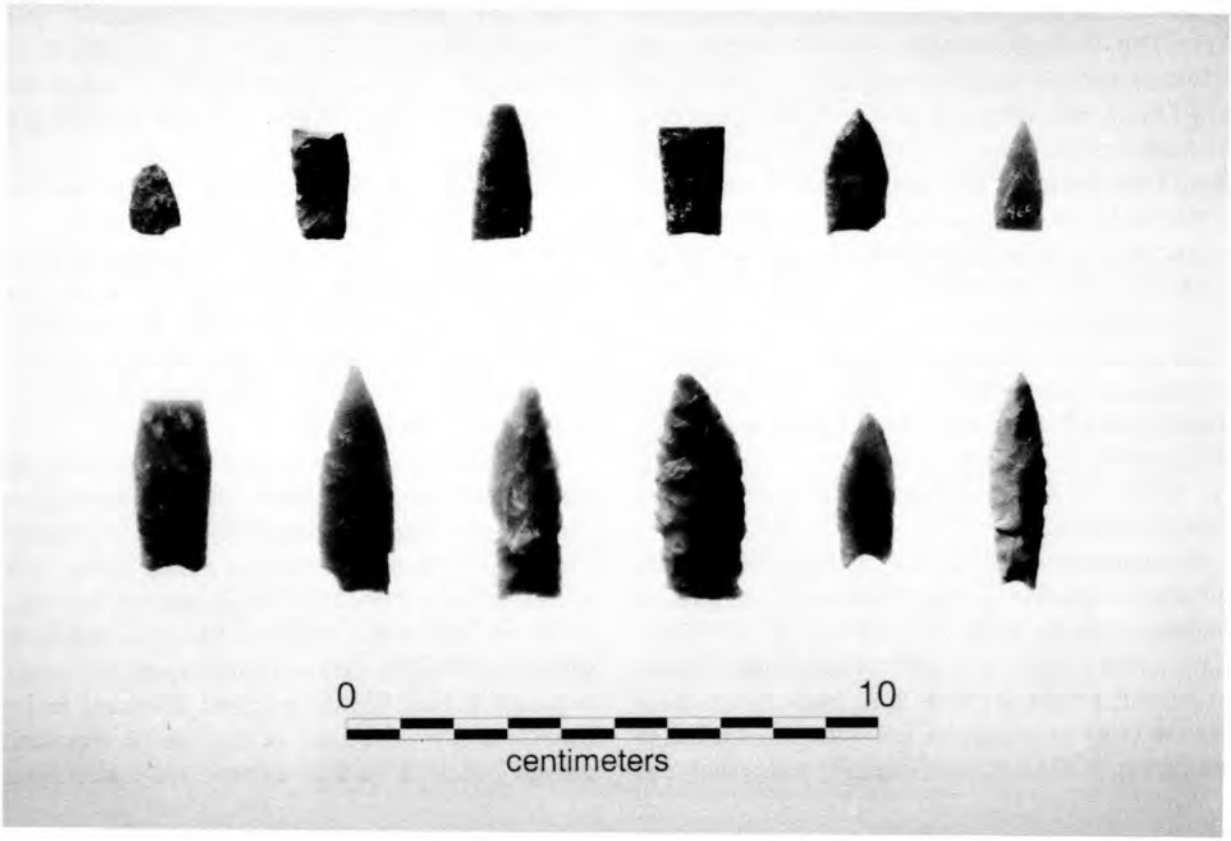

Figure 2. Examples of Guerrero Points from Espíritu Santo (41VT11).

Figure 3. A Portion of Feature 3 ("Bone Bed") at 41VT11. The north arrow in the lower right corner is 30 cm long.

(Figure 3). Numerous mussel shells and some fish bone were recovered. A number of bone-tempered sherds were mixed among the bones, as were several end scrapers (two with bits snapped off) and several Guerrero point fragments [see Turner and Hester 1993; identical points are reported from the Goliad location of Espíritu Santo by Mounger (1959: Pl.67, D-K) and from Mission Rosario by Gilmore (1974: Fig. 34,c,d)]. A small rectangular mussel shell bead, with two perforations, was also recovered.

While these excavations were underway, Jack D. Eaton carried out selective excavations of exposed architecture. This provided more information on the dimensions of what are at least two rooms in the main structure (the function of which remains unknown). A mound just north of the main ruin was also tested and found to be a room with stone walls with the interiors of the walls plastered and painted red. Eaton's excavations succeeded in better defining two architectural components at the mission (Figure 4). The northern part of the mission has been badly damaged during the 20th century by treasure hunters and looters; it will require extensive clearing to see if any architectural elements are intact. Eaton suggests that the chapel of the mission may have been located in that area.

Additional important work was done by Kenneth M. Brown in mapping the site (see Figure 4). He was able to field-check and add to the TDS map produced by UT students Jason Lucas and Matt Williams in October 1994. Lucas is currently preparing a comprehensive contour map of the entire site based on his work with Williams, Brown's work, and later work (noted below) by Dan Potter.

Analysis of the 1995 UT field school data has been done by Tamra Walter (1996) as a Masters thesis at the University of Montana. Dr. Susan deFrance, now at the Corpus Christi State Museum, provided initial faunal studies (deFrance 1996), and students at the University of Montana did a comprehensive analysis of the bone-tempered aboriginal pottery (Free and Raschkow 1996).

In November 1995, Hester, Walter, Schmiedlin, Inman and others returned to the site to complete the excavation of Feature 3 (the "bone bed"). Faunal

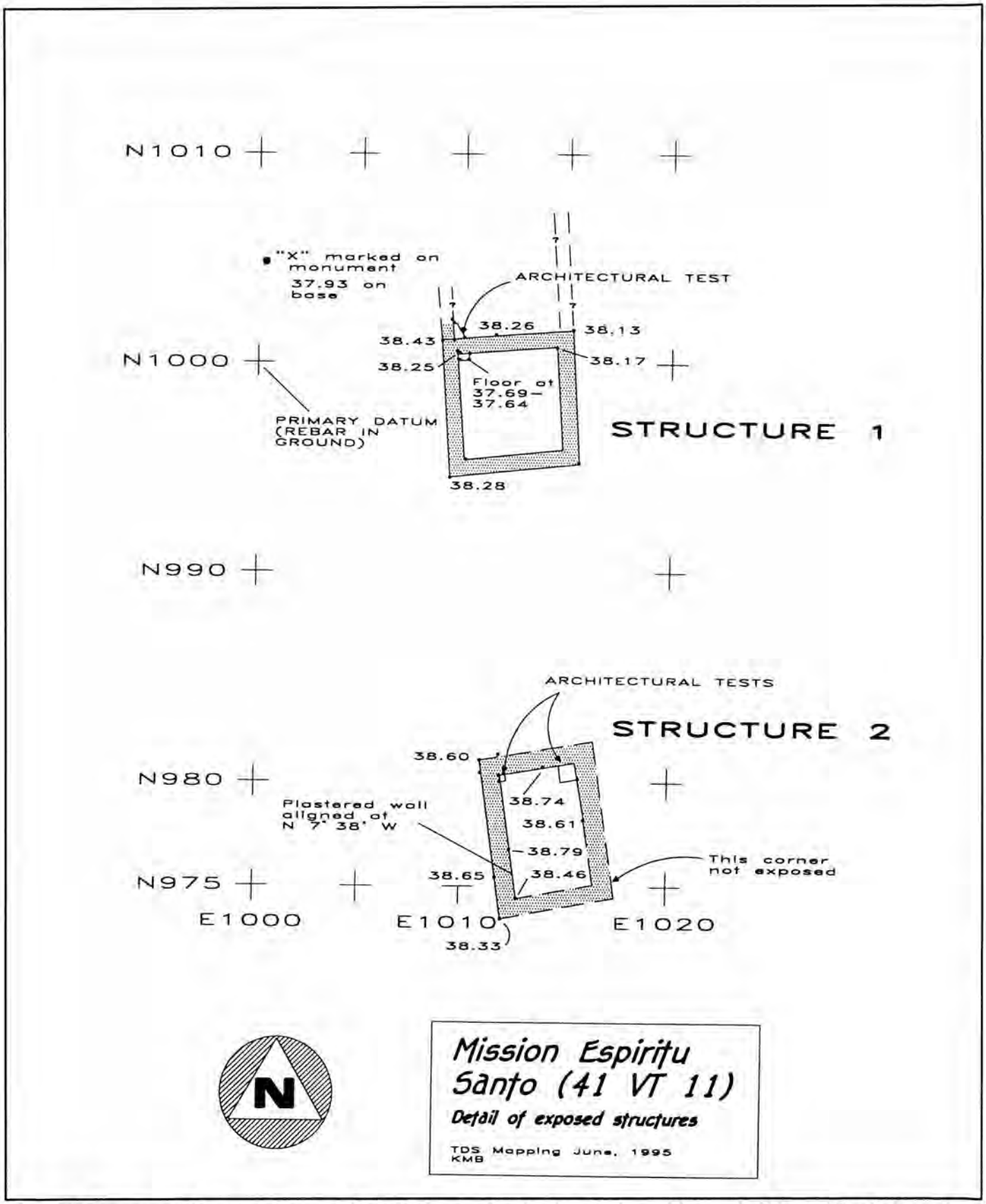

Figure 4. Plan map of the central part of Espíritu Santo, showing foundations of known buildings. Map by Kenneth M. Brown, TARL.

remains from the feature, as identified by deFrance include: cow or bison, deer, opossum, cottontail rabbit, gray fox, black bear, box and pond turtles, soft shelled turtles, catfish, snakes, birds, unidentified fish—as well as sheep, goats, a pig, and one burro. The minimum number of individuals is about 33. Presently, there are ongoing studies of 89 pounds of additional faunal remains from the site, including Feature 3, by Dr. Marilyn Masson and students at The University at Albany (SUNY).

During the November fieldwork, Schmiedlin noted the existence of a sandstone quarry, about 1 km distant, that aparently provided much, if not all, of the building materials for the mission. Quarry marks can still be clearly seen and there is evidence of a road in front of the quarry. Also part of the mission complex is a dam and an acequia on private property that lies to the east of 41VT11 (records by C. A. Calhoun, on file at TARL).

In July, 1996, additional fieldwork was done at the site. The landowner, in building a new house near the mission, had to remove a section of the knoll for a driveway. Thus, the usual cast of characters and other volunteers went to the site and dug a number of test pits to see if any major features would be destroyed in that specific area. In general, the soil was thin, overlying caliche, but containing occasional mission Indian and Spanish artifacts A small feature was uncovered and some evidence obtained that a possible Perdiz/ Toyah occupation is adjacent to the north side of the mission, between it and the river terrace. All deposits removed in this testing episode was water-screened. The fieldwork was supplemented by further TDS survey by Dan Potter of the Office of the State Archeologist, aided by Richard Meadows of TARL.

Subsequent to our testing, a bulldozer operator making the driveway cut described above removed more of the deposits than had been expected. However, Schmiedlin quickly intervened and got the soils from this area placed into neat piles so that they could be screened. Since then, he, Mike Davis, Ray Smith, members of Southern Texas Archaeological Association, the Travis County Archeological Society, and others, devoted several weekends to screening these deposits. We can narrow the provenience of the specimens to a specific area where deposits were quite shallow, and they are thus a highly valuable sample. Artifacts recovered include Guerrero points, majolica, lithics, endscrapers, marine shell ornaments, and an aboriginally-made mussel shell crucifix.

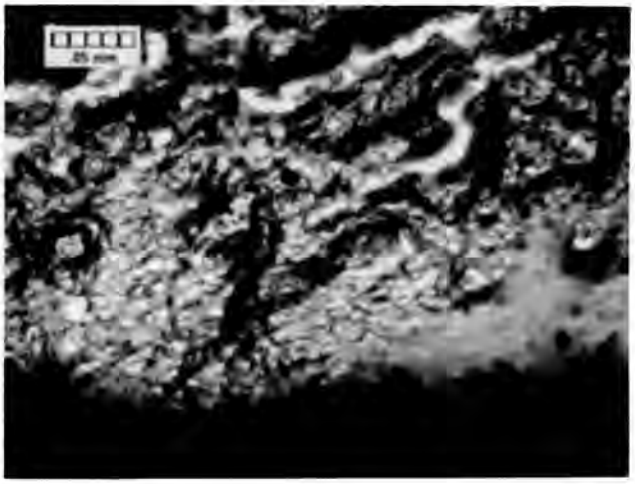

Figure 5. Photomicograph of Portion of Endscraper Bit. Shown at 200X, this .3 mm+ portion of an endscraper bit (Unique 490), along the bottom of the photo, displays edge rounding, polish, and residues indicative of animal processing—likely hide-scraping. Photomicrography by Dale Hudler and Betty Inman.

Several of the endscrapers from the site, from the bone bed at Feature 3 and from habitation contexts have undergone preliminary examination, by Betty Inman and Dale Hudler, using high power digital videoimaging microscopy at TARL. These studies thus far have revealed very distinctive polish (Figure 5) and residue that are attributed (based on experimental data obtained by Hudler) to the processing of animal materials, e.g., hideworking, such as defleshing, scraping, etc.

Though the 1936 Texas Centennial marker placed at the ruins states that this was the second location of Mission Espíritu Santo, archival work and recent testing by Kay Hindes (1995) suggests it could be the third location (the second being 41VT10 in Riverside Park, Victoria), prior to its final move to present-day Goliad. Site 41VT11 is a particularly important window on mission Indian lifeways, in that here we have a 23-year span—a relatively narrow time slot compared to the long-lived missions elsewhere, in which mission Indian materials are heavily mixed through decades of habitation. Moreover, the native populations at this mission were largely, if not entirely, of only two groups, the Aranama and the Tamique

(Campbell 1996a, 1996b). Ethnohistorians disagree about their language—whether it was Coahuilteco or not, and the Spaniards disagreed about their culture. Some describe them as of 'superior culture' to the Karankawa, while others describe them as vile, hostile and untrustworthy. The Aranama and Tamique moved with the mission to Goliad. The collections from the Goliad mission show some remarkable similarities to the material culture at 41VT11; unfortunately, the Goliad materials were poorly excavated and their contexts are unknown (Mounger 1959). We thus have perhaps a final chance, at 41VT11, to look at the Aranama and Tamique, and to examine the mission process of the early part of the 18th century.

Note: A version of this paper was presented at the annual meeting of the Texas Archeological Society, held in San Antonio, October 1996. Further excavations at 41VT11 are planned for June 1997, under the aegis of the Texas Archeological Society Field School.

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IS CHOLESTEROL GOOD OR BAD?

For archaeologists it appears that cholesterol is good—that is, useful. Very recent studies (Stott and Evershed 1996) have shown that cholesterol extracted from bones and teeth can provide paleodietary information. Skeletal remains from Barton-on-Humber, a coastal site in the UK, indicated major changes in diet from the ninth century to the present. Cholesterol from femurs of 50 individuals had carbon isotope ratios ($\delta^{13}C$) reflecting the changes over time as diets varied from marine to terrestrial.

Most of the isotopic paleodiet measurements until now have used the collagen in bone because it is the principal organic constituent. This dietary information presents the results of food eaten over 20 or 30 years because collagen is replaced very slowly in bone. The time scale for cholesterol is shorter than that of collagen and may describe the diet of the last years of the individual. The shortest time frame for diets is the coprolite, which is a last meal indicator.

Another favorable factor for cholesterol diet studies is that the determination of isotopic ratios can be run much more rapidly in the lab than collagen. Dietary studies can be made more rapidly and more economically on larger populations providing a broader database for understanding the typical life style of the community.

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D. R. Lewis, Associate Editor

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TAS FIELD SCHOOL - 1997

The 1997 TAS Field School will be at the site of La Bahía #2. La Bahía #1 was established adjacent to the presidio that was built directly on top of Fort St. Louis and lasted only three or four years. The mission was then moved inland to where El Camino Real crossed the Guadalupe River, and remained in that spot for about 23 years and is known as La Bahía #2. In 1749 the mission was moved back down the road to where the road crossed the San Antonio River near Goliad and this La Bahía (#3) was a part of the Texas Revolution.

The site looks great. Good camping amongst shade trees beside a very good river. Lots of early history, and a large prehistoric site at the same location. This site could belong to the Archaic time period. It appears that all of the La Bahía missions had the same Spanish name: Nuestra Señora de la Bahía del Espíritu Santo de Zuñiga.

Dr. Thomas Hester will be the Archaeologist in charge.

Sheldon Kindall, Houston Archeological Society

EARLY AND MIDDLE HOLOCENE OCCUPATIONS AT THE RICHARD BEENE SITE: THE 1995 SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION FIELD SCHOOL PROJECT

Alston V. Thoms, David D. Kuehn, Ben W. Olive, John E. Dockall, Patricia A. Clabaugh, and Rolfe D. Mandel
Center for Environmental Archaeology, Texas A&M University, College Station

ABSTRACT

Archaeological investigations by representatives of the Center for Environmental Archaeology at Texas A&M University and the Southern Texas Archaeological Association were carried out in 1995 at the Richard Beene site (41BX831) on the Medina River about 15 miles south of San Antonio. Excavations in the 4,400-year-old upper-Medina pedocomplex yielded chipped-stone debitage, cores and core fragments, stone tools, fire-cracked rock (FCR), mussel shells, bone, and charcoal fragments. Diagnostic artifact types included Desmuke, Travis, and stemmed-point fragments similar to Bell, Andice and Calf Creek points. The abundance of FCR suggests that food preparation was an important activity, with game animals and river mussels being among the food items consumed. Excavations in the 8,700-year-old upper Perez paleosol also yielded chipped-stone debitage, cores and core fragments, stone tools, FCR, mussel shells, and bone fragments, mostly from rabbit- and deer-sized animals. Diagnostic artifacts included Angostura points and Clear Fork tools. Cultural materials from these early Holocene deposits appear to represent short-term encampments with perhaps more intensive occupations and diverse activities than represented in the middle Holocene deposits.

Archaeological investigations in 1990-1991 for the proposed construction of Applewhite Reservoir resulted in discovery of the Richard Beene site (41BX831) along the Medina River some 15 miles south of San Antonio (Figure 1). The site has 10 m of well-stratified, fine-grained, overbank alluvium that contains archaeological deposits dating from the last 8,700 years (Figure 2) (Thoms 1992; Thoms and Mandel 1992). Because of its well-preserved, long-term record of riverine use in south-central Texas, the site has been declared a State Archaeological Landmark and is eligible for inclusion to the National Register of Historic Places.

The most salient ecological characteristics of 41BX831 are its riverine location and ecotonal setting at the southern end of the Post Oak Savannah and northern limits of the south Texas brush country, known as the Rio Grande Plain and Tamaulipan Biotic Province (Arbingast et al. 1976; Blair 1950). Hunter-gatherers occupied this and adjacent regions over the last ca. 11,500 years (cf. Black 1989; Hester 1989). Excavations at the site have yielded materials from the early Holocene (i.e., Late Paleoindian) through late Holocene (i.e., Late Prehistoric) periods in the upper 10 m of terrace fill at the proposed dam site (Figure 2) (Thoms 1997; Thoms and Mandel 1992).

The oldest early Holocene component (Blocks H and T; ca. 8700 B.P.) yielded what may be the largest assemblage of stratigraphically in situ cultural materials associated with Angostura projectile points in North America (Figure 3). Another extensively excavated early Holocene component (Block G; ca. 7000 B.P.) revealed many well-preserved features, associated stemmed/indented-base projectile points, other artifacts, and faunal remains. Middle Holocene components (Block A; ca. 4100-4500 B.P.) were comparatively feature-rich and artifact-poor. One of the late Holocene components (outer Block B; ca. 3000 B.P.) contained a large, earth-oven-like feature, as well as a relatively high density of broad-blade projectile points and thin bifaces. The youngest late Holocene component (inner Block B; ca. 1000-400 B.P.) did not yield intact features, but arrow-points and ceramic fragments were recovered (Thoms 1997; Thoms and Mandel 1992).

Previous analyses reveal the almost exclusive use of local river gravels as raw material for stone tools, and suggest that technology during initial stages of tool production appears to have changed little during

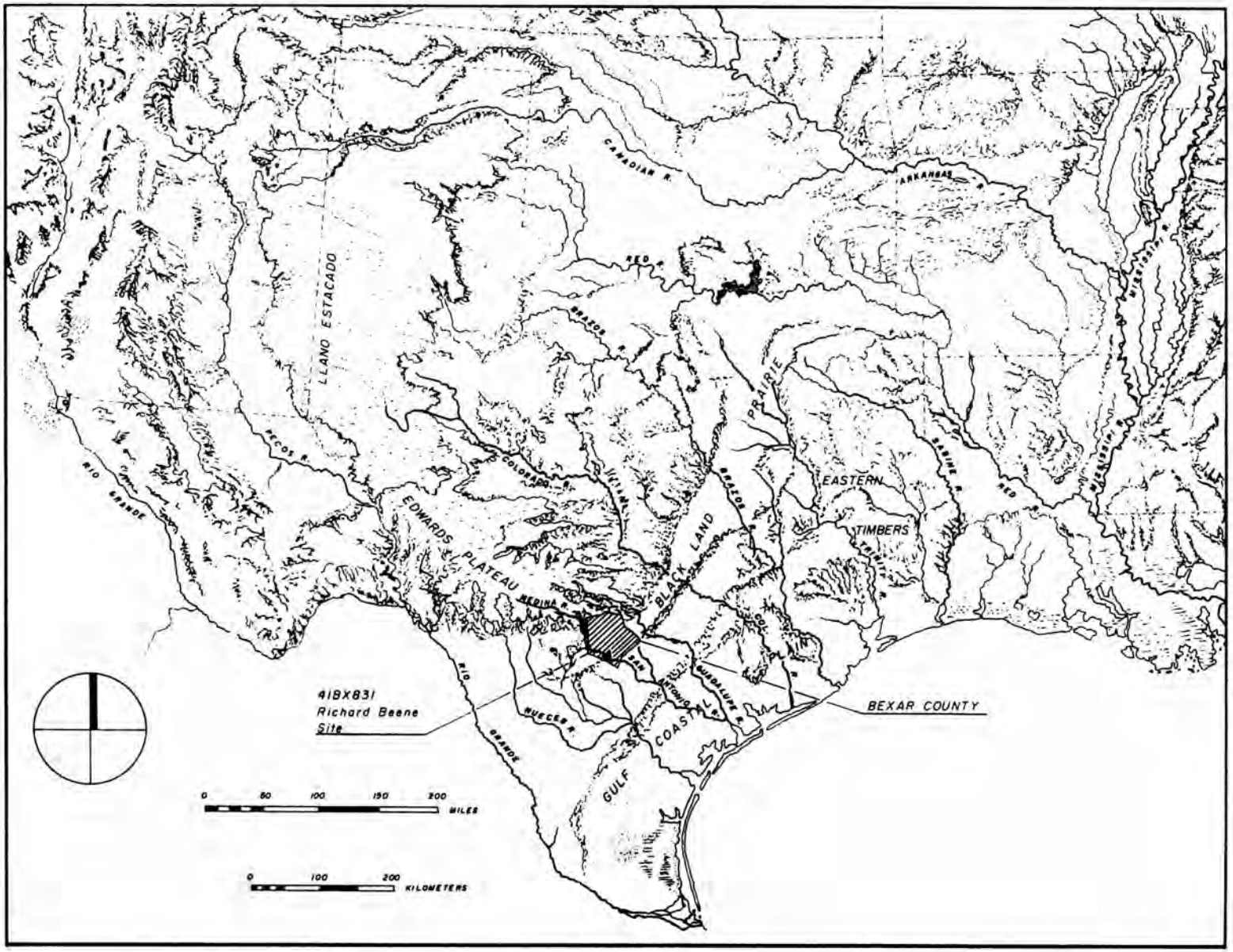

Figure 1. Map of the Gulf Coastal Plain/Edwards Plateau showing the location of 41BX831, the Richard Beene site.

