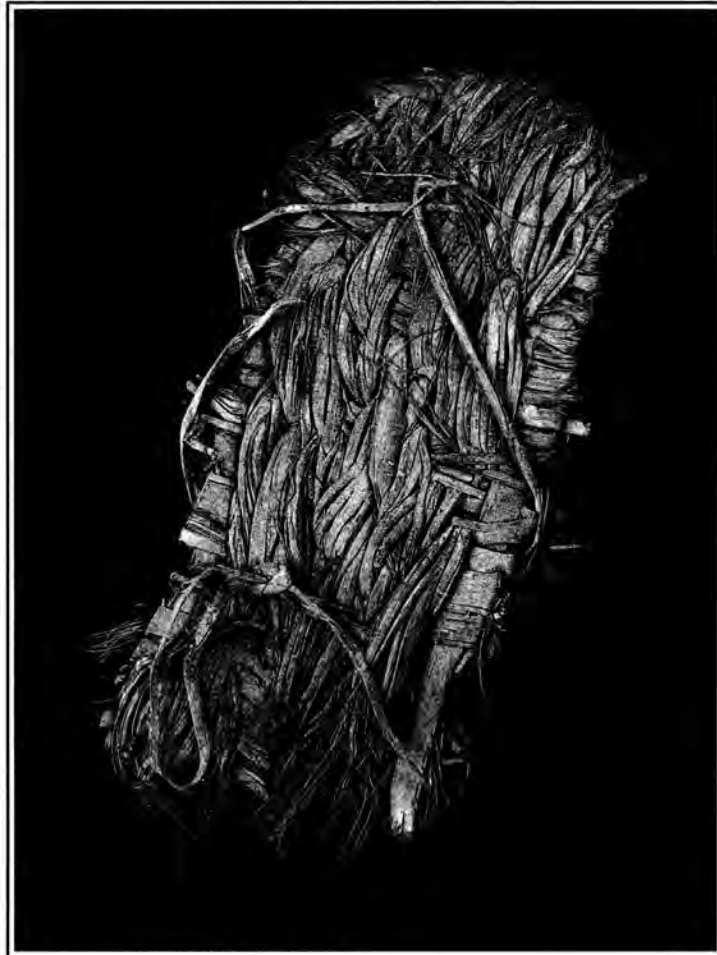


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Shirley Van der Veer
Editor

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About the Cover: Sandal from a large rock shelter in Val Verde County. See article by Dr. Solveig Turpin starting on page 20. Drawing by Richard McReynolds is on page 9.

Manuscripts for the Journal should be sent to: Mrs. Shirley Van der Veer, Editor, *La Tierra*, 123 East Crestline, San Antonio, Texas, 78201-6613, email shirleyvan@worldnet.att.net. Past issues of the Journal and Special Publications are available by requesting an order form from STAA (Jim Mitchell), P. O. Box 791032, San Antonio, Texas 78279, or from the STAA internet site (see below). Dr. T. R. Hester may be contacted at the Texas Archeological Research Laboratory, Pickle Research Center, Building 5, 10100 Burnet Rd, Austin, Texas, 78712-1100.

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NOTES ON SOUTH TEXAS ARCHAEOLOGY: 1999-2
The Obsidian Arrowpoint from the Jonas Terrace Site, 41ME29:
Further Observations

Thomas R. Hester, Frank Asaro, Fred H. Stross, and Helen Michel

In 1985, the Texas Obsidian Project (TOP), involving the authors, and, at the time, Helen Michel, was requested to carry out trace element analysis of an obsidian arrow point found during excavations at site 41ME29 (Figure 1). The excavations, by the State Department of Highways and Public Transportation (SDHPT), were conducted prior to improvements on Highway 16 in northeastern Medina County. The specimen (TOP 87; LBNL #8142) was analyzed using non-destructive x-ray fluorescence at the Lawrence Berkeley National Laboratory, and was determined to be of Malad, Idaho, obsidian. This is now known to be a source found rarely in Archaic contexts, but frequently in the obsidian of Late Prehistoric Central and South Texas (cf. Hester et al. 1998).



Figure 1. General Location of 41ME29.

In his site report on 41ME29 (designated as the Jonas Terrace site), which was issued by the Texas Department of Transportation and Texas Historical Commission, Johnson (1995:245-246) briefly described this specimen, the trace element studies that

ascertained its geologic source, and published a sketch of the artifact from the TOP files. His focus, in discussing the specimen, was the fact that it was "the missing obsidian arrowhead" (Johnson uses the latter descriptor in lieu of the term "arrow point"). The artifact remains missing, apparently having been misplaced after being returned to the SDHPT, where it was to be photographed and incorporated back into the 41ME29 collection. While this was an unfortunate loss, extensive data had been recorded (much of this presented by Johnson 1995) and the context of the artifact was known. Johnson, however, minimized its cultural-historical context in his discussion, apparently since the specimen was "missing." He did note its provenience, "1C"-the south block, unit 1, stratum 1 (ibid.:245), but no cultural associations were noted.

In a letter to Hester from Dr. Frank A. Weir, then head of the Archaeology Section for SDHPT, dated March 22, 1985, Weir reported that the artifact came from "level 3, Unit N12/E4 in a context which also yielded 4 Scallorn arrow points and 1 Darl dart point." Johnson's stratigraphic analysis of "1C" led him to describe this context as consisting of Strata 1 and 2, at 20-30 cm in depth (p. 114). He goes on (Johnson 1995:124) to report 4 arrow points and 1 arrow point preform from the 1C provenience. Two were typed by him as Edwards points and his illustrations (Figure 87, a,b) confirm this assignment. Also illustrated (Figure 87,l) is a non-diagnostic modified flake that is probably an arrow point. An arrow point preform fragment (or fragment of a corner-notched arrow point!) is shown in Figure 88,E and is in the size range of Edwards. In Figure 82,b, a burned small dart point is illustrated and Johnson suggests it was "maybe originally a Darl point."

We have elaborated on these contextual data, first presented by Weir and then clarified by Johnson, because the 41ME29 obsidian specimen represents one of comparatively few scientifically excavated artifacts that we have analyzed. Thus, its age is

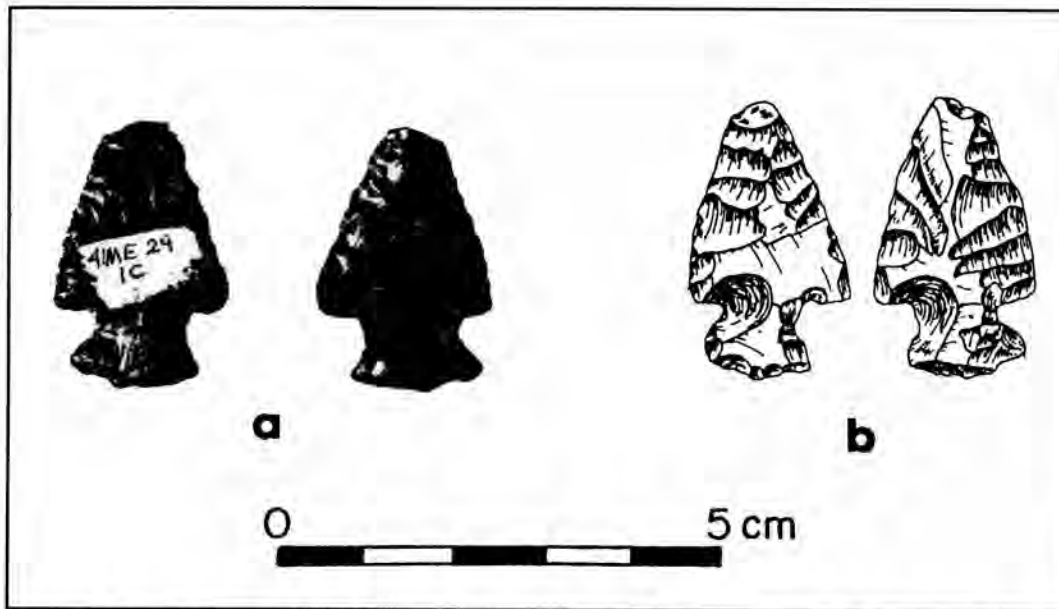


Figure 2. Illustrations of the 41ME29 Obsidian Arrow Point. a, scanned photocopy of both sides; b, drawings of both sides (by Pam Headrick).

important to us as we have studied the temporal spread of Malad obsidian in Texas. The arrow point itself (Figure 2) is not morphologically distinctive in terms of Texas typology (e.g., Turner and Hester 1993). However, its context, associated primarily with Edwards arrow points, places it in the early part of the Late Prehistoric era. Edwards appears to be the earliest arrow point type in the southern Edwards Plateau (and thus it is no surprise that a fragmented

Darl-like Transitional Archaic point might be in the vicinity). While radiocarbon dates directly linked to Edwards are not yet fully published (e.g., Henderson 1985), it likely dates around A.D. 800-1050. Stratigraphically, it appears to consistently underlie Scallorn and Perdiz, as J. B. Sollberger (1967) pointed out more than 30 years ago, and confirmed by Henderson's (1985) excavations in the Rainey Site (see also the data assembled by Mitchell 1978). This

Table 1. Results on Two Obsidian Samples Excavated in Texas, and Two Malad, Idaho Source Samples.

<u>Designation</u>	<u>Run</u>	<u>Ba*</u>	<u>Zr</u>	<u>Rb/Zr</u>	<u>Sr/Zr</u>
41 HI 34	8141-0; (XRF)	1493	117	1.21 ± .03	.74 ± .02
41 ME 29 1C	8142- ; (XRF)	1535	109	1.27 ± .03	.71 ± .03
Malad reference	8136 E (XRF)				
	8136 F (")		101	1.28 ± .04	.71 ± .03
	(NAA value)	1499			

* The XRF Ba values have been calculated by a new approach and should be close to the true value (~ ± 2%).

dating of the Jonas Terrace obsidian arrow point makes it several centuries earlier than much of the Malad material found in Texas sites, these tending to date to the latter part of the Late Prehistoric (cf. Hester et al., 1998).

To supplement Johnson's published sketch (which I had prepared at the time the specimen was submitted in 1985), Figure 2 presents scanned images of photocopies made of the point in 1985, along with drawings by Pam Headrick that were based on the photocopies and my initial sketch, which showed the flake scar outlines. These provide a better record of the artifact that supplement Johnson's published drawings. These are important to have on record if the point is never relocated. The measured dimensions of the artifact are: length, 39

mm, maximum width, 18 mm, thickness, 2.5-3.0 mm, and weight (of the specimen, lacking its distal tip) is 1.9 grams.

The trace element data suite provided by LBNL is shown in Table 1. Continuing analyses of Malad source samples from the Wright Creek outcrop (provided by James Wood of Twin Falls, Idaho) and additional archaeological specimens from Texas, demonstrate an unequivocal linkage between the Idaho source, the 41ME29 specimen, and numerous other Texas obsidian artifacts, particularly of Late Prehistoric date. This connection has been repeatedly verified over the past decade, but was not emphasized by Johnson (e.g., he noted that this artifact and others of similar chemical composition were "believed to be..." from Malad).

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A CREMATION BURIAL FROM THE ARROYO SALINILLAS, FALCON RESERVOIR

James Bryan Boyd and Diane Wilson

ABSTRACT

We discuss a cremation burial discovered at a Falcon Reservoir site in 1986. The site in which it was found is described, along with a history of artifacts. The salvaged skeletal remains are analyzed, and we present a general discussion of the rare occurrence of cremation burials in South Texas and adjacent northeastern Mexico.

THE BURIAL SITE

On April 30, 1986, as the senior author explored archaeological sites in the Falcon Reservoir area, a recently disturbed burial was discovered at a site near the southern end of the lake. The site, dubbed "Shumla Camp" by artifact collectors from the Rio Grande Valley, is located approximately 35 km (ca. 22 miles) south-southwest of Zapata, Texas (Figure 1). It is on the Mexican side of the lake, in the state of Tamaulipas. The site lies on the south bank of the Arroyo Salinillas, a large tributary of the Rio Grande that confluences with it approximately 8 km (ca. 5 miles) to the southeast.

Shumla Camp is normally inundated by the waters of Falcon Reservoir, and is only uncovered during periodic low water episodes. The conservation pool elevation of the reservoir is 301.2 ft. above mean sea level (amsl); the site lies at ca. 264-275 ft. amsl. When the burial was discovered, the elevation of the lake was 265.66 ft. amsl (IBWC, 1986 personal communication with the senior author). When it was found, the burial was just inches in elevation above the waterline.

Shumla Camp is at least 250 meters (ca. 820 feet) in length (width undetermined), and lies on a southeast to northwest-trending terrace of the Arroyo Salinillas. The surface is a dark, silty sand, and it gently slopes from the higher elevations toward the northeast, the direction of the original streambed of the arroyo. The site surface has very large quantities

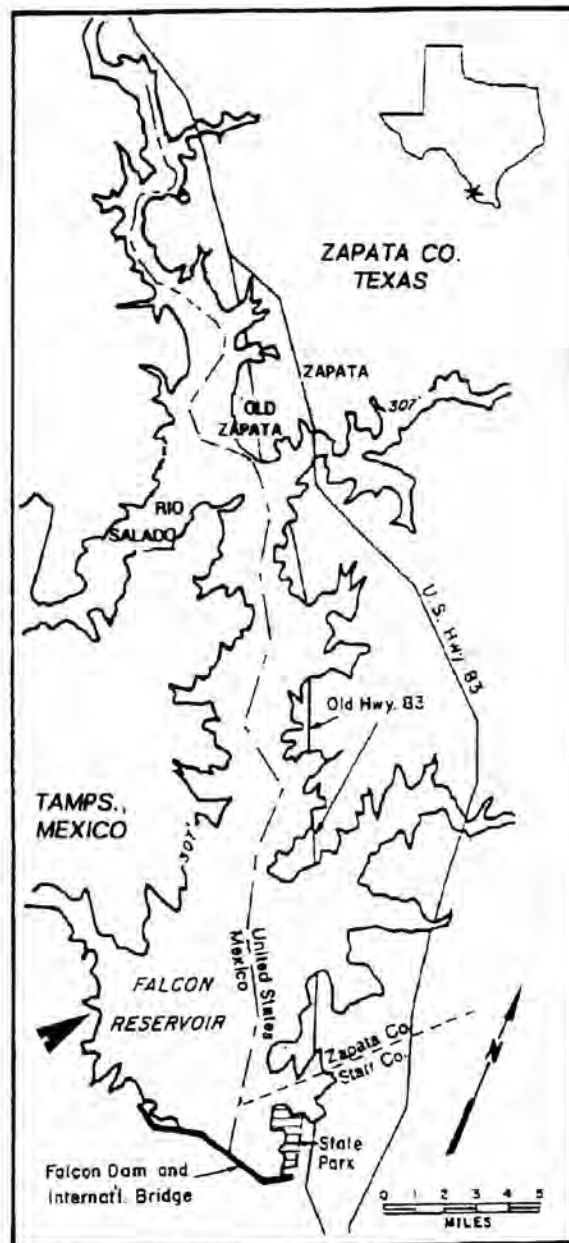


Figure 1. Map of Falcon Reservoir, showing approximate location of the burial site. Inset shows location of area in the state.

of lithic debris and burned sandstone rock, including hearths.

The site name derives from the large numbers of Shumla points collected there by various persons during the early to mid-1980s. Many other types of dart points, in very large numbers, were also found in the site. These include examples of Abasolo, Almagre, Bell, Catan, Desmuke, Lange, Langtry, Lerma, Matamoros, Pandora, Plainview, Refugio, and Tortugas, as well as others (Boyd n.d.a). Few arrow points were found at the site, although small numbers (including Caracara and Fresno) were recorded on a small, peninsular-like landform in the site's north-western quadrant. The cremation burial was found there.

THE BURIAL

Although many visits to this site were made by the senior author in the 1980s, only a single cremation has been found there. The cremation reported here had only recently been uncovered by rapidly declining water levels at the lake, but it had already been disturbed by looters (Boyd n.d.a, n.d.b). It appeared that a small pothole had been dug, and scattered fragmentary skeletal remains were evident at the surface. The bones appeared to be blackened or charred. Heavy rainfall the previous night had washed the feature well, apparently exposing more remains. All significant visible remains, some 375 mostly fragmentary specimens, were recovered for future study, and to prevent further destruction by looters or because of their exposure at the surface. Only those specimens visible at the surface were collected; all sub-surface remains were left undisturbed.

The burial found at Shumla Camp is significant because it is the only cremation documented to date from the area of Falcon Reservoir (Boyd n.d.a, n.d.b), though many burials have been documented there (Boyd et al. 1997:387-425; Hester 1997:4-8). Indeed, cremation burials in South Texas are rare occurrences. Hester (1989:2-4) reported a cremation burial from a disturbed site in Dimmit County, also noting that 3-4 of the burials from the Loma Sandia (41LK28) cemetery site in Live Oak County were also cremations. Another cremation, found by J.W. House in Dimmit County, has not yet been published (Dr. Thomas R. Hester, 1999 personal communication with the senior author). A.E. Anderson (n.d.)

reported two cremation burials, and a possible third, from gulf coastal sites in northern Tamaulipas, Mexico, just south of the Rio Grande. Though the burials at Loma Sandia were determined to date to the late Middle Archaic period, the Dimmit County burial and the burials discovered by Anderson remain undated, as no temporally diagnostic artifacts were recovered with the skeletal remains. No artifacts are clearly associated with the Arroyo Salinillas burial, but a small Caracara arrow point was recovered from the surface in immediate proximity to the feature (see below).

OSTEOLOGICAL ANALYSIS

After removal from the site, the skeletal remains were carefully cleaned and were later taken to the Texas Archeological Research Laboratory, The University of Texas at Austin, where they were examined by Wilson.

The remains of at least one younger middle-aged adult are represented by the cremated bones. Miscellaneous faunal remains are also present, and include marine and terrestrial species. The human bones appeared to have been burned at a high temperature of some 300°-800° centigrade as evidenced by the white to blue-gray color of the bones. Transverse and longitudinal cracking and warping, as well as the absence of uniform colors, indicate that bone was burned when it was covered by flesh (e.g., femoral heads are tan to black). Sex of the burial could not be determined due to the fragmentary nature of the remains.

THE CARACARA POINT

As mentioned above, a single Caracara arrow point was found on the surface in proximity to the burial feature. It was approximately 1 meter from the burial, but it is unknown if it was associated with the feature.

The recovered specimen generally conforms to the Caracara type as defined by Saunders and Hester (1993:22-31). It is made from a glossy white stone with a few darker inclusions, and is relatively small (Table 1). The specimen has very slightly convex lateral blade edges, and a slightly concave base. The specimen is different from other specimens of the same type found in the region (Boyd n.d.a) due to a

Table 1. Specifications of Recovered Caracara Arrow Point.

