National Register of Historic Places
Eligibility Testing of Sites 41LT172 and 41LT354
in Luminant's Kosse Mine
Limestone County, Texas
NATIONAL REGISTER OF HISTORIC PLACES
ELIGIBILITY TESTING OF SITES 41LT172 AND 41LT354
IN LUMINANT’S KOSSE MINE
LIMESTONE COUNTY, TEXAS

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Abstract

Atkins North America, Inc. (Atkins) conducted National Register of Historic Places (NRHP) eligibility testing of sites 41LT172 and 41LT354, located within the Kosse Mine, owned and operated by Luminant, in Limestone County, Texas. The field investigations took place between May and August 2011. Site 41LT172 has both historic and prehistoric components, although the prehistoric component was determined to be ineligible for NRHP inclusion based on the results of previous survey. NRHP eligibility testing on the historic component during this investigation demonstrated that the site does not possess significant data resources that would warrant NRHP inclusion. Site 41LT354 is a prehistoric site with an ephemeral historic component. It is the opinion of the Principal Investigator that the prehistoric component at site 41LT354 harbors significant data resources that would warrant NRHP inclusion. Avoidance of the prehistoric component at site 41LT354 by mine-related development is recommended. If avoidance is not possible, data recovery of the prehistoric component at 41LT354 is recommended. The historic component at 41LT354 does not harbor significant data and does not warrant NRHP inclusion.
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Acknowledgments

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Sara Laurence and Candace Wallace produced the report figures. Chris Vidrick provided word processing. Andrea Burden served as Report Coordinator, David Sherman served as Quality Control Officer, and Linda Nance edited the report.
INTRODUCTION

At the request of Luminant, Atkins North America, Inc. (Atkins) archeologists conducted National Register of Historic Places (NRHP) eligibility testing of sites 41LT172 and 41LT354 within the Kosse Mine. Luminant plans to impact these sites through mine-related development. These sites were last evaluated during an intensive archeological survey of the Kosse East mine area (Dixon and Sherman 2010). Shovel testing during the survey (Dixon and Sherman 2010) showed site 41LT354 to comprise some 92,000 square meters (m²). This work demonstrated that only a 4,800-m² portion of this area, referred to as Area 3, contributed to the site's overall potential NRHP eligibility status (Dixon and Sherman 2010; Martin 2009). Consequently, all work conducted at 41LT354 was limited to Area 3.

These investigations were performed in compliance with the Protection of Historic Properties regulations (36 CFR 800), which govern the Section 106 review process as established by the National Historic Preservation Act of 1966 (PL 89-665), as amended in 1974, 1976, 1980, and 1992; the National Environmental Policy Act of 1969 (PL 91-190, 83 Stat. 915, 42 USC 4231, 1970); the Office of Surface Mining Regulations, as superseded by the Coal Mining Regulations of the Texas Railroad Commission, 1981, as updated in 1989; and other appropriate cultural resources legislation and the guidelines set forth by the Council of Texas Archeologists and the Register of Professional Archaeologists.

This report contains seven chapters. Following this introduction, Chapter 2 describes the natural setting of the Kosse Mine. Chapter 3 discusses previous archeological investigations within the vicinity of the project area and provides a regional cultural context. Chapter 4 details the field and laboratory methods. Chapters 5 and 6 present the results of NRHP eligibility testing of sites 41LT172 and 41LT354, respectively. Chapter 7 addresses the research questions and provides recommendations for the sites. The references cited in this report follow Chapter 7. This report includes five appendices. Appendix A presents trench profiles for site 41LT172. Appendix B contains the specimen inventory and artifact data analysis sheets for 41LT172. Appendix C provides trench profiles for site 41LT354, and Appendix D is the specimen inventory and data analysis sheets for 41LT354. Appendix E presents the macrobotanical analysis conducted for site 41LT354. Appendices B and D are provided on a CD.
Figure 1
Project Area Location

Inset 1

Limestone County

Robertson County

41LT172

41LT354

Mine Boundary

0 5,000 10,000 Feet

Job No.: 100013959
Prepared By: GR
Date: Dec 16, 2011

Scale: 1" = 5,000 feet

N:\Clients\L\Limestone\Kosse\100013959\geo\Rgs\Figure_1_20111216_letter.mxd
NATURAL SETTING

The Kosse Mine is located within the Post Oak Savannah region of east central Texas (Gould 1975). This area is also within the West Gulf Coastal Plain physiographic province (Fenneman 1938). The vegetation consists primarily of upland pastures, forested slopes, and bottomland forests and wetlands. Vegetation communities that occur in the mine area include upland hardwood forests and pastures, bottomland/riparian forests, grasslands, mesquite brushland, hydric communities, aquatic habitats, regenerative areas, and disturbed land.

SURFACE GEOLOGY

The surface geology of the Kosse Mine is dominated by the Eocene-aged Calvert Bluff Formation, which is mostly composed of "mudstone with various amounts of sandstone, lignite, ironstone concretions, and in the uppermost part, locally glauconitic" (Proctor et al. 1970). The floodplain of Steele Creek and the lower reaches of its largest tributaries (Owens Creek and Polecat Creek) are dominated by Holocene alluvial deposits that include "indistinct low terrace deposits; gravel, sand, silt, silty