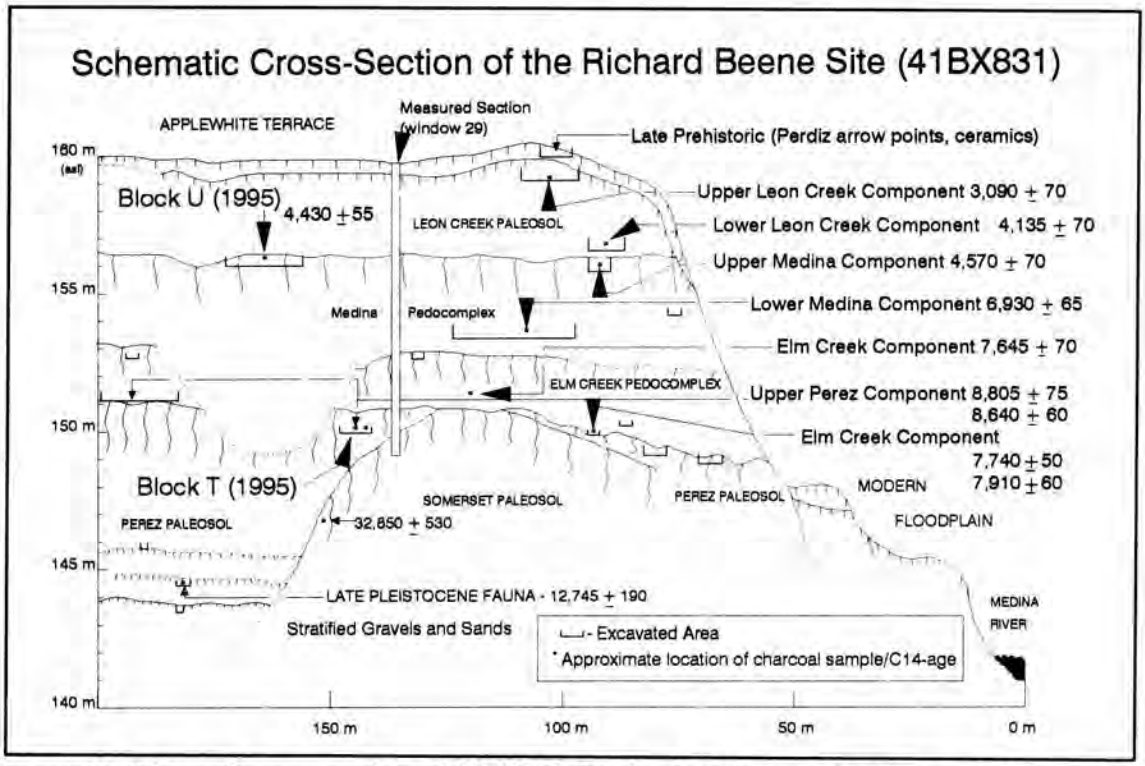

Figure 2. Schematic cross section of 41BX831 showing locations of Blocks T and U, as well as locations of dated radiocarbon samples.

the Holocene. Only the earliest Holocene component has a high diversity of tool types, including the Angostura points, but it also has the largest artifact sample. Overall, there is considerable intercom ponent variation in the density of chipped-stone artifacts, fire-cracked rock (FCR), and mussel shells, suggesting variation in the intensity and perhaps the nature of occupations (Thoms 1996, 1997).

This article summarizes preliminary results of excavation, survey, mapping, and geomorphic investigations carried out in September and October 1995 under the direction of Alston Thoms, Director of the Center for Environmental Archaeology (CEA), and David Kuehn, CEA's Associate Director. These investigations were conducted under the Department of Antiquities Protection Permit No. 1589 (Applewhite Reservoir Archaeological Project) issued to CEA by the Texas Historical Commission. Funds were provided by the San Antonio Water System (SAWS) as part of site closure for the abandoned Applewhite Reservoir project.

Fieldwork was undertaken in conjunction with the 1995 Southern Texas Archaeological Association's (STAA) field school for which Thoms served as Principal Investigator. Field and laboratory work were supervised by CEA staff members and STAA field-school crew chiefs. More than 50 people participated in the week-long field school (Figure 4). STAA members volunteered to prepare the site for excavation; they continued to serve as volunteer excavators after field school itself ended and helped prepare the site for closure (Thoms 1996).

RESEARCH DESIGN, PROJECT OBJECTIVES, AND FIELD METHODS

The city of San Antonio currently owns the site area, but no longer intends to build Applewhite Reservoir. As part of project-closure plans, SAWS must bring the steep-walled spillway trench and adjacent landscape into compliance with legally mandated guidelines pertaining to safe environments, runoff control, and wetland and cultural resources preservation. Reclamation of the spillway trench will result in adverse impacts to several archaeological components at the site. Plans are presently underway

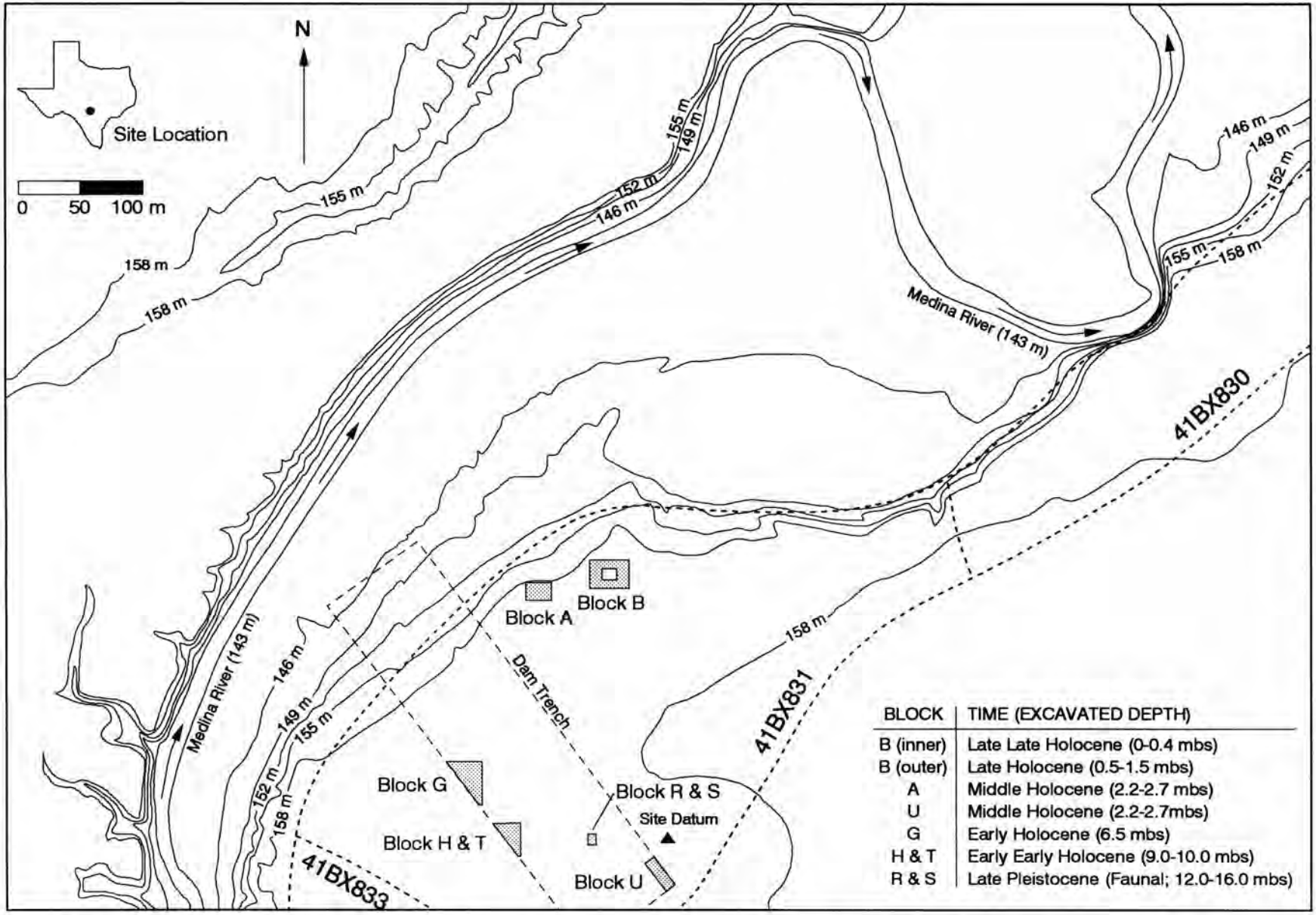

Figure 3. Topographic map of 41BX831 site area showing locations of the spillway trench, Blocks T and U, and excavation windows.

Figure 4. Photograph of STAA field crew members working in Block T at 41BX831.

for the Archaeological Conservancy to manage the Richard Beene site and surrounding acreage that encompasses several other important sites until a public agency(ies) can assume control and develop the tract as an archaeological preserve or park.

As originally developed, the project's research design sought to identify changes in site structure and mobility strategies over time, and the relationship of these changes to environmental factors (Carlson et al. 1990). Initial data from pollen, macrobotanical, terrestrial fauna, and mollusk studies failed to indicate appreciable changes in the general nature of the riverine and near-riverine environment during the last 10,000 years (Mandel and Caran 1997). However, results of a recent study of the $\delta^{13}C$ of paleosol organic carbon that integrates the relative contribution of C_3 and C_4 plants indicate that from 10,000 to 6,000 years ago, climate in the project area was cooler and wetter than at present (Mandel et al. 1995). Other $\delta^{13}C$ studies from central and north-central Texas also depict the climate as cooler and/or wetter between 9,000 and 8,000 years ago (Nordt et al. 1994).

Our preliminary paleoenvironmental analyses suggest that when viewed from the perspective of the floodplain/terrace setting for 41BX831, evidence regarding microenvironmental changes (i.e., within the site catchment area) is sparse. Moreover, we have not yet identified major changes in the kinds of tools used at the Richard Beene site during the last 8,700 years (Thoms 1997). However, burins, discoid cores, and adzes are far more common in the 8,700-year-old component than elsewhere at the site. There may have been short-term fluctuations (e.g., droughts) that had profound implications for humans, but such changes may not be readily detectable using current research techniques (Steve Black, personal communication 1992). It is also possible that even significant changes in the mesoenvironment and macroenvironment may remain undetected from a riverine perspective.

Mitigative measures undertaken by the CEA/STAA team in 1995 included excavation of archaeological deposits in the upper Perez (ca. 8700 B.P. — 9 m below surface) and upper Medina (ca. 4500 B.P. — 3 m below surface) paleosols, as well as surface collecting and mapping in the spillway trench (see Figure 2). Our primary objectives were: (1) to recover artifact and sediment samples from previously unsampled or under-sampled archaeological deposits that could not be adequately protected from reclamation activities; and (2) to prepare a detailed map illustrating the distribution of paleosols and archaeological deposits that would be preserved in place, and thereby be available for future investigations.

The CEA/STAA field team excavated portions of two 10-x-5-m block areas on backhoe-prepared benches carved into the near-vertical spillway trench walls. These consisted of: (1) Block U — middle

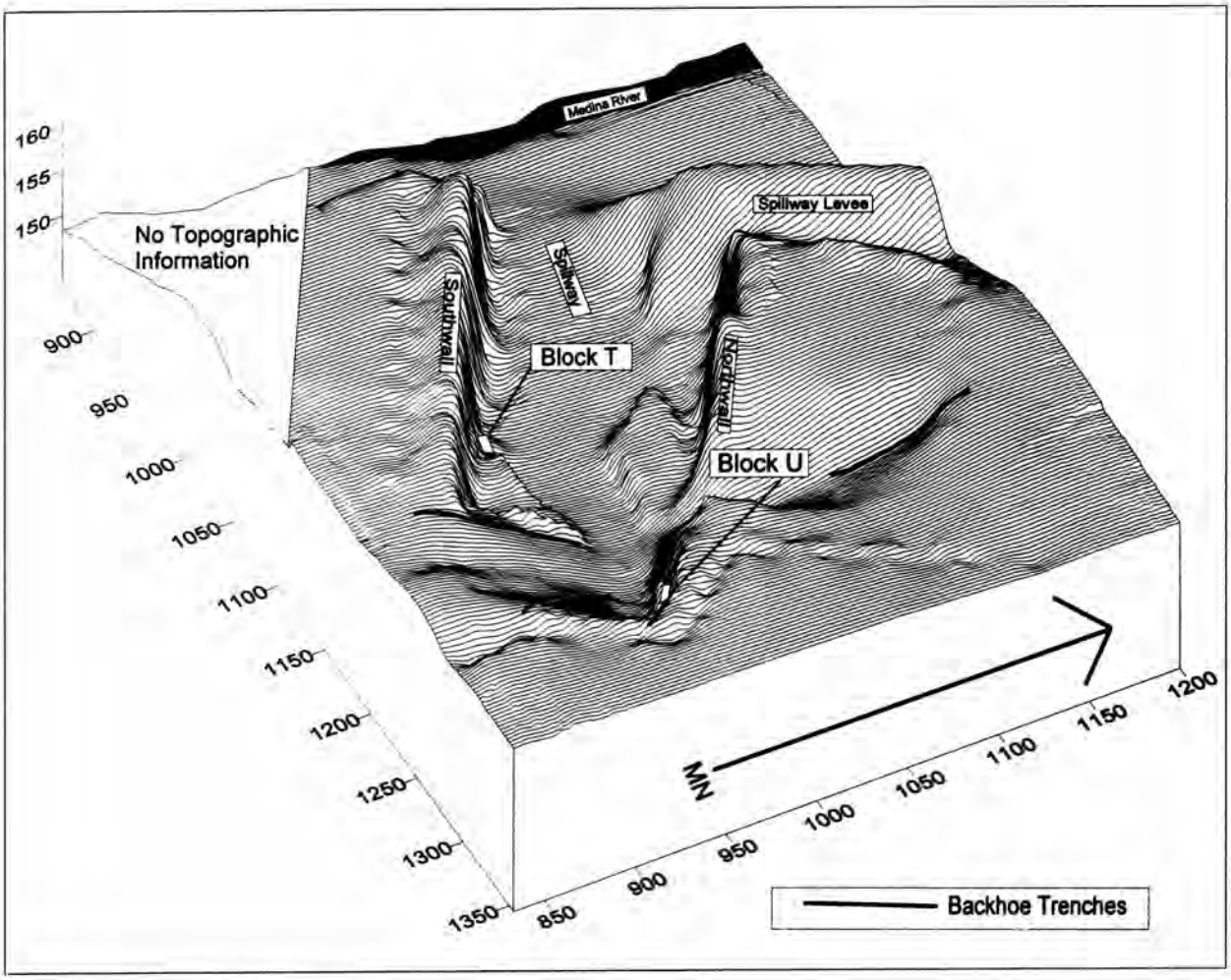

Figure 5. Three-dimensional computer graphic showing locations and topography of the spillway trench and Blocks T and U.

Holocene-aged deposits where 6 m^2 were hand-excavated in the upper portion of the Medina pedo complex, about 3 m below the modern surface (Figure 5); and (2) Block T — early Holocene-aged deposits where 27 m^2 were dug into the upper part of the Perez paleosol, about 10 m below surface (Figure 5). Water was hauled to the site in vacuum trucks and stored in a 22,000-gallon frac tank in order to water-screen the clay-rich sediments from both block areas (Figure 6).

An electronic distance measurer (EDM) was used to conduct the following tasks: (1) map the present (i.e., post-construction) landscape, including the spillway trench, sediment pond, levee, drainage ditch, and scraper-cut ground surface adjacent to the trench; (2) map paleosol exposures along the spillway trench vertical walls and in backhoe trenches dug on the slopes of the spillway trench; and (3) map the location of diagnostic artifacts, artifact scatters, and features exposed in the spillway trench.

In addition to preparation of block areas for excavation, SAWS provided backhoes to construct roads to the new block areas, to prepare a place for water-screen operations, and to cut trenches exposing paleosols along the spillway trench slopes. A hydraulic lift (i.e., "cherry picker") was also provided by SAWS to gain close-up views of the vertical wall in the spillway trench and thereby facilitate the examination and description of stratigraphy in the Applewhite terrace fill.

SURFACE COLLECTED ARTIFACTS AND DISTRIBUTIONS

STAA crew chiefs and field school students found a variety of artifacts and features during a survey of exposed slopes in the spillway trench area (see Figure 5). Exposures of the upper portion of the

Figure 6. Photograph of water-screening at 41BX831.

Medina pedocomplex, extant about 3 m below the pre-construction surface (i.e., modern ground surface), produced: (1) a Desmuke point; (2) an unidentified, rectangular-stemmed dartpoint fragment; (3) several FCR features; and (4) scattered debitage, FCR, bone, and mussel-shell fragments. The lower part of the Medina pedocomplex, ca. 6 m below surface, yielded a stemmed, indented-base point (Uvalde-like), as well as scattered debitage and FCR. A well-made, notched, quartzite axe was also recovered about 6 m below surface. Unfortunately, the axe's point of origin and its age are uncertain because it was found in the bottom of a shallow gully. However, judging from the overall distribution of other artifacts in the vicinity, the axe probably originated in one of the deposits dated between 4500 and 7000 B.P.

Artifacts, mostly mussel shell, chipped-stone debitage, and FCR, were exposed in backhoe trenches and gully walls. These artifacts were mapped in place as part of the effort to document paleosol distributions. Only a few formal tools and tool fragments were collected from the trench and gully wall. The most unusual of these was a sandstone grinding slab (described below) recovered from the lower part of the Elm Creek pedocomplex that has been dated to about 8200 B.P. (Mandel and Jacob 1997).

Surface exposures of the upper portion of the Perez paleosol (ca. 9-11 m below surface) along the lower slopes and the floor of the spillway trench yielded the same artifact types that were recovered from excavations in Block T (described below). These included: (1) two Angostura points, one complete and one fragment; (2) two fragments of lanceolate points; (3) fragments of at least two Clear Fork tools; (4) several edge-modified flakes, including gravers; and (5) comparatively dense scatters of chipped-stone debitage, mussel shells, and FCR.

BLOCK U EXCAVATIONS: UPPER MEDINA COMPONENT, MIDDLE HOLOCENE OCCUPATIONS

Several small FCR features, along with chipped-stone tools and debitage, were exposed in the upper Medina paleosol on the steep slopes of the southwestern portion of the spillway trench, more than 300 m from the Medina River. Stratigraphic correlation from a previously excavated and well-dated upper Medina component in another part of the Richard Beene site indicated that archaeological deposits in Block U should date to about 4500 B.P. (see Figures 2 and 3). The upper Medina component (Block A) excavated in 1990-1991 was located within 100 m of the Medina River; it yielded numerous hearth features, most of which had very little fire-cracked rock, mussel shell concentrations, and a small sample of chipped-stone artifacts, none of which were temporally diagnostic (Thoms 1992, 1997). The relative abundance of FCR and chipped stone clearly distinguished the Block U upper Medina component from the previously excavated component located near the river (i.e., Block A).

Our objectives at Block U were to: (1) increase the sample size from the mid-Holocene occupation

and document assemblage differences, if present, from those previously recovered; (2) recover charcoal samples suitable for dating; (3) obtain information concerning the horizontal distribution of cultural materials; and (4) gather comparative data from other surface exposures in the spillway trench to better assess depositional environments.

To maximize data recovery from the upper Medina pedocomplex, a backhoe was used to create a 13-x-4-m flat bench for placement of excavation units. Two backhoe trenches, one to the west and one to the east of the bench, were excavated to isolate the artifact zone and to establish the elevation of the Medina paleosol in this area. These two trenches, in addition to the back wall profile, demonstrated that the artifact zone was approximately 15 cm below the Medina paleosol. With careful monitoring, the bench was further graded down to within a few centimeters of the uppermost Medina pedocomplex (Mandel and Jacob 1997). Three backhoe-dug sondages (Figure 7) were excavated along the back wall of Block U in order to provide a three-dimensional perspective of the graded bench and the Medina pedocomplex profile, and also to verify the depth of the artifact zone across the bench. This block was tied into the grid system utilized during the 1990-1991 excavations.

Initially, five units were excavated and screened through 1/8-inch hardware cloth. Once artifact distribution was noted, an additional unit was opened adjacent to the unit with the highest frequency of cultural materials (Figure 7).

Charcoal recovered from the artifact-rich zone during the 1995 Block U excavations yielded an age of 4430 $\pm$ 55 B.P. (GX-21746-AMS). This correlates with radiocarbon dates recovered in Block A during 1991: 4570 $\pm$ 70 B.P. (BETA 38700) for the uppermost Medina component and 4135 $\pm$ 70 B.P. (BETA 43330) for the lowermost Leon Creek component (see Figure 2). These ^{14}C data provide

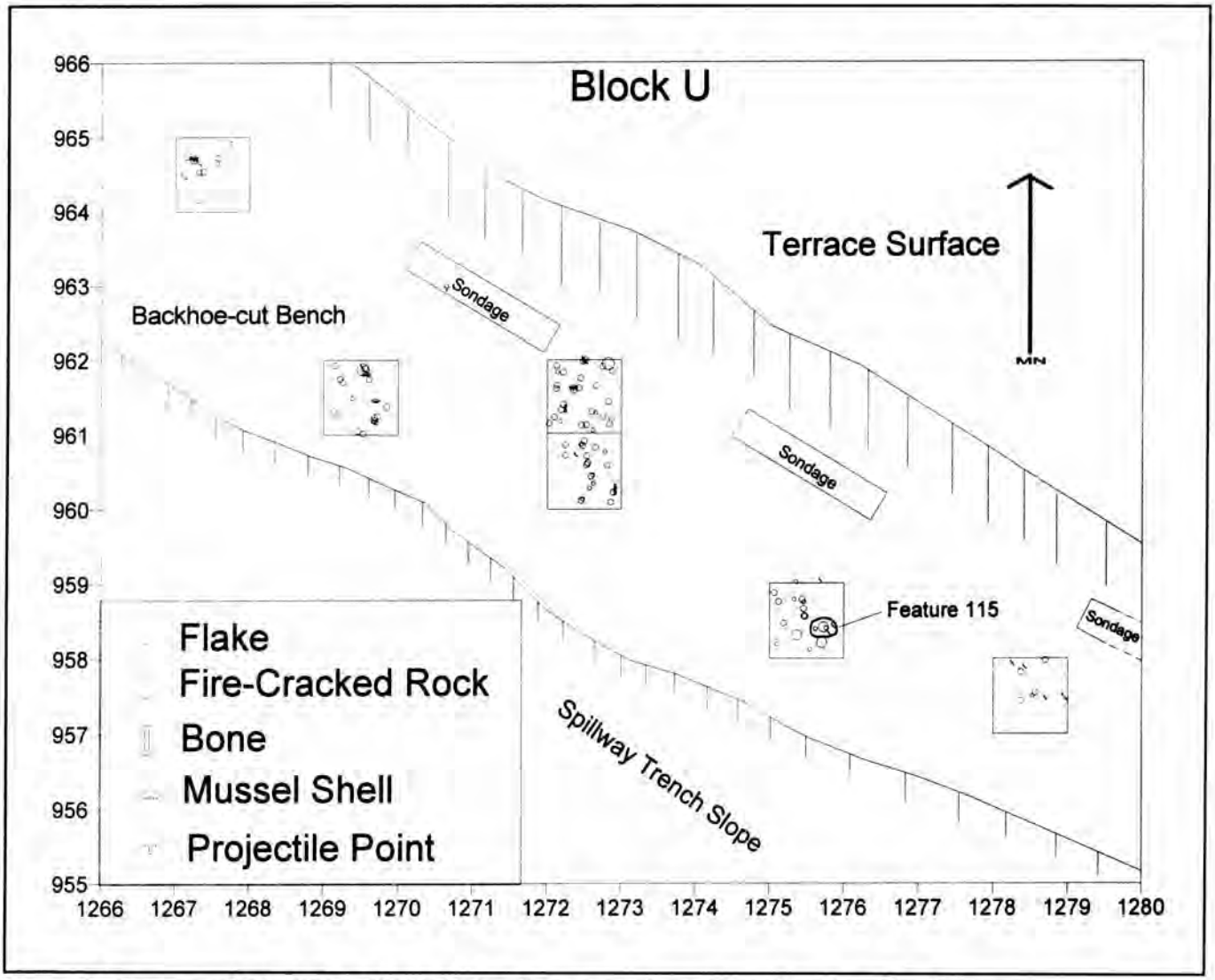

Figure 7. Plan map of Block U at 41BX831 showing excavation units and artifact distribution.

approximate ages to two fragments of Bell/Andice points recovered in 1991 from deposits adjacent and stratigraphically identical to Block U. Many tree-root burns were noted along the upper boundary of the Medina pedocomplex in 1991, suggesting that forest/prairie fires may have been especially common around 4500 B.P.