Max. Length	-	24.70 mm
Max. Width (base)	-	20.08 mm
Max. Thickness	-	4.74 mm
Neck Width	-	14.35 mm
Weight	-	2.1 grams



Figure 2. Photo of the recovered Caracara arrow point, found in close proximity to the burial. Note the unusual extra notch on the lower basal lateral edge (right in photo). Author photo.

shallow notch on one lower lateral edge of the base (Figure 2).

The specimen is made of a material somewhat different from the common cherts used in the manufacture of stone tools in the region of Falcon Reservoir (Boyd n.d.a). It more closely resembles the material used in nearly all of the stone tools found in sites in the Sierra Madre southwest of Monterrey,

Nuevo León, Mexico (George Doffing, 1990 personal communication). In this region, centered around the small town of Galeana, high in the Sierras, projectile points are almost always fashioned from a white stone similar to the specimen recovered from the burial site.

CONCLUSIONS

The burial from the Shumla Camp site appears to be unique, as it represents the only known occurrence of a cremation in the entire region around Falcon Reservoir. Although many burials have been recorded in the area in recent years, this one is the only example of disposal of the dead by fire. Osteological examination of the remains, although limited, indicates that when burned, flesh still adhered to the bones.

The Shumla Camp site has artifacts dating primarily from the Paleoindian to the Archaic periods. However, a sparse Late Prehistoric period component was evident on the small point of land where the burial was found. The burial may date from that period, although whether the Caracara arrow point found nearby was actually related to the burial feature is uncertain. It is interesting to note that the style of the Caracara (i.e., the additional notch on the basal edge) and the material used contrast with many other similar projectile point types found in the region.

ACKNOWLEDGMENTS

The authors thank Dr. Thomas R. Hester, Director of the Texas Archeological Research Laboratory (TARL), The University of Texas at Austin for arranging the examination of the salvaged skeletal remains from Shumla Camp. He also provided valuable information about other cremations in South Texas, and was helpful in the editing of this report. Carolyn Spock, Head of Records at TARL, provided copies of the early manuscripts of the late A.E. Anderson. Dr. Timothy K. Perttula, of Frontera Archaeology in Austin, was very helpful in his editing of the original draft of this paper. Finally, the late George Doffing is warmly remembered. He accompanied the senior author on many exploratory trips in the Falcon Reservoir area, and provided valuable information about the sites and artifacts of the Sierra Madre of Nuevo León, Mexico.

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FOLSOM POINTS FROM BASTROP, BEXAR, CRANE AND CULBERSON COUNTIES, TEXAS

C. K. Chandler

ABSTRACT

Folsom points from widely separated areas of Texas are illustrated, documented and discussed.

ARTIFACT DESCRIPTIONS

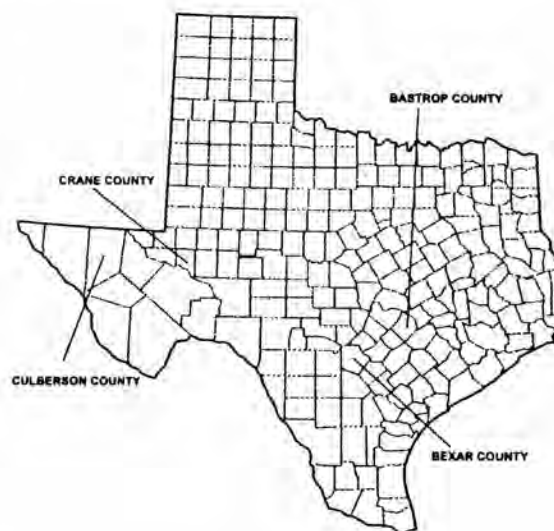
Figure 1, A, A' illustrates a reworked Folsom point from Culberson County in the Texas Trans-Pecos. This specimen was broken and has been reworked. Dimensions are: Length, 30 mm, Width, 20.2 mm, Thickness, 4.0 mm. It weighs 2.5 grams. Base width is 20.4 mm with a basal concavity of 3.7 mm. Lateral edges are ground 18 and 20 mm. Thickness in the fluted area is 2 mm. There is a single flute scar on the obverse that is 20 mm long and 15 mm wide that has prominent ripples. The reverse face has remnants of two flute scars. One is in the upper half of this face. This flute scar fragment was made prior to the reworking of the point. This flute scar is 12 mm long and 8 mm maximum width. The other flute scar on this face originates in the center of the basal concavity. It is 15 mm long with a narrow portion of it extending 5 mm up the side of the earlier scar. This specimen is of glossy, slick, light grayish brown good quality chert with a hint of interior patina. Flaking is neat oblique parallel.

Figure 1, B, B' illustrates a complete Folsom point from Culberson County. It has a single flute scar on each face. The obverse flute is 22 mm long and 10 mm wide. The flute on the reverse is 20 mm long and 13 mm wide. There are light ripples on both faces. This specimen is heavily coated with white patina in all areas. Artifact dimensions are: Length, 31 mm, Width, 20.4 mm at 21 mm above the basal corners and Thickness, 3.8 mm at 9 mm below the distal tip. It weighs 2.7 grams. Edges are ground 18 and 20 mm. The basal concavity of 3 mm is lightly ground. Flaking is mostly fine horizontal parallel. Of the many Folsom points this author has reported this is the first with a full coating of patina.

Figure 1, C, C' illustrates a complete Folsom point

from Bastrop County in southeastern central Texas. It is made of an excellent quality glossy, pale gray chert. All surfaces are slick and edge flaking is rounded and polished to the extent they cannot be counted to identify the number of flakes per inch. It appears to be sand blasted. Dimensions are: Length, 42.1 mm, Width, 20.3 mm, Thickness, 3.2 mm, and Weight is 3.5 grams. Base width is 19.8 mm. Maximum width is 20.3 mm. Basal concavity, 2.7 mm. Lateral edges are ground 22 mm each and the basal concavity of 3 mm is also ground. There is a single flute scar on the obverse 35 by 12.3 mm and 2 flute scars on the reverse. One is 35 mm long by 12.3 mm wide. The other is 15 x 5 mm.

Figure 1, D, D' illustrates a complete Folsom point from Crane County. It is made of light brown good quality chert with a slick, glossy finish. Dimensions of this specimen are: Length, 28 mm, Width, 20.2 mm, Thickness, 3.4 mm, and it weighs 2.1 grams. Base width is 21 mm with a basal concavity of 3.6 mm. It is 2.4 mm thick in the fluted area. There is a single flute scar on each face. The obverse flute scar is 18 mm long, by 13 mm wide. The reverse flute scar is 20.4 mm long by 12 mm wide. Lateral edges



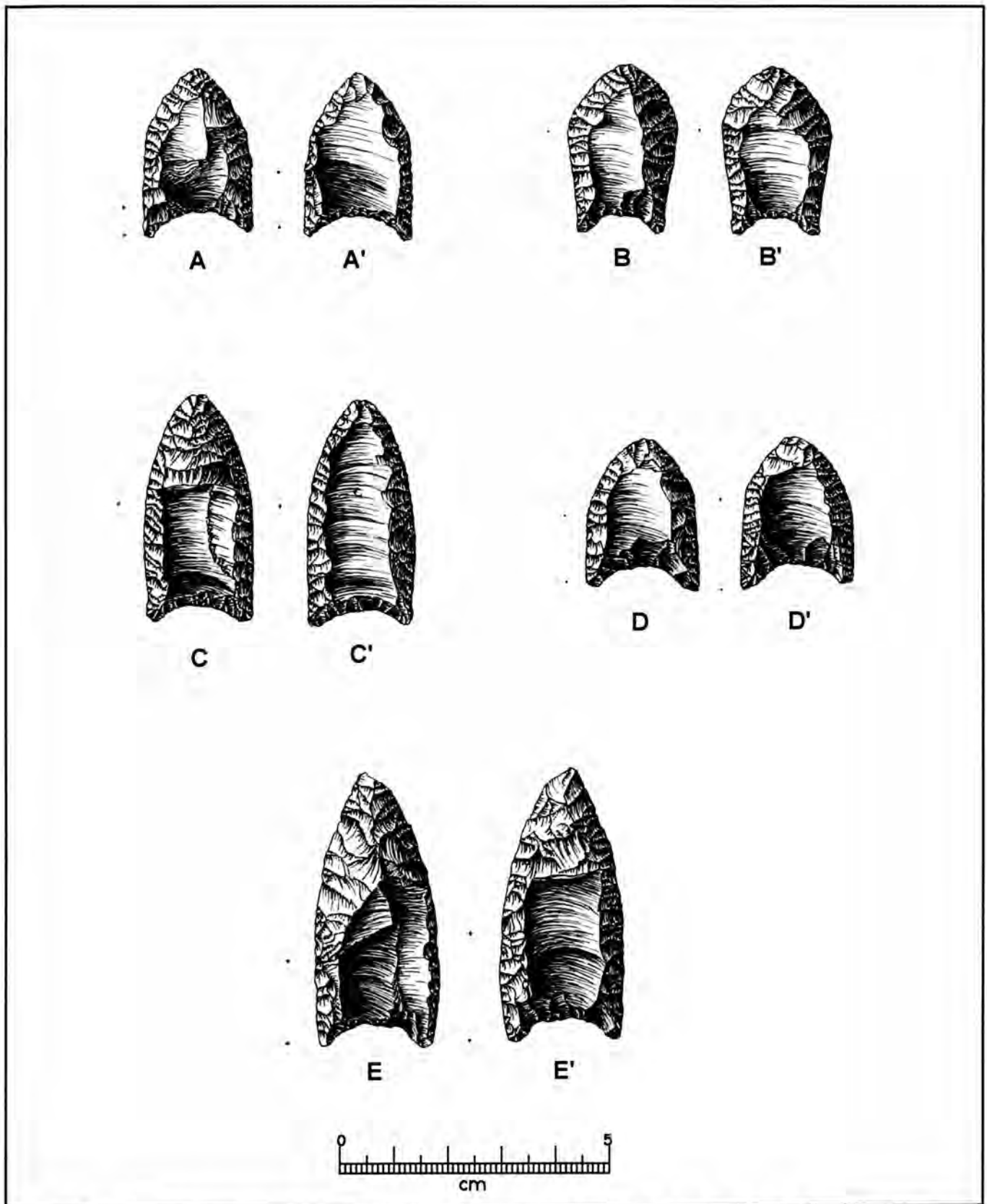


Figure 1. Five complete Folsom points from four widely separated counties. A, A' and B, B' are from Culberson County; C, C' is from Bastrop County; D, D' is from Crane County, E, E' is from Bexar County.

are ground 14 and 18 mm and the base is heavily ground.

Figure 1, E, E' illustrates a complete Folsom point from Bexar County in South Texas. This specimen is of good quality, slightly reddish brown chert with a glossy finish and appears to have been heat treated. It is from a deep sand pit that has yielded a large number of Paleo points over a period of several years including Clovis, Plainview, Golondrina, Scottsbluff, Dawson, Angostura, and San Patrice, but this is the only Folsom recovered from this site.

Dimensions of the Folsom point are: Length, 50.4 mm, Width, 23.2 mm at 12 mm above the base, Thickness, 4.3 mm at 21 mm below the distal tip, and it weighs 6.0 grams. Base width is 21 mm with a basal concavity of 3.8 mm. Lateral edges are ground 26 and 31 mm and the basal concavity of 3.8 mm is also ground. The obverse face has a single flute scar 29 x 19 mm with prominent ripples. The reverse face has two flute scars. One is 32.2 x 7 mm; the other is 31 x 12 mm. Ripples are prominent on both flute scars. Artifact thickness in the fluted area is 3 mm.

DISCUSSION

The most recent database (Largent 1995) reports 345 Folsom points from 102 localities in 63 of the 254 counties in Texas. Obviously there are large areas of Texas where no Folsom points have been recorded. Crane County is one of the counties where no Folsom points have been reported by Largent, et al. (1991) or by Largent (1995).

However, in addition to the one complete Folsom point from Crane County reported in this paper there are several other Folsom points known and reported

by Harrell (1995) from Crane County. Harrell has reported five complete Folsom points; several Folsom basal fragments and one lateral fragment of a Folsom point that has been reworked and apparently reused as a projectile point. All of these reported by Harrell are from private collections from the sand sheet area in the northwest part of Crane County. Provenience for the one Folsom point from Crane County reported in this article is from the southern part of the county near the town of Crane. This area is also sandy.

The one complete Folsom point reported in this article from Bastrop County is the first Folsom on record for this county. It brings one more county into the known distribution of Folsom points in Texas.

The new Folsom point from Bexar County reported in this paper increases the count to eleven (11) documented specimens for this county.

Previously undocumented Folsom points continue to be published in *La Tierra* and provenience is sometimes improperly reported or missed entirely. The one Folsom point reported by Chandler, et al. (1983) is identified by Largent, et al. (1991) as from Nueces County. It is actually from Jim Wells County where no other Folsom points have been recorded.

Properly accounting this Jim Wells Folsom and the new Folsom from Bastrop and Crane counties increase the known distribution for Folsom points in Texas by three previously unreported counties.

ACKNOWLEDGMENTS

These five Folsom points are from the Michael Redwine collection. Sincere thanks are extended to him for their loan for documentation and study, and sincere thanks to Richard McReynolds who prepared the illustrations.

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1845 - 1846 MILITARY HEARTHES, ZACHARY TAYLOR, ARMY OF OCCUPATION, SAN PATRICIO, SAN PATRICIO COUNTY, TEXAS

Jerry L. Bauman

ABSTRACT

The following is a brief report of the artifacts recovered from military hearths from the McMullen Site, McMullen Lot No. 1 (41SP190), San Patricio, San Patricio County, Texas through excavations by the Coastal Bend Archeological Society (CBAS) from the summer of 1997 to the fall of 1998.

INTRODUCTION

Excavation of the two large camp fires associated with the 1845 military occupation of San Patricio provides a small but intriguing look into military life on the frontier during the mid-1800s. This narrow glimpse into the past is limited to the officer's mess area which was encountered along the front of Lot No. 1 and adjacent to the recently cleared and paved McMullen Street. The lot was originally owned by John Mc Mullen from 1830 to 1836. He abandoned the lot after his house was looted shortly after the Battle of San Patricio by the victorious Mexican Army under General Urrea, and took up residence in San Antonio. The lot appears to have remained empty until the United States Army occupied the town of San Patricio from 1845 to 1846.

In 1845, the Republic of Texas was taking steps to become admitted into the Union as a state. President James Polk sent a large segment of the United States Armed Forces, under General Zachary Taylor, to Texas as a deterrent to possible hostilities from Mexico when Texas finally became a state.

The main body of the troops arrived by boat while the dragoons and light artillery traveled overland (through San Patricio) to Corpus Christi. General Taylor arrived on the beaches of Corpus Christi on August 15 and shortly dispatched several companies of dragoons to set up positions outside the town and patrol all roads leading into Corpus Christi. One detachment of dragoons and three light cannon were dispatched to the town of San Patricio.

The actual number of soldiers who camped in San Patricio is not presently known. However, to effectively patrol the roads and the vast area west of Corpus Christi no less than a company (about 78 officers and men) of the mounted soldiers would be needed. Added to this is the number of soldiers of the artillery unit plus personnel needed to handle the wagons carrying the baggage and supplies for the force during its long stay in San Patricio. It is also apparent that a small detachment of infantry may have been dispatched as well. Infantry units have long been used as support for the artillery and may have served as guards at the camp while the dragoons patrolled the roads. This flanking force could easily have numbered up to 200 men, officers and military support personnel.

EXCAVATION

Two large hearth areas were encountered just four inches below present ground level and roughly in a north to south alignment. Both hearth areas are roughly oval with the north hearth being 10' 4" long by 11' wide and 1' 5" deep, and the south hearth being 11' 11" long by 7' 9" wide and 1' 2" deep. Each



hearth area represents the culmination of multiple small hearths being dug in and around the same areas over a long period of time. The occupation of the camp site was about seven months. By March 8, 1846 the camp had been broken and the 2nd Dragoons were marching to Matamoros, Mexico.

Areas of heavy to light ash, charcoal and baked clay nodules began about four inches below present ground level to a maximum depth of thirteen inches. Below these ashy layers was a mixture of charcoal and dirt to the bottom of the hearths. Due to successive episodes of digging, building the fire and banking it with dirt at the end of each day, the outline as well as the bottom of the hearth areas was difficult to establish. Several false bottoms were encountered during the excavations. The bulk of the artifacts was recovered in the ashy layers of the hearth with only some animal bones, ceramic fragments and hearth stones being recovered below 10 inches deep.

Near each large hearth area were two small shallow satellite hearths. These small hearths may have been built while the camp was being established. It is also possible that they were built when the dragoons and artillery first stopped off for the night in San Patricio prior to continuing on to Corpus Christi.

Both hearths had sandstone cobbles of varying sizes used as hearth stones. It appears that many of the stones were salvaged and reused as the fires were rebuilt daily with some being buried and lost. More stones were encountered in the North Hearth than the South Hearth. Some eight fragments of home-made bricks were recovered from the South Hearth Area raising speculation that these were also used as hearth stones. It is also clear that the South Hearth Area was utilized during the warm months and the North Hearth Area in the winter. Since the North Hearth Area was the last area used, that is why nearly all of the sandstone cobbles were recovered from it and very few in the South Hearth.

Areas of baked clay nodules formed in the hearth areas as freshly exposed dirt was heated by the fires or as dirt was shoveled over the hot coals when the fires were extinguished at the end of the day. Some of these nodules (12 fragments) had impressions of sticks, flat surfaces of metal objects and textured surfaces of the ground that they were exposed to at the time they were formed.

Mess duty was not performed by a permanent cook in the United States Army during this time

period but was detailed to lower enlisted men. It also appears that two styles of cooking were being conducted at this camp site with the traditional above-ground method and the possibly newly-acquired below-ground method. Cow teeth and skull fragments recovered from both hearth areas allude to the South Texas style of preparing cow head for consumption. This process of cooking is conducted by placing the wrapped (in wet burlap cloth) head into a deep pit lined with hot coals and then covered by dirt to seal the pit. The trapped heat steam cooks the cow head.

It is clear that the bulk of the wood used in the fires was salvaged from nearby abandoned cabins. The cabins were stripped of furniture and the walls removed and chopped up for fuel for the fires. San Patricio at this time was largely abandoned. Some of the townspeople never returned after the Runaway Scrape during the fight for the independence of Texas, or later left because of Indian and Mexican bandit raids. The recovery of 523 whole square nails and 955 fragments, 3 brass furniture tacks, and a caster from a large section of furniture give evidence of these scavenger operations. Other artifacts include a small hinge pin, 3 iron wood screws, brass eye bolt, iron latch part, and a nut and 2 bolts. All of the nails appear to be machine-cut and ranged in size from 0.84 inches to 3.4 inches long. Since the nails were exposed to high heat in the fires, preservation was very poor.