The 6 m^2 excavated at Block U yielded 249 pieces of chipped-stone debitage, two cores and core fragments, five stone tools, ca. 10 kg of FCR (tabular sandstone), 10 umbos (mussel-shell hinges), and 33 poorly-preserved bone fragments, as well as charcoal fragments. Some of the basic assemblage characteristics, especially an abundance of FCR and a paucity of chipped stone, are suggestive of plant-food processing. The low density and small size of chert debitage, coupled with the scarcity of formal tools, suggest that tool manufacture was not a common activity in this area of the site. Tool maintenance and tool replacement were probably frequent activities, in addition to plant-food processing.

BLOCK T EXCAVATIONS: UPPER PEREZ COMPONENT, EARLY HOLOCENE OCCUPATIONS

In 1991, about 20 m^2 were excavated in Block T where archaeological materials were recovered about 1 m below the eroded surface of the Perez paleosol, revealing several occupation zones dating to about 8700 B.P. (Figure 8). These excavations yielded three features, two of which were radiocarbon dated. In addition, two lanceolate projectile points were recovered (Angostura and Plainview/Barber-like), along with a drill, an adz, several other tools, mussel shells, and poorly preserved bone fragments (Thoms 1992, 1997). Upon completion of our work in 1991, excavation units and backhoe trenches were backfilled, but erosion removed part of the fill along with some intact, artifact-bearing sediments. As a result, the bench where Block T is located became very fragile, such that protection in place was not practical. Accordingly, and as per the 1991 recommendations, CEA proposed to excavate an additional 20 m^2 that would provide for adequate mitigation by augmenting the existing artifact sample and thereby providing an adequate sample as the "type component" for the early Holocene period at the Richard Beene site.

Our objectives at Block T were to: (1) significantly increase the sample size of artifacts, especially diagnostic tools and faunal remains; (2) find and excavate features; (3) obtain additional datable material; and (4) elucidate the nature and impact of site formation processes at the intrablock level. With detailed spatial, vertical, and pedogenic data available from the 1991 excavations, the 1995 excavations at Block T were designed to maximize data recovery by expanding the size of the block and by specifically targeting known vertical and horizontal distributions of the early Holocene components. With careful monitoring, the SAWS backhoe removed culturally sterile overburden to within a few centimeters of the previously identified target zone. This required cutting into the south wall of the spillway trench and exposing approximately 40 m^2 of artifact-bearing deposits. This block was tied into the grid system utilized during 1990-1991 excavations.

The CEA/STAA team excavated 27 1-x-1-m squares in Block T. These units yielded 635 pieces of chipped-stone debitage, 6 cores and core fragments, 19 stone tools, less than 10 kg of FCR, 92 umbos, and 165 bone fragments, mostly from rabbit- and deer-sized animals. Diagnostic artifacts recovered from excavations and surface exposures of the upper Perez paleosol included Angostura points, fragments of lanceolate projectile points, and Clear Fork tools. Vertical distribution of these materials suggests that the Block T area witnessed a number of site use-episodes during the early Holocene. The most intensive occupations are represented in a cultural zone vertically situated between 149.5 m and 149.35 m, and associated with a plainly visible concentration of FCR and *Rabdotus* sp. shells. Other possible use-episodes of a more ephemeral nature were evident between 149.70 m and 149.50 m.

Horizontal distribution of the major cultural zone in Block T appears to be somewhat linear (oriented from northeast to southwest), with three possible concentration areas (see Figure 8). The first area of concentration was situated at the extreme southeastern end of the expanded block (ca. 942.00-938.00 N and 102.00-107.00E); it contained flaking debris, FCR, and two Angostura points. These materials were in direct association with alluvial gravels (i.e., granules and pebbles), and therefore appear to have been impacted by post-occupational geomorphic activity (i.e., alluvial deposition via

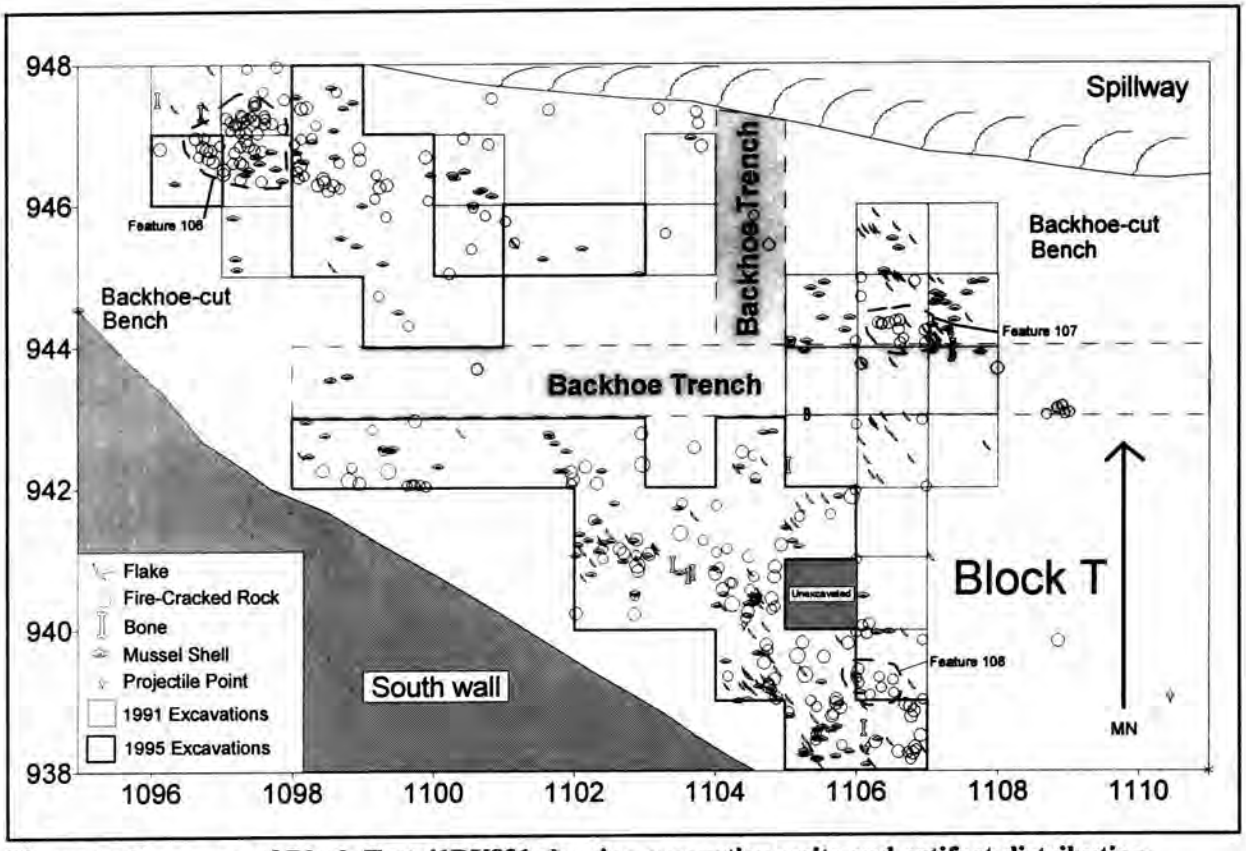

Figure 8. Plan map of Block T at 41BX831 showing excavation units and artifact distribution.

small channels?). The second possible concentration was situated at the extreme northwestern edge of the block area (946-948N/1095-1094E; see Figure 8). Here, a dense but rather amorphous concentration of FCR was encountered. A lack of fluvial gravels suggests that this portion of Block T was probably not significantly impacted by geomorphic activity. The third concentration was encountered in the northeastern portion of Block T near Feature 106, a small stone-lined hearth feature excavated in 1991 (944-947N/1105-1107E). Materials here included fire-cracked rock, flaking debris, and mussel shell.

The chronological and spatial relationships between these concentration areas, as well as an exact determination of their function, are not fully understood at this time. More specific data analyses, including natural clast and artifact densities, soil micromorphological characteristics, and statistical quantification, are necessary before we can fully determine whether the vertical and horizontal distributions of cultural materials at Block T are a result of cultural or natural processes, or a combination of both. Preliminary data do indicate, however, that natural site disturbance processes were less substantial in Block T than in Block U.

CHIPPED-STONE ARTIFACTS

A technological and functional approach was used to analyze cultural materials recovered during the 1995 investigations. The technological phase involved analysis of both debitage and whole and broken artifacts. Specific attributes common to all stone artifacts include material type, color, thermal alteration, and edge modification. Artifact morphology and technology were used to reconstruct core reduction and artifact manufacture-use-discard patterns. Functional classification of artifacts was based upon both morphological and microscopic usewear characteristics. Use-phase classification represents a qualitative assessment of artifact completeness, degree of finishing, and whether the artifact represents failure during manufacture or discard from use-breakage or exhaustion.

Cores. A variety of core types was recovered during excavations and surface survey that relate to

specific strategies of core reduction. Discoid cores (Figure 9 A-B) have a prepared surface which served as a striking platform to remove flakes from the opposite side of the core, and frequently retain cortex on the prepared platform surface. This core reduction strategy was useful in producing expedient flake-tool blanks for a variety of cutting tasks requiring a thin cross-section and acute lateral edges. The majority of discoid cores were recovered during surface reconnaissance of the early Holocene deposits (ca. 8700 - 7000 B.P.), but several were excavated from Block T.

A second core type includes expedient hardhammer cores with random flake removals from suitable platforms (Figure 9 C). This is the most common core type observed at the Richard Beene site. Large pebbles and small cobbles of chert were selected for this reduction strategy. Usually, negative flake scars from previous flake removals served as platforms for subsequent flake removal, resulting in an angular or blocky core. Flakes produced by this method are thicker than flakes removed from discoid cores and have more dorsal cortex and fewer dorsal flake scars. Striking platforms are typically cortical or single-faceted, and flake cross-sections range from wedge-shaped to triangular and irregular. Lateral edges exhibit an assortment of edge angles from obtuse to acute, and were used in a variety of tasks requiring a range of edge angles suitable for cutting/scraping and chopping/adzing. Flakes produced by this technique were also frequently used for manufacture of unifacially flaked implements, such as denticulates, notched flakes, and an array of beaked tools for graving, scraping, and incising of dense materials. Functional analysis indicates that flakes produced by this technique were employed in tasks requiring mass and edge durability beyond that of flakes produced from discoid cores. One specimen was recovered from Block U, and the rest were from surface and excavated contexts at Block T.

Two examples of conical blade cores were recovered, specimens 6642 and 6652 (Figure 9 D). Blades produce a more usable cutting edge per removal than either discoid or random flake production strategies. Such elongated flakes are also useful for incising or piercing (drilling or perforating). One blade (specimen 6657) was recovered from exposures of the upper Perez paleosol near the base of the spillway trench. The second specimen was a surface find.

A single example of a macroflake percussion core (specimen 6644) was also recovered from surface exposures of the Perez paleosol. Other core fragments from both Blocks T and U represented repair of broken cores or damaged platforms, and some may also represent recycling of exhausted or otherwise abandoned cores for expedient tools.

Debitage Analysis. A total of 884 pieces of debitage was recovered from Blocks T and U during the 1995 excavations, inclusive of complete and fragmentary flakes and shatter. Block T yielded 71.8 percent of the total (N = 635), and Block U 28.2 percent (N = 249). Chert was the most abundant material represented in both excavation areas, representing 98.2 percent and 97.6 percent of all raw materials from Blocks T and U, respectively. Block T contained a greater variety of material types in addition to chert (quartzite, silicified wood, sandstone, and chalcedony), whereas U included only chert and quartzite. Block U had a higher density of flakes per m^3 than did Block T (Table 1).

All debitage was size-graded for mass analysis (cf. Ahler 1989) through a series of nested sieve screens (Table 2). Size-grade analysis of debitage recovered from Blocks T and U revealed patterning that may be correlated with behavioral differences. Both blocks are dominated by small-sized debitage in grades 6 and 7 (6.3 mm and 2.8 mm, respectively; see Table 2), suggesting that tool resharpening, tool repair, and core preparation activities were common. However, a higher m^3 density of size-grade 7 debitage from Block U suggests that tool maintenance may have been more frequent at this locality. Also, Block U has a smaller proportion and m^3 density of debris bearing dorsal cortex than did Block T (Table 2). The abundance of interior flakes from Block U supports frequent tool edge modification, maintenance, and repair. In contrast, cortex debris from Block T is related to use of local chert cobbles as cores for flake tool production. Thus, Block T is characterized by more debris from initial reduction of chert cobbles than Block U, an inference also supported by artifact differences.

A range of flake types was recovered from both excavation areas (Table 2). There are similar proportions of debitage from each block classified as shatter, fragments with missing platforms, and biface thinning flakes, but greater differences are found between softhammer, hardhammer, and pressure flakes. Block T exhibits a higher proportion and

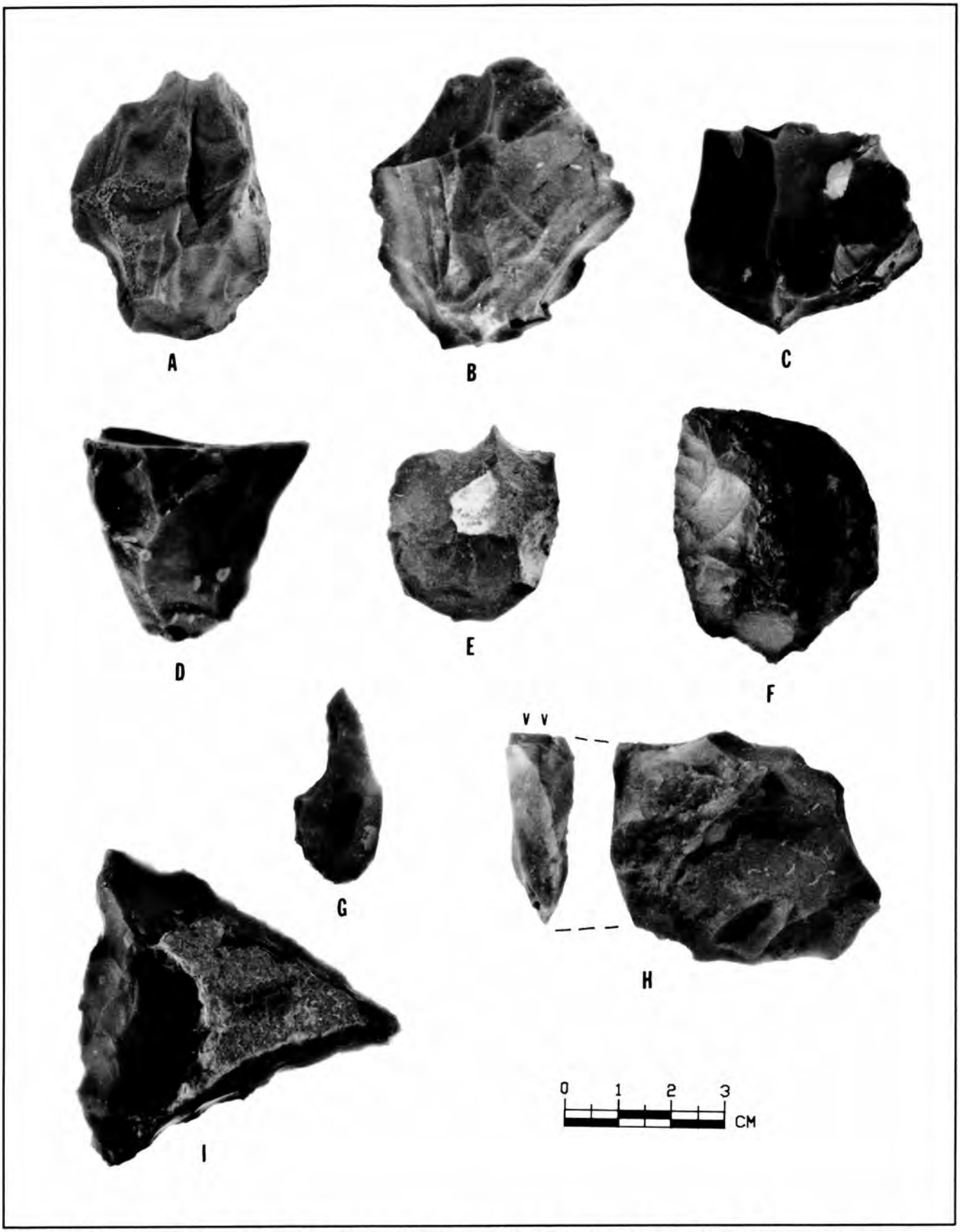

Figure 9. Cores and edge-modified tools. A, discoid core (3741); B, discoid core (6387); C, hardhammer core (6649); D, conical blade core (6652); E, beaked uniface (6360); F, uniface (6379); G, perforator (6371); H, burin spall core (6363); I, distally beveled uniface (8155-696).

Table 1. Counts and density of lithic artifact categories recovered from block excavations and surface survey during the 1995 STAA Field School at 41BX831. Material from Block A included for comparison with Block U.

Category	*Block T-1995 STAA Field School*	
	Total	Density per m3
Debitage	635	84.4
Cores	6	0.7
Edge-modified Tools	16	2.1
Dart Points	2	0.2
Hammerstones	1	0.1
Category	*Block U-1995 STAA Field School*	
Debitage	249	131.0
Cores	2	1.0
Edge-modified Tools	3	1.5
Dart Points	2	1.0
Category	*Block A-1991 Excavations*	
Debitage	1459	95.9
Bifaces	1	.06
Dart Points	1	.06
Category	*1995 STAA Field School Surface Survey*	
Debitage	21	—
Cores	14	—
Edge-modified Tools	30	—
Cobble Tools	2	—
Bifaces	3	—
Dart Points	8	—
Hammerstones	1	—
Groundstone	1	—

Table 2. Raw material and technological variability of excavated debitage recovered during the 1995 STAA Field School at 41BX831. Material from Block A included for comparison with Block U. Values in cells represent percentages and densities per m^3.

Excavation Area	*Block T*		*Block U*		*Block A*	
Attribute	%	m^3	%	m^3	%	m^3
Raw Material						
Chert	98.2	84.4	97.6	131.0	92.6	95.9
Quartzite	1.2	82.9	2.4	127.8	1.1	94.5
Other	0.6	1.0	0.0	3.1	0.3	1.1
Dorsal Cortex						
Primary	10.2	8.6	0.8	1.0	1.2	1.1
Secondary	10.1	8.5	7.6	10.0	10.8	10.3
Interior	79.7	67.2	91.6	120	88.0	84.0
Size-Grade						
1 (50 mm)	0	0	0	0	0	0
2 (25 mm)	0	0	0	0	.06	.06
3 (19 mm)	1.6	1.3	1.6	2.1	1.0	0.9
4 (12.5 mm)	7.1	5.9	2.8	3.6	4.6	4.4
5 (9.5 mm)	10.1	8.5	4.8	6.3	6.7	6.3
6 (6.3 mm)	22.8	19.2	17.7	23.1	19.3	18.2
7 (2.8 mm)	58.4	49.3	73.1	95.7	68.3	64.6
Identified Flake Types						
Softhammer	16.7	14.0	21.7	28.4	16.0	15.2
Hardhammer	11.8	9.9	4.4	5.7	1.5	1.4
Plat. missing	48.0	40.5	41.4	54.2	72.1	68.9
Shatter	14.2	11.9	13.3	17.3	6.5	6.2
Biface Thin.	1.4	1.1	2.0	2.6	0.4	0.3
Pressure	6.3	5.3	13.3	17.3	1.6	1.5
Platform Technology						
Cortical	3.1	2.6	0.8	1.0	2.0	1.8
Flat	17.0	14.3	22.0	28.4	14.0	13.3
Faceted	9.6	8.1	9.2	12.1	3.3	3.1
Lipped	.2	0.1	1.2	1.5	0.3	0.2
Crushed	6.3	5.3	6.8	8.9	0.4	0.3
Missing	63.8	53.8	60.0	78.9	80.0	76.5

density of hardhammer percussion flakes, correlating with cortex and size-grade data. The Block T artifact assemblage indicates flake tool production and lateral edge retouch of beaked tools, notches, and denticulates. Some hardhammer percussion flakes were probably produced during core trimming and platform preparation of discoid cores.

The only potentially significant difference in platform technology between Blocks T and U is represented by flakes with flat and missing platforms (Table 2). A greater frequency of cortex platforms in Block T is associated with expedient flake tool production from cobble cores. The presence of flat platforms may be related to both flake tool retouch and flake production. Faceted platforms are typically removed from formal implements during manufacture or maintenance.

The middle Holocene debitage assemblage recovered during 1991 excavations in Block A is similar to Block U in the percentages of certain types of raw materials, flakes, and particular attributes; however, the density per m^3 of certain flake types and technological attributes is considerably different. For instance, the density of softhammer flakes at Blocks A and U is 15.2 and 28.4, respectively, while pressure flakes are 1.5 and 17.3 per m^3, respectively. A similar pattern is also noted for size-grade 7 flakes: 64.6 per m^3 for Block A and 95.7 per m^3 for Block U. Significantly higher densities of debitage at Block U are suggestive of behavioral differences between Blocks A and U that may be correlated with similar density differences in FCR (see Thoms 1992:27).