Basic food rations for the soldiers included bacon, pork or beef, bread, flour or commel with allowances for coffee, beans or rice, sugar, vinegar and salt. Not presently known is how much of the food issued to the soldiers was acquired locally and what was shipped in. It is likely that the army purchased as much of the basic rations locally as possible with the remainder coming by ship. Contact with the local civilians would have varied with the placements of the soldiers. In respect to the soldiers placed on the outpost like those in San Patricio, civilian contact may have been more important in regard to food. This shows up, to some degree, in the animal remains recovered from both hearth areas.

ARTIFACTS

Eggs and Nuts

The North Hearth Area yielded 1,625 (408.8 grains) eggshell fragments with the South Hearth

Area having 12,119 (2,859.6 grains) eggshell fragments. The fragments were recovered individually and in small clusters. There was more clustering and in larger numbers in the South Hearth Area. This higher concentration in the South Hearth Area also lends support to the conclusion that it was utilized in the summer months. Egg production tends to be higher in the warm months than in winter.

To calculate the number of eggs that were eaten at the site, the dried eggshells of a dozen large grade A brown eggs were weighed. The highest and lowest weighing shell was discarded and the resulting average was 88.68 grains per eggshell. With this factor, 5 eggs were consumed in the North Hearth and 33 eggs in the South Hearth. The numbers were rounded off to compensate for the fragments that were too small to collect.

The eggs may appear not only as a food source but as a medium in coffee brewing. Crushed eggshell was used to cut the bitter taste of the harshly-brewed coffee and to capture the coffee grains in the bottom of the pot. With this in mind, possibly not all of the eggshell was deposited in the fire but tossed on the ground when the coffeepot was empty. Therefore the actual number of eggs consumed may be twice as much as indicated.

A single charred nut fragment (possibly pecan) and a comcob was recovered from the North Hearth and South Hearth Areas respectively. Both items were most likely grown locally. Pecans were once numerous along the Nueces River.

Fish

A total of 201 shellfish fragments was excavated from the hearths. Not all of the shellfish are being regarded as food sources. Apparently some of the smaller shell was unintentionally brought in as the main seashells were collected in Corpus Christi Bay. These are 2 water-rolled quahog shell fragments and 51 cross-barred Venus shell fragments. Edible shellfish include 60 oyster, 25 conch or whelk, a Florida horse conch, a disk dosinia, 10 scallop, a ponderous ark, *Rangia*, 38 freshwater mussel and 11 undetermined shell fragments.

Animal

A large number of animal bones (3,507 fragments) was encountered in the excavation of the hearths. With very few exceptions, the bones were very splintered or broken into small fragments by the

repeated excavations of the hearths. Cow bones include 219 long bone fragments, 4 skull fragments, 2 mastoids, 19 rib fragments, 2 phalanges, 43 vertebrae, 4 metacarpals, a joint pad, 6 complete teeth and 34 teeth fragments.

Large-sized animals, antelope to deer size, are represented by 741 long bone fragments, 8 ribs, 1 mastoid, jaw fragment, horn core, 2 vertebra and a pad, 2 phalanges, and 6 whole teeth and 16 teeth fragments. A possible intrusive bone from a horse (astragalus) was encountered outside the North Hearth area.

Indeterminable medium size animal bones number 993 long bone fragments, 16 ribs, 3 vertebra and 3 vertebrae pads, a calcaneus, astragalus, humerus, 9 teeth fragments and 1 whole tooth. Medium-size animals are hog- and sheep- size up to antelope.

Indeterminable small animal bones include 1,112 long bone fragments, 14 vertebrae, 4 ribs, 2 innominate, a scapula, coccyx, and 5 teeth. A large portion of these bones are thin-walled and hollow, possibly chicken or waterfowl. Located nearby are two oxbow lakes and the Nueces River as well as many shallow depressions that holds runoff water that is a prime habitat for waterfowl.

Identifiable small animal remains include 9 snake vertebrae, 14 turtle bone, 4 hog bone fragments, 3 deer, 2 rabbit, 27 rodent, 63 armadillo, 32 bird, 6 gar, 18 fish scales and 22 fish bones. The low number of fish otoliths may suggest that the fish were headed and cleaned prior to arriving at the camp.

Most of the artifacts were recovered from within the confines of the two hearth areas with a low number being encountered immediately outside them. This implies that at least the areas around the campfires were being swept clean of broken items and trash and being deposited into the fires. It is evident that not all of the damaged items were deposited in the fires. A lot of the glass and ceramic fragments do not have any corresponding fragments. Apparently some items were broken and deposited elsewhere.

Glass

Glass container fragments (2,394 fragments) represent a sizable portion of the artifact assemblage. Small medical bottles, small drinking glasses and lantern chimneys are represented by 1,744 clear glass fragments. All of the small clear glass medical bottles have open pontil marks on the bases. The 145 clear flat glass fragments may represent paneled bottles,

mirror glass, or fragments of box lanterns. Distilled spirits bottles are represented by 208 olive green, 7 dark green, and 202 amber glass fragments. Undetermined glass containers are represented by 3 pressed glass (Figure 1, g), 5 cut glass, 5 pale green or soda bottle glass, 4 opaque white, and 35 new green glass fragments. Larger medical bottles are inferred by 11 cobalt blue glass fragments. One teapot finial was found (Figure 2, e).

Ceramics

Of the 2,095 ceramic fragments recovered from the hearth areas, 899 fragments were decorated. These decorated ceramics vary greatly and appear that none are from matched sets (see Table 1). Undoubtedly most of the plain ceramic fragments may fill in the empty spaces of the decorated vessels. However, some of the fragments went to plain vessels. These plain vessels are: a large plate (5 fragments); saucer (28 fragments); 4 shaving mugs (18 fragments), and a teapot (1 fragment).

Ceramic breakage appears to be very high. Metal flatware would have been considerably cheaper in the long run since it would last longer and be easier to transport. Pamela Headrick (1993) noted a similar occurrence of the varying types of ceramics on another possible campsite of the 2nd Dragoons along the Oso Creek. She alludes that the ceramics may be attributed to the officers' mess. This seems logical since enlisted men would not have been so pampered. However at the camp site in San Patricio, only military buttons from enlisted men were recovered from the hearth areas. This may be logical since only enlisted men were doing the cooking and if any buttons ended up in the hearths, they would be theirs. Some of the officers may have been able to contract with locals to cook.

Activity Items

Leisure time around the campfires is reflected by the appearance of kaolin pipes. The North Hearth provided 34 pipe fragments while the South Hearth yielded 197 fragments. The bulk of the pipes (142 stem fragments and 89 bowl fragments) are white, unglazed, ribbed, and long-stemmed. Two short-stemmed pipes are represented by 3 fragments of a green glazed pipe and 4 fragments of a slate gray pipe (Figure 1, h, i). The short-stemmed pipes may have been personal possessions while the white pipes were not. These white clay pipes were passed around

Table 1. Ceramics, Military Hearths, 41SP190 (Headrick 1993).

Ceramic Type	No. Varieties	No. Frags.
Blue Flow	8	33
Brown Transfer Print	5	25
Purple Transfer Print	7	63
Red Transfer Print	5	13
Blue Transfer Print	18	117
Black Transfer Print	2	6
Green Transfer Print	1	3
Hand painted	13	29
Single color	4	18
Mocha	2	30
Edgeware	20	211
Banded ware	14	87
Sprigware	11	150
Peafowl	1	2
Lineware	5	10
Yellow ware	4	14
Ginger beer bottle		19
Crockery		24
Mexican pottery		13
Maker Marks	5	1

with each person breaking off a section of the stem before smoking it. The number of white pipes recovered from both hearth areas is estimated at 14. This number was derived by counting the number of pipe bowl fragments with heels (Figure 1, j). Since some white pipe fragments have been recovered farther back on the lot the actual number may be slightly higher.

Along with smoking, gaming was used to pass the off-duty hours. This activity is inferred by the recovery of a broken clay marble, 5 slate pencils and 40 slate fragments. The slate writing equipment would have been used to keep scores for the various games the men enjoyed. The marble may have been a gaming piece. One large slate fragment (Figure 2, a) is unusual because of a crude drawing on one face. Scratched on one face is the left profile of a long-

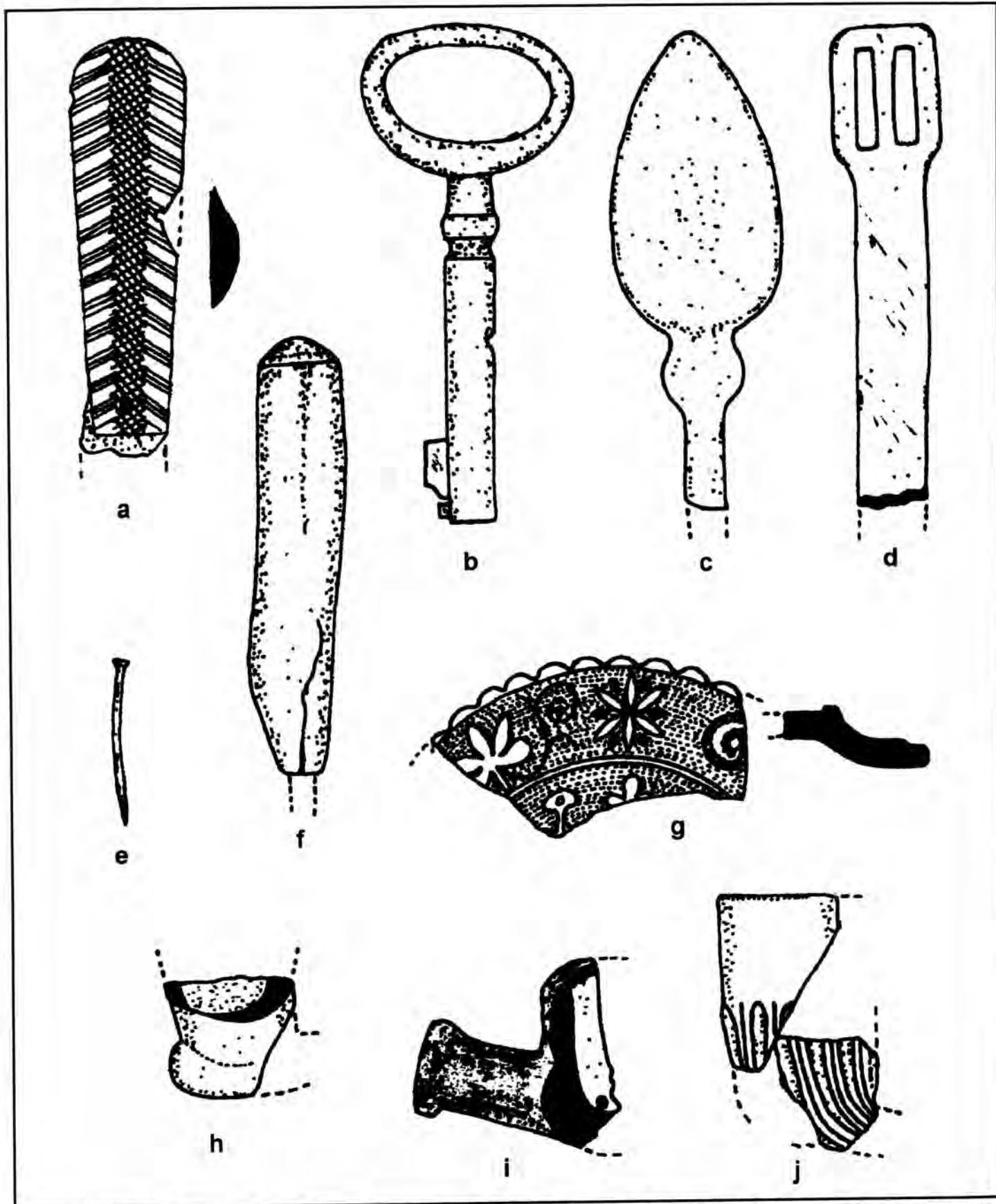


Figure 1. Artifacts from 41SP190, Military Hearths, San Patricio, Texas. a, Bone handle for eating utensil; b, Leg iron key; c, Iron spoon fragment; d, Brass spur part; e, Silverplated brass straight pin; f, Bone handle for button hook; g, Pressed glass container fragment; h, Gray clay pipe bowl fragment; i, Green glazed pipe fragment; j, White clay pipe bowl, most common pipe used at the site.

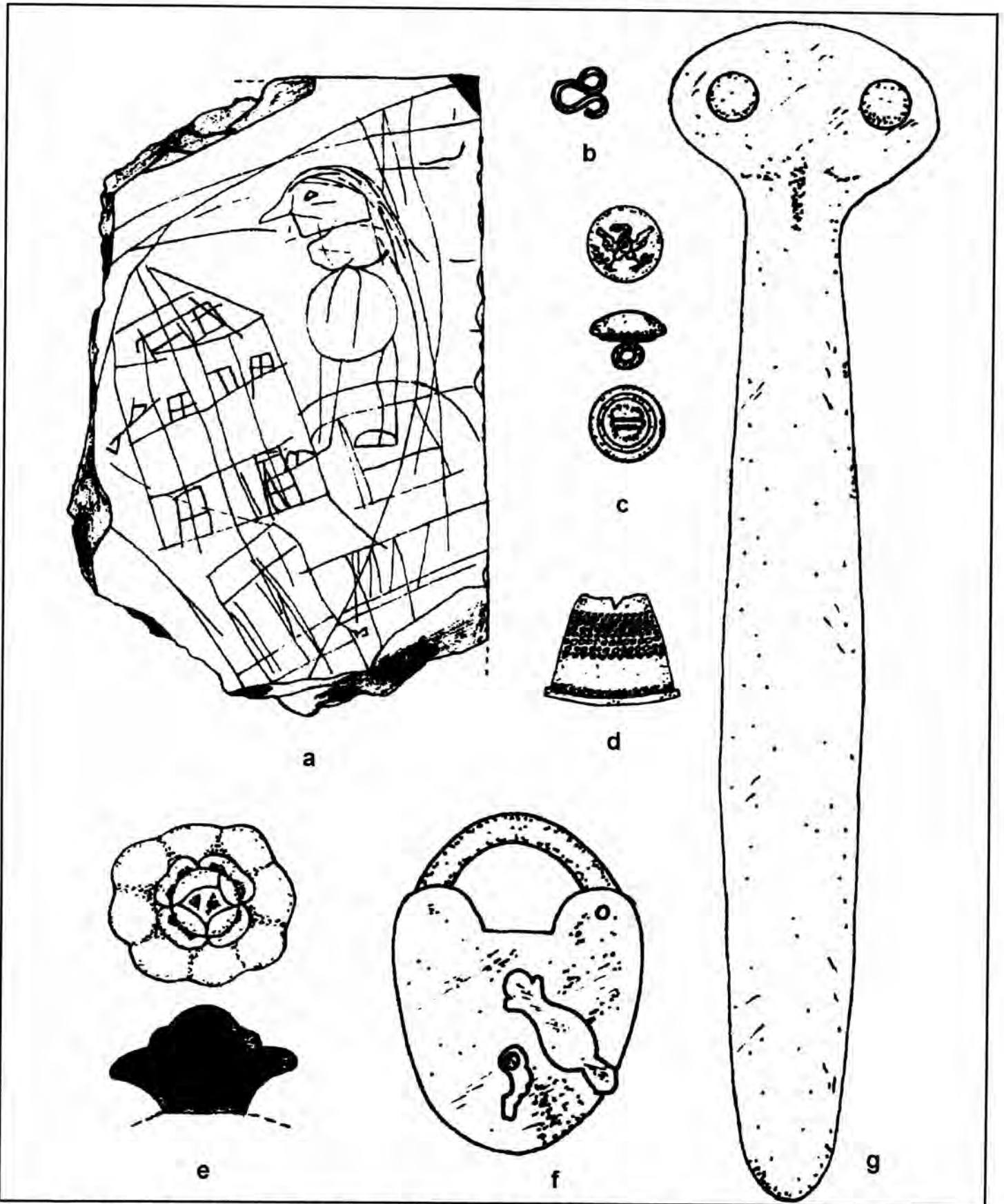


Figure 2. Artifacts from Military Hearths, 41SP190, San Patricio, Texas. a, Slate tablet fragment with scratched-on drawings of house and person; b, eye for hook and eye fastener set; c, Two-part military button, Dragoons, produced from 1830-1850; d, Crushed thimble; e, Teapot finial; f, Iron padlock; g, Stamped heavy gauge sheet iron skillet handle.

haired person whose features include a long sharp nose. The person is standing in front of a two-story house with what looks like two outbuildings close by.

The presence of musical instruments is indicated by a harmonica reed plate and a single ivory peg. The peg is hollow and may be from a stringed instrument, possibly a violin. No doubt some soldiers brought personal instruments along to entertain themselves and the rest of the camp. Army bands were present but assignment to a small unit on flanking duty is doubtful.

Personal Items

Personal hygiene was another part of camp life. The soldiers were to be clean shaven, the Dragoons were allowed to have mustaches, with hair neatly trimmed above the shoulder. Only a few artifacts were recovered that reflect on this aspect of camp life: part of an ivory shaving brush handle, a small fragment of a fine toothed comb made of turtle shell, and 5 fragments of a bone-handled toothbrush. The South Hearth Area yielded a nearly complete double-sided fine-toothed comb made of very thin bone.

Clothing

Duties of a soldier on the frontier appear to have been very hard on his uniform. Maintaining the appearance of his uniform may have been a nightly chore and the 122 artifacts collected from both hearths may reflect this process. The artifacts include 3 bone-handled buttonhooks, a broken pair of scissors, worn out thimble (Figure 2,d), hook-and-eye fasteners (9 hooks and 16 eyes, Figure 2 b), 107 silver-plated brass straight pins (Figure 1, e), 6 iron sewing needles, loop fastener, and 89 buttons. It is known that laundresses were hired for each company in the main camp in Corpus Christi, but it is not known, at present, if any accompanied this detachment to San Patricio. The appearance of sewing tools implies that they were left to attend to their own uniforms. Possibly some officers managed to hire some of the locals to perform this task.

Recovered buttons include 33 bone, 18 glass, 27 shell, 1 homemade lead, 9 brass, 5 military, 5 stamped tin, 4 possible ceramic, and 3 snap-like buttons. Most of the bone buttons appear to be large four- or five-holed trouser or shirt buttons with a single 1-hole bone button that may be for a shirt or underwear. All of the shell and glass buttons are small, four-holed and appear to be for underwear.

The possible ceramic buttons are five-holed small buttons that would be preferred for underwear. The single lead two-holed button is of moderate size and due to the softness of the lead it may have been used on a shirt. The stamped tin buttons are four-holed and may have been used on trousers. The brass buttons appear to be all for civilian clothing. Three large, heavy, shank buttons may be from a heavy coat while the two smaller ones may be from a shirt or light coat. The military buttons include a large, plain and flat, shanked button manufactured by L. H. Scovill. Four smaller shanked buttons are of molded brass in the earlier style (1833 - 40). Two have an eagle with a 'T' on the shield (Figure 2, c), one is a general service button with a shield on the eagle, and the other is too fire-damaged to determine. The snap-like buttons at first looked like a rivet for adjusting the fit for various leather straps, belts or slings. However, two of them later recovered in the South Hearths had impressions of cloth on them. Apparently they were cloth-covered buttons.

Eating utensils

Eating utensils include 2 bone handles from two-tined forks, a three-tined fork, 1 pewter-handled spoon (Figure 1, c), 2 bone-handled spoons, and an undetermined metal handle. Also recovered were 3 bone handle fragments from other utensils (Figure 1 a, 1, f).

Metal Items

Various metal containers are indicated by the 4,108 flat tin fragments, 12 formed tin fragments, 6 round can lids and a can body. Also encountered in the South Hearth was a handled rectangular bread pan. The formed tin was found as end-folded, edge-rolled, folded, and tubular rolled fragments. Pewter or hard lead strips (154 fragments) may have been seals from some of the containers. Most of the flat tin fragments may be from rusted-out cans with some fragments being scale popped off of cast iron or sheet iron cooking utensils. The stamped sheet iron handle from a skillet (Figure 2, g) was recovered from the South Hearth. Also some of the flat tin fragments may have been from various strapping materials. Officially, only 15 sections of medium-gauge barrel strap from the hearths were recovered.

A total of 143 cast iron fragments was recovered from the hearths. These include 3 kettle lid fragments, 1 stove part, 7 kettle body fragments and 132

unidentifiable fragments.

Some equipment parts and tools and miscellaneous items were also recovered in the hearths. These include a small triangular file, homemade blade from sheet tin, flat silver pin, pocket watch face, 2 wood screws, iron padlock (Figure 2, f), latch-like part, fishhook, brass handle, brass spur part (Figure 1, d), spur rowel, lead seal, 4 sections of sheet brass, 5 iron rods, leg iron key (Figure 1, b), harness ring, and an eyepiece and brass cylinder from a telescope. Also recovered were 3 brass, 9 iron and 1 tin buckle fragments. Only one small iron equipment buckle was complete. An iron and a brass buckle appear to be wide suspender buckles while the others could have been from various types of equipment.

The number of fragments of wire recovered from the hearth areas was moderate. Two sections of heavy gauge wire turned out to be from a bucket handle. Other wire sections included 4 heavy, 33 medium, and 149 thin fragments of iron wire and 4 small concentrations of twisted thin wire. Brass or copper wire included 1 medium and 6 thin sections.

Firearms

Firearms related material include a section of bar lead, 12 fragments of melted lead, 21 percussion caps (15 pistol and 6 musket), 22 large and small caliber musket balls, 5 deformed balls, 57 shot, and one gunflint. Muzzle-loading, percussion-fired muskets and flintlock pistols (percussion pistols were issued early in 1845) were the standard issue weapons for the Dragoons. Both weapons fired a .54 caliber ball bullet. The two large caliber balls are a 0.51" wide ball and a deformed ball of about the same size. These may be the only two military related bullets. All the other small size balls and shot appear to be civilian and may have become imbedded in the various game and meat cooked over the camp fires. Small caliber ball ammunition varied from 0.38" to 0.36" and weighed from 81 grains to 59.6 grains. Some of these balls may be large shot and not small caliber pistol ammunition. Also, buck and ball ammunition may have been utilized as well as single ball ammunition. Shot pellets were recovered in two sizes, buckshot and birdshot.

Recovered birdshot only numbered 19 pellets. Since these pellets were very small, possibly many were overlooked during excavation and lost through the screens. The sizes of birdshot are as follows:

Table 2. Birdshot, Military Hearths, 41SP190

<u>Type</u>	<u>#Pellets</u>	<u>Width</u>	<u>Weight (grains)</u>
#1 Shot	2	0.16"	6 - 6.2
#2 Shot	4	0.13"-0.15"	4.9 - 5.2
#3 Shot	3	0.14"	4.4 - 4.9
#11 Shot	3	0.06"-0.07"	6 - 6.6
Air Rifle	1	0.17"	7.4
BB Shot	6	0.18-0.19"	7.8 - 11

The large caliber or diameter shot was easily recovered and numbered 38 pellets. The sizes of buckshot is as follows (Table 3):

Table 3. Buckshot, Military Hearths, 41SP190

<u>Type</u>	<u>No.Pellets</u>	<u>Size</u>	<u>Weight (Grains)</u>
0	1	0.31"	49.5
00	6	0.33"-0.38"	53.4-66.7
1	5	0.27"-0.31"	42.8-50.9
3	25	0.26"-0.29"	23.8-34.4
4	1	0.26	24

Miscellaneous Items

Luckily, the number of intrusive items was moderate even though the hearths were located so close to the road. Possibly due to the lot being heavily overgrown and the road being reopened only a few years ago, modern dumping of trash was very limited. However, the lot was frequented by hunters and small and large caliber bullets and cartridges were left in various areas of the lot. The bulk of the intrusive material was in the overburden that was deposited on parts of the hearth areas as the reopened road was graded and ditched. This material was mainly glass and can fragments, round nails, brick fragments, and wire staples. Other items included two glass beads, school chalk, electrical wire, insulator fragments, pencil parts, spring fragments, bottle caps, canning jar lids and rubber seals, 1853 half dime, and light-

bulb fragments. The only items that intruded deep into the hearths were modern bullets.

Prehistoric Items

Other intrusive material came from an older source. About 458 chipped stone flaking debris, 2 scrapers, modified cobble, and 2 broken projectile points were found in and around the hearths as well as 3 fragments of Indian pottery. This material apparently comes from an Indian occupation site located near by.

CONCLUSIONS

The hearth areas were very productive and provided many artifacts that hinted at camp life for the officers, however, the picture is not complete. There are still two areas that need to be investigated. One area is west of the hearths and should be the area where the tents for the officers were located. Possibly some personal artifacts may have been deposited in this area that will provide additional information that artifacts from the hearths did not.

The other area is immediately south of the South Hearth Area. During the excavation of the South Hearth Area, rows of square nails, standing on end and pointing straight down into the ground, were encountered. The nails were encountered in clusters of 3 to 4 nails of slightly varying sizes about every 9 inches apart. The rows were roughly aligned at a 45 degree angle to the road. Investigation into this feature is needed to determine how the rows of nails are associated with the hearths.

General Taylor ordered planking for the purpose of providing floors for the tents. This material did not arrive till February 1846, only a month before they left for Mexico. It is possible that the wood was used and the rows of nails may indicate where one tent or some other type of structure stood. A second possibility is that the wood for the fires was stacked in this area. The lumber stripped from the vacant houses was placed on the ground with the nails pointing down into the ground. Not all of the wood had been burned by the time orders came to decamp and the remaining was left in place to rot away.

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TEST EXCAVATIONS AT 41VV156: MIDDLE AND EARLY ARCHAIC STRATA

Solveig A. Turpin

ABSTRACT

In 1998, the Rock Art Foundation, Inc. sponsored test excavations in a large dry rock shelter, 41VV156, on a tributary to the Pecos River in Val Verde County, Texas. Although badly damaged by relic hunters, the site retained some intact Middle and Early Archaic deposits at depth. Three radiocarbon dates placed occupation of the lower strata between 6800 and 7600 years ago. The number of artifacts that still bore traces of pigment suggests that paint production and use were well established by Early Archaic times. Copious amounts of mussel and snail shell indicate that the occupants of 41VV156 exploited a broad spectrum of resources and ecological niches.

INTRODUCTION

The 1998 Rock Art Foundation (RAF) field school test excavations in 41VV156, a badly vandalized dry rock shelter on a tributary to the Pecos River (Figure 1), found remnant intact Middle and Early Archaic deposits in isolated pockets between and beneath relic hunter holes (Figure 2). When recorded by Graham and Davis (1958) during their initial survey in anticipation of the impoundment of Amistad Reservoir, this large rock shelter was described as intact and a prime candidate for excavation. In 1990, when I first visited 41VV156, I noted on the site form that it was still relatively intact with only a few old shallow holes that had been smoothed by the passage of time. Eight years later, the site had been transformed into a ravaged hulk of a shelter pocked by huge irregular pits and piles of screening debris that walled in the front of the overhang (see Figure 2a).

Several aspects of the site were intriguing. The sheer quantity of mussel shell discarded by the relic hunters and exposed on the surface of a large burned rock midden on the flats above the canyon seemed unusually profuse for a site over a kilometer from the

river. Fragmentary projectile points on the discard piles indicated that substantial Middle and Early Archaic components had been destroyed by the vandals but small segments along the rear wall and a larger portion of the western end appeared to be still intact. The objective of the RAF field school was to determine if the site could still yield important information, despite the damage inflicted over the past eight years, and, if so, to prepare for a series of excavations in the coming months to salvage what little remains.

LOCAL ENVIRONMENTAL CONTEXT

The site is in the right wall on the outside of a sharp meander in an unnamed left-bank tributary of the Pecos River, about one straight-line km above and east of their confluence and 2.5 kms above the juncture of the Pecos and the Rio Grande. Nestled in the curve, midway between the rim and the canyon floor, the shelter faces south, above the level of flood waters that course down the narrow defile after heavy rains (Figure 2b). The nearest steady source of water is a spring or relatively stable tinaja about 400 meters upstream although casual water is retained for short periods in pot holes in the canyon immediately in front of the site.

The shelter is ideally situated to take advantage of the diversity in resources afforded by ecotonal changes from the canyon floor to the upland flats. Chert outcrops, immediately above the shelter on the rim and adjacent slope, provided a ready source of raw material for stone tool manufacture. The Pecos River, flowing west of the shelter, must have been a choice resource zone based on the quantities of mussel shell strewn on the surface of the relic hunter backdirt and occasionally found in the excavation units. Closer at hand, the tinaja in the canyon bottom east of the shelter was probably a steady source of potable water that attracted animal and human alike. Desert staples, such as sotol, lechuguilla, and prickly pear grow in

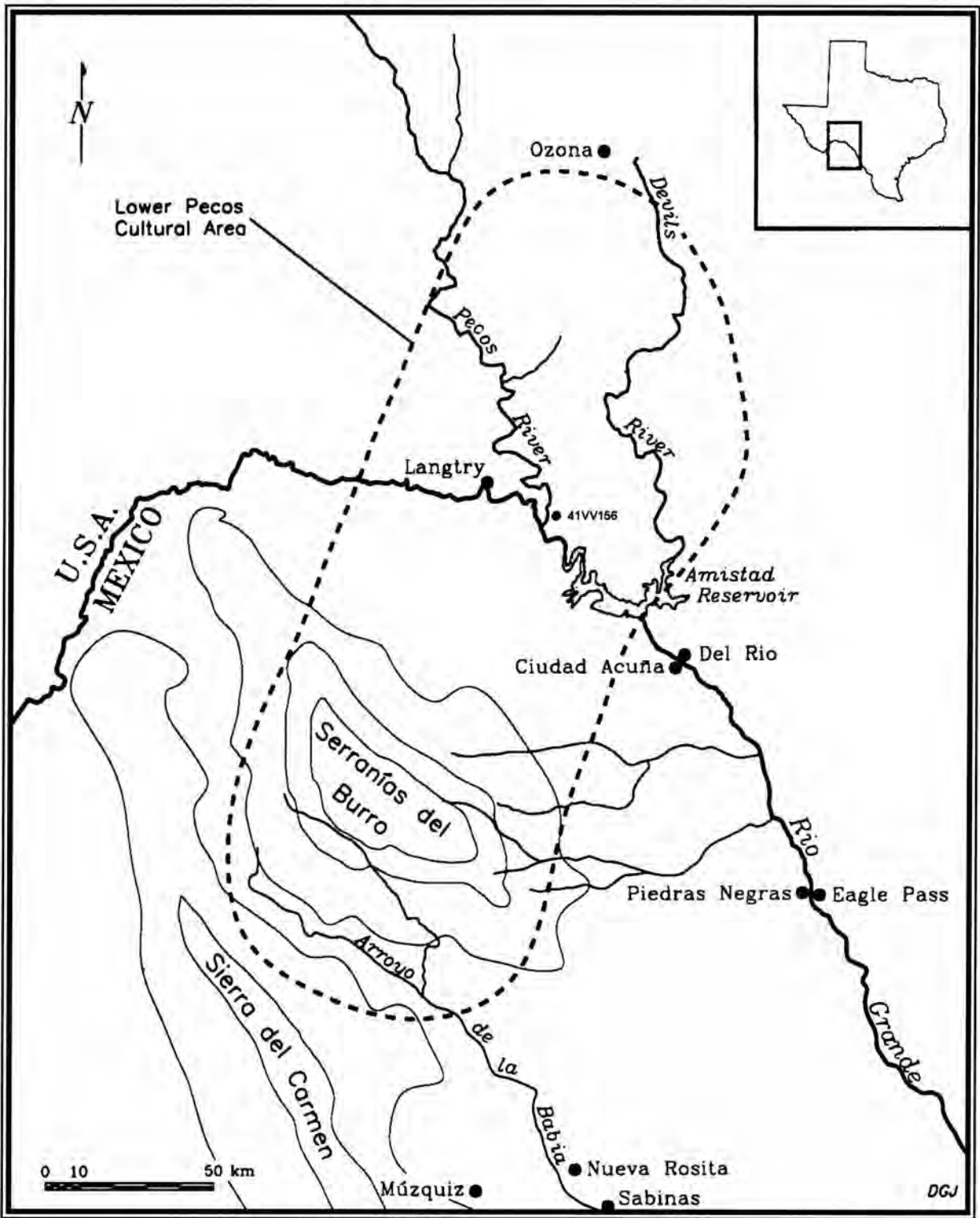


Figure 1. Map of Lower Pecos Cultural Area. Site is indicated near confluence of the Pecos River and the Rio Grande. (From Turpin and Middleton 1998).



Figure 2, a. Photograph of shelter from opposite side of canyon. (41VV156)



Figure 2, b. Interior of site showing the extent of relic hunter damage. (41VV156)

abundance on the upland flats where a substantial population of rabbits and other small animals thrives. The riverine vegetation of the canyon bottom provides food and shelter for white tail deer and other mammals exploited by prehistoric people. Thus, all the necessities of life could be obtained within a few hundred meters of this excellent shelter.

CULTURAL CONTEXT

The chronology of Lower Pecos prehistory has been discussed in detail (Turpin 1991, 1995) and will only be briefly summarized here. Based on the materials recovered from 41VV156 during testing, the main periods of interest are the Early Archaic Viejo and the Middle Archaic Eagle Nest and San Felipe, although future work in the site may well encounter more Late Archaic materials as well.

The Viejo subperiod, 8000 to 5500 B.P., is indicated by the recovery of Martindale, Uvalde, and Devils Triangular dart points and by three radiocarbon dates. Adapting to the trend toward aridity that characterizes the transition from Paleoindian to Archaic lifeways, the people of the Lower Pecos developed a clearly successful economy that relied upon desert succulents for food, clothing, and tools. The fiber industry was well advanced by Early Archaic times. Little evidence of their aesthetic or spiritual life remains but some painted pebbles can be attributed to the Early Archaic period.

The Eagle Nest subperiod, 5500 to 4100 B.P., sees the refinement of the desert adaptation and the introduction of the distinctive Pandale dart points which are later replaced by the equally regionally specific Langtry and Val Verde styles. The Lower Pecos as a cultural entity is defined by regionalization that reaches its apogee during the San Felipe subperiod, 4100 to 3200 B.P. The highly distinctive Pecos River rock art style is tentatively attributed to San Felipe artists who portrayed the increasing complexity of their society in elaborate polychrome pictographs that clearly express a belief system based in shamanistic principles.

A break in the trend to aridity signals the end of the ethnicity implied by the regional specificity of the Middle Archaic period. The influx of bison herds and their attendant hunters marks the beginning of the Late Archaic period and a concomitant move from shelter to open air sites more in keeping with a mobile economy. After a few hundred years, the arid climatic

regime and the archaic adaptation to it are reasserted and life in the shelters resumes in much the same form. Given the depth of deposits that 41VV156 once had, Late Archaic and Late Prehistoric components are probably present in the relatively intact but shallower western end of the site but the testing program encountered only a few artifacts characteristic of these later periods in the ravaged central portion.

History of Site Investigations

Graham and Davis (1958) recorded 41VV156 during their initial reconnaissance of the Amistad district prior to reservoir impoundment. At that time, the only vandalism noted was minor and the deposits were described as deep and dry. In 1990, I visited the site while on a volunteer survey of the ranch which was at that time slated for development into small properties for recreational use. The National Park Service's survey of land surrounding Amistad Reservoir rerecorded the site which is on private property well outside their jurisdiction.