Edge-modified Flake Tools. Variability in tool morphology, secondary edge modification, and usewear patterns indicate that edge-modified flakes from Block T were specifically manufactured for a range of tasks that included both extractive (hunting, butchering, and plant processing) and maintenance (tool manufacture, repair, and maintenance) use contexts (cf. Hayden et al. 1996). Thick percussion flakes from Block T were typically employed in both scraping and cutting tasks, but were also modified into a variety of beaked, notched, and denticulated flake-tool forms for scraping, shaving, planing, and heavy cutting (Figure 9 E). Edge-modified tools made from thinner hardhammer and softhammer percussion flakes (Figure 9 F-H) were typically employed in light-duty cutting and scraping activities, and were modified into small piercing and drilling tools. Implements recovered from both excavation and surface survey include notched/denticulate tools, a thin end scraper, one drill or perforator, burin spall tools/cores, beaked tools, and a probable wedge or *pieces esquillees*. Although Block U yielded only a small number of edge-modified implements, previous investigations of middle Holocene deposits in Block A produced two unifacially retouched flake implements (Figure 9 I).

Cobble Tools. Two large, flaked cobble tools were recovered by STAA field school participants and CEA staff as surface finds. The first specimen (6406) is a quartzite axe with a bifacially flaked bit created by hardhammer percussion (Figure 10 A). The medial portion of the cobble has also been bifacially flaked, followed by concentrated pecking to create a large notch for hafting on each side of the cobble. The axe bit has large bending fractures with step terminations on each surface of the edge which can be produced during use against dense materials, such as wood. The poll end of the axe displays only slight use in battering as evidenced by a localized pitted and battered cortex. As noted earlier, the stratigraphic context of this axe is uncertain, but it probably came from deposits dated between 4500 and 7000 B.P.

The second tool (6408) is a quartzite cobble with each end and a portion of one edge modified by marginal, unifacial, hardhammer percussion retouch (Figure 10 B). It is plano-convex in cross-section. There is some localized battering that produced a slight edge concavity and a corresponding zone of battering along the opposite edge, although not as pronounced, that suggests hafting. Usewear is not pronounced and is limited to light blunting and edge-rounding. This implement could have been employed in heavy-duty chopping or pounding tasks, and hafting would certainly have improved its efficiency. It was also a surface find from exposures dated to about 4500 B.P.

Bifaces. Three thick bifaces were recovered during surface survey. A single proximal fragment of a Stage I biface (6643) was broken in a transverse bending fracture due to a crystal flaw and possible platform collapse during manufacture. Two other biface specimens (6402, 6655) and a single unifacial specimen (6658) represent portions of distally beveled, hafted bifacial implements. The bifacial specimens are similar to Clear Fork tools (Figure 11 A). Both exhibit distal impact damage and retain evidence of lateral edge preparation for hafting. In

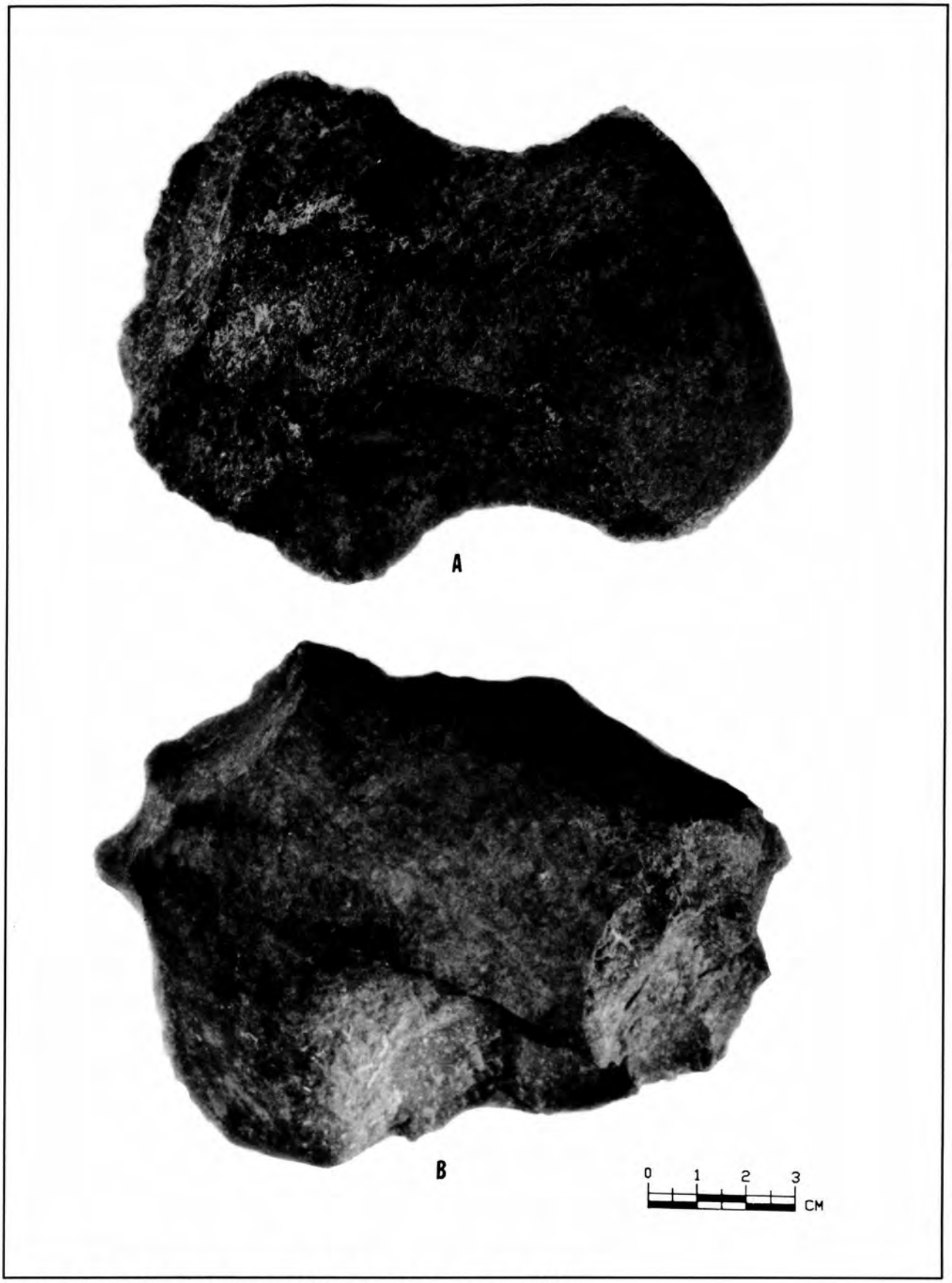

Figure 10. Cobble tools. A, axe (6406); B, cobble chopper (6408).

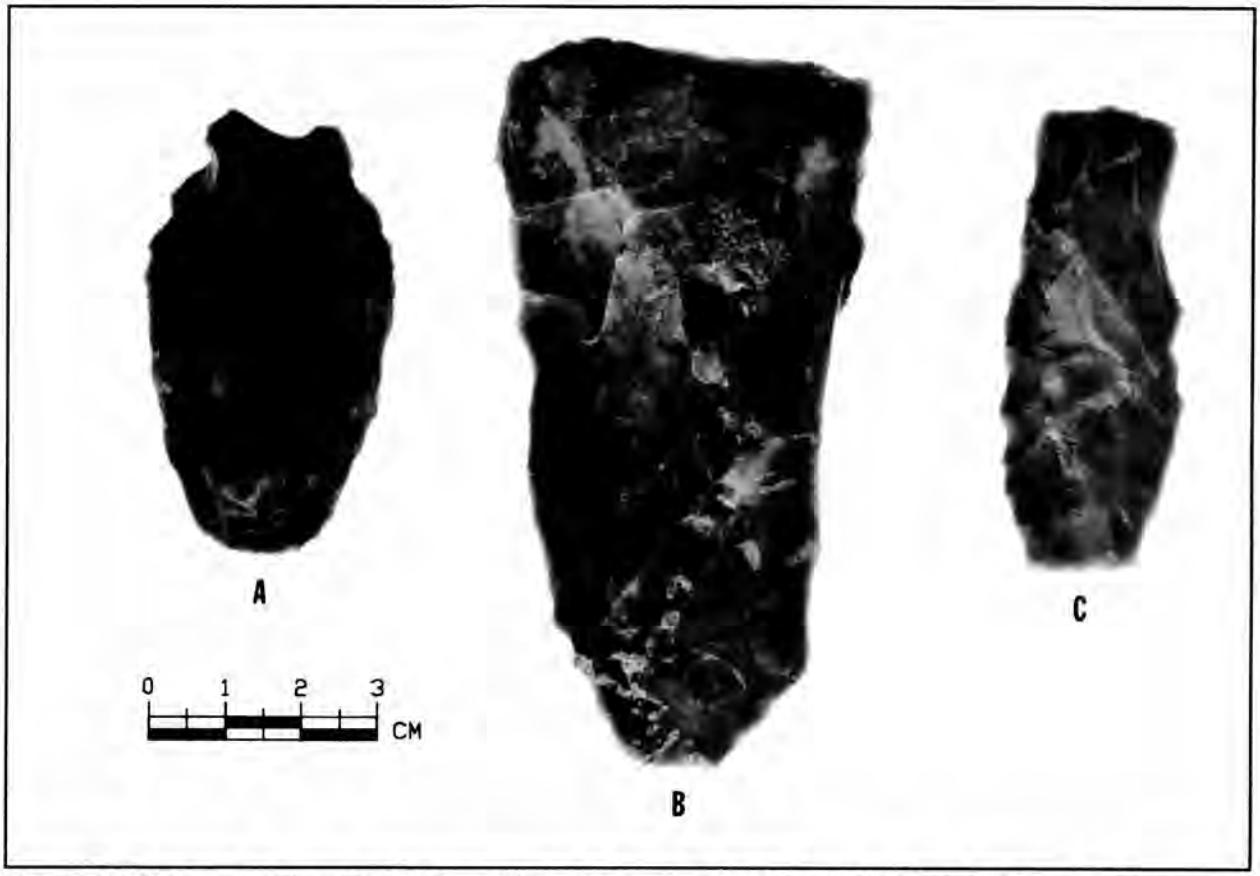

Figure 11. Bifaces. A, Clear Fork biface (6655); B, Clear Fork biface (8162-703); C, heavily resharpened lenticular biface (8161-702).

addition, two size-grade 3 (19 mm) hardhammer percussion flakes were recovered from Block T excavations that represent distal resharpening flakes from beveled bifaces or unifaces. An examination of previous Clear Fork tools recovered from 41BX831 indicates that hardhammer percussion was a resharpening technique for these implements. Previous surface finds near Block U included in Block A recovered a bifacial Clear Fork implement, a heavily resharpened lenticular biface, and the basal portion of a larger thick biface (Figure 11 B-C). These artifacts were recovered from the upper part of the Medina pedocomplex that has been dated to the middle Holocene (Thoms 1992:14).

Projectile Points. Twelve projectile points were recovered from both excavated and surface contexts during the 1995 investigations. All are assignable to early and middle Holocene time periods. Block T excavations and the surface survey of upper Perez paleosol exposures in the spillway trench yielded five complete and fragmentary Angostura points and two fragmentary, unidentified lanceolate points (Figure 12 A-F). All Angostura specimens have been considerably resharpened distally by alternate pressure flaking of the right lateral blade edges, and two also appear to have been reworked proximally to some extent. Unidentified lanceolate points are represented by one medial and a single distal fragment. A single medial fragment (Figure 12 F) exhibits a distal transverse break from an impact fracture and a medial bending fracture. The medial fracture surface was secondarily used as a burin spall platform. The blow to remove the burin spall plunged into the interior of the biface fragment and was unsuccessful. All Angostura and lanceolate projectile points recovered during the STAA field school are made from Edwards Plateau cherts.

A stemmed/indented base point reminiscent of Uvalde, Martindale, or Bandy types (cf. Turner and Hester 1985) (Figure 13 A) was recovered from a surface exposure of the lower Medina pedocomplex, about 6 m below the modern surface. This point was manufactured from a flake; its lateral blade edges exhibit considerable beveling from resharpening on

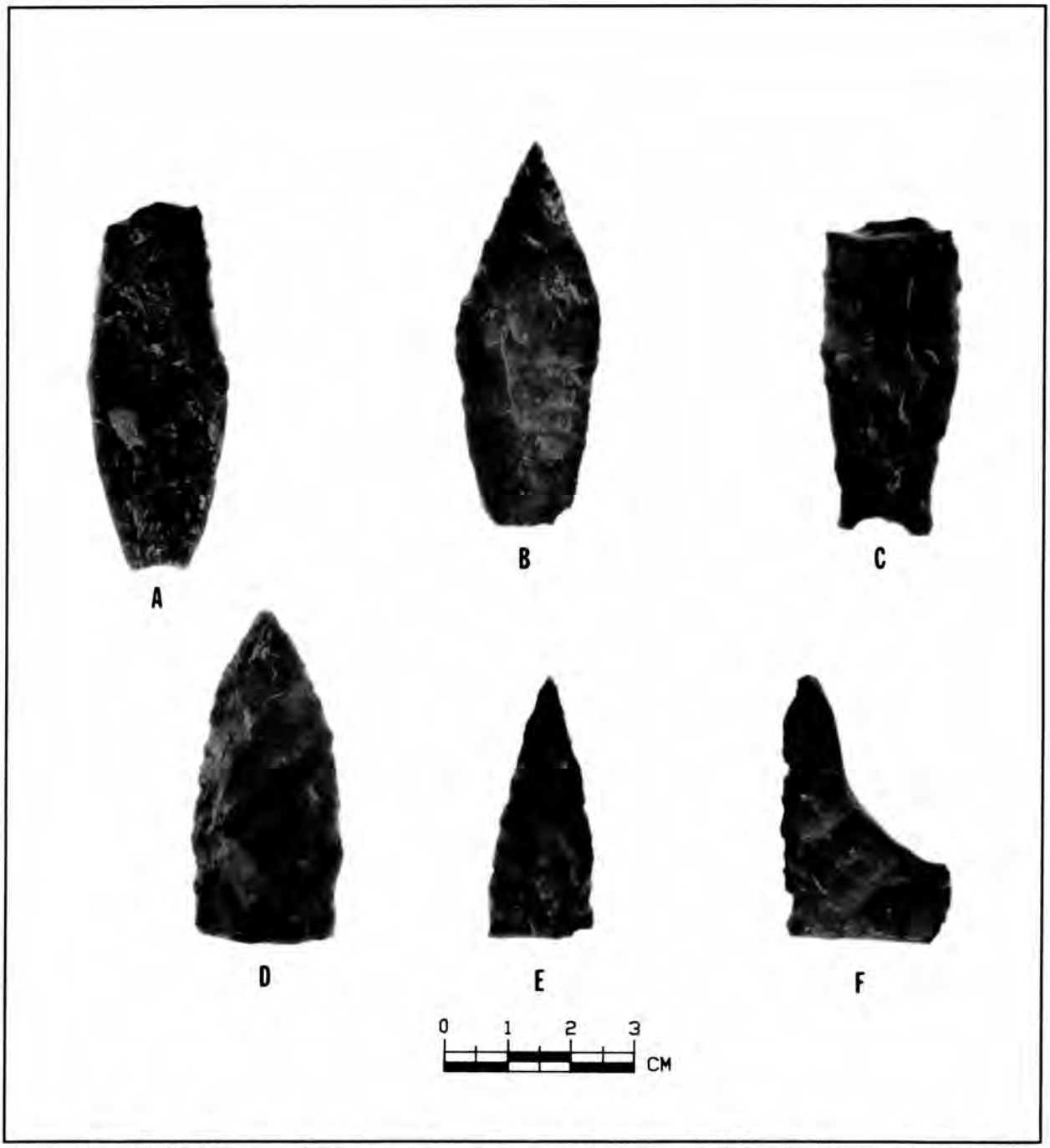

Figure 12. Early Holocene lanceolate dartpoints. A, Angostura (6351); B, Angostura (6395); C, Angostura (6328; D, distal fragment (6352); E, distal fragment (6391); F, medial fragment/plunging burin spall (6397).

the same surface. It is made from a translucent brown Edwards chert, and the entire point is moderately patinated. Similar stemmed/indented base points were previously recovered from other early Holocene components in the lower Medina pedocomplex that dated to about 7000 B.P. (Thoms 1996).

Middle Holocene point styles include a single Travis-like point (specimen 6400; Figure 13 B) and two Desmuke points (specimens 6392 and 6393; Figure 13 C-D), all of which are heavily resharpened distally. The Travis point also has an impact fracture of the blade. The distal end of one Desmuke point

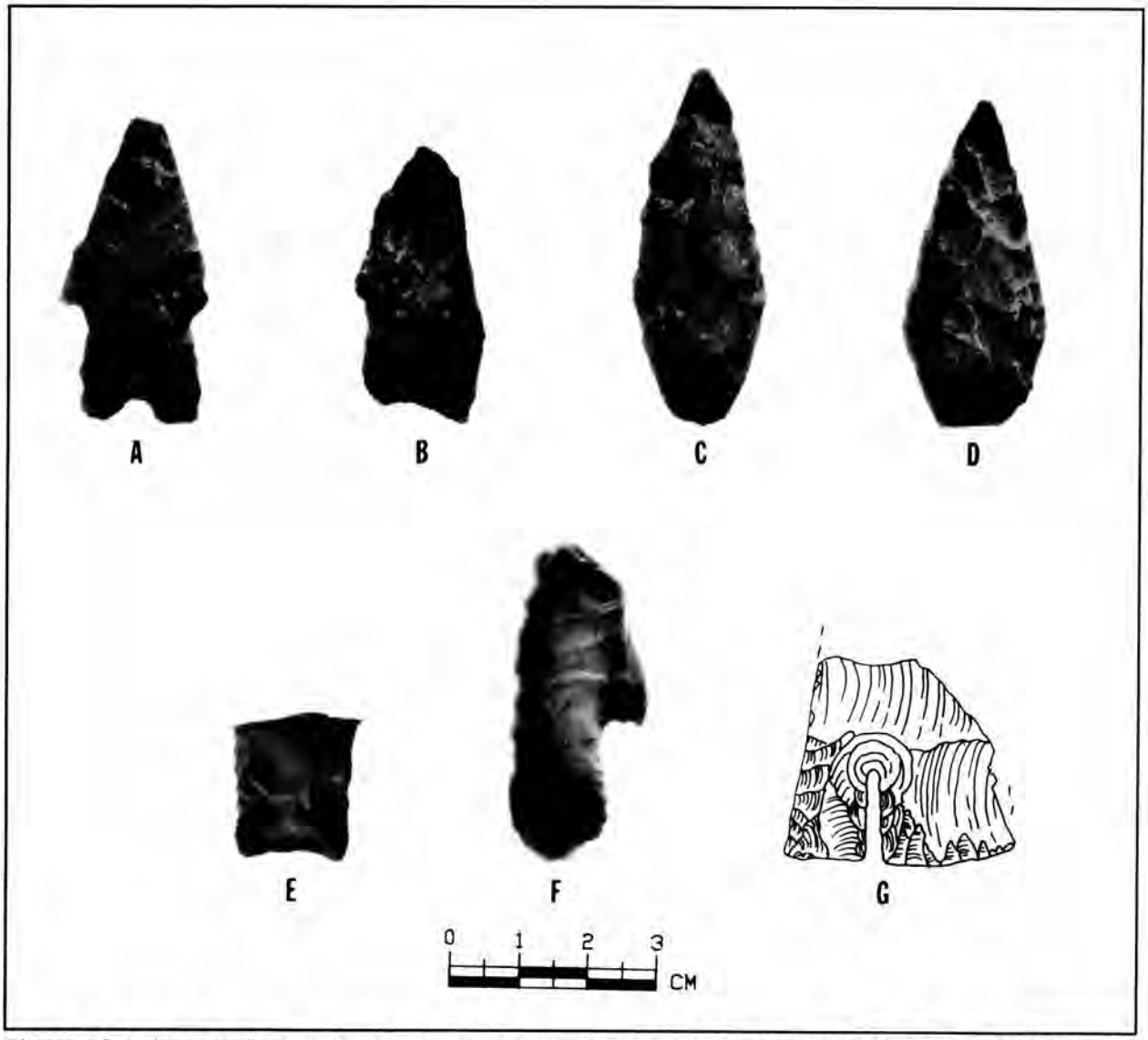

Figure 13. Middle Holocene dartpoints. A, stemmed/indented base form (6394); B, Travis (6400); C, Desmuke (6392); D, Desmuke (6393); E, stem fragment (6398); F, Bell/Andice fragment (5992); G, Bell/Andice fragment (6143-33); not photographed due to burning and dark coloration.

(6392) has been retouched into a dihedral burin by the removal of two small burin spalls from each lateral edge of the tip.

The Travis-like point was recovered in the spillway trench from a surface exposure of the lower Leon Creek (ca. 4100 B.P.) and upper Medina pedocomplexes (ca. 4500 B.P.). One of the Desmuke points (6392) was recovered from Block U in upper Medina paleosol, sediments associated with a charcoal radiocarbon age of 4430 ± 55 B.P. (GX-21746-AMS). The second Desmuke point came from the spillway trench where the lower Leon Creek and upper Medina pedocomplexes were exposed on the surface. The stem of an unidentified middle Holocene dartpoint (6398; Figure 13 E) was recovered from the upper Medina soil in a backhoe trench adjacent to Block U and from the same occupation zone. This stem has parallel lateral edges, a concave basal edge, and no lateral edge grinding. Previously recovered projectile points from the upper Medina pedocomplex in the immediate vicinity of Block U included two fragments of Bell/Andice dartpoints (Figure 13 F-G).

Nonflaked Stone Artifacts. One hammerstone was recovered during excavations at Block T, and another specimen came from a surface context near

Block U. The hammerstone from Block T (6348) is a fragmentary, heat-discolored chert cobble with light battering on the ends and surface. The second specimen (6407) is an elongated, cherty-limestone pebble with light battering on the ends and on a localized area of one surface. This specimen resembles "slickstones" recovered from the Pampopa-Talon Crossing site (Thoms and Ahr 1995:48-54), except that no striated usewear was noted.

A fairly complete grinding slab (6353) was recovered from a backhoe trench in the lower portion of the Elm Creek paleosol, dated to about 8200 B.P. (Mandel and Jacob 1997). This artifact is made from a fine-grained tabular sandstone; its outer edges have been lightly chipped by direct percussion, followed by some very light smoothing or battering. The grinding surface exhibits some remnants of pecking to roughen the surface, but otherwise the surface is smooth. Microscopically, the individual grains are flattened and some striations can be observed. Although incomplete, this specimen may have been somewhat oval or elongated in outline.

Technological Organization. In general, edge-modified implements appear to have been discarded soon after use, indicating that these implements were manufactured whenever there was a manifest need, a practice which is characteristic of activity provisioning (Kuhn 1990, 1992). Activity provisioning requires the least amount of planning and is equivalent to Binford's (1977, 1979) expedient technology. According to Kuhn (1990, 1995), this level of planning can only occur in areas where there is suitable raw material and where there is sufficient time for task performance.

All recovered projectile points represent specimens that were broken during use or abandoned as nonfunctional. The presence of intensive resharpening on complete and fragmentary Angostura points corresponds with the abundance of basal fragments from haft breakage of Angostura points previously recovered from the Richard Beene site, suggesting that retooling (replacement of broken weapons with new ones) was being conducted (Thoms 1992, 1997). Other early and middle Holocene point styles are also indicative of retooling, based on the degree of resharpening and fracture patterns (impact and haft breaks). The majority of edge-modified artifact types represent implements that were complete at the time of discard, but that were no longer functional. Bifacial artifacts were also discarded because of exhaustion due to intensive resharpening. Projectile points represent a portion of the individual toolkit. Personal toolkits (personal gear) (Binford 1977, 1979) are associated with provisioning of individuals (Kuhn 1990, 1992, 1995) and require more complex planning than activity provisioning. Due to constant use, personal gear is characterized by a greater degree of maintenance and a higher attrition rate than implements that are provisioned for activities or for places (Kuhn 1990).