METHODS

For five days, between June 24 and 29, 1998, a field crew composed of RAF members and three supervisory personnel—Larry Riemenschneider, crew chief; Lisa Middleton, assistant crew chief and lab supervisor; and Solveig Turpin, director—excavated five 1x1 meter units and two test trenches to a maximum depth of 2.96 meters below the original site surface (and datum). Prior to the inception of field work, the field supervisors made a tape and compass plan map of the shelter and laid out two units, A and B, against the rear wall on the fringes of the largest relic hunter hole (Figure 3). Vertical control was maintained from a nail driven into the rear wall of the shelter at approximately the level of the surface at Units A and B. The upper levels of Units A and B, which were obviously backdirt from relic hunter pits, were shoveled until artifacts began to appear on the screen around 60 and 70 cmbd (cm below datum) respectively. Then, excavation proceeded in arbitrary 10 cm intervals. A 50-cm-wide, 2-meter-long test trench (TT1) was dug in the bottom of the largest pot hole to determine the depth of the deposits to bedrock and to afford a working profile for two adjacent 1x1 meter units—C-East and C-West. Unit A, the least productive of the test pits, was terminated at a depth

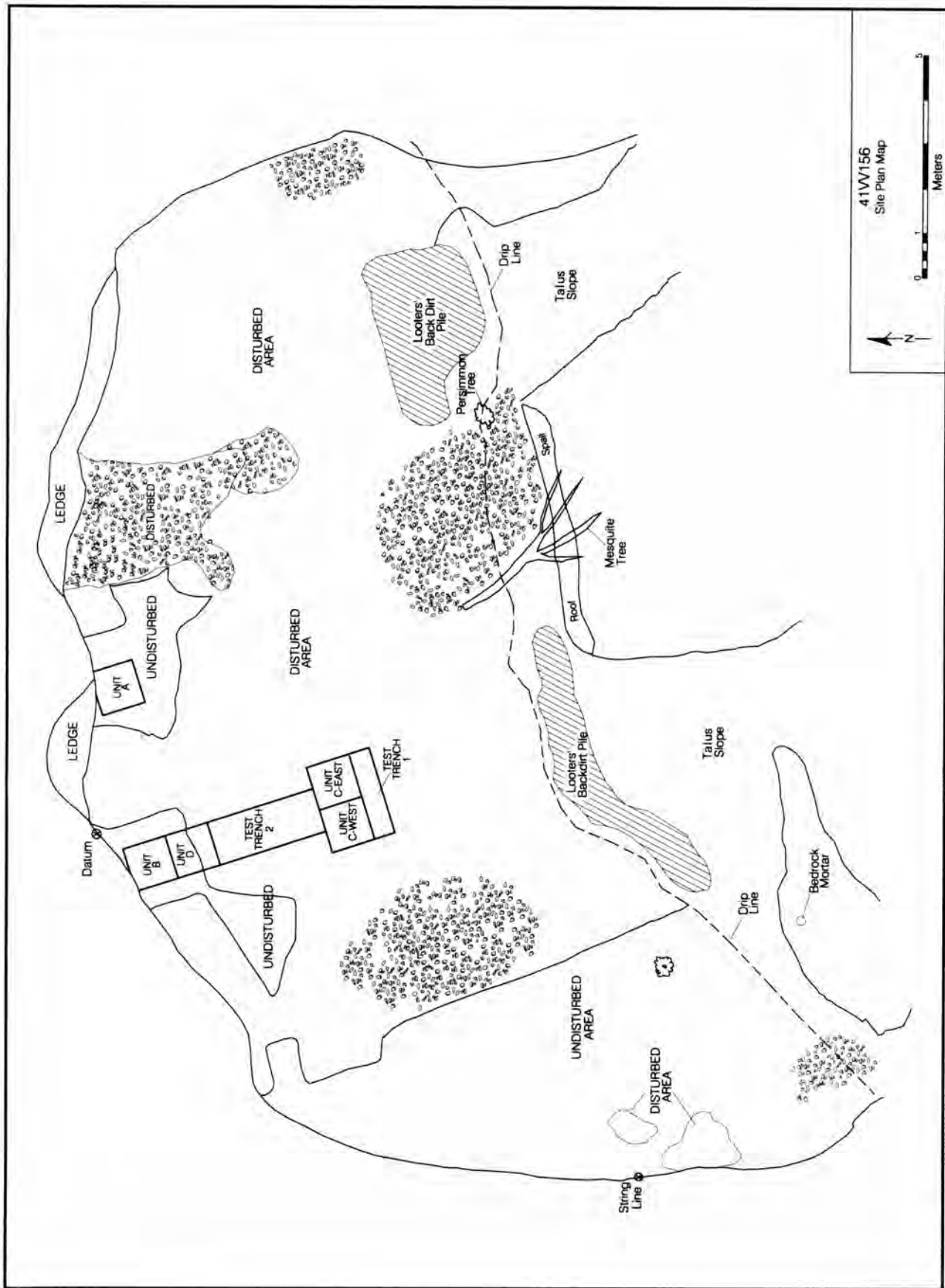


Figure 3. Plan map of shelter (41VV156) showing excavation units.

of 1.4 meters. Unit B was dug to bedrock at 1.8 meters as were C-E and C-W which began about 1 meter bd (below datum) and reached a depth of 2.7 meters. Unit D was established to enlarge Unit B, extending the excavation pit another meter to more fully expose fiber features. A second test trench (TT2), 1 meter long and 70 cm wide, was then dug between Units D and C to expose the slope of the bedrock and provide an intersecting profile. The floor of the shelter deepened from 1.8 meters bd in Unit B to 2.96 meters at the deepest point of TT1. One objective of the field school was met when several apparently undisturbed features and lenses were exposed in the profiles. Charcoal samples from three hearths or ash pits were submitted for radiocarbon assay to confirm the impression of intact stratigraphy and ascertain the duration of shelter occupancy which, based on the artifacts recovered from the relic hunters' discard pile, appeared to span the Archaic Period.

EXCAVATION RESULTS

Radiocarbon Assays

Charcoal samples from two hearths or large burned rock concentrations in Unit C and one in TT2 were assayed at the University of Texas Radiocarbon Laboratory (Table 1). All three proved to be Early Archaic in age, their calibrated dates ranging from 6860 to 7630 years before present (BP). The sampled features were below the largest relic hunter pit where they had eluded major disturbance.

Feature Descriptions

Eight features were identified in Units B, C, and Test Trench 2 (TT2), all at depths exceeding 1 meter below a datum that was the equivalent of the surface at the rear of the shelter. The four fiber features came

from roughly the same area of Unit B, and may constitute parts of a larger accumulation of vegetal material and artifacts now separated by rodent burrows and natural decay. The other four features were ash lenses or hearths, the latter containing burned rock as well as charcoal and ash; all were uncovered in Unit C and TT2.

Fiber Features. In Unit B, Feature 1 consisted of a loose grass pad and a relatively intact sandal that were laying against the rear wall of the cave, next to a metate and a large flat rock that was scored by a series of grooves in the middle of one side. The top of this feature was 117 cmbd. Nothing was cached beneath either of the two large rocks.

Only 8 cm lower, Feature 2 is a mass of fiber that covered an area 69 cm n/s by 40 cm e/w. One part of a sandal lay atop one corner of the padding and another part was directly below it. Adjacent to the fiber and slightly to one side, two prickly pear pads underlay a loose accumulation of leaves, seeds, and fiber, 29 cm e/w by 18 cm n/s and 120-130 cmbd, designated as Feature 5. Unit D, which joined Unit B to TT2 expanded the mass of fiber to include Feature 8, a sotol pad, a stick, and sandal fragments at a depth of 128 cm bd.

Hearths and Ash Pits. The first intact feature to emerge in Unit C-W was a concentration of burned rock and charcoal 67 cm by 46 cm, 120 cmbd, designated as Feature 3. A roughly oval concentration of burned rock and charcoal, also in Unit C-W but between 140 and 150 cmbd, was designated Feature 4. Charcoal submitted for radiocarbon assay produced a delta-13 corrected age of 6070±60 years which calibrates to a centroid date of 6895 B.P. or 4060 B.C. (Stuiver and Reimer 1993: Method A). The probability that this date falls between 6860 and

Table 1. Radiocarbon Assays, Charcoal samples, 41VV156.

<u>Lab No.</u>	<u>Corr.</u>	<u>C13</u>	<u>Cal BP*</u>	<u>Cal BC*</u>	<u>Provenience</u>
TX9393	6070 ± 60	-24.0	6860-7010	4910-5060	Unit C-W, F4, 150 cmbd
TX9394	6140 ± 60	-25.0	6910-7030	4960-5080	TTN2, F7, 210 cmbd
TX9395	6780 ± 60	-24.5	7540-7630	5600-5680	Unit C-E&W, F6, 220 cmbd

*Stuiver and Reimer 1993: Method B

7010 B.P. or 4910-5060 B.C. reaches 100 percent (Stuiver and Reimer 1993: Method B).

Feature 6 was an ash pit, 1 meter in diameter, that extended below 270 cmbd, from Level 9 through Level 11 in Unit C-E and C-W. In keeping with its stratigraphic position beneath Feature 4 in the deepest portion of the site, a charcoal sample generated a delta-13 corrected age of 6780±60 years ago which calibrates to a centroid date of 7570 B.P. or 5620 B.C. (Stuiver and Reimer 1993: Method A). There is a 100% probability that this date is within the range between 7540 and 7630 B.P. or 5600-5680 B.C. (Stuiver and Reimer 1993: Method B).

Just above bedrock in TT2, at its juncture with Unit D, a thick ash-charcoal lens filled the entire pit at a depth between 210 and 219 cm bd. Designated as Feature 7, this lens produced a delta-13 corrected radiocarbon date of 6140±60 years ago or a calibrated central date of 7010 B.P. or 5060 B.C. (Stuiver and Reimer 1993: Method A) with a 72% probability that the true date is between 6910 and 7030 B.P. or 4960-5080 B.C. (Stuiver and Reimer 1993: Method B).

Other Features. Other features of the site, although not given formal numbers, are three blotches of red paint, remnants of long lost pictographs, and a series of cut marks on the downstream curve of the rear wall. Although far from rare, cut marks have still not been satisfactorily explained, either in functional or symbolic terms (Turpin and Davis 1993). One of the large flat slabs underlying Feature 1 was similarly scored by three parallel grooves in the center of one face.

Artifact Descriptions

Sandals. The most intact sandal (Figure 4) belongs to one of the most common types found in the Lower Pecos and northern Mexico. Two parallel warps clearly outline the foot portion of this fragment from Unit B, Feature 1, 117 cmbd; the toe end is obscured by padding but beneath them the warps converge using a technique recognized in both geographic areas. Based on a sample of 117 sandals from the Lower Pecos region, Shuetz (1956:130-131) defined Type A which she described as two exterior warps that converge at the toes and are bent inward and downward to form a third central warp. Taylor (1988) gave the general type the name "plaited," a

category that subsumes several variations on the basic theme of vertical warps joined by interweaving horizontal wefts, often padded by miscellaneous fiber sewed through the framework of warps and wefts. This particular specimen belongs in his sub-group Flaiii which he describes as:

Sandal, plaited, three-warp. The warp frame is constructed by arranging two elements parallel to form the lateral margin and turning them inward at the toe end ... But at a point about equidistant between the two lateral warps, one of them is turned and run back toward the heel forming a third, central warp (Taylor 1988:76).

In its current condition, the sandal is 8 cm wide and 18.8 cm long although the heel is partially destroyed. Wear suggests this specimen was worn on the left foot. The tie string is one continuous element that was secured by the toe loop, then crossed over the top of the foot to the outside of the warp on either side. The string was then drawn up through the padding on the inside of the warp and tied at the ankle. The sandal and a loose pad of grass, designated as Feature 1, were laying against the sloping rear wall, next to a metate and a large flat rock with three grooves or incisions on one side.

The remains of one small sandal were laying on the surface of the largest relic hunter hole where they had either been tossed aside or thrown up by bioturbation. This specimen is unusual in that it has no frame but consists of a loose bundle of grass fibers that was apparently twisted into a loop held in place by knotted sotol cords. The remnant toe strap encircled the front part of the pad, making a toe loop on top and knotted on the bottom whereupon the moving element extended up either lateral, reemerging from the pad to form a circular ankle strap. Wear suggests it was worn on the right foot; its small size and loose construction indicate it was made to fit a child whose weight could be supported without a frame or rigid wefts.

Two pieces of what might be one sandal were recovered from Unit B, Feature 2, 125 cmbd. Although fragmentary, this specimen is very like the sandal in adjacent Feature 1 and may be its mate. A knotted strand of frayed fiber extending from the center of the pad is apparently the remnant of the tie string. Several pieces of what might be another sandal



Figure 4. The most complete sandal, a three-warp plaited type from Feature 1 (41VV156). Size is 8 cm by 18.8 cm.

came from Unit D, Feature 8, 128 cmbd (4 pieces). Little more can be said about these lumps of matted fiber.

Cordage. Two pieces of very finely Z-twisted string were found in Unit B, 120-130 cmbd. Both appear to be part of the same string now broken into pieces 145 mm and 50 mm long.

All the rest of the cordage consists of various lengths of knotted sotol leaf. Two pieces, from Unit B, 80-90 cmbd and Unit B, 120-130 cmbd are relatively small loops, 35 and 50 cm in diameter, probably used to secure bundles of grass or sotol leaves for transport into the site. Four lengths of stiff knotted leaf fiber and a loop of finer string were in Feature 8, Unit B, 128 cmbd. The knots which appear in mid-leaf join nothing and apparently were used to bend the leaves 90 degrees preparatory to some sort of weaving. Two other knotted sotol leaf cords were in Unit B, 117 cmbd.

Flaked Stone Tools

Projectile Points

The projectile point assemblage—51 relatively intact dart points, 1 arrow point, and 7 dart point fragments—is dominated by Early and Middle Archaic types which came from all the excavated units and every level overall (Figure 5; see also Table 2). The Early Archaic Viejo period is evidenced by nine Martindale and four Uvalde dart points. Two Early Triangular forms, both broken at mid-blade, were retrieved, one from the discard pile and one from the upper levels of Unit A, mixed with Middle Archaic specimens (Figure 5, r-s).

Except for one Zorra dart point discarded by the relic hunters, the projectile points attributable to the Eagle Nest subperiod, the first half of the Middle Archaic period, were found only in Units A and B, near the back of the shelter. The types represented are Zorra (n=3), Pandale (n=3), and Nolan (n=1) (Figure 5j-m).

San Felipe subperiod types dominate the inventory with 17 specimens of which 10 belong to the Val Verde type and 5 to the Langtry type (see Figure 5, b-d, g-i). One is a mixture of Langtry and Jora characteristics and one is a cross between a Langtry and Val Verde. Four of these dart points were discards, the rest came from all units except C-W which overall had a low artifact density.

Two Late Archaic Ensor points were retrieved from the discard pile; one consists only of a side notch from stem to barb. Two Shumla points were roughly associated with Feature 7 but the date derived from this feature is far too old for the generally accepted age of this projectile point style. A third Shumla point came from the upper levels of Unit B, more in keeping with its estimated age (Figure 5, a). The relic hunters apparently removed most of the Late Archaic deposits from the area excavated.

One arrow point, assigned to the Sabinal type, was found in Unit B at a depth of 120 to 130 cmbd. This specimen is stratigraphically aberrant and the only Late Prehistoric artifact found in the site.

Six dart points were too fragmentary or otherwise non-distinctive and remain untyped. All but one came from beneath the largest relic hunter hole and should be of some antiquity. Two resemble the Uvalde type and one may be a reworked Martindale dart point. Two are very like a number of dart points recovered in northern Coahuila where they may be a variant of the well-known and well-dated Langtry or the lesser known Jora type (Figure 5, e-f; Turpin and Eling 1999).

Discussion

The projectile point assemblage corroborates the radiocarbon dates, all of which indicate that the RAF excavations tested the Middle and Early Archaic components of the site. None of the artifacts predate the Viejo period in the local chronology. The Late Archaic strata, represented by two Ensor point fragments in the relic hunter discard pile, have been stripped from this portion of the site by vandals who also penetrated but did not plumb the lower levels. The three Shumla dart points, also usually considered to be Late Archaic index markers, are contained within Early Archaic deposits, a contradiction that can not be resolved with the information at hand. Late Prehistoric use of the shelter is indicated by the stratigraphically incongruent arrow point found in Unit B at a depth of 120 to 130 cmbd but the bulk of this component also apparently fell victim to the relic hunters.

Bifaces

Only eight of the 32 bifacially worked artifacts are complete. Nine are basal fragments and five are tips. All of the bifacially worked specimens are finished tools; the majority were isosceles triangles

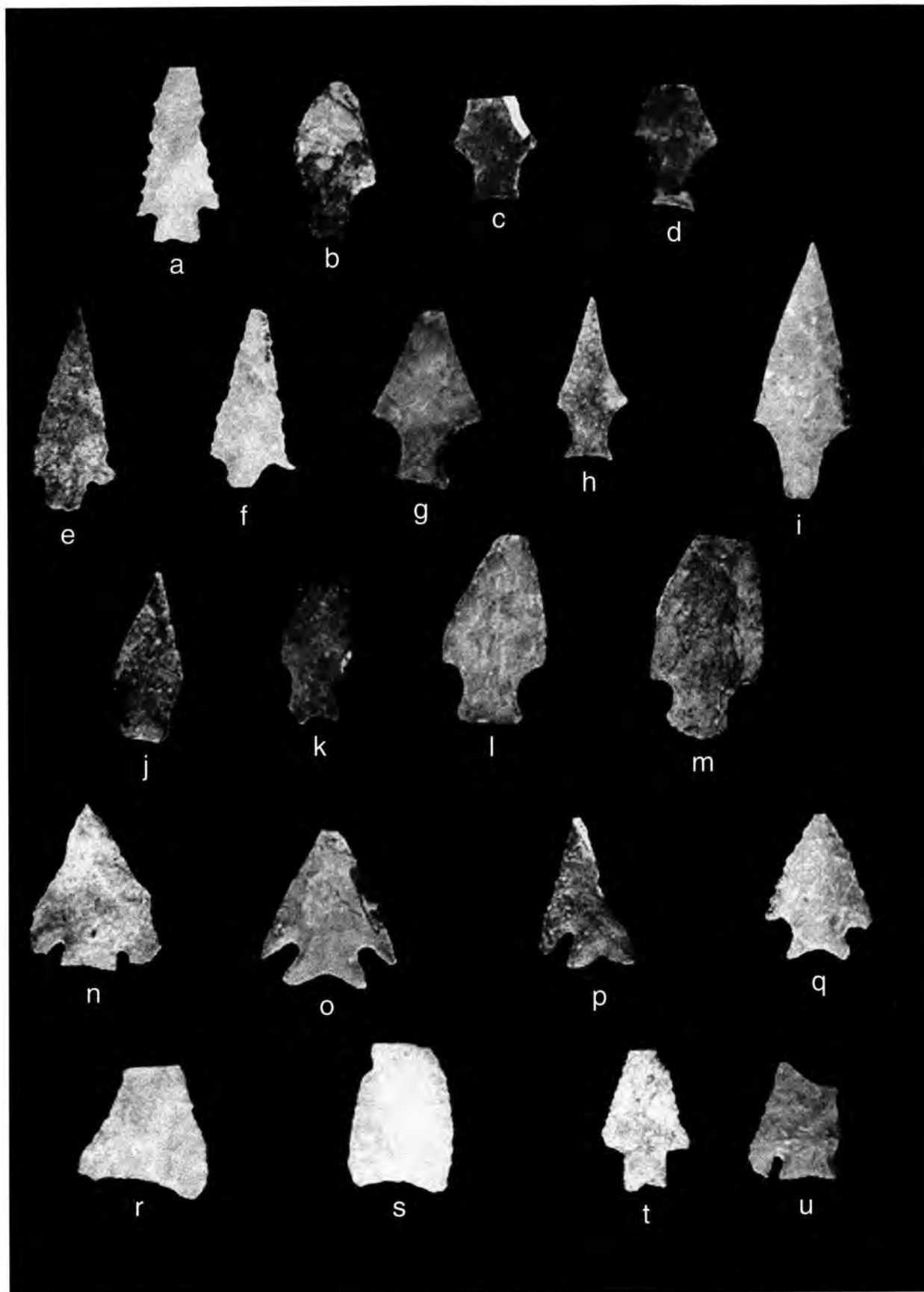


Figure 5. Projectile points, 41VV156. a, Late Archaic Flanders subperiod dart point; b-i, Middle Archaic San Felipe subperiod specimens; j-m, Middle Archaic Eagle Nest specimens; n-u, Early Archaic Viejo subperiod specimens. Shown two-thirds actual size.

Table 2. Projectile Points, 41VV156

Lot	Provenience	Type	Length	Width	Thickness	Comments
16	B (120-130)	Sabinal	*	13.2	3.9	tip missing
10	Discarded	Ensor	*	*	*	side notch only
10	Discarded	Ensor	*	22.7	6.8	base, half blade only
48	TT2, F7	Shumla	39.8	29.6	4.9	relatively intact
48	TT2, F7	Shumla	*	*	4.9	blade, barbs broken
	B, upper 60?	Shumla?	*	19.9	4.0	badly burned
10	Discarded	Langtry	*	29.1	4.4	blade snapped in half
10	Discarded	Langtry	*	26.9	6.1	half blade missing, pot lids
10	Discarded	Langtry	*	26.4	4.8	half blade missing
10	Discarded	Val Verde	*	22.2	5	tip, barb missing
11	A (60-90)	Val Verde	43.1	18.8	3.5	tip of barb missing
11	A (60-90)	Val Verde	*	23.1	4.4	blade snapped in half
11	A (60-90)	Val Verde	*	*	5.1	badly potted
12	B (60-70)	Val Verde	32.7	23.4	4.4	tip broken
15	B (90-100)	Jora/Langtry	68.3	21.3	5.4	intact specimen
16	B (120-130)	Val Verde	*	34.1	4.4	most of blade missing
19	? L-7	Langtry/VV	*	*	4.5	base broken, pot lids
20	L-7	Langtry	*	32.4	5.9	blade snapped in half
22	TT (all)	Val Verde	32.4*	23.8	5.6	tip, base broken
29	C-E (130-140)	Val Verde	41.9	*	5.5	blade broken diagonally
34	TT2 (150-160)	Val Verde	*	29.5	6.1	tip broken, short stem
36	TT2 (190-220)	Val Verde	42.5*	24.6	3.7	large part of tip missing
48	TT2, F7	Langtry	*	23.4	4.4	blade broken, burned
53	D, bedrock	Val Verde	46.8	30.5	4.7	tip snapped
10	Discarded	Zorra	*	28.6	7.1	blade broken
13	B (70-80)	Pandale	45.1*	18.8	5.1	base broken
17	B (108)	Pandale	41.1*	18.0	6.1	small part of tip missing
18	B, L6	Nolan	55.0	21.6	6.6	intact specimen
20	B, L7	Zorra	55.1*	30.6	8.0	tip broken
20	B, L7	Pandale	*	20.4	6.3	large part of tip missing
42	A (140)	Zorra	51.9*	28.5	8.8	missing small part of tip
10	Discarded	E. Triang	*	34.6	5.1	blade snapped in half
11	A (60-90)	E. Triang	*	28.1	4.2	large part of tip missing
10	Discarded	Martindale	*	*	5.1	base and barb only
10	Discarded	Martindale	*	*	4.6	base and barb only
10	Discarded	Martindale	*	*	8.5	badly burned, half base only
11	A (60-90)	Martindale	*	*	4.6	base and barb only
14	B(80-90)	Uvalde?	*	21.8	3.5	base, barbs broken
22	TT (all levels)	Martindale	39.4	28.7	6.1	intact specimen
23	C (100-110)	Martindale	45.2*	35	6.1	tip snapped diagonally
26	C (130-140)	Martindale	*	22.6	4.4	reworked, serrated
26	C (130-140)	Uvalde	*	20.4	4.8	barbs broken
27	C-W (60-70)	Uvalde	36.1	29.1	5.6	complete specimen
35	TT2 (160-170)	Martindale	42.5*	35.8	6.8	missing small part of tip
35	TT2 (160-170)	Martindale	41	*	4.4	split longitudinally, pot lid
40	TT2 (220-bdrk)	Uvalde	*	24.1*	4.2	barbs and tip missing
11	A (60-90)	Untyped	*	25.2	6.1	wide square base, broken blade
22	TT (all levels)	Untyped	30	16.6	3.9	narrow square base, barb missing
36	TT (190-200)	Untyped	42.2	19.8	3.7	unifacially worked flake
39	TT2 (210-220)	Untyped	*	21.8	3.5	badly burned, blade, barbs broken
48	TT2, F7	Untyped	47.7	22.5	5.0	short stem, resharpened
53	D, 130-bdrk	Untyped	*	18.7	5.9	shallow side notches

Medial Frags: A (60-90); B (170-180); C (110-120), D(130-140); TT (all levels)

Tips: B (70-80); C (130-140); TT (all levels); TT1 (200-210); TT2 (220-bdrk)

with straight or slightly rounded bases. Four of the bifaces are ovate and three are smaller lozenges, around 5 cm long, 2 cm wide, and between .6 and 1 cm thick. The latter three specimens came from the deepest levels of the site in Unit D and Test Trench 1. A unique specimen is the base and one edge of an extremely thin, finely worked triangular biface that was at least 7 cm long and 5 cm wide. Of interest are three bifaces that were fashioned on broken tools, two of which had been discarded long enough to patinate. In one case, the edge of a thin uniface had been refashioned into a tear-drop shaped biface the same size as the lozenge bifaces. In the other two, rectangular basal halves of triangular bifaces were reworked, one into a thick, roughly square tool and the other into a beaked ovate artifact. As chert is readily available immediately above the shelter, this reworking is due to expedience rather than scarcity of raw material.

Unifaces

Nine of the 24 unifaceally worked tools are end scrapers, 7 are side scrapers, and 4 are both. Four are too fragmentary to classify. Two of the specimens are, like some of the bifaces, resharpened or fashioned from tools that had been abandoned long enough for significant patina to form. One of the side scrapers is coated with patchy black greasy film of unknown material and another, from just above bedrock in Test Trench 2, bears traces of pigment. By far the majority of the unifaces are crude, formed from secondary flakes, and obviously expedient.

Discussion

The lithic assemblage from 41VV156 is dominated by expedient tools, made rapidly and carelessly discarded. Many were made on flakes or broken tools that had already acquired a light patina, indicating that they were picked from the debris inside or above the shelter and fashioned into a usable implement. The raw material, easily available from an outcrop immediately above the shelter, is predominantly tan chert with a few examples of lighter and darker material obtained elsewhere but probably still near at hand, given the profuse chert sources in the region.

Ground Stone

Metates

One large flat limestone slab with a grinding facet on one side was paired with a similar stone that had

three shallow grooves cut into the center of one face. These slabs lay immediately below Feature 1, a grass pad and a complete sandal plotted at 117 cmbd, and rested on the bedrock slope of the wall in Unit B. Neither the mano nor the scored slab were collected.

One broken metate, found in Unit C-E, 198 cmbd, retains copious traces of red paint in grooves and cracks. The roughly rectangular slab was broken after it had acquired the pigment stains. A second metate with one grinding facet lay beneath the first, below 210 cmbd and above bedrock. Both of these metates can be assigned to the Early Archaic Viejo period, between 6895 and 7570 years ago, based on two radiocarbon dates from this unit (see Table 1).

Manos

One intact round grinding stone was recovered from TT1, between 160 and 170 cmbd. Both faces are smoothed and one has been ground flat. Opposing edges have been battered to increase purchase of the smooth stone. This mano fits well in the palm and is 122.7 mm long, 101.3 mm wide, and 46.6 mm thick.

A fragment of a dark brown silicified limestone grinding stone came from TT1, below 220 cmbd and above bedrock. Both sides are smoothed and the end is slightly battered. The only dimension that can be determined is thickness: 32.2 mm.

A small oval mano, 95.8 mm long, 71.5 mm wide, and 44.4 mm thick, has one lustrous side and one slightly battered end. Its provenience is Unit C-E, 190 to 200 cmbd.

Two small fragments of smoothed limestone, recovered from Unit B between 80 and 90 cmbd, may be pieces of the same artifact. The original dimensions can not be determined but the larger of the two has wide, deep parallel scratches on its flat end surface.

Painted Pebbles

Three pebbles clearly bear geometric designs painted in black pigment (Figure 6; Turpin and Middleton 1998) and one stone has a fugitive black stain that may or may not be intentional. The uppermost (Figure 6, a), from Unit A, 60-90 cmbd, is a smooth sub-rectangular brown pebble that retains only a remnant of a linear design on one side and fleck of black pigment on the other. The pebble is 42.4 mm long, 28.3 mm wide, and 15 mm thick. Found in the upper levels of Unit A, this specimen is of uncertain age. Although associated artifacts

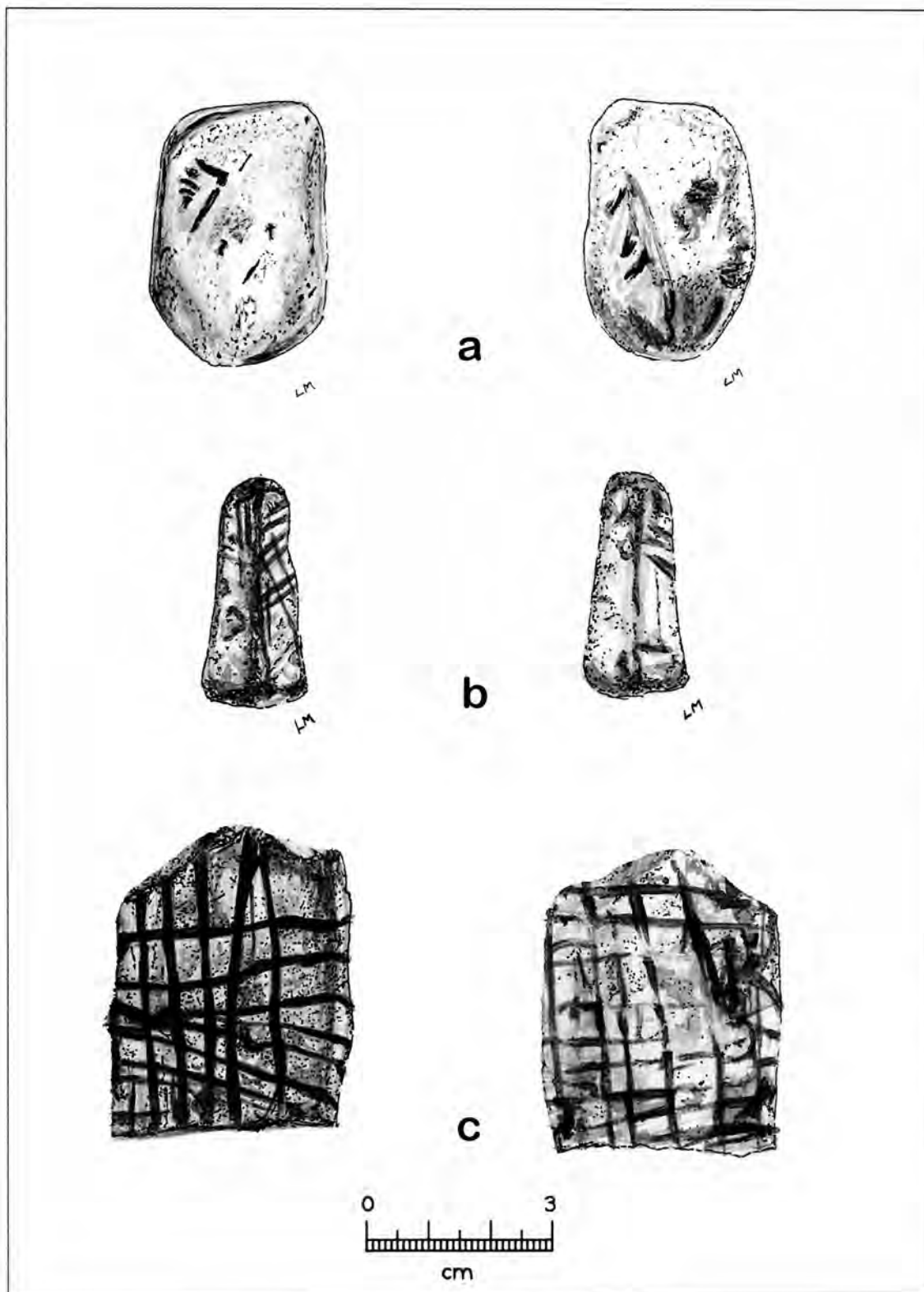


Figure 6. Painted pebbles from 41VV156. See text for provenience information. Drawn by Lisa Middleton.

indicate Middle to Early Archaic deposition, these strata may have captured some artifacts discarded by the relic hunters.

The other two painted pebbles were recovered from undisturbed deposits in Test Trench 2, immediately above bedrock. The smaller of the two (Figure 6, b) is a blunt obelisk with faint cross-hatching on all sides. It is 36.1 mm long, tapering from 5.8 to 10 mm wide, and 7 to 11.5 mm thick. The largest pebble is also the most clearly patterned with black cross-hatching that encircles the stone (Figure 6 c, see also Turpin and Middleton 1998). The roughly rectangular pebble was modified by the detachment of two corners prior to painting and broken after the design was complete. It is now 51 mm long, 40.2 mm wide, and 17.6 mm thick.

Finally, a smooth pebble (not illustrated), naturally shaped like a rounded tear-drop has a black circle on one face. Whether the stain is intentionally applied pigment or accidentally accrued soot is difficult to determine in the absence of a coherent design. The symmetry of the pebble is pleasing and may have been the characteristic that resulted in its transportation to the cave. This stone is 36 mm long, 27.2 mm wide at the widest point of its body, and 7.1 mm thick. It, too, is from one of the lowest levels of the site in TT2, between 190 and 200 cmbd.

Discussion

Cross-hatching is not a characteristic of the types defined by Parsons (1986) or Mock (1987) but a similar linear design is found on a painted pebble from Fate Bell Shelter (Pearce and Jackson 1933: Plate XIII). The Fate Bell stone came from a depth of 99 inches in a site whose average depth was 70 inches, thus placing the pebble in the earliest deposits. Continuous designs, encircling the stone, are also found in Parson's Type I, his earliest category. The raw material used in all three 41VV156 specimens is more angular and darker than the smooth oval river pebbles so often selected. Nevertheless, the two pebbles from TT2 were clearly contained within Early Archaic strata, making them some of the earliest well-dated specimens in the region. They and the cross-hatched pebble from Fate Bell provide some basis for the hypothesis that linear designs preceded the more figurative patterns typologized by Parsons and Mock.

Scatched Pebbles

An irregular rectangular pebble from Unit A, between 60 and 90 cmbd, is battered and has diagonal scratch marks on both ends. Traces of pigment can be detected on one face above the scratched area. This specimen is 85.1 mm long, 40.3 mm wide, and 30.9 mm thick.

A smooth oval pebble from Unit B, 100-110 cmbd, is 57 mm long, 35.5 mm wide, and 25 mm thick. The narrower end is battered and pecked to about one-quarter of its length and vertical scratch marks extend up both faces. The wider end is somewhat less battered and scratched on only one side. This pattern is repeated on a stone from TT1, 220 cmbd. This triangular specimen is pecked on the lower, narrower end and has parallel thin scratch marks. The pebble is 59.9 mm long, 41.3 mm wide, and 31.1 mm thick.

A flat round pebble recovered from TT1 between 210 and 220 cmbd has one smooth side and one scratched end. This artifact is 61.1 mm long, 52.1 mm wide, and 19.9 mm thick.

An extremely dense, stream-rolled black pebble from Unit D, below Feature 8, has been battered to a wedge-shaped point on one end. This stone is lustrous and smooth to the touch and fits well in the palm of the hand. The broken long dimension is now 85.6 mm, width is 46.6 mm, and thickness is 24.9 mm. An oblong, thin smooth pebble from the same provenience shows no wear or pigment but it is very similar to the stones that were turned into painted pebbles. This specimen was definitely brought to the cave for some purpose, whether it was never realized or the paint has eroded away is undeterminable. It is 76.1 mm long, 38.3 mm wide, and only 11.1 mm thick.

Faunal Remains

The majority of the bones are burned and unburned splinters or fragments of deer-sized animals: scapula fragment from the initial test at the bottom of the relic hunter hole and long bone splinters from Test Trench 1, 190-200 cmbd; Test Trench 1, 200-210 cmbd; Unit A, 60-90 cmbd; Unit A, 140 cmbd; Unit B, 108 cmbd; Unit B, 120-130 cmbd; Unit C-E, 210 cmbd-bedrock; and Unit D, Feature 8, 128 cmbd with fragments of a deer tooth. Three medial rib fragments are smoothed and polished from wear consistent with their use as bone awls: one from Unit A, 60-90 cmbd;

and two from Unit D, Feature 8, 128 cmbd. The heavy reliance on riverine resources indicated by the density of mussel shell is corroborated by the recovery of a catfish spine from Unit B, 117 cmbd; a catfish vertebra from Unit B, 90-100 cmbd, and a drum otolith from Unit D, 128 cmbd. All three are from very large fish that were probably caught in the Pecos River and brought to the shelter intact. Miscellaneous bone includes two rabbit mandibles, one from just above bedrock in Unit B, Lot 20 and one from Unit C-W, 130-140 cmbd; a burned antler medial fragment from Unit A, 140 cmbd; and an adult human phalanx from Unit A, 60-90 cmbd. The latter is eroded and burned on one end.

Mussel Shell

The abundance of mussel shell heaped on the relic discard piles and found on the midden above the shelter were one of the more intriguing aspects of 41VV156. No distinctive shell lenses or concentrations were uncovered in excavation although single or small scatterings were found throughout the units. Tampico pearly mussel or *Crytonaias tampicoensis* (Howells et al. 1996:48-49), a shell much used for ornaments and utensils, was the most common type followed by the smaller and thinner-shelled Texas Hornshell or *Popenaias popei* (Howells et al. 1996: 93-94). Both are native to the region and were available in the Pecos River, over a kilometer west of the site. The sheer quantity of mussel shell indicates exploitation of riverine resources and transport of the mussels over a considerable distance. When measured by their caloric contribution to the diet, their procurement was labor-intensive and probably justified as an embedded activity, undertaken during the course of other riverine activities, such as fishing, or by less skilled or able members of the community, such as children. There is no evidence of shell working so it must be presumed that the mussels were a food source, emphasizing the broad resource procurement that typified Archaic life in the Lower Pecos region.