There is no evidence that the Richard Beene site was being provisioned with either tools or raw materials, partly due to the local abundance of suitable raw materials to equip individuals for specific activities. In short, there was no need to cache raw materials or tools in a resource-rich area such as 41BX831. The evidence suggests that the site served as a resource procurement and processing area based on lithic technology and presence of fire-cracked rock features. Planned re-use of this site allowed inhabitants to schedule activities, such as personal toolkit maintenance and retooling.

FEATURE EXCAVATION AND ANALYSIS

To evaluate feature types and their range of potential uses, a feature classification system was used to standardize morphological, metric, and inferred functional attributes. This relational database facilitates the organization of descriptive feature summaries by providing links to provenience data, other field records, as well as pertinent analytical results.

Analysis of archaeological data collected during the 1995 STAA field school substantially contributed to the ongoing analysis of cultural features at the Richard Beene site. Intact features were not recovered in the middle Holocene deposits at Block U (upper Medina pedocomplex), although FCR, charcoal, and oxidized sediments were represented (see Figure 7). The Block U assemblage also included chipped stone, rabbit- and deer-sized bones, and river mussel shells. These materials are comparable to those recovered during the 1991 work in Block A, which was stratigraphically located in the same pedocomplex (Thoms 1992). In the late Holocene deposits at Block T (upper Perez paleosol), the southwestern portion of Feature 106, an FCR platform feature (i.e., a flat-bottomed pavement one or two rocks deep; cf. Clabaugh 1994) partially exca-

vated in 1991, was exposed and cross-sectioned (see Figure 8). The Block T assemblage also included chipped stone, rabbit- and deer-sized bones, and river mussel shells. Feature 106 and several "pseudo features" (features containing two or more FCR in close proximity) from both Blocks U and T were sampled in order to assess feature integrity related to site structure.

Feature Recovery at Block U. In spite of the fact that cooking-related features (i.e., FCR) appear to have been disarticulated, excavations in the Upper Medina pedocomplex added considerably to the relatively sparse middle Holocene feature record at this site. The density of FCR recovered from Block U exceeded the amount recovered from Block A in 1991, which contained very well preserved, basin-shaped, rockless pits. It is not known whether the total weight of FCR excavated in Block U (ca. 10 kg) represented a single, small oven or roasting feature versus a few disarticulated FCR features. The blocky FCR recovered from Blocks A and U were similar in size and morphology. The distribution and small size of the clasts could be the result of post-occupational disturbance under fluvial conditions. The near vertical positions of much of the FCR and chipped stone in Block U, and their consolidated linear arrangements, indicate transport via microchannelling initiated during overbank flooding or significant valley-wall runoff.

Three very small charcoal samples from Block U were submitted for dating via accelerator mass spectrometry (AMS). Charcoal was collected from above, inside, and below the targeted, artifact-rich cultural zone, and was associated with the linear arrangement of chipped stone, FCR, and *Rabdotus* sp. shell. Charcoal from above this zone yielded a radiocarbon age of 4380 ± 100 B.P. (AA20401-AMS), from inside the zone an age of 4430 ± 55 B.P. (GX-21746-AMS), and from below the zone an age of 4510 ± 110 B.P. (AA20472-AMS). These ages are quite similar to a charcoal sample recovered from Block A which yielded an age of 4570 ± 70 B.P. (Thoms 1992).

An amorphous, and ostensibly fortuitous, concentration of four pieces of FCR designated as Feature 115 was capped for archaeomagnetic analysis and submitted as a blind test to assess the model for natural site formation processes (described below). In addition, two fairly intact FCR piles (i.e., less than 1 m in diameter and two or three rocks deep in the center; designated as Features 116 and 117) were discovered in exposures of the uppermost Medina pedocomplex on a slope approximately 50 m northwest of Block U. These FCR piles were described, mapped, photographed, videotaped, and the rocks were collected.

Feature Recovery at Block T. As mentioned above, part of an FCR platform or probable oven feature (Feature 106; Figures 8 and 14) and several amorphous, clast-supported FCR concentrations were excavated in the upper Perez paleosol. Sufficient charcoal for radiocarbon assay was not recovered from Feature 106 during the 1995 fieldwork effort. However, in 1991, small pieces of charcoal from another portion of Feature 106 yielded a radiocarbon age of 8640 ± 60 B.P. (BETA 80687, CAMS 18801). Stream-worn pebbles and reworked carbonate concretions were associated with this feature, suggesting post-occupational disturbance. The quantity of FCR originally associated with the platform feature is unknown, but based on comparisons with

Figure 14. Photograph of Feature 106, Block T.

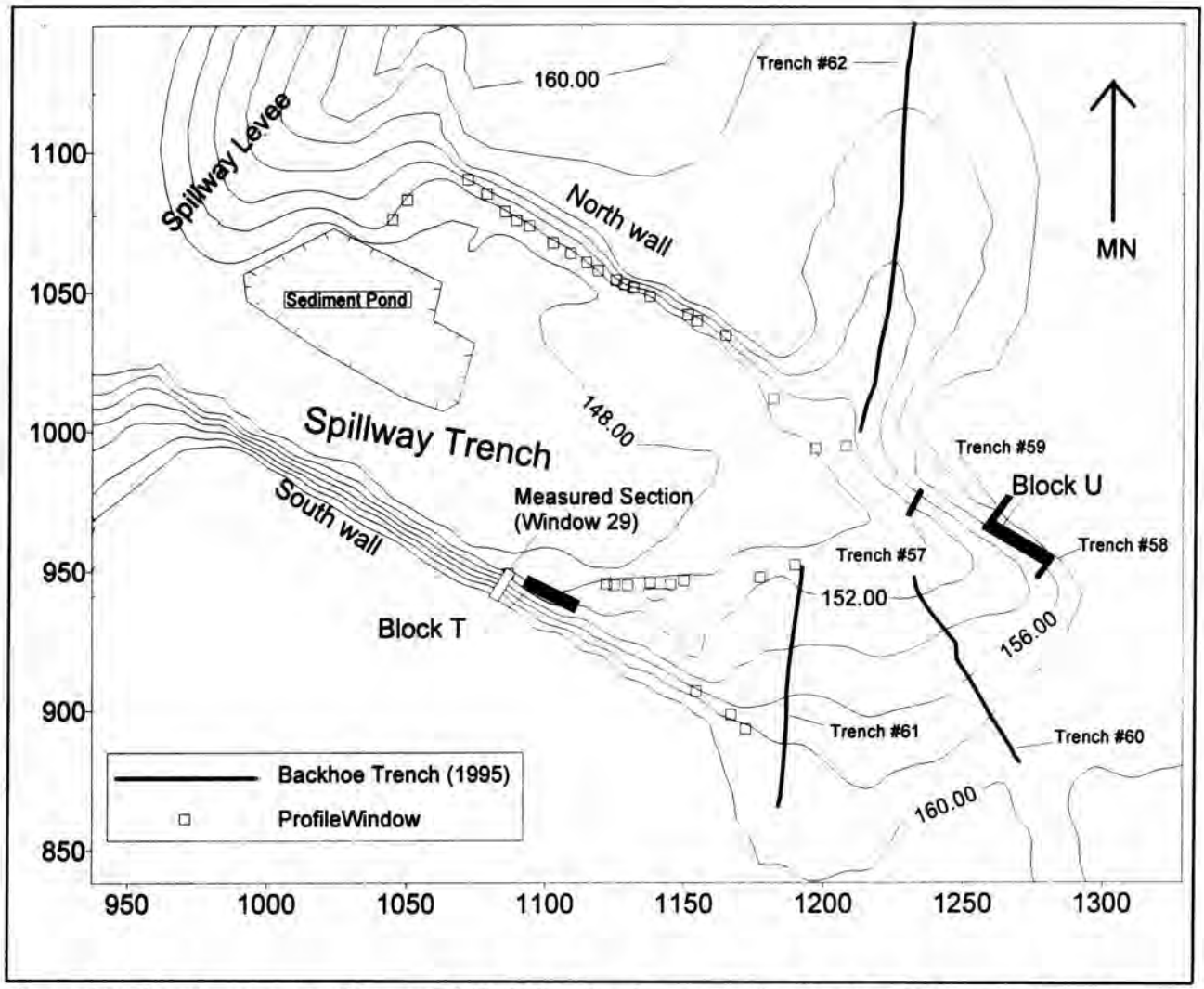

Figure 15. Planview topographic map of 41BX831 showing excavation blocks, windows, and backhoe trenches.

other early Holocene features, the total weight is estimated to have been 30-40 kg. In 1991, a similar disarticulated feature that was partially excavated in early Holocene deposits (Block G, Feature 64) had an estimated weight of ca. 30 kg of FCR. Another FCR platform-like oven from other early Holocene deposits (Feature 80) at the Richard Beene site weighed about 40 kg.

Several pieces of FCR recovered inside Feature 106 were capped for archaeomagnetic analysis. Two FCR specimens located outside of this feature's diffuse boundary were also capped as a blind test. In 1991, archaeomagnetic analysis of Feature 107 in Block T (a basin-shaped, open containment FCR feature; see Figure 8) indicated that three out of the five feature rocks remained in place after the terminal heating event (Gosa 1995). Both Features 106 and 107 show evidence of being relatively intact, as indicated by faint oxidized sediments and the presence of small pieces of charcoal underlying the FCR.

Summary: Feature Research. The early and middle Holocene record of FCR features was bolstered by the 1995 STAA field school effort with the recovery of additional fire-cracked rock and charcoal samples. The presence of FCR, chipped stone, deer- and rabbit-sized bone, and river mussel suggests small, hunting-related camps. In Block T, further excavations at Feature 106 extended the feature boundary to the southwest. The exact amount of FCR associated with this oven-like platform feature is not known, but all evidence thus far demonstrates that it was subjected to some degree of flooding as evidenced by linear arrangements of small gravels and *Rabdotus* sp. shells, etc. These new data, however,

support the model that low impact flooding allowed two very different kinds of features, platform oven and containment hearth, to remain relatively intact.

SITE STRATIGRAPHY AND NATURAL FORMATION PROCESSES

Documentation of vertical and horizontal distributions of paleosols at the Richard Beene site began in 1991 along the 15-m high and 250-m long south wall, as well as in backhoe trenches on the bottom of the spillway trench. Five major and several minor paleosols and pedocomplexes were identified by Rolfe Mandel and schematically mapped (see Figure 2) (Mandel and Jacob 1997).

In 1995, Mandel and the CEA/STAA team continued to document natural and cultural stratigraphy along the southern and northern spillway trench walls, as well as along the base of the trench. The Elm Creek pedocomplex and the Perez paleosol, exposed along the lower wall, were mapped in 30 backhoe-cut windows (Figure 15). A hand-cut "window" (No. 29) along the southern spillway trench wall exposed the entire 15-m section (Figures 16 and 17). In addition, we mapped the modern soil and the Leon Creek, Medina, Elm Creek, and Perez soils where they were exposed in six backhoe trenches (totalling ca. 250 m in length) dug along the gentle slopes in the eastern part of the spillway trench (see Figure 15).

The mapping of paleosurfaces focused on the stratigraphic boundary of the Perez paleosol. Utilizing dozens of EDM data points, a generalized paleotopographic map of an area about 100-x-200-m in size was created that approximates the prehistoric floodplain landscape, including the location of flood chutes and other channels (Figure 18). Eventually this map (and less detailed ones based on other paleosols) will be used to plot the distribution of artifacts, features, artifact concentrations, excavations, profile windows, and backhoe trenches. Subsequent maps will include UTM coordinates that can be used by archaeologists to precisely locate target zones for future investigations.

An important aspect of our research is the question of site formation and microgeomorphological processes at the individual block level (cf. Olive et. al 1996; Thoms 1994, 1995). These processes could include the movement and/or displacement of artifacts by: (1) possible non-Newtonian viscous hypersediment flows generated during high magnitude floods (cf. Boggs 1987:38-42; Maizels 1989); (2) flood-generated runoff in variously sized tributary channels and/or flood chutes; and (3) the action of soil shrink-swell (Mandel and Jacob 1997; Thoms 1992).

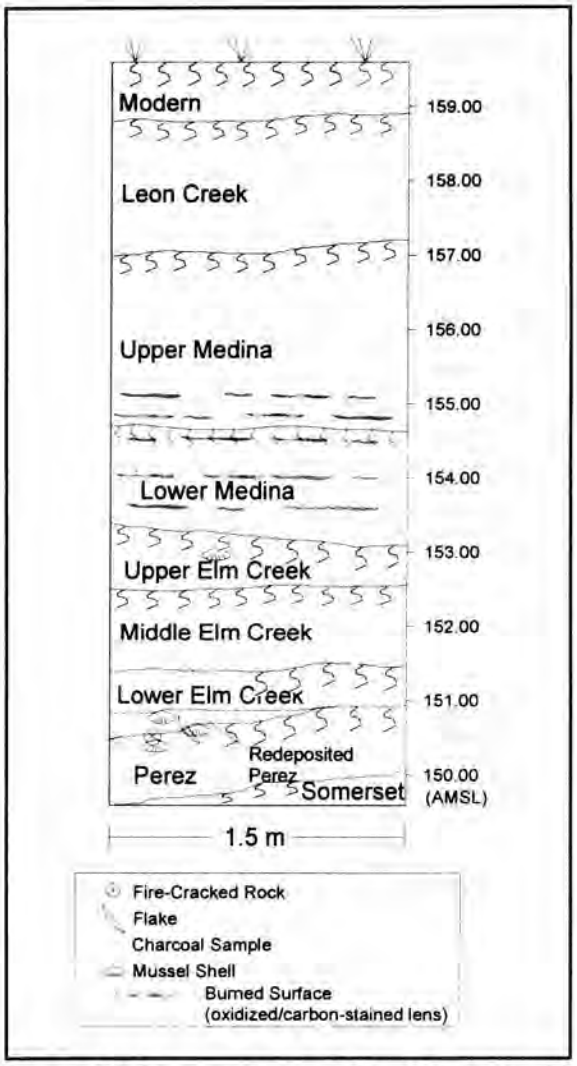

Figure 16. Stratigraphic profile of Window 29 along the south wall of the spillway trench (see Figure 2 for location).

The magnitude of these processes and their influence on archaeological context at the microscale await further investigations, including soil micromorphological analysis. In any event, the data clearly demonstrate that natural disturbance processes were more substantial in Block U than in Block T. In Block U, well over half of the FCR and larger flakes

Figure 17. Photograph of the spillway trench wall.

were found in upright, often near-vertical angles of repose. Based on field observations, less than one-fourth of the artifacts were "flat-lying" enough to be considered indicative of a well-preserved archaeological deposit. In several cases, artifacts occurred in linearly-arranged concentrations that may represent microchannel lag in an alluvial overbank setting. Most of the FCR, larger flakes, and tools in Block T were found in near-horizontal angles of repose. In several cases, two or more pieces of distinctive raw material that were probably detached from the same core or tool were found in the same level, and some of the chipped stone found in close proximity has been refitted. Also, in Block T particularly, field data suggest that these processes, specifically soil shrink-swell, did not significantly alter the vertical context of the target cultural zones. Likewise, the presence of FCR concentrations with only a few natural gravel clasts suggests that horizontal artifact movement in some portions of the block was minimal to nonexistent. In other areas, concentrations of FCR associated with significant amounts of natural gravels (i.e., granules and pebbles) suggests that some horizontal displacement occurred.

SUMMARY AND CONCLUDING COMMENTS

Fieldwork carried out in the fall of 1995 by CEA and STAA archaeologists was directed toward the following cultural resources management and re-

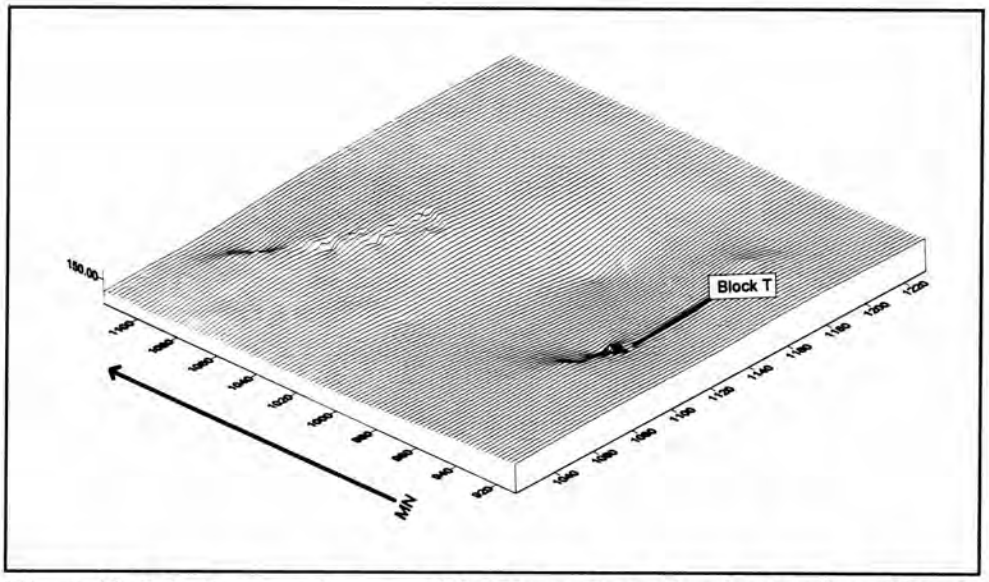

Figure 18. Paleotopographic map of the Upper Perez showing location of Block T.

search objectives: (1) to recover artifact and sediment samples from endangered, but previously undersampled, archaeological deposits (Block U) in the middle-Holocene-aged, upper-Medina pedocomplex; (2) to recover artifact and sediment samples from endangered, but previously undersampled, archaeological deposits (Block T) in the early-Holocene-aged, upper-Perez paleosol; and (3) to map the distribution of paleosols and archaeological deposits in enough detail to allow relocation in the future.

Excavation of 6 m^2 in the 4,400-year-old upper-Medina paleosol at Block U yielded 249 pieces of chipped-stone debitage, two cores and core fragments, five stone tools, ca. 10 kg of FCR (tabular sandstone), 10 umbos (mussel-shell hinges), and 33 poorly-preserved bone fragments, as well as charcoal fragments. AMS radiocarbon ages (^{13}C corrected) of 4380 $\pm$ 100 B.P., 4430 $\pm$ 55 B.P., and 4510 $\pm$ 110 B.P. were obtained on very small charcoal samples from above, in, and below the artifact-rich stratum, respectively. Diagnostic artifact types recovered from subsurface and surface exposures of the upper Medina paleosol included Desmuke, Travis, and stemmed-point fragments similar to Bell, Andice, and Calf Creek points. The abundance of FCR suggests that food preparation was an important activity. Although we do not know the entire range of foods that were cooked in the hot-rock cooking facilities, game animals and river mussels were among the food items consumed at the site. Projectile points and point fragments attest to the importance of large game. Judging from the variety and quantity of artifacts in Block U, the uppermost Medina pedocomplex deposits at the Richard Beene site appear to represent a series of short-term encampments that are scattered across a 10,000 m^2 area.

Compared to previous excavations in the upper Medina pedocomplex (i.e., Block A) (Thoms 1992), the 1995 work at Block U revealed a significantly higher density and diversity of chipped-stone tools, debitage, and FCR. However, the upper Medina component at Block A was comparatively well preserved. It contained several basin-shaped hearth features with little or no FCR, discrete mussel-shell concentrations, and almost all of the artifacts were found in horizontal angles of repose. In contrast, Block U was not as well preserved. Much of the chipped stone and most of the FCR occurred in linear arrangements (i.e., small channels), and well over half of the tabular FCR and larger chipped-stone artifacts were found in near-vertical angles of repose. It appears that these Block U artifacts were transported a relatively short distance (i.e., a few meters?) by alluvial processes and deposited in microchannels by floodwaters or other types of surface flow. Differences in contextual preservation at Blocks A and U probably result from variation in floodplain geomorphic settings and valley-wall runoff conditions. Just what caused the marked, interblock differences among contemporaneous assemblages remains unclear, but seasonal variation or differences in microenvironmental settings may be important factors.

The 27 m^2 excavated in the 8,700-year-old upper Perez paleosol at Block T yielded 635 pieces of chipped-stone debitage, 6 cores and core fragments, 19 stone tools, less than 10 kg of FCR, 92 umbos, and 165 bone fragments, mostly from rabbit- and deer-sized animals. Diagnostic artifact types recovered from excavations and surface exposures of the upper Perez paleosol included Angostura points, fragments of lanceolate projectile points, and Clear Fork tools. The nature of the assemblage was consistent with temporal/spatial patterns observed during work at Block T in 1991. Although FCR was less abundant than in Block U, cultural materials from Block T appear to represent short-term encampments that, cumulatively speaking, were more intensive and perhaps more diverse than those represented at Block U, as evidenced by the accumulation of more chipped stone and a greater variety of tools. Recovery of projectile points and animal bone, including deer-sized long-bone fragments, indicate that hunting-related tasks were important subsistence activities in the Block T portion of the Richard Beene site.

Our work at Block T also confirmed what was evident after the excavations in 1991: post-occupational alluvial activities had impacted, but not destroyed, the spatial integrity of artifacts and features. We excavated the southwestern portion of Feature 106, an oven-like FCR feature first identified in 1991. Part of this feature appeared to be intact in that most of the FCR was horizontally positioned and was underlain by faint oxidized and carbon-stained sediments. Other portions of the feature were disturbed, as evidenced by tabular pieces of FCR and larger flakes found in vertical angles of repose. In addition, granule and pebble-sized gravel was more abundant

in the feature than above or below it. That running water was an active, but variable, geomorphic agent is indicated by the occurrence of high densities of artifacts and small gravels within a 5- to 15-cm thick lens, and by the regular occurrence of artifacts in near-vertical angles of repose. Nonetheless, this part of the site yielded a sample of artifacts that promise to reveal significant information about life along the Medina River some 8,700 years ago.

We mapped the upper boundaries of four Holocene-aged paleosols and pedocomplexes — Leon Creek, Medina, Elm Creek, and Perez — along the northern wall of the spillway trench, as well as in six backhoe trenches and more than 30 other exposures in the spillway trench area. We also mapped the locations of artifacts and features exposed in the excavation unit profiles and along the spillway trench slopes. Enough points were plotted to produce a preliminary map of the early Holocene floodplain topography. This effort, combined with future research, will result in additional paleotopographic maps and maps that illustrate the location of known archaeological deposits that will be protected under a veneer of fill sediment and grassy vegetation.

To conclude, archaeological investigations carried out in conjunction with the 1995 STAA field school reconfirm the significance of the Richard Beene site and its potential to yield important information about use of the riverine environment throughout the Holocene period. This work also demonstrates the ever-present potential of professional and avocational archaeologists to work together, not only to meet cultural resources management objectives, but also for the long-term benefit of the public community.