Snail Shell

Equally impressive are the prodigious amounts of burned and unburned *Rabdotus* shell distributed throughout the shelter deposits. The large quantity of adult shells found outside their natural habitat surely indicates that snails were a food source that was collected, probably in conjunction with plant procurement, and processed in the site. A number of shells

have small round holes in the largest whorl immediately below the aperture. Although some predators do drill through the shell to get to the meat within, the regularity of the placement of these holes is more consistent with human procurement, perhaps by inserting a cactus spine and forcing the animal out the aperture.

SUMMARY AND CONCLUSIONS

Although hugely damaged by relic hunting, 41VV156 still retains some intact deposits of special relevance to Middle and Early Archaic times in the Lower Pecos region. Specifically, the RAF test excavations recovered considerable evidence that the earliest Archaic people were well versed in pigment production and painting of various objects, even though the pictographs in the site are now reduced to a few red blotches. A surprising number of artifacts bore traces of red pigment—a metate, a mano, a scratched pebble, a flake, and a piece of roof fall—and three smooth pebbles retained some portion of linear designs in black pigment. The latter suggest that the long regional tradition of painting pebbles may have begun with simple geometric patterns, in this case, cross-hatching, and developed into a more complex art form over time. Clearly, the production of paint and its application to various objects was a characteristic of Lower Pecos society in the Early Archaic period, well before the earliest dates ascribed to the pictographs.

The second perception that emerges from the test excavations is one of broad spectrum resource procurement, well-established in Early Archaic times. The heavy reliance on riverine resources indicated by the huge quantity of mussel shell, and corroborated by some scattered fish remains, is balanced by the equally impressive number of snail shells, indicative of terrestrial foraging. Mussels and snails are generally considered to be auxiliary food sources, augmenting a diet generally deficient in protein but labor intensive in terms of their caloric contribution. In a generalized foraging economy, gathering mussels or collecting snails could well be embedded activities, corollary to the pursuit of more productive but rare or patchy resources. For example, snails could be plucked from the prickly pear patches in conjunction with the tuna harvest with little extra expenditure of energy. These are also activities that can be accomplished by the very young or the very old as their

contribution to the diet. However, in the case of 41VV156, these relatively minor food sources appear to have played a major economic role, thus giving the abiding impression of hard times and a resulting increase in diet breadth.

Finally, although the demonstrated presence of some intact deposits in 41VV156 justifies continuing low-level excavations, the findings of the RAF test confirm that a few years of drastic vandalism virtually wiped out thousands of years of accumulated domestic debris. The tendency to attribute the loss of archaeological sites to the far distant past when landowners and officials were less cognizant of the information stored in their deposits has been controverted by the activities of a few careless individuals who systematically ravaged this site for curios.

ACKNOWLEDGMENTS

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USES OF PREHISTORIC POTTERY IN SOUTHEAST TEXAS

Leland W. Patterson

ABSTRACT

The possible uses of prehistoric pottery in Southeast Texas are discussed in relation to various physical attributes of pottery. Comparisons are made between possible uses of pottery and lifestyles of hunter-gatherers of the inland and coastal margin subregions of Southeast Texas.

INTRODUCTION

The author has previously made some brief observations on uses of prehistoric pottery in Southeast Texas (Patterson 1995a:258). This article is an expanded discussion of this subject, to include more detailed considerations of the physical attributes of pottery in this region. Consideration is also given to the relative amounts of pottery used in the inland and coastal margin subregions of Southeast Texas.

The functional uses of pottery have not been well defined in Southeast Texas, but possibilities include cooking, food storage, and water storage. The common occurrence of sherds with drilled repair holes implies that some of the pottery in this region may have been used for food storage, where a watertight container was not required. Aside from repair holes, functional attributes of pottery considered here are temper materials, degree of firing, and vessel wall

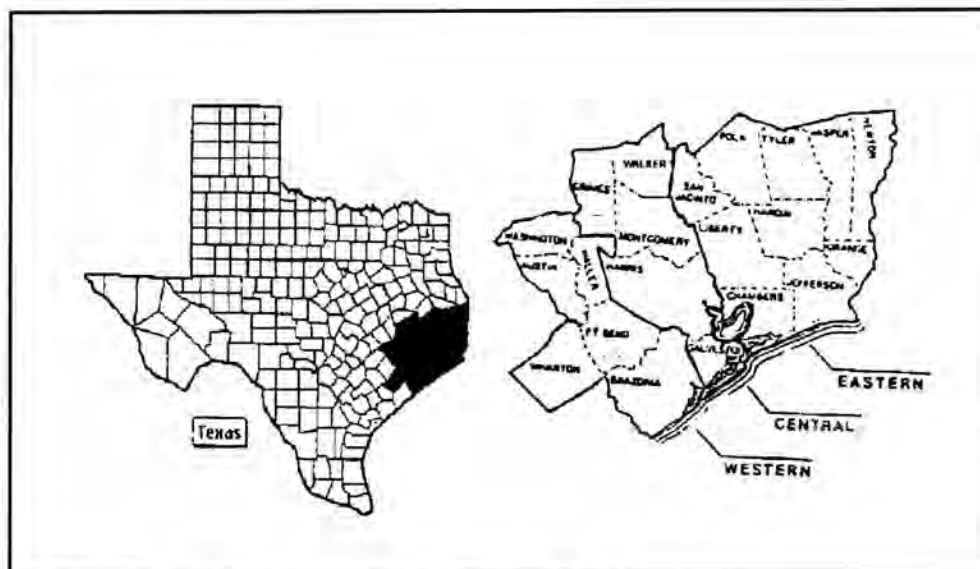
thickness.

It is concluded that pottery was used in the inland part of Southeast Texas for food and water storage, but seldom for cooking. In contrast, pottery on the coastal margin may have been used often for cooking, food storage, and water storage.

POTTERY TEMPER

Temper is a material added to clay to strengthen pottery, in the same manner that crushed gravel and pebbles are added to strengthen concrete. Temper materials used by prehistoric Indians in Southeast Texas include coarse sand, grog (crushed potsherds), and crushed bone. There is also untempered pottery in Southeast Texas, including Tchefuncte pottery made from fine clay (Aten 1983:238) and Goose Creek pottery made from clay with natural fine sand content (ibid.:231).

Different types of temper can be used to strengthen pottery, but not all types of materials are suitable for pottery to be used for cooking with long periods of high temperature exposure. Chilton (1998:149) notes that optimal inclusion types for cooking vessels have thermal expansion coefficients similar to or less than that of clay. Sand (quartz) is not an optimal inclusion type for cooking pots; it expands much more quickly than clay and can lead to crack initiation (ibid.:149).



Southeast Texas Counties outlined and named.

Therefore, O'Neal Plain, variety Conway pottery (Aten 1983:238) with medium to coarse sand temper would not be considered a good choice to use for cooking. Using the Wentworth grain-size classification method (Waters 1992:Table 2.1), coarse sand has a size range of 1/2 to 2 mm, medium sand has a size range of 1/4 to 1/2 mm, and fine sand has a size range of 1/16 to 1/4 mm. Particle size less than 1/16 mm is classified as silt.

O'Neal Plain pottery with coarse sand temper occurs in the Early Ceramic period (AD 100-600) in both the coastal margin (Aten 1983:238) and inland (Patterson 1980) parts of Southeast Texas. At some sites of inland Southeast Texas, such as 41WH72 (Patterson et al. 1995:4), pottery made from clay with coarse sand as a natural component occurs in both the Early Ceramic and Late Prehistoric (AD 600-1500) periods. Both tempered and untempered pottery containing coarse sand would be poor choices for cooking use.

Goose Creek pottery made from clay with a natural content of fine sand occurs throughout Southeast Texas in both the Early Ceramic and Late Prehistoric periods. This type of pottery would be a somewhat better choice for cooking than pottery containing coarse sand. All sand has a high thermal expansion coefficient, but fine sand would have lower volumetric thermal expansion than coarse sand. A discussion on the classification of Goose Creek and O'Neal Plain pottery in Southeast Texas has been given by Patterson (1996a).

There are two types of grog-tempered pottery in Southeast Texas, San Jacinto (Aten 1983:239) and Baytown Plain, variety Phoenix Lake (ibid.:241). San Jacinto pottery is made of clay with natural fine sand, and with some added grog temper. Baytown Plain, variety Phoenix Lake is made of clay without much sand and with much grog temper. One study shows that there is a bimodal distribution of grog density that can be used to differentiate between San Jacinto and Baytown Plain pottery types (Patterson 1995b:Figure 1). Aten (personal communication 1995) currently differentiates between grog-tempered pottery types by sand content, with Baytown Plain having a non-sandy paste and San Jacinto having a sandy paste. He states that "as sand content is increased, the functional need for grog temper decreases; sand is really the independent and causal variable with respect to grog abun-

dance." All grog-tempered pottery occurs in the Late Prehistoric period (AD 600-1500) in Southeast Texas (Aten 1983:Figure 14.1).

Grog-tempered pottery would be a good choice for cooking use, because grog temper has the same thermal expansion coefficient as the clay matrix of pottery. Baytown Plain pottery with much grog temper occurs only on the coastal margin of Southeast Texas. Baytown Plain pottery with much grog temper and little sand content would have good resistance to thermal crack initiation. San Jacinto pottery with fine sand as well as some grog temper would be less resistant to thermal crack initiation, because of sand having a high thermal expansion coefficient.

Bone-tempered pottery would have been a good choice for cooking use, because bone has a low thermal expansion coefficient.

DEGREE OF FIRING

A large proportion of pottery from inland Southeast Texas is poorly fired, with many sherds being soft and friable. This indicates that not much pottery was used for cooking in the inland part of this region, because a durable vessel would have been desired for cooking. Pottery is generally better fired on the coastal margin of Southeast Texas, with a high proportion of hard sherds. This probably attests to more use of pottery for cooking on the coastal margin than inland, such as processing of fish and shellfish. Boiling water was probably a major method to open and cook shellfish, because shell remains at coastal margin middens do not have much evidence of mechanical breakage or burning that would indicate use of mechanical force or heat from fires for shellfish processing. My experiments show that *Rangia cuneata* brackish water shellfish can be opened and cooked in about three minutes in boiling water.

My opinion is that the degree of firing is the best indication as to whether or not pottery may have been used for cooking, with hard-fired pottery the best choice for cooking. Hard firing of pottery also imparts more mechanical strength. The typical poorly fired nature of pottery from inland Southeast Texas may indicate that not much pottery was moved between residential sites, where mechanical resistance to breakage would have been desirable.

VESSEL THICKNESS

Vessel wall thickness is an important variable in the manufacture and use of pottery. A thick vessel wall is stronger, but is more difficult to dry before firing, which can lead to breakage during firing. A thick ceramic vessel is also heavier and less easily transported. A thin vessel wall has a higher heat transfer rate per unit area, which would be good for cooking use.

Potsherds that I have examined in Southeast Texas range from 4 to 8 mm in thickness, with a high proportion having a thickness of 6 mm. I have observed no significant difference in thickness for pottery from the inland and coastal margin subregions of Southeast Texas. It is concluded that thickness is not a key variable in different uses of pottery in this region, but that 6 mm is an ideal thickness for the manufacturing process and strength of pottery. Chilton (1998:151) reached a similar conclusion for thicknesses of Algonquian and Iroquoian pottery in the northeastern United States. Both types of pottery had average thicknesses of about 6 mm. Iroquoian pottery was probably used more for cooking with a need to withstand thermal stress, while more mobile Algonquians had a need for storage vessels to withstand mechanical stress.

AMOUNT OF POTTERY USE

The amounts of pottery used by inland and coastal margin Indians of Southeast Texas may indicate the relative degree of mobility of hunter-gatherer groups in these two subregions. Over twice as many sherds have been recovered at coastal margin sites than at inland sites, even though the inland subregion has a much larger area than the coastal margin subregion (Patterson 1996b:Tables 11,12).

Coastal margin Indians seem to have been more sedentary than their inland counterparts. More use of pottery would be expected with a more sedentary lifestyle. Use of much pottery would not be expected

by highly mobile hunter-gatherers of the inland subregion, because of short times of residential stays and because bulky, heavy pottery is difficult to move. Also, cooking with ceramic vessels may have been more desirable at coastal margin sites because of aquatic food types being processed.

Settlement patterns also indicate that inland Indians were more mobile than their coastal margin counterparts in Southeast Texas. Inland sites are mainly residential sites with few indications of special activity (logistic) sites. This settlement pattern is typical of highly mobile hunter-gatherers with frequent residential moves.

In contrast, there are many very large coastal shell midden sites that may indicate extended occupation stays by large groups. Some shell midden sites are several hundred meters in length. Immediately inland along brackish water streams are small sites that may indicate seasonal dispersal into small groups by coastal margin Indians.

SUMMARY

Several variables related to pottery uses in Southeast Texas have been discussed. It was noted that pottery tended to be better fired at coastal margin sites than at inland sites. It is concluded that poorly fired pottery at inland sites was used mainly for storage, and that better fired pottery at coastal margin sites was used for cooking as well as storage. It would have been especially desirable to use ceramic vessels for processing of shellfish. Shellfish were processed in very large amounts at coastal margin sites in Southeast Texas, and use of boiling water in ceramic vessels would have been a good method for cooking shellfish.

The relatively larger amounts of pottery found at coastal margin sites may indicate a relatively more sedentary lifestyle by coastal margin Indians than by their inland counterparts.

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ARCHAEOLOGICAL SURVEY OF THE KERR COUNTY FEDERAL CREDIT UNION PROPERTY IN KERRVILLE, TEXAS

Bryant Saner, Jr.

ABSTRACT

An archaeological survey was conducted on a tract of land owned by the Kerr County Federal Credit Union in Kerrville, Texas. A pedestrian survey, shovel tests and artifact collection were done. Scattered flint flakes and tools indicated that a lithic workshop and possibly other activities took place here as early as 3000 BC. This site is very likely associated with two burned rock middens located on the south side of Highway 27. A historical dump, indication of cultivation, and more recent heavy equipment access to the tract were recorded. There appears to be no significant subsurface cultural material at this site.

INTRODUCTION

On October 6, 1998 a walk thru of a tract of land owned by the Kerr County Federal Credit Union (KCFCU) was done to determine if any archaeological features are present on this property (Figure 1). This was followed by a letter presented to the board of directors outlining the laws affecting archaeological sites on private property in Texas, the results of the walkthrough and a short proposal for a more complete archaeological survey. The board of directors gave their approval for the survey. On November 22, 1998 a thorough archaeological survey was completed to determine the significance of the archaeological features noted on the walkthrough. One site was found and designated 41KR569.

There are future plans to use this land for expansion of the KCFCU. It is possible that a parking area may be placed on the area that was surveyed. The opportunity to do the archaeological survey arose. It was done in a thorough and unhurried manner. This was better than to wait until construction begins and the surface has been disturbed. Surveys done during construction may be rushed and prone to error.

The building and property of KCFCU are located

on Highway 27 in the east-central portion of Kerr County, Texas, at the eastern edge of the Kerrville city limits. The Kerrville Veterans Administration Hospital is adjacent to the property on the north and west boundaries. An old railroad right-of way also occupies part of the eastern edge of the northern boundary, Highway 27 is the southern boundary, while property owned by Kerr County is on the eastern boundary.

There are approximately 550 archaeological sites recorded in Kerr County (Carolyn Spock personal communication 1998). Seven of these previously recorded archaeological sites are in close proximity to the KCFCU property.

41KR106 is a burned rock midden approximately 2,600 feet northeast of the property, located near Second Creek and Spur 100. This site has been destroyed by construction (Saner 1997a). 41KR119 is a burned rock midden across Highway 27 approximately 300 feet south of the KCFCU building. This site has been destroyed by construction of an American Legion Hall and adjoining parking lot (Saner 1997b). 41KR501 is located approximately 5,500 feet north/northeast on the Kerrville City Farm. It was

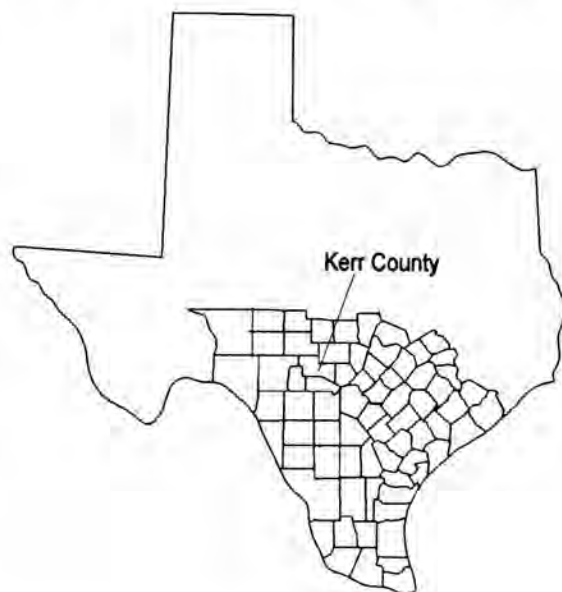




Figure 1. Kerr County Federal Credit Union property archaeological survey site. (Shown facing ESE, author photo)

a series of hearths destroyed during construction of the Kerrville City Farm Soccer Fields (Saner 1995). 41KR503 is a burned rock midden located approximately 2,000 feet southwest of KCFCU. This site has been destroyed by road construction (Saner 1997c). 41KR556 is a small hearth located approximately 2,200 feet east/southeast of the site. It was destroyed during construction of a baseball field (Saner 1997d). 41KR559 is a burned rock midden located approximately 200 feet south/southeast of the site on Kerr County property. It has been destroyed (Saner 1997e). 41KR566 is an occupational area used for flint procurement and possibly to observe game movements in the valley below. It is approximately 3,800 feet northwest of the KCFCU. An archaeological survey was done for the City of Kerrville and the Kerrville Home Opportunity Board to satisfy the laws regarding construction on public property in the State of Texas (Rector 1998).

METHODOLOGY

The tract of land to be surveyed was mapped (Figure 2). Then a pedestrian survey of the non-brush-covered portion of the tract was conducted. Five-meter-wide corridors were walked in northeast and southwest directions. Artifacts recovered during the pedestrian survey were given a number and this number then plotted on the site map. The artifact numbers and description were written in a log (Table

Table 1. Prehistoric and historic artifact logs, 41KR569. (See Figures 4 - 11)

Prehistoric Artifacts

A-1	Crude biface with serrated edge
A-2	Preform
A-3	Quarry blank
A-4	Metate
A-5	Utilized flake
A-6	Expended core
A-7	Blank
A-8	Utilized flake
A-9	Utilized flake
A-10	Distal tip of biface
A-11	Chopper
A-12	Utilized flake
A-13	Proximal end of crude biface

Historic Artifacts

A-14	W. S. George ceramic ware fragment
A-15	Clear glass milk bottle top fragment
A-16	Clear glass round bottom bottle fragment
A-17	Clear glass square bottom bottle fragment
A-18	Blue clear glass ovoid bottom bottle fragment
A-19	Brown clear glass bottle top fragment
A-20	Clear glass melted blob
A-21	Steel hook

1). Areas covered by thick brush required the investigators to crawl on hands and knees to complete the survey. An unusual pile of rocks (Figure 3), an area

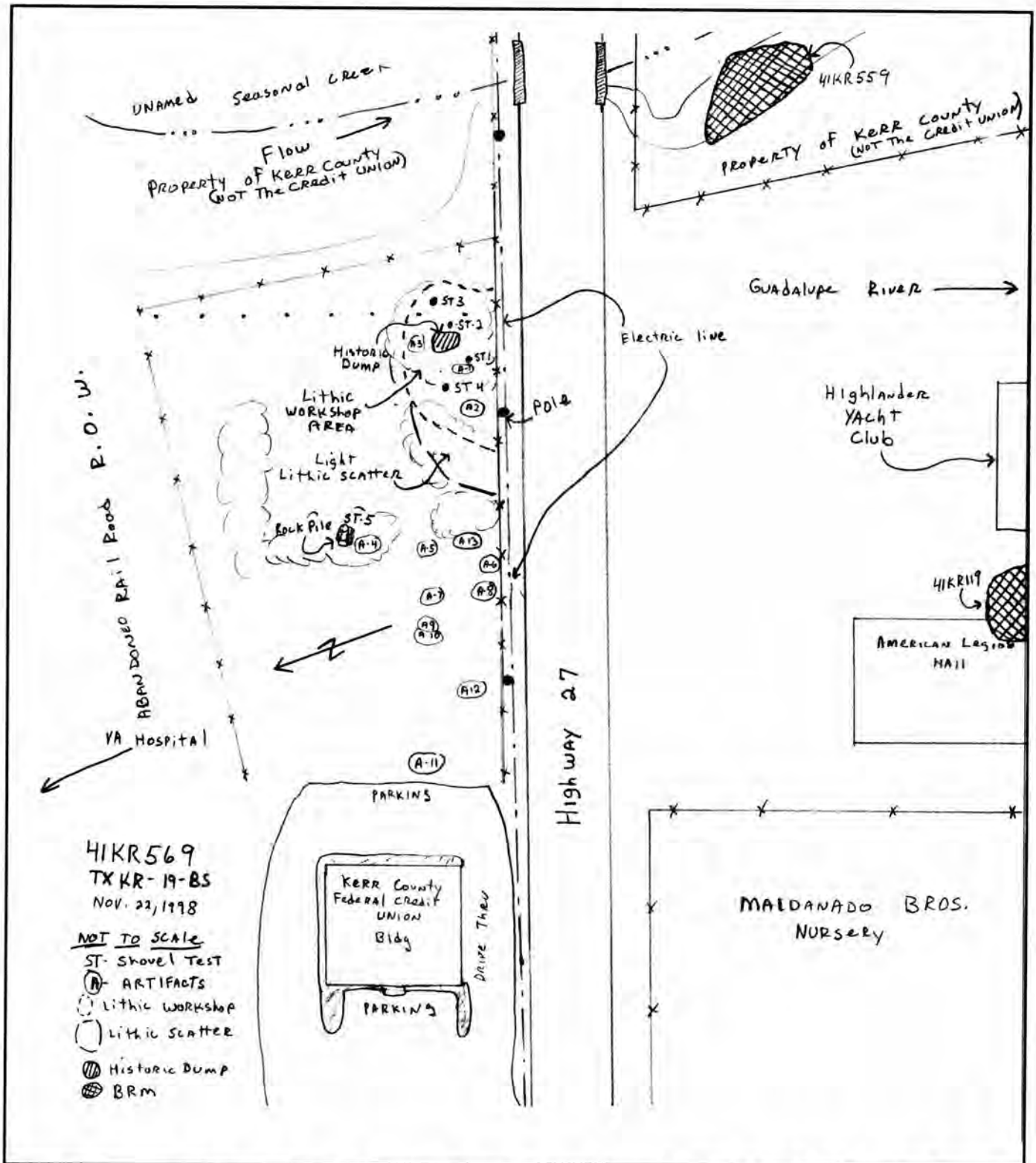


Figure 2. Site map, 41KR569, from an Archaeological Survey, Kerr County Federal Credit Union Property, Kerrville, Texas.



Figure 3. Rock pile. Metate (A-4) is in the upper left corner. Author photo.

of concentration of flint, and a historic dump were discovered and plotted on the site map. Four shovel tests were placed in the area of flint concentration and one in the rock pile. Shovel tests are 12-15 inch (30-40 cm) diameter holes dug in 10-centimeter levels. All soil removed from these test holes was screened and flint flakes and other significant material kept for analysis. This material was counted, classified, analyzed and recorded (Table 2). The holes were refilled with the soil removed from them.

The artifacts recovered at this site will be in possession of the author until their analysis and the survey report is completed. The artifacts will then be returned to KCFCU.

THE SITE

An area of heavy concentration of flint with some infrequently scattered burned rock approximately 100 feet east/west by 55 feet north/south is observed in the southeast portion of the KCFCU property. On the northeast border of the heavy concentration is an area of moderate concentration of flint. Widely scattered flint flakes and some tools were seen throughout the KCFCU tract. A historic dump is noted within the heavy flint concentration area. A pile of rocks is seen in the middle of the tract of land. The flint concentration area is not completely intact. Construction of Highway 27 has destroyed half or more of the south-

ern portion of this site.

The terrain of the site is nearly level with tannish-brown clay loam top soil. The Guadalupe River is approximately 1,000 feet southwest, while there is a seasonal drainage approximately 200 feet southeast of the site.

Cedar is the most common flora seen, along with live oak, hackberry, elm, native grasses and cactus (prickly pear).

ARTIFACTS

One limestone and twelve flint prehistoric artifacts, one metal and seven glass historic artifacts were collected and numerous flint flakes recovered from the shovel tests. The thirteen prehistoric artifacts were collected from the surface during the pedestrian survey of the area. Seven of the historic artifacts were recovered at the small dump site and one from the pedestrian survey.

A variety of types of prehistoric artifacts are seen from 41KR569. All are surface finds; none were recovered during the shovel tests. No diagnostic artifacts were recovered. Diagnostic artifacts are flint tools that may be assigned an age range based on the shape of the stem. The stone artifacts consisted of the following: four utilized flakes (Figure 4), three various types of biface fragments (Figure 5), and one each preform, quarry blank, blank (Figure 6), ex-

Table 2. Shovel test log, 41KR569Shovel Test 1, Level 1, 0-10 cm

2 lg. secondary cortex flakes
 2 med. secondary cortex flakes
 1 sm. secondary cortex flake
 3 med. tertiary flakes
 10 med. to sm. tertiary flakes
 6 sm. tertiary flakes
 3 med. secondary cortex flake fragments
 1 sm. secondary cortex flake fragment
 1 med. tertiary flake fragment
 11 med. to sm. tertiary flake fragments
 7 med. to sm. secondary cortex and tertiary
 flake fragments with recent breaks

Shovel Test 1, Level 2, 10-20 cm

1 med. to lg. primary cortex flake
 1 med. primary cortex flake
 3 med. secondary cortex flakes
 3 med. tertiary flakes
 6 sm. tertiary flakes
 1 lg. primary cortex flake fragment
 3 med. secondary cortex flake fragments
 6 sm. to med. tertiary flake fragments

Shovel Test 2, Level 1, 0-10 cm

1 very lg. primary cortex flake
 1 lg. secondary cortex flake
 1 med. secondary cortex flake
 4 sm. to med. tertiary flakes
 2 sm. tertiary flakes
 12 sm. to med. secondary cortex flake
 fragments
 2 med. tertiary flake fragments
 6 sm. to med. tertiary flake fragments

Shovel Test 2, Level 2, 10-20 cm

1 med. secondary cortex flake
 1 lg. tertiary flake
 1 med. tertiary flake
 5 sm. tertiary flakes
 1 med. secondary cortex flake fragment
 1 med. to sm. tertiary flake fragment
 5 sm. tertiary flake fragments

Shovel Test 3, Level 1, 0-10 cm

1 lg. primary cortex flake
 1 med. tertiary flake
 4 med. to sm. tertiary flakes
 4 sm. tertiary flakes
 3 med. tertiary flake fragments
 9 sm. tertiary flake fragments

Shovel Test 3, Level 2, 10-20 cm

2 med. tertiary flakes
 4 med. to sm. tertiary flakes
 1 sm. tertiary flake
 1 sm. tertiary flake fragment

Shovel Test 3, Level 3, 20-30 cm

1 med. tertiary flake
 1 med. tertiary flake fragment

Shovel Test 4, Level 1, 0-10 cm

1 sm. tertiary flake
 1 med. tertiary flake fragment
 1 med. to sm. tertiary flake fragment
 1 sm. tertiary flake fragment

Shovel Test 5 had no flint flakes or
 artifacts recovered.

Sizes: Sm. = 0-1 cm; Med. = 1-3 cm; Lg. = 3-5 cm; Very lg. = >5 cm



Figure 4. Utilized flakes. Left to right artifact numbers are: A-5, A-8, A-9 and A-12.



Figure 5. Crude biface, A-1; biface distal tip fragment, A-10; and proximal end biface fragment, A-13.



Figure 6. Preform, A-21; quarry blank, A-3, and blank, A-17.



Figure 7. Expended core/chopper, A-6; chopper, A-11.



Figure 8. Limestone metate, A-4.

pendent core/chopper, chopper (Figure 7) and a metate (Figure 8).

Utilized flakes are flakes of flint that have been used for scraping or cutting without any modification prior to use. They are made from primary and secondary cortex flakes and interior flakes. Primary cortex flakes have at least 90% of limestone or cortex on one surface. Secondary cortex flakes have less than 90% cortex on one surface. Interior flakes are flakes with no cortex on either side (Hemion 1988). One of the utilized flakes appears to have a spokeshave on one edge. Under magnification, the spokeshave area appears to be of recent origin, perhaps created when the flake edge came in contact with a plow blade. A spokeshave is a flint flake with a concave notch in one edge. It was used to scrape wood or bone surfaces to thin or shape them for handles or shafts (Davis 1995).

Bifaces are flint artifacts that are chipped on both sides. Preforms are bifaces that are several stages from completion in the manufacturing process. Blanks are thick, often crude, bifaces that are seen at the start of the flint tool manufacturing process. Quarry blanks are blanks made at the flint procurement site for convenience during transport to the main campsite. It is easier to make quarry blanks to carry back to the main camp than it is to carry large cobbles of flint. A core is a flint cobble that flakes are struck from to make flint tools (Turner and Hester 1993).

Choppers are cobbles of flint that have one edge chipped, usually steeply, and are used for chopping hard materials, such as wood or bone (Turner and Hester 1993). Metates are usually made of flat limestone or sandstone, with a bowl in one or both of the surfaces. A smaller rock called a mano is used to grind seeds and other materials that required pulverizing (Davis 1995).

The historic artifacts consist of six glass objects/fragments (Figure 9 a, b), one ceramic fragment (Figure 10) and one metal object (Figure 11). One clear glass milk bottle top half and one brown glass bottle top fragment, possibly an agricultural medicine bottle, make up the bottle top remnants. A clear glass round bottom bottle fragment, a clear glass square bottle fragment and a blue glass ovoid bottom bottle fragment make up the bottle bottom remnants. One clear glass melted blob was recovered. One W. S. George ceramic fragment of the bottom of a bowl or

plate was recovered. All the glass and ceramic items were recovered from the historic dump. A steel hook was recovered during the pedestrian survey from the central portion of the tract. This hook is the type that is attached to the end of a chain. It can still be purchased at most hardware stores today.

DISCUSSION

This site is a lithic workshop area where the prehistoric inhabitants manufactured flint tools as indicated by the number and variety of flint cobbles and flakes seen on the surface and recovered during the shovel tests. The reduction of a flint cobble to a finished tool creates flakes of various sizes and shapes. All of these are present here. Large cobbles of unchipped flint are noted in the rock pile and presumably gathered from the survey area. Preforms, blanks, biface fragments and an expended core were recovered. Primary, secondary and interior flakes of various sizes and shapes were seen during the pedestrian survey.

The site may have functioned as more than a flint workshop. The recovery of utilized flakes, a chopper and a metate are indicative of other activities of daily living taking place here. These tools, with the exception of the metate, may have been used for many scraping and cutting tasks. They may also have had other, unidentified functions.

The area was probably cultivated in historic times. The shovel tests revealed soft soil and various sizes and types of flint flakes down to the 25-centimeter level. The rock pile is typical of rocks gathered and piled around a tree or placed in an area that would not hinder the plow during cultivation. Many rock piles can be seen on the edges of fields in the Guadalupe River valley in the Kerr County area. Several of the artifacts collected during the pedestrian survey have red/brown rust marks similar to rust marks on artifacts recovered at other archaeological sites located in plowed fields. These are created when a metal plow blade scrapes across an artifact leaving a small amount of metal on the surface that oxidizes causing the metal to turn a red/brown color.

The historic dump revealed glass artifacts from the 1930s to early 1950s (Anne Fox, personal communication 1998). The ceramic fragment by the W. S. George Pottery Company was recovered at the dump site. The W. S. George Pottery Company



Figure 9a. Glass bottle fragments from historic dump. Top row: left, blue bottom fragment, A-18; middle, bottom fragment, A-16; right, brown top fragment, A-19. Bottom row: left, melted glass blob, A-20; right, bottom fragment, A-17.



Figure 9b. Milk bottle top fragment A-15.

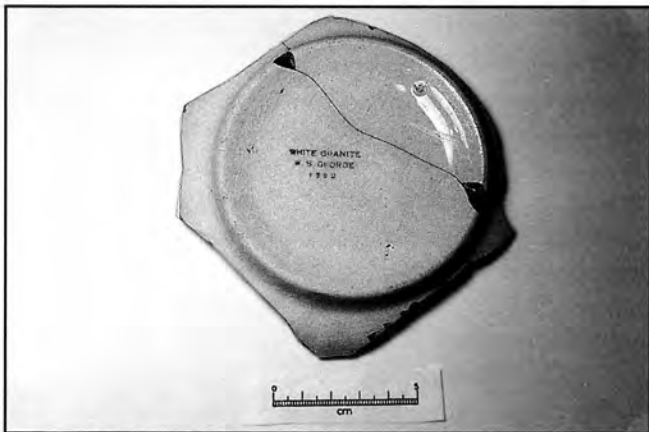


Figure 10. W. S. George ceramic fragment, A-14.



Figure 11. Metal hook, A-21.

manufactured pottery in Ohio and Pennsylvania from about the turn of the century (1900) to the early 1950s (Lehner 1988). The melted glass blob appears to be that of a clear or light green bottle melted by intense heat. It was recovered from a small mound of soil at the edge of the historic dump that may have been formed by mechanical means. The steel hook was recovered near the southern central border of the site. It is very recent.

CONCLUSION

The early occupants of this site used it for all stages of manufacture of flint tools and other functions associated with daily living. These other activities may include preparation of shafts and handles for tools and grinding of seeds and other material. The probability is high that this site was an occupational area associated with the burned rock middens across Highway 27. It is closer to 41KR559 which is on the property owned by Kerr County. No diagnostic artifacts are known from this site. However, 41KR119 located on the American Legion Hall property has had several diagnostic artifacts recovered. These are a Bulverde and a Pedernales dart point fragment recovered by the author. This indicates a time period from approximately 3000 BC to 1200 BC (Turner & Hester 1993). It is probable that the time range for these sites is earlier and later than this 1800-year span indicated by the diagnostic artifacts from 41KR119. 41KR569 could be associated with both these burned rock middens.

This appears to be a surface site only. The shovel tests revealed flint flakes down to 25 centimeters. These subsurface flakes could be the result of cultivation of the tract. Bioturbation is another possibility. This is a process wherein flakes of flint and other rock or objects deposited on the surface work through the soil to a subsurface position. This takes place by heavy rains loosening the soil allowing the object to sink into the soupy mud. During very dry periods large cracks form in the clay loam soil found in this area. Objects fall into these cracks becoming a subsurface object. Also animal burrows and deterioration of tree root tracts will allow objects to settle in the subsurface soil.

Scattered fire-cracked rocks were seen on and around the lithic workshop area. These may be remnants of hearths used by prehistoric inhabitants. It is also possible that these rocks resulted from the

burn conducted in recent times close to the dump area. The historic dump material was placed there sometime between the 1930s to the early 1950s, with the 1940s being the most likely time. A portion of the dump was pushed up in a small mound by scraping, possibly by a tractor blade or small bulldozer. A fire with intense heat burned on or near the dump at some time after the material was dumped here. It is possible this tract of land was cleared and a brush pile burned near or on the edge of the dump. Only a few of the artifacts on the west edge of the dump appeared to have been exposed to heat. The conclusion is the fire was a brush pile burn after the dump was made.

The pile of rocks was the result of removing rock from the tract in order to cultivate the land. The metate was picked up and placed in the pile by those clearing the land. It was not identified as a prehistoric artifact and was placed in the pile as another stone to be moved. It was partially covered with soil with the bowl facing up. When the soil was cleared, while exposing the rocks, it was identified and recovered. Limestone rocks and flint cobbles were found in the pile. Limestone was more prevalent than flint cobbles. The shovel tests excavated in the rock pile revealed sterile soil beneath the rocks.

Some brush has been cleared in the workshop area in the recent past. It appears that this brush was removed to gain access to a utility pole on the right-of-way of Highway 27 next to the fence. The right-of-way between Highway 27 and the fence is steep making the utility pole inaccessible from the highway. Access from the KCFCU tract is flat and easily accessible by heavy equipment. Heavy equipment on the portion of the lithic workshop may account for some of the flint flakes that had recent breaks as indicated by a difference in color on the break surface versus the flat surfaces of the flake.

There appear to be no significant subsurface features here. It is recommended that when removal of soil or subsurface scraping during construction begins the site should be monitored for subsurface features. Recording any features found would add to the archaeological record and could be done quickly during construction.

The survey of archaeological sites is important because of the number of sites being lost due to destruction for whatever reasons. This may be seen in the number of sites found near 41KR569 that have been destroyed. The information obtained from this site is slight compared to some sites; however, the

important point here is that information was obtained and will be preserved.

ACKNOWLEDGMENTS

A debt of gratitude is owed to Kerr County Federal Credit Union for permitting access to this site for the survey. Thanks go to Rick Sparkman for bringing this site to the author's attention and helping in the survey. Thank you to Don Shirley for assisting with photo scanning.

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