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The STAA Field School Committee did a superb job of organizing and planning, including Chairman Mike Fulghum, Richard Kinz, Marie Livesay, and Lenora Metting. Karen Fulghum and Lenora Metting served, among other capacities, as field school registrars. Publicity was handled by Wilson McKinney. STAA field school crew chiefs included Sandra Billingsly, Norman Flaigg, Tom Miller, Wilson McKinney, Duke Smith, and Don Turner. Smitty Schmiedlin was in charge of waterscreen operations with the help of Richard Kinz, who kept the screeners busy with a steady stream of samples. Richard also helped in excavations at Block T and collected a large number of soil micromorph samples. Thanks are also extended to the STAA President, Lynn Highley, and to Curtis Harrell, project photographer.

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CEA staff consisted of Alston Thoms, Project Director and Co-Principal Investigator; David Kuehn, Project Archaeologist and Co-Principal Investigator; Ben Olive, Project Data Manager and Graphics Specialist; Patricia Clabaugh, Collections Manager; Carrie Falletich, Field Laboratory Supervisor; John Dockall, Field Archaeologist; Jeff Johnson, Field Technician; and Kimberly Rector, Field Technician. Editing of the final draft manuscript was provided by Robyn Lyle, CEA's Technical Editor. Rolfe Mandel served as the Project Geomorphologist.

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ALLEYTON DIG

A recent historical survey and excavation of the now-obscure railroad right of way near Center street in Alleyton yielded artifacts such as nail spikes, pieces of cast iron machinery, pottery and glass. The collections will be analyzed at College Station and returned to Prairie Edge Museum in Eagle Lake for preservation and exhibit.

In 1860, Alleyton became the western termination of the first railroad built in Texas—the Buffalo Bayou, Brazos and Colorado Railroad (BBB&C). The community was important in east-west freight and passenger traffic. During the Civil War, it was a vital link in the "Cotton Road," where bales of Southern-grown cotton were delivered by rail and off-loaded onto ox carts before being hauled to the Mexican border. There, European dealers received the cotton in exchange for war materials and other supplies needed by the Confederate Army. Alleyton was a busy commercial center but once the war was over the town's role diminished and its population rapidly declined.

Today there is little physical evidence of Alleyton's important role 130 years ago, in Confederate Texas. The locations of the Alleyton railroad station, the engine turn-table and Confederate Camp Webb are unknown. So Museum curators asked Dr. Shawn Carlson of Historic Sites Research in College Station to make an archaeological survey of the area.

Participating in the field project with Dr. Carlson and others were Houston Archeological Society members Bill Csanyi, Dick Gregg, Joe Hudgins and Ray McCausland.

From *Colorado County Citizen,*
and *The Profile*, HAS Newsletter

LITHIC CACHES FROM THE LOWER RIO GRANDE

C. K. Chandler and Don Kumpe

ABSTRACT

Two caches of lithic bifaces are documented and illustrated. One cache is from Starr County, Texas and the other is from the Tamaulipas side of the Lower Rio Grande.

THE STARR COUNTY CACHE

The cache from Starr County consists of four thin triangular bifaces, all of which are broken in some manner. This cache was found near the small town of Roma by Don and Terry Kumpe, October 7, 1967 during a rainstorm following Hurricane Beulah. The bifaces were protruding from the side of a 2.5 to 3-foot deep narrow wash under the edge of a roughly rectangular sandstone slab. The bifaces were recovered by bare hand digging seven to eight inches into the wall of the wash. It was raining hard at the time and daylight was fast disappearing. It is believed there were additional bifaces in the cache. In a return trip to the area the next week they were unable to locate the cache site.

These four bifaces are illustrated in Figure 1.

Figure 1, Specimen A is a distal portion of a biface fragment made of a white chert with tan streaks. The edges are worn and rounded. The surfaces are polished from use. It is 65 mm in length, 50 mm in width, with a maximum thickness of 9 mm. It weighs 32 grams.

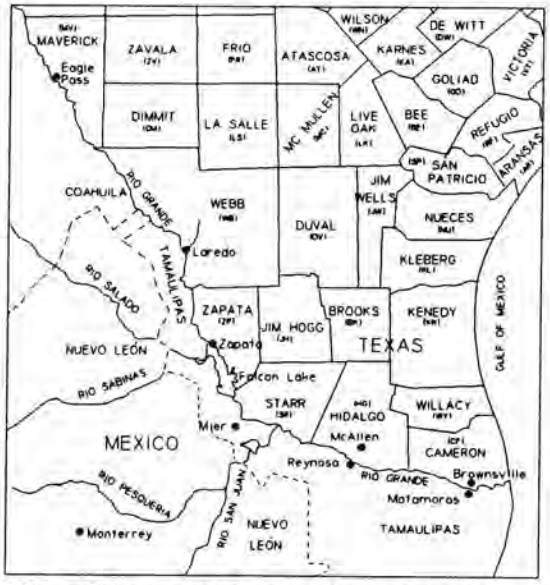
Figure 1, Specimen B is a nearly complete thin triangular biface with one basal corner broken and missing. It is made of highly silicified, well cemented conglomerate containing some red iron oxide. It is mostly a mottled tan to brown in color. This material may be of volcanic origin (J. Fallon, personal communication 1995). It is 91 mm in length, 57 mm in width, 12 mm thick and weighs 32 grams.

Figure 1, Specimen C is a complete thin triangular biface with a small chip broken out of one edge near the distal end where a wide thinning flake was removed. This specimen is made of an olive-gray grainy chert. It is the largest of the four bifaces from this Starr County site. It is 125 mm in length, 70 mm in width and 9 to 11 mm thick. It weighs 135 grams. There is a diagonal break across the mid-section that separates it into two pieces which are now rejoined.

Figure 1, Specimen D is a complete thin triangular biface made of the same olive-gray grainy chert as Specimen C. This type chert occurs throughout Starr and Zapata Counties. This specimen has a diagonal break across the mid-section that separates it into two pieces now rejoined. It is 76 mm in length, 55 mm in width and 10 mm thick and weighs 49.2 grams.

THE TAMAULIPAS CACHE

This cache consists of eight thin triangular bifaces that were recovered from the Tamaulipas side of Falcon Lake. These bifaces were stacked in crisscross fashion with the largest on top (Figure 2, G) and the second largest (Figure 2, B) next. Only three specimens were visible when the cache was found and the sequence of the others was not recorded.. All eight were stacked in crisscross fashion in a small hole and showed no evidence of having been enclosed in a container of some kind. This cache was 30 to 40 feet up from the waterline when found. At the time this cache was discovered the lake was at its lowest water level since it was completed in the early 1950s.



Map of Southern Texas and Northeastern Mexico.

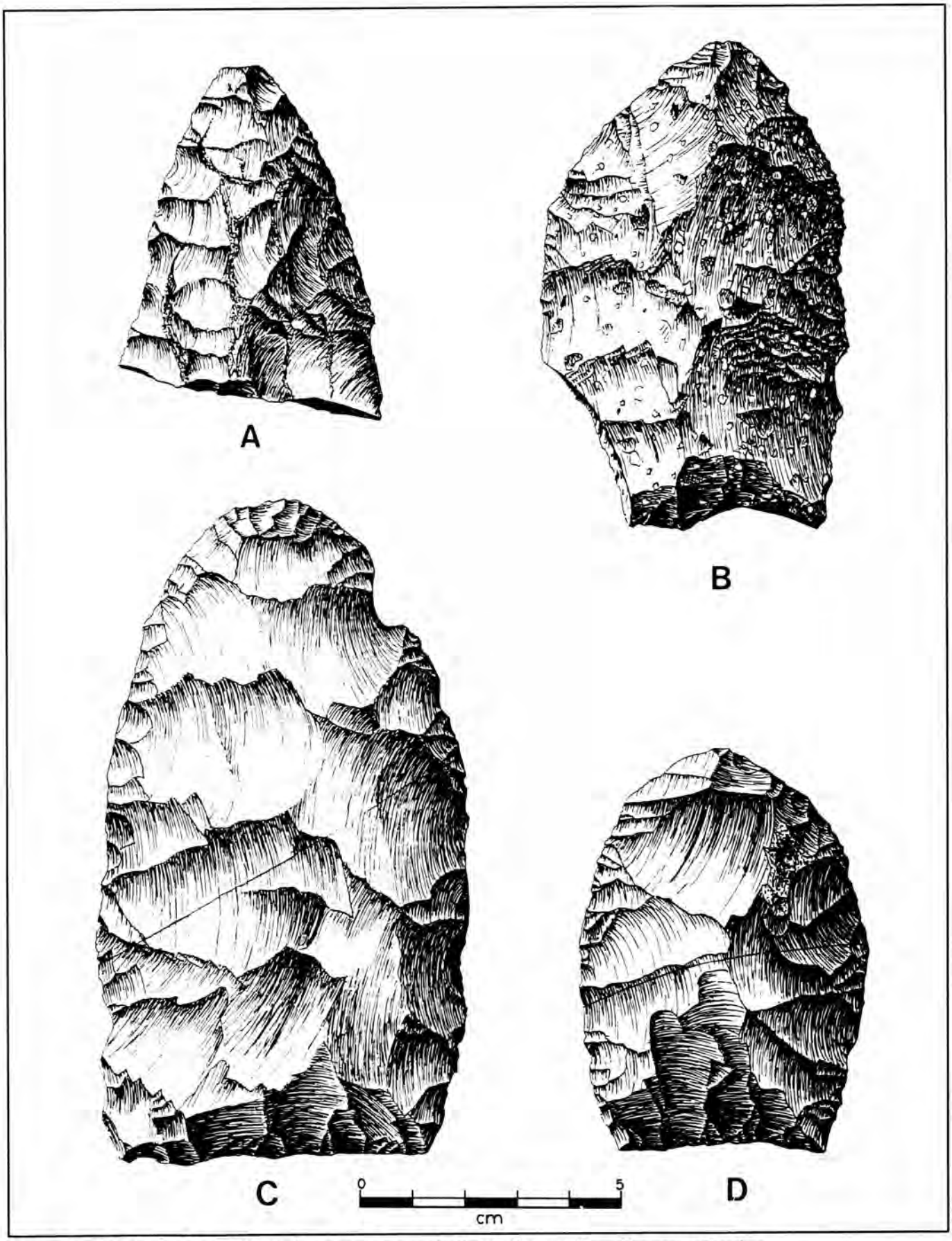


Figure 1. A Cache of four bifaces from near Roma in Starr County. Don Kumpe collection.

These eight bifaces are illustrated in Figure 2.

Figure 2, Specimen A is a complete thin triangular biface made of a good quality pinkish-tan and gray chert. It is 77 mm long, 48 mm maximum width, 8 mm thick and weighs 28 grams.

Figure 2, Specimen B is a complete thin biface made of a tannish light gray good quality chert with speckled white inclusions throughout. It is the second largest of these eight specimens. Dimensions are: 102 mm in length, 56 mm maximum width, and 8 mm in thickness. It weighs 52 grams.

Figure 2, Specimen C is a complete thin biface made of good quality mottled tan and gray chert with a hint of purple. It is 73 mm in length, 47 mm in width and 8 mm thick. It weighs 30 grams.

Figure 2, Specimen D is a complete thin biface made of good quality mottled red and gray chert with many white specks throughout. It is 69 mm long, 49 mm maximum width and 8 mm thick. It weighs 32 grams.

Figure 2, Specimen E is a complete thin biface made of good quality dark brownish gray chert. It is 76 mm long, 53 mm maximum width and is 6 mm thick. It weighs 31 grams.

Figure 2, Specimen F is a complete thin biface made of good quality light tannish gray chert. It is 71 mm long, 43 mm maximum width and is 8 mm thick. It weighs 28 grams.

Figure 2, Specimen G is a complete thin biface made of light grayish tan good quality chert. It is 116 mm long, 60 mm maximum width and is 10 mm thick. It weighs 80 grams. This is the largest of these eight bifaces and was the top one in this stack that made up this cache.

Figure 2, Specimen H is a complete thin biface made of light grayish tan chert of good quality. It is 68 mm in length, 46 mm maximum width and is 7 mm thick. It weighs 23 grams.

White speckled inclusions occur in six of the eight bifaces in the Falcon Lake cache from Tamaulipas. On five of these specimens (A, B, C, D, G) these specks are liberally sprinkled in sufficient quantity to be readily identified without magnification. Under low magnification (18X) a few of these specks occur in specimens F and H. Specimen E is of a good quality dark olive-brown chert that is quite different in color and texture from the other seven. It is without white inclusions but is totally saturated with tiny short needle-like tan inclusions that have not been identified. The white specks in the other bifaces in this cache have been identified as cretaceous age fossil shell and shell fragments called Miliola (J. Fallon, personal communication, 1995).

All specimens are without cortex and are very thin and flat. They are triangular in outline with straight bases and convex edges. Flaking is predominately irregular to broad parallel, produced by percussion with some neat edge trimming.

No evidence of use wear was found on any of the Falcon Lake cache bifaces but three specimens (A, C, H) have light polish on some higher arrises that is believed to be from contact with adjoining bifaces while stored in the cache. It appears that these bifaces were stored in the cache without having been used.

On the chance these white specks might be used to identify Rio Grande cherts we examined large numbers of lithics in several collections from Hidalgo, Starr, and Zapata Counties and from Tamaulipas across the lake from Starr and Zapata Counties. White to tan speckled inclusions were found to occur in seven percent of all the artifacts examined. Many specimens had only a few white inclusions while some had a large number and were visually striking for this.

A large number of lithic collections from several counties across central, north central and southwest Texas—Atascosa, Bexar, Kendall, Grayson, Limestone, Milam, Llano, and in the Fort Stockton and Van Horn areas—were also examined for the presence of these white to tan inclusions and a high percentage of the lithics had these inclusions.

We did not try to identify all of the speckled tan to white inclusions but it was obvious that they were not all Miliola. Our effort to identify the source of these biface materials by the presence of the speckled inclusions was not successful.

Dr. Michael Collins at the Texas Archeological Research Laboratory (TARL) has been conducting a long-term research project on how to identify Edwards Plateau cherts based on the color they fluoresce under ultraviolet (black) light. Edwards Plateau chert will generally fluoresce an orange-yellow. Dr. Collins examined the bifaces in the Falcon Lake cache under ultraviolet light and seven of the eight were identified as Edwards Plateau chert. The other one (Figure 2, E) is of an unidentified chert.

Another cache of 50 thin triangular bifaces from

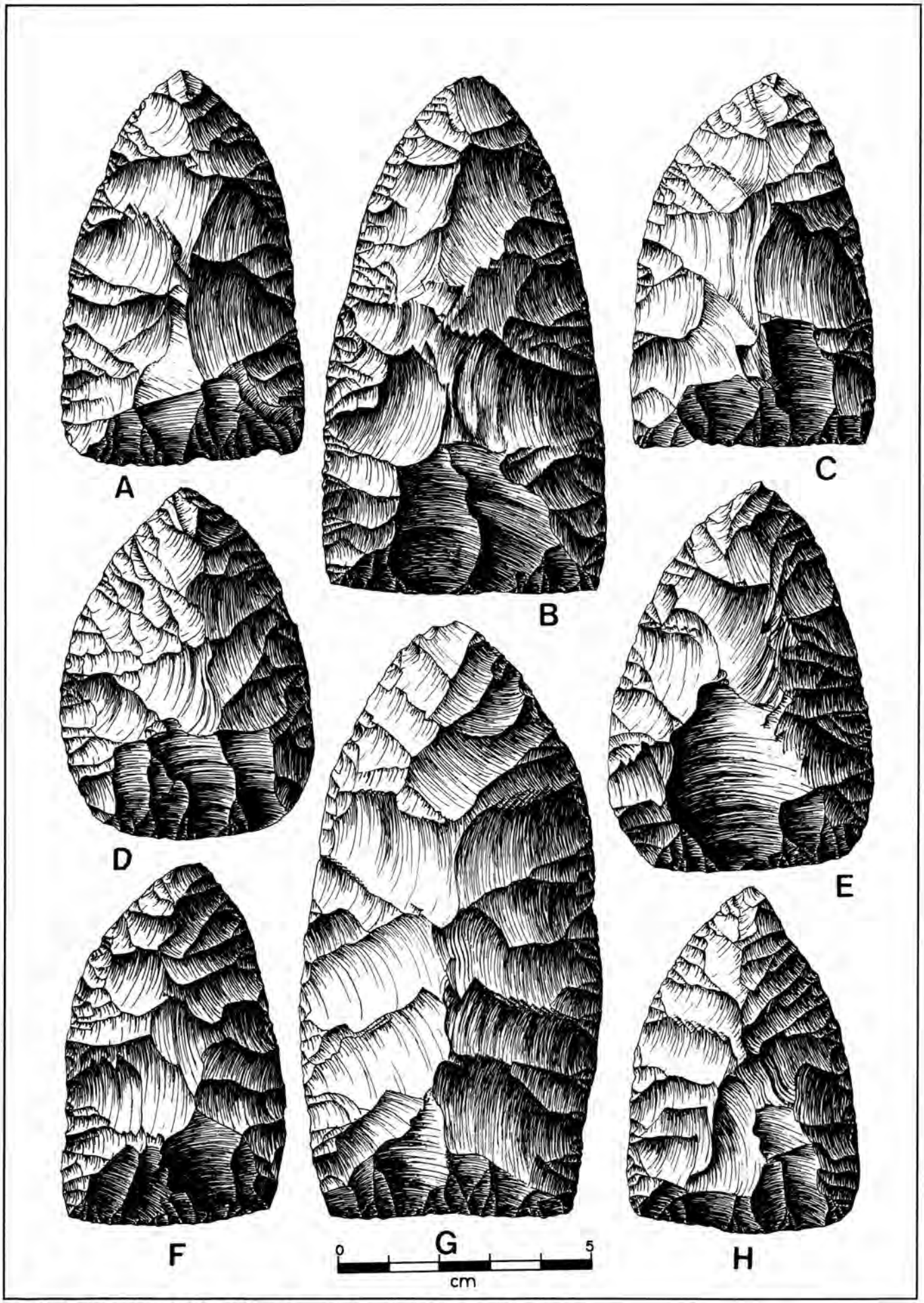


Figure 2. A Cache of eight bifaces from Falcon Lake, Lower Rio Grande.

Falcon Lake has been examined under ultraviolet light and some of them were identified as Edwards Plateau chert (Hester 1995).

Over 700 small flakes and four biface fragments were recovered by Don Kumpe in a Zapata County cache in 1982. This cache is known as "Pinella's Pocket." Because of the small size of the cache hole and the tight cluster of the items in the cache they may have been buried in a container of some kind. This cache is awaiting analysis and reporting.

A cache of four bifaces from Dimmit County are described as percussion-flaked and relatively crude, unfinished blanks, or preforms (Hester and Brown 1985).

Not all caches were intended to be recovered but certainly most were. The reasons for non-recovery can be many. It would seem that caches deposited with burials would be considered mortuary offerings and not intended to be recovered.

Several caches of stacked mortuary items were recovered from the burial zone at the Loma Sandia Site (41LK28) but were not associated with specific human burials (Highley 1995). It was suggested these may represent dedicatory or votive caches meant to honor the cemetery as a sacred site or they may represent post-interment offerings left for a particular individual (Highley [1995], referencing Schiffer 1987). Whether found as individual specimens or in a cache of many, large thin bifaces are general considered to be "trade blanks" (Hester and Barber 1990; Hester and Brown 1985; Turner and Hester 1993).

SUMMARY

The eight bifaces from Falcon Lake in this report are all quite thin and very well made. They are suitable for use without alteration but could be readily modified into other tools. They are without cortex, have no evidence of use, and were not associated with other artifacts. They range in thickness from 6 to 10 mm with an average thickness of 7.8 mm. Only one exceeds 8 mm in thickness. They have already functioned as trade items in their move from the Edwards Plateau and apparently were stored in this cache with the intent of recovering them.

The four broken specimens from Zapata County had evidence of use. Though broken they still were cached, suggesting that they were considered of sufficient value for recovery. Due to the circumstances of their recovery there may have been additional artifacts in this cache.

ACKNOWLEDGMENTS

We extend our sincere appreciation to Richard Clardy for the loan of his biface cache for study and documentation and to Richard McReynolds for his drawings of the artifacts. Thanks are also due to Michael Collins and James Fallon for their help in identification of the lithic source material.

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THE ARROYO DIABLO BURIAL, TAMAULIPAS, MEXICO

James Bryan Boyd

ABSTRACT

In February 1986 a prehistoric burial was discovered by an avocational archaeologist at a site on the Mexican side of Falcon Reservoir on the Lower Rio Grande. The burial had been eroded by wave action as the water level at the lake fell. Along with the skeletal remains, a large number of beads obviously associated with the burial were exposed. Although the skeletal remains were not salvaged, the beads were recovered. The circumstances of the discovery of the burial are outlined, and a description of the artifacts is given.

LOCATION OF THE BURIAL

The burial was discovered in a large occupation site on the Mexican side of Falcon Reservoir, in the state of Tamaulipas. The site is located approximately 10 kilometers south of Zapata, Texas (see Figure 1), and is located on a lengthy, elevated section of the Zapata terrace. The Zapata terrace contains a large part of the archaeological deposits which have been discovered in the area (Evans 1961:39). This segment of the terrace is relatively narrow, and is oriented from the northwest to the southeast and parallels the nearby original channel of the Rio Grande. The actual river channel is now submerged within the reservoir, but is located approximately 250 meters east-northeast of where the burial was discovered. The northern sector of the terrace, where the burial was found, is located at the south edge of a large tributary arroyo which flows into the Rio Grande. This tributary is known as the Arroyo Diablo (English translation: "Devil's Creek").

The burial was discovered on February 2, 1986. On that date the water level of Falcon Reservoir was 268.88 feet above mean sea level (m.s.l.). The normal conservation pool elevation of the reservoir is 301.2 feet above m.s.l. (I.B.W.C. 1975), therefore the water level was over 32 feet low when the burial was found.

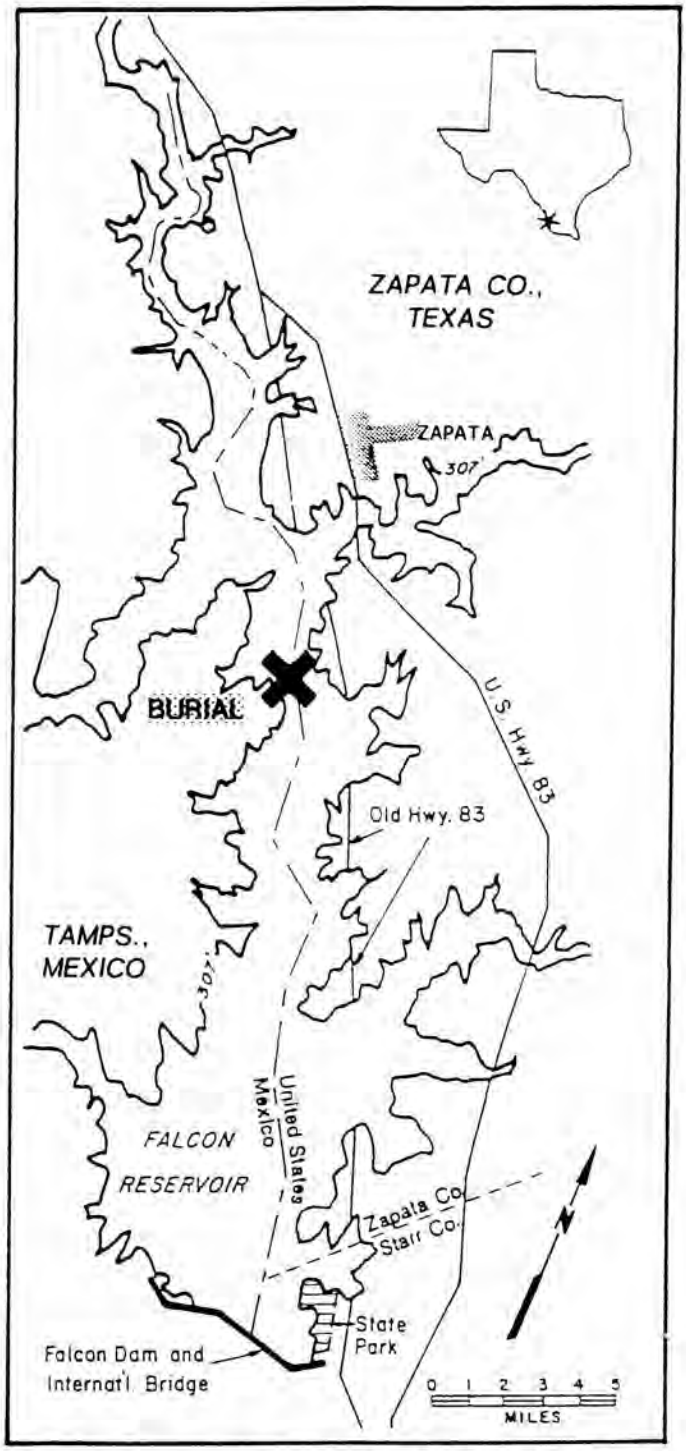

Figure 1. Falcon Reservoir, showing location of the burial site. The Arroyo Diablo is the inlet to the left (west) of the burial. Inset shows location of region in the state.

THE BURIAL

The burial was discovered by Erick Kruger, formerly of McAllen, Texas. At the time of the

discovery Mr. Kruger noticed that there were a large number of beads, made of bone and marine shell intermixed with the skeletal remains, and numerous bone beads scattered along the shoreline to the northwest of the burial feature. These scattered bone beads had apparently been washed down the shoreline as the burial eroded out at the waterline. Wave action caused by a strong southeasterly wind which usually blows in the area would account for the distribution of beads toward the northwest.

The skeletal remains appeared to be those of a single adult (Erick Kruger, personal communication 1996). Most of the larger bones (arms, legs, etc.) were clustered together near the shoreline, while many of the smaller bones had been washed toward the northwest along with the bone beads. A few of the marine shell beads were visible on the surface in direct proximity to the main cluster of skeletal remains (ibid.). Mr. Kruger made no specific notes regarding the skeletal remains but did salvage all visible artifacts, both in proximity to the skeleton and those washed down the shoreline. Mr. Kruger later returned to the site and screened the relevant areas, and a substantial number of additional beads were recovered. The bone beads and some of the smaller bones from the skeleton had been washed down the shoreline a distance estimated to be about 20-25 meters, with the density of the items decreasing rapidly as the distance from the source burial feature increased (ibid.)

The orientation or position of the skeleton was not noted. The remains were not salvaged, but were left in the site following the recovery of associated artifacts.

THE ARTIFACTS

As already mentioned, two types of beads were recovered from the burial. A description of both types follows.

Bone beads. A total of 271 bone beads was salvaged. The beads are quite small and appear to be cut sections of small animal bones, perhaps birds. They are essentially tubular in shape and vary somewhat in size. The beads range from approximately 3.3 mm to 8.6 mm in length, averaging about 5.9 mm. In width they vary from approximately 4.8 mm to 7.8 mm, averaging about 5.8 mm. The color of the beads is light brown. When the beads were examined by the author in 1996 they had been strung together in necklace fashion (see Figure 2). This strand measured 160 cm in length. It is uncertain whether the beads had been similarly strung in their original context. Four of the beads exhibited longitudinal incisions which would seem to indicate that they had been cut from longer sections of bone, and that those exhibiting these incisions simply had not been completely cut.

Bone beads are commonly associated with burials from the Falcon Reservoir region (Cason 1952:239-243; Boyd n.d.a; Boyd and Wilson 1996; Doug Bryan, personal communication 1988 and 1990). They have also been recovered with burials from the Laredo, Texas area (McGraw 1983:36-39) and in the Lower Rio Grande Valley (Collins, Hester and Weir 1969:138-141).

Marine shell beads. Five marine shell beads, fashioned from conch, were salvaged. They are quite uniform in size and shape (see Figure 2) and were all recovered in direct proximity to the main concentration of skeletal remains. Due to their heavier weight, they were not washed down the shoreline by the same wave action which caused many of the lighter bone beads to be washed in that direction.

The beads range in diameter from 13.3 mm (Figure 2D) to 14.7 mm (Figure 2A), and in thickness from 3.9 mm (Figure 2C) to 4.0 mm (Figure 2A, 2B, 2D, 2E). The diameter of the centrally drilled holes varies from 4.1 mm (Figure 2C, 2E) to 4.8 mm (Figure 2B, 2D). Table 1 provides specifications for each of the five shell beads. The beads are all white in color.

Table 1. Specifications: Disc-shaped Conch Shell Beads.

Specimen	Max.Diam.	Max. Thick	Central HoleDiam.
A	14.7 mm	4.0 mm	4.3 mm
B	14.4 mm	4.0 mm	4.8 mm
C	14.1 mm	3.9 mm	4.1 mm
D	13.3 mm	4.0 mm	4.8 mm
E	13.4 mm	4.0 mm	4.1 mm

* All measurements made with Mitutoyo CD-6" BS digimatic caliper.

Beads manufactured from marine shell, usually conch, are infrequently found with burials in the Falcon Reservoir region (Boyd n.d.a, n.d.b) Aburial

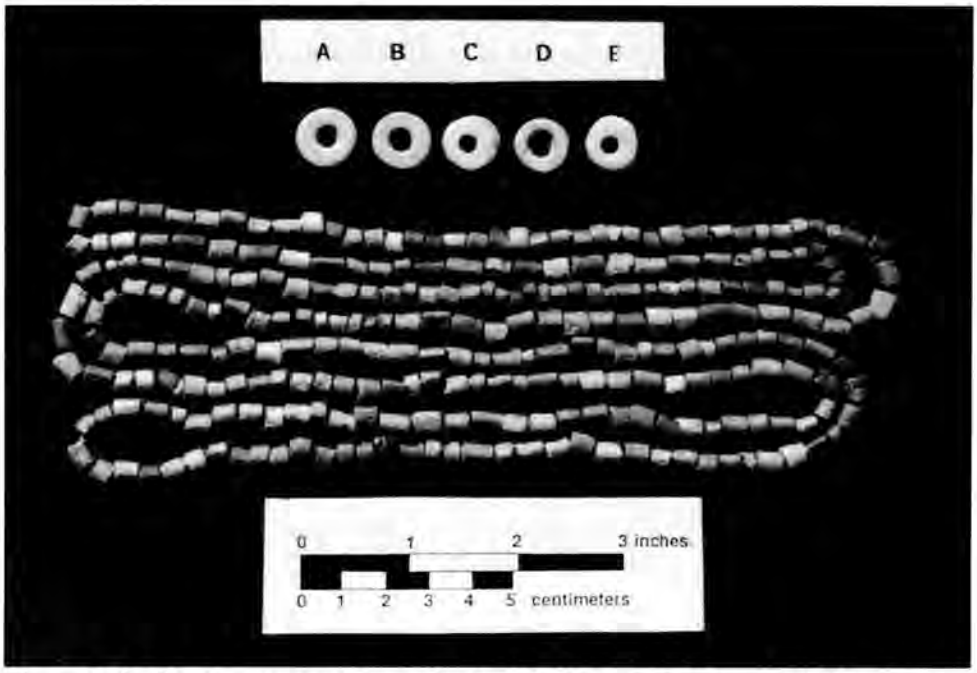

Figure 2. Artifacts recovered from the burial. Disc-shaped conch shell beads are designated A-E. Bone beads are strung for convenience only. It is unknown whether they were so strung in their original context. Photograph by the author.

excavated in 1952 by Frederick Ruecking, Jr., a student with The University of Texas, yielded five disc-shaped shell beads also apparently made from conch (Hester and Ruecking 1969:150-154). This burial also yielded numerous bone beads (ibid.:154; see also Figure 3) similar to those salvaged from the Arroyo Diablo burial, and was located in a prehistoric cemetery known as the Ayala Site (41HG1) in Hidalgo County, Texas.

CONCLUSION

The burial being discussed conforms to other burials discovered in the conservation pool area of Falcon Reservoir as far as associated artifacts are concerned. These artifacts, namely bone and shell beads, have been salvaged with burials in the reservoir district which have been tentatively dated from the Late Prehistoric period (Dr. Thomas R. Hester, personal communication 1996). The artifacts found with the burial being discussed are also similar to artifacts found with burials in other sites in South Texas. It is apparent, judging by the presence of the marine shell beads found with this burial as well as other burials in the area, that some sort of trade existed during the Late Prehistoric between the peoples of the coastal regions and those from the area where Falcon Reservoir is now located. Krieger and Hughes (1950:24) noted that due to the extreme paucity of marine shell artifacts collected during the 1950 survey, little trade seems to be inferred between the two areas. Information gathered from the region by the author from 1983 to the present seems to indicate that a substantial amount of trade did in fact occur.

Although the skeletal remains from the Arroyo Diablo burial were not salvaged, the addition of information regarding the salvaged associated artifacts adds more to the limited database of information about burials in the area. In recent years other burials have been discovered in the same general area by Erick Kruger (personal communication 1996), including one found in April 1996. This burial yielded no associated grave goods, but the skeletal remains were salvaged by the author and were taken to the Texas Archeological Research Laboratory, The University of Texas at Austin for study.

In 1995 a total of eight burials was discovered at the north edge of the Arroyo Diablo, all eroded by wave action as the water level at Falcon Reservoir fell, or as they became exposed by wind erosion after the dried out surface deposits blew away. Several of the burials from this site, believed to be a cemetery (Boyd n.d.b) yielded associated artifacts. Some of these artifacts were strikingly similar to those from the burial being discussed.

The areas adjacent to where tributary arroyos such as the Arroyo Diablo flowed into the Rio Grande seem to have been preferred locations for burials in this region. A comprehensive study of all burials and associated artifacts reported and/or salvaged in the area will eventually provide a more detailed picture of the burial practices of the aboriginal peoples who once inhabited this very understudied region.

ACKNOWLEDGMENTS

The author wishes to thank Erick Kruger, of Zapata, Texas for information he provided regarding the burial, and for the meticulous care in his salvage of the artifacts. Thanks are also extended to Dr. Thomas R. Hester, Director of the Texas Archeological Research Laboratory (TARL), The University of Texas at Austin, for his continued cooperation and support of several of the author's archaeological projects in the Falcon Reservoir area. Without his help, as well as that of many other individuals at TARL, most of these projects and the resultant reports would be very difficult to successfully accomplish. Christopher Lintz and the staff of Mariah Associates, Inc. of Austin graciously supplied the Falcon Reservoir map.

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T.M.C. BUTTON - HOW RESEARCH FOUND ITS IDENTITY

Chris Kneupper

ABSTRACT

A brass gold-plated coat button found at the old port town of Quintana, Texas (41BO135) showing a fouled anchor and a banner embossed with the initials "T.M.C." is reported. Research indicates that this button is from the uniform of a member of the "Texas Marine Corps."

THE ARTIFACT

The discovery of a mysterious gold-plated brass military button has catalyzed some research into an obscure area of Republic of Texas history, and we'd like to share this story with you. Found in 1991 at the site of the old port town of Quintana (41BO135) at the mouth of the Brazos river, the button revealed an intriguing design showing a fouled anchor and a banner embossed with the initials "T.M.C." ending in a sleeve cuff and hand holding a highly curved sword. The button is pictured in drawings by Barbara Feiner (Figure 1). We have attempted photographs of the button, but the corroded nature of the surface prevents a good likeness. It was a "Sanders" type military button , of coat size, and held a backmark of "Scovills and Co. Waterbury," similar to military buttons of the Republic of Texas and Civil War periods. Investigation of several historical button references (Albert 1976, Hughes and Lester 1981, Wyckoff 1984) failed to reveal its identity. The Albert reference does show this button (in vest size) in the chapter on "Schools and Universities" as button SU387, but without any further identification. The same reference indicates the backmark was used from 1840-1850. Obviously naval in its face design, could this button be of Mexican or other foreign origin, whose sailors may have called at the port in antebellum Texas?

The button, along with many residential-type artifacts, was part of a deposition layer at the site of the old town of Quintana, in an area that has now eroded into the Intracoastal Canal and Freeport Harbor channel. Prior to this, the Brazosport Archaeological Society sought permission from the owner of the property to allow excavations, but this was denied for liability reasons. Consequently, we were constrained to let the tidal surf excavate for us, and surface collections along the public waterfront at low tide became the preferred method of study. The collected artifacts seemed to be predominantly from a pre- and post-Civil War period of deposition, based on the type of glass, ceramic, and button artifacts. The button is housed at the Brazosport Museum of Natural Science, and is part of a larger study collection of artifacts from this site.

Subsequently, construction work associated with the widening of the Freeport harbor combined with the ongoing erosion erased much of the study area. Today, as a sleepy village of beach vacation cabins, Quintana sits directly across the mouth of the Brazos River from the old town site of Velasco, where the Battle of Fort Velasco was fought in 1832, and where the Treaty of Velasco was signed by Santa Anna in 1836 after San Jacinto. Hurricanes in 1875, 1888, and 1900 destroyed much of the towns of Velasco and Quintana.

At the Texas Archeological Society's 1991 annual meeting in Austin, Ms. Juliann Pool of the Texas Parks and Wildlife Department identified the button as being from the "Texas Marine Corps." Later, she and J. Barto Arnold (of the Texas Historical Commission) provided additional references (Shelton and Luckenbach 1986; Speights 1986) which allowed conclusive identification of the button. The purpose of this article is to report this result to the Texas archaeological community and display some of the associated research, since the historical record on the Texas Marine Corps in general, and this button in particular, is so scarce.

The Shelton and Luckenback reference mentions that "Several excavated specimens from the Texas coastal area have been located by the authors in the last year and they are the type illustrated by Al-

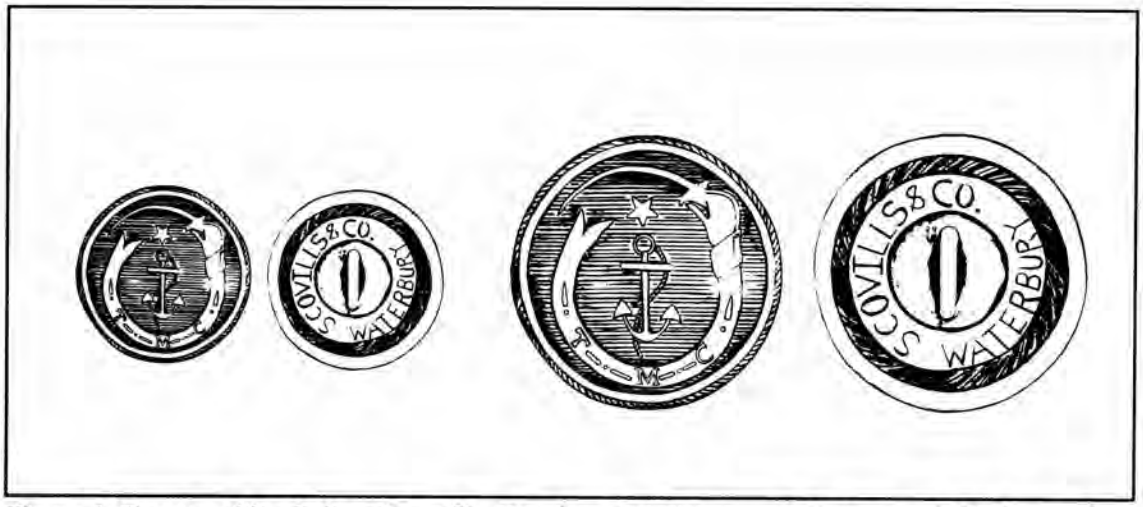

Figure 1. Front and back drawings of button found at old town of Quintana. Initials stand for "Texas Marine Corps." Smaller drawing is approximate size of button. Larger shows in clearer detail. Drawing by Barbara Feiner.

bert (SU 387). Two different sizes were dug. They are 21 mm (coat button) and 15 mm (cuff button)." We have relocated some of these referenced specimens in the possession of relic collectors known to us, and they indicate the buttons were found near Baytown and Morgan's Point near the old towns of New Washington and Lynchburg where a shipbuilding yard was located.

Additionally, a button of this type was reported found at the 1981 TAS Field School in the Choke Canyon reservoir area. Specifically, Site 41LK202 (a well) rendered a brass military button identical to the one found at Quintana, but it was not identified at the time of the written report (Fox 1986). A photo of the button can be seen as Item 'i' in Figure 8 of that report.

An article on the history of the Texas Marine Corps has been published in the journal of the U. S. Marine Corps (Moore 1978), and features artwork showing their uniform by Bruce Marshall, an Austin-based historical artist. Another artist's rendition of the uniforms for the Texas Marine Corps has also been published as part (Plate 4) of a portfolio showing Texas Navy uniforms (Hefter 1974). Apparently, large numbers of naval infantry did serve aboard ships of the Texas Navy with their own officers, especially during the buildup of the "second Texas Navy" under the favorable naval policy of Mirabeau Lamar. Individuals who served as Marines can be found in the muster lists of the ships (Devereaux 1983). In this period John Grant Tod, a veteran of both the Mexican and U. S. Navies, was appointed by Lamar to convert the "S. S. Charlston" into the Texas Navy steamer "Zavala" which he delivered into Galveston harbor in March 1839. Tod was then dispatached to Baltimore to oversee the building of several brigs for the Texas Navy, eventually returning to command the Galveston Navy Yard. A number of these brigs arrived in Galveston in the summer and fall of 1839.

The J. G. Tod papers at the Rosenberg Library contain two or three documents involving the order, payment, and disposition of a consignment of buttons from Scovills & Co., a button manufacturer located in Waterbury, Connecticut. A letter instructing Tod to order the buttons is shown in the Speights reference, but we were unable to relocate this document in 1992. It says:

"Navy Department
Houston, 8th July 1839

Sir

I enclose herewith a drawing of the Texas Navy button as well as that for the Marine Corps. You will have 100 Gross of large 150 Do. small of the former and one fourth the quantity of the latter struck off as soon as possible and forwarded to the Navy Agent at Galveston.

The buttons are very much needed and it is important that we should have them as soon as possible. Be particular however and see that they are executed in the best manner and of the very best materials.

I am Sir very Respectfully
Your Obedient Servt.
Louis P. Cook
Secty of the Navy"

To: Commander
J. G. Tod
Baltimore

Unfortunately, the drawing mentioned in this note was also not found in the Tod papers, perhaps because it was forwarded by Tod to Scovills. Two documents were additionally located in 1992 in the J. G. Tod papers of the Rosenberg Library, and are shown in Figures 2 and 3. A "translation" follows each document. One document appears to be a bill (Figure 2), and lists a consignment of several items. The document is dated 20 Nov 1839 in Waterbury, and a note at the bottom says final payment was received in New York from J. G. Tod on 2 Jan 1840.

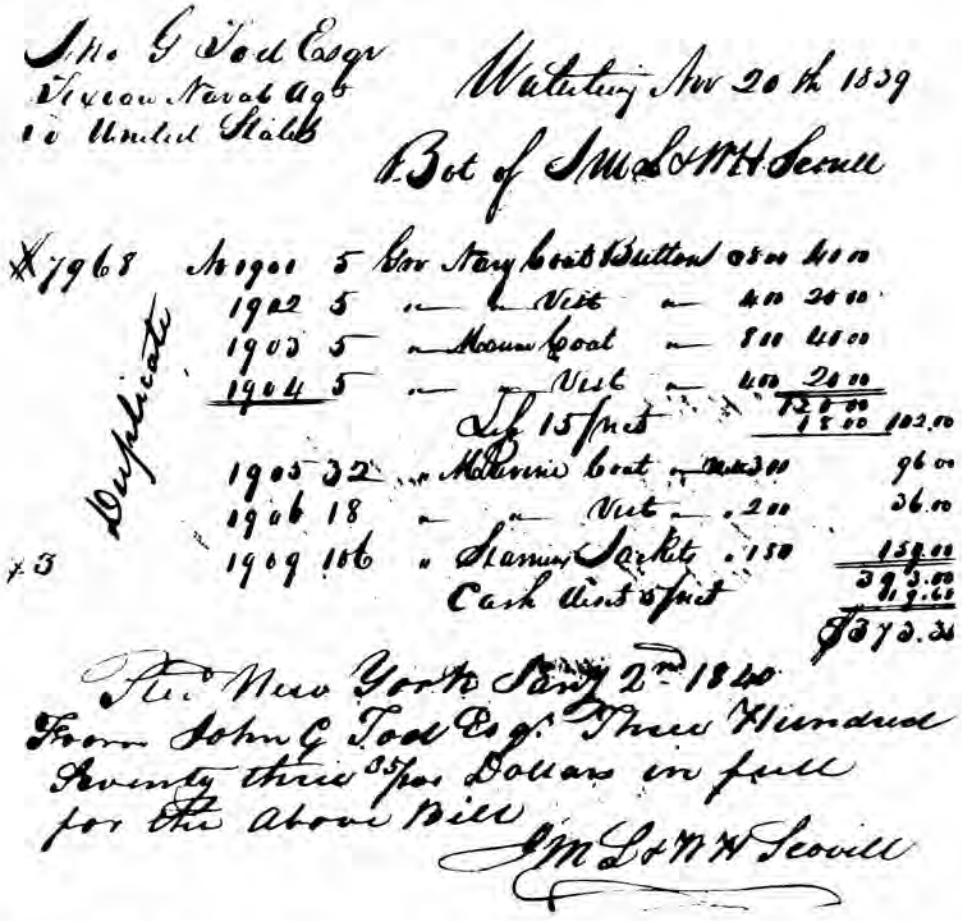

Figure 2. Bill/Receipt for Scovill Button Order. Courtesy Rosenberg Library, Galveston, Texas.

["Translation"]:

Jno. G. Tod Esqr.
Texian Naval Agt.

Waterbury Nov 20th 1839
Bot of J.M.L. & M.H.Scovill

7968 No.	1901	5	Gross	Navy Coat Buttons		@	8.00	40.00	
	1902	5	"	" Vest	"	@	4.00	20.00	
	1903	5	"	Marine Coat	"	@	8.00	40.00	
	1904	5	"	" Vest	"	@	4.00	20.00	
								120.00	
					Sep 15/Net			18.00	102.00

[Continued next page]

[Scovill button order ("Translation")--Continued from preceding page]

[Total carried over from preceding page							102.00]
1905	32	"	Marine Coat	" Nite	@	3.00	96.00
1906	18	"	" Vest	" "	@	2.00	36.00
1909	106	"	Seaman's Jackets	"	@	1.50	159.00
							393.00
				Cash Asset 5/Net			19.65
							373.35

Rec'd New York Jany 2nd 1840 From John G. Tod Esq.
Three Hundred Seventy three 35/100 Dollars in full
for the above bill

J.M.L. & M.H. Scovill

A second document (Figure 3) appears to be a receipt for delivery of the majority of these buttons.

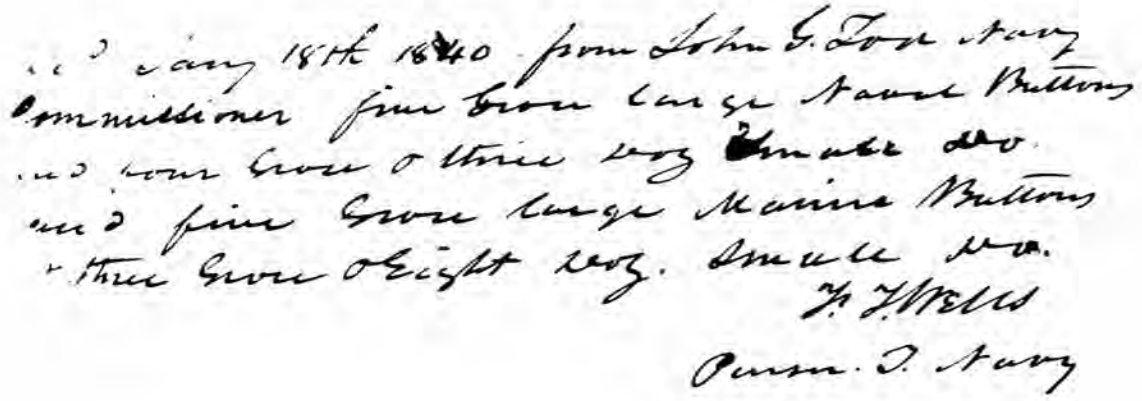

Figure 3. Receipt for Delivery of Buttons To Purser. Courtesy Rosenberg Library, Galveston, Texas.

["Translation"]:

Rec'd Jany 18th 1840 from John G. Tod Navy Commissioner five gross large naval buttons and four gross and three doz. small do. [ditto] and five gross large Marine Buttons and three Gross and eight doz. small do. [ditto]

F. T. Wells
Purser Texas Navy

CONCLUSIONS

A number of these buttons have been discovered in both scientific archaeological investigations and by coastal relic collectors. They appear to have been manufactured in equal quantities to the more well-known "1840 Navy" button. Since historic archaeology in Texas is becoming more prevalent, it is likely that further discoveries of this type of button will occur, and we hope the information in this report is of use to future Texas archaeological investigators.

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NEW EDITION OF *FIELD METHODS IN ARCHAEOLOGY*

The 7th edition of **Field Methods in Archaeology** will be available through Mayfield Publishing Co. on January 31, 1997. Edited by Thomas R. Hester, Harry J. Shafer and Kenneth L. Feder, this wholly revised and updated guide totals near 400 pages and has over 250 illustrations. Chapters include goals of archaeology, research design and sampling, site survey, methods of excavation, data recording and collecting; field conservation of artifacts, field photography, site mapping and surveying, stratigraphy, excavation and analysis of human remains, excavation and recovery of paleobotanical materials, archaeological faunal recovery and analysis, and chronological methods. Contributing authors from the Texas area in addition to Hester and Shafer include R.E.W. Adams, Fred Valdez, Joe Powell, Gentry Steele, Mike Collins, Barry Baker and Brian Shaffer. Paperback: $39.95. Mayfield Publishing, 1280 Villa St, Mountain View, CA 94041. Orders can be placed through bookstores beginning in mid-February or **call 1-800-433-1279**..

FOLSOM POINTS FROM BELL, COCHRAN, LIMESTONE AND MILAM COUNTIES, TEXAS

C. K. Chandler and Dwain Rogers

ABSTRACT

Seven previously unreported Folsom points are reported and illustrated. Three are from Bell County, one is from Cochran County, two are from Limestone County and one is from Milam County.

THE ARTIFACTS

Figure 1, Specimen A, A' is an incomplete Folsom point made of glossy brown, nearly translucent, good quality chert from Limestone County. There is a single flute scar on each face that extends beyond the distal break. A fragment of the basal nipple survives. Lateral edges are minimally dulled. Flaking is mostly irregular with some fine parallel alternate edge retouch. It is 29.5 mm in length, 20 mm in width and 3.7 mm thick. Base width is 15 mm with a basal concavity of 3.2 mm. Thickness in the fluted area is 2.7 mm. It weighs 3.5 grams.

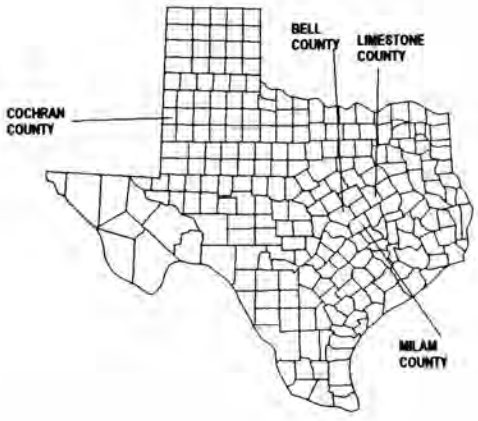
Figure 1, Specimen B, B' is a Folsom point basal fragment made of brown and white, nearly translucent Alibates flint (agatized dolomite). It is from Cochran County in the upper Panhandle Plains west of Lubbock. Flaking is fine, neat parallel confined to the lateral edges. Edges are ground full length and the base is dulled. It is 20 mm long, 19.5 mm wide and 3.5 mm thick. Base width is 19.5 mm with a basal concavity of 3.0 mm. It is 2 mm thick in the fluted area and weighs 2.6 grams.

Figure 1, Specimen C, C' is a basically complete Folsom point with two chips broken from the distal tip. There has been minimal effort to restore the broken tip. There is a single flute scar on each face that extends nearly to the distal end where they are interrupted by a lateral retouch flake apparently applied in restoring the broken distal tip. It is made of light tan, good quality chert and has a glossy finish and waxy feel indicative of heat treatment. Flaking is neat parallel and irregular. Lateral edges are heavily ground and the base is lightly dulled. It is 26.6 mm long, 16 mm wide and 3 mm thick. Base is 16.4 mm wide with a basal concavity of 1.4 mm. It weighs 2.1 grams. It is from Limestone County.

Figure 1, Specimen D, D' is a nearly complete Folsom point made of light grayish tan chert of fair quality. It is from along the Lampasas River in Bell County. One basal corner is missing and the distal tip has been broken and poorly retouched. Lateral edges have been ground but much of the grinding has been removed in reworking the distal end. Both faces have a single flute that extends within 6 mm of the distal end. It is 37 mm long, 19.3 mm wide and 4.4 mm thick. It is 3.5 mm thick in the fluted area. Basal concavity is estimated to be 1.4 mm. It weighs 5.0 grams.

Figure 1, Specimen E, E' is a nearly complete Folsom point made of good quality gray chert with a single flute on one face only. One basal corner is broken and the distal end has been retouched along one edge. The one flute is 10 mm wide and 20 mm long. Lateral edges and base are ground. It is 35.6 mm in length, 18.8 mm in width, 3.4 mm thick and 2.4 mm thick in the fluted area. Basal concavity is 1 mm. It weighs 4.0 grams. It was found near Youngsport in Bell County.

Figure 1, Specimen F, F' is a medial blade fragment of a large Folsom point made of good quality mottled gray chert from Bell County. It is fluted on



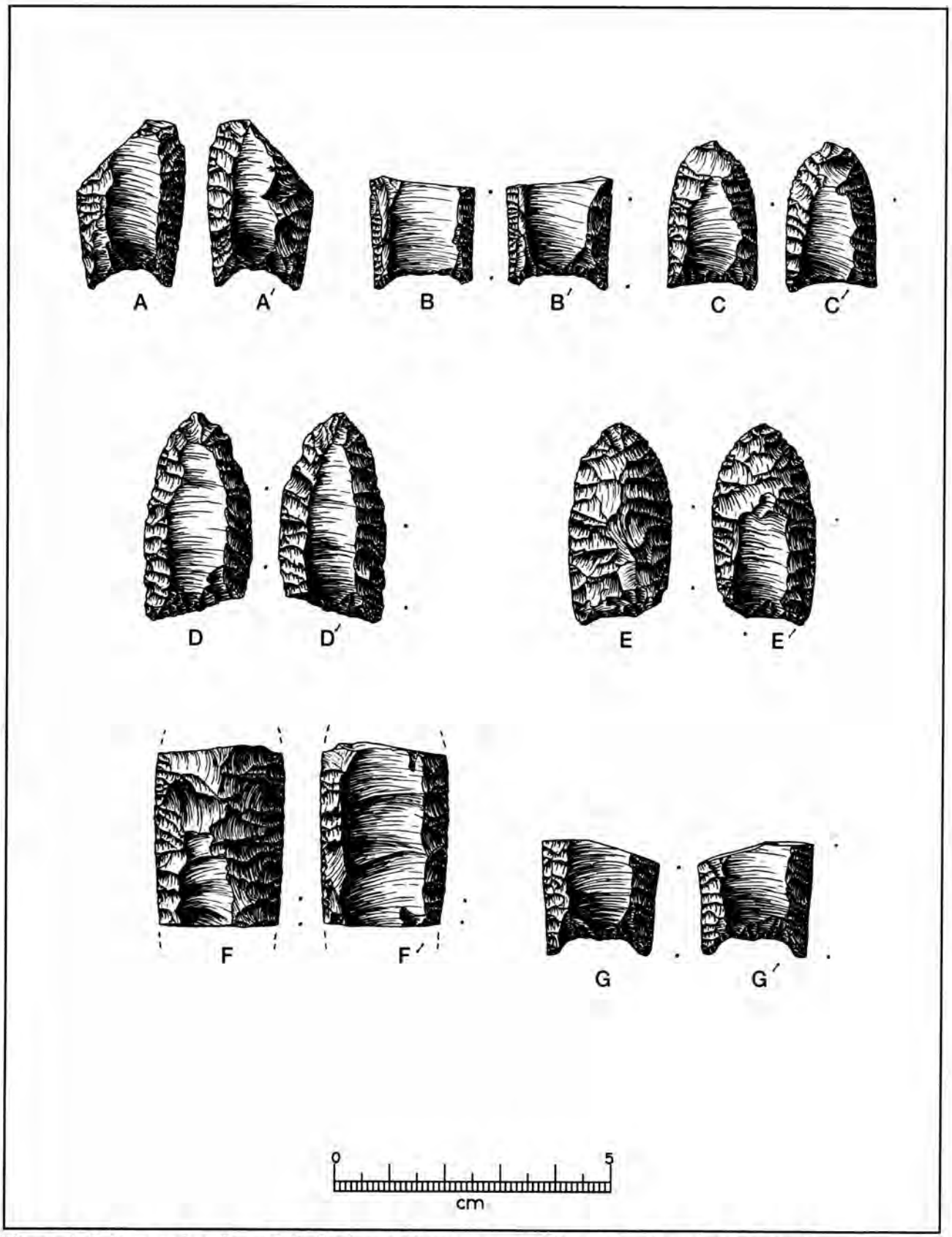


Figure 1. Folsom points from Bell, Cochran, Limestone and Milam Counties. A, A', C, C': Limestone County; B, B': Cochran County. D, D', E, E', F, F': Bell County; G, G' Milam County.

both faces. The flute on one face is full length of the fragment and 17 mm long on the other. Only 5 mm of the lateral edges are dulled. It is 32.3 mm long, 23.5 mm wide at the distal end and 22 mm wide at the proximal end. Maximum thickness is 4 mm and 3.3 mm in the fluted area. It weighs 6 grams.

Figure 1, Specimen G, G' is a basal fragment of a Folsom point made of light grayish white, good quality chert. It was found near Cameron in Milam County. Lateral edges are ground and a remnant of the basal nipple survives. It is 20.5 mm long, 21 mm wide, 3.2 mm thick and 2.5 mm thick in the fluted area. It weighs 3 grams. Basal concavity is 3 mm.

DISCUSSION AND CONCLUSIONS

Folsom points are increasingly reported from many areas of Texas and the known distribution of this type continues to grow. Largent et al. (1991) studied the distribution of Folsom points for all of Texas and determined Folsom projectile points occurred throughout the state but unevenly so. A total of 329 Folsom points were documented but they were confined to 57 of the 254 counties in Texas.

Additional Folsom points were documented and published. Perttula (1993) increased their known distribution in East Texas as did Chandler and Hindes (1995), Chandler and Kumpe (1994), Chandler and Smith (1994) for south and southwest Texas and north central Texas.

An updated geographic distribution and record of Folsom points by Largent (1995) increased the total recorded Folsom points in Texas to 345 from 102 localities in 63 counties.

The seven Folsom points reported here are previously unreported. One is from Cochran County in the Upper Panhandle Plains. Three are from Bell County, two are from Limestone County and one is from Milam County. There are no previous Folsom points reported from Bell, Milam and Cochran counties and only one is previously reported from Limestone County.

These seven Folsom points increase the known number to 352 Folsom points from 70 counties and greatly increase the known number from Central Texas.

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1993 New Folsom Point Finds from Eastern Texas. *Plains Anthropologist* 38(143): 199-202.

AUTHORS

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C. K. CHANDLER, Documentation Chairman of STAA, is a charter member of STAA and a Past President of the Texas Archeological Society (TAS) and also of the Houston Archeological Society. He was the 1985 Robert F. Heizer Award winner for his extensive work in south Texas archaeology. C. K. is a valued contributor of manuscripts to *La Tierra* and the *Bulletin of the Texas Archeological Society*, He has been honored by being named a TAS Fellow, and is an archeological steward for the Office of the State Archeologist (OSA).

PATRICIA A. CLABAUGH is the Collections Manager for CEA and the Department of Anthropology at Texas A&M University. She is currently pursuing her Master's degree in Anthropology based on feature materials and associated material culture recovered from the Richard Beene site. Research interests include hunter-gatherer studies, subsistence, women's roles in prehistory, paleoecology, archaeological curation, and museum science. Ms. Clabaugh is responsible for overseeing the collections facility at CEA, and she manages day-to-day operations in CEA's Processing and Analytical laboratories.

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BETTY INMAN is a central Texas native who lives in Round Rock. She is in the graduate program at UT-Austin, currently working on an MA thesis synthesizing the lithics of missions San Bernardo and San Juan Bautista. She has also been involved with research on south Texas archaeology, especially work with T. C. Hill, Jr.; papers on this research have appeared in *Tierra* and/or in preparation.

CHRIS KNEUPPER lives in Lake Jackson and makes a living as a chemical engineer; however, his avocational interests include both archaeology and botany. He is a charter member of the Brazosport Archaeological Sociey (1980), and has been a member of the Texas Archeological Society since 1981 where he currently serves on the Field School Committee.

DAVID D. KUEHN is the Associate Director of CEA. His major research interest is geoarchaeology, specifically landform and paleoenvironmental reconstruction, archaeological stratigraphy, soils in archaeology, and site formation processes. In cooperation with the National Museums of Kenya, he is currently involved in ongoing geoarchaeological research in north-central Kenya. Dr. Kuehn has also directed archaeological field and laboratory research in the Dakotas, Montana, Colorado, Arizona, and Texas.

DON KUMPE is a lifelong native of the Lower Rio Grande Valley. He and his wife, Mary, own and operate a jewelry store on South Padre Island. The store's specialty is jewelry that is designed and finished "while-u-wait." Don is a member of STAA. As a teenager he began collecting artifacts while on camping trips in Starr County. This led to his 30 years of continuous interest in the archaeology of the Lower Rio Grande River. His collaboration with C. K. Chandler on several articles in *La Tierra* has led to some very interesting documentation of artifacts.

ROLFE D. MANDEL is a private consultant and Adjunct Assistant Professor in the Geography Department at the University of Kansas. His academic training is in geomorphology, with emphasis on soils and fluvial stratigraphy. Dr. Mandel's research interests include geoarchaeology, late Quaternary landscape evolution, and soil stratigraphy. He has been involved with more than 50 archaeological projects over the past 15 years. Most of his research has been conducted in the Great Plains, the Big Bend and Gulf Coastal regions of Texas, and the eastern Mediterranean, including Egypt, Cyprus and Jordan. Dr. Mandel has been the geomorphologist for the Applewhite Reservoir Archaeological Project in south-central Texas since 1989.

BEN W. OLIVE is a Research Scientist with CEA. He specializes in computer, EDM, and GPS applications in archaeology and has successfully served as Project Director on a number of large research projects in Texas and Montana. Mr. Olive manages the Computer Graphics and Data Management Laboratory at CEA, and is currently a Ph.D. candidate in the Department of Anthropology at Texas A&M University. His dissertation topic deals with the spatial analysis of archaeological components at the Richard Beene site.

DWAIN ROGERS is a communications technologist for Southwestern Bell Telephone Company. His interest in artifacts of Texas began in 1952 after finding Indian relics on his grandfather's farm in Milam County, Texas. The study of flint sources and flintknapping of Texas materials has been his hobby for 20 years. Dwain has an avid interest in Texas Corner Tang knives. He is a new member of STAA.

E. H. "SMITTY" SCHMIEDLIN has long been active in the archaeology of the Texas coastal plain. A charter member of STAA, he has also held offices in this society as well as in the TAS. He also serves as a Steward for the Office of the State Archeologist. The author of numerous publications on the archaeology of his region, he has recently focussed his efforts on Spanish Colonial fieldwork in Victoria and Jackson Counties and has provided invaluable assistance to professional archaeologists working in the region.

ALSTON V. THOMS is the Director of the Center for Environmental Archaeology (CEA) and a Senior Lecturer in the Department of Anthropology at Texas A&M University. His archaeological research focuses on long-term human ecology of North American, especially hunter-gatherer, land use and intensification. Dr. Thoms has directed archaeology students in field studies for more than 20 years throughout the western and southeastern United States. He also has special interests in lithic technology, site formation processes, and archaeological research strategies, as well as in the ecology, ethnography, ethnohistory, and archaeology of native root foods. Dr. Thoms teaches undergraduate and graduate classes in archaeology and anthropology, and since 1994 has directed the Department's Northern Rocky Mountains and Post Oak Savannah archaeological summer field schools.

TAMRA L. WALTER is a Texan currently doing cultural resource management archaeology in Wyoming. She has previously worked on a number of Texas projects and recently completed her MA at the University of Montana. Her thesis provides a detailed report on the 1995 UT-Austin excavations at Espiritu Santo. Ms. Walter will help direct excavations at the mission during the TAS summer field school in June 1997.

ERRATA, VOL. 23, NO. 3, July, 1996

Unfortunately, Dr. Timothy Perttula's name was inadvertantly omitted from the AUTHORS page:

TIMOTHY K. PERTTULA is the current editor of the *Bulletin of the Texas Archeological Society* and the *Journal of Northeast Texas Archaeology*. He has a long-term interest in the prehistoric and early historic archaeology of Texas, particularly Caddoan archaeology, and this paper on Hog Island represents his initial foray into South Texas archaeology. Recently, Dr. Perttula has been involved with the National Park Service in an historical and archaeological study of Mexican-American War sites in South Texas.

Our apologies to Dr. Perttula.

INFORMATION FOR CONTRIBUTORS

La Tierra publishes original papers and selected reprints of articles involving the historic and prehistoric archaeology of southern Texas and adjacent regions. Original manuscripts are preferred. Articles involving archaeological techniques, methods, and theories are also considered.

The main objective of this quarterly journal is to provide a way for STAA members and others interested in the archaeology of southern Texas to share the information they have with others. We encourage your full participation through submission of your information for publication; we are particularly interested in receiving manuscripts from those in the less well-known counties of our region, to document even surface finds and old collections. Only through such total member participation can we, as a group, build up a comprehensive picture of the archaeology of our area!

Articles may be submitted in any form, although double-spaced typed copy is naturally preferred. However, we will review and work with material in any form to encourage those not comfortable with typewritten or other formal methods; WE ARE MORE CONCERNED THAT YOU SUBMIT YOUR IDEAS AND DOCUMENT YOUR MATERIALS THAN WE ARE WITH THE FORM OF MATERIALS WITH WHICH WE HAVE TO WORK. If you can supply a 5 1/4" or 3 1/2" disk, IBM or compatible, in ASCII form (if not in Word Perfect or MSWord), it will be very helpful.

We are now incorporating a small Texas map with the county represented down in the lower right-hand corner of Page 1. This is not "Figure 1" and it may be all that you want in your paper. However, if you are being more precise as to your area of Texas, please submit a map showing the general region with rivers, streams, etc. This would be Figure 1. We are trying not to be too precise with locations of sites—unfortunately there are those who take advantage of this information to locate and ravage archaeological sites. Those sites already in the published material are sometimes shown again, however. Also, you MUST have the landowner's permission before entering his property. This small consideration can avoid misunderstanding and ill feeling toward archaeological research.

Other figures can be line drawings or photographs; line drawings are preferred if they are good quality—every photograph used costs an extra $50-$60 for a metal plate and set-up charges. If you need assistance with illustrations, please let us know—there are several STAA members who have volunteered to help with illustrations. For examples of good artifact and map illustrations, see those by Richard McReynolds and Ken Brown in previous issues.

When drawings or sketches of artifacts are included in your manuscript, please give the name of the artist responsible for the illustration(s). All figures should contain an appropriate caption and, where necessary, identification of each specimen (a, b, etc. or 1, 2, etc.) to aid referencing individual specimens in the text. The suggested procedure is to photocopy your original drawing and write in captions and identification letters on the photocopy. This saves the original for our use in final preparation of camera-ready copy.

PLEASE include a proper scale on all maps, diagrams, artifacts, etc. When any figure must be reduced, the scale must be in the original figure so that reduction will not change any proportions. Most of our artifact figures are drawn "actual size" but this is not proper publishing terminology. A scale is necessary, and may be reset in the picture through "cut and paste"—just so it is there. Remember that photocopied material very often slightly enlarges, and care must be taken that there is no change in the scale if done separately. For area (regional) maps, a small "rake scale" will help in our final copy—just so it is the proper dimension. Any site excavation map MUST have a good scale with it, again, IN the map so that reduction will not change the proportions.

Citations of references should be embodied in the text, giving the author, date, and page (e.g., Hester 1980:33). All references cited should be included in a References list using normal archaeological form (see articles in this issue for examples). The Reference list should not include publications not referred to in the text. Personal communications are cited in the text (e.g., Anne Fox, personal communication 1977) but need not be included in the Reference list.

Be sure to include a short (4-6 lines) BIOGRAPHY FOR THE AUTHOR AND ALL CO-AUTHORS of the paper. The principal author and one co-author will receive two additional copies of *La Tierra*. Additional coauthors will receive one extra copy each. We will need each author's address for mailing purposes.

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Manuscripts and/or hard copy of disk, if used, or other information may be submitted to: Evelyn Lewis, Editor, *La Tierra*, 9219 Lasater, San Antonio, Texas 78250. With your cooperation, much time may be saved in correspondence to clear up matters before *La Tierra* can go to press.

Thanks to all of you for the fine reports coming in. Keep them coming!

THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

The Southern Texas Archaeological Association brings together persons interested in the prehistory of south-central and southern Texas. The organization has several major objectives: To further communication among avocational and professional archaeologists working in the region; To develop a coordinated program of site survey and site documentation; To preserve the archaeological record of the region through a concerted effort to reach all persons interested in the prehistory of the region; To initiate problem-oriented research activities which will help us to better understand the prehistoric inhabitants of this area; To conduct emergency surveys or salvage archaeology where it is necessary because of imminent site destruction; To publish a quarterly journal, newsletters, and special publications to meet the needs of the membership; To assist those desiring to learn proper archaeological field and laboratory techniques; and To develop a library for members' use of all the published material dealing with southern Texas.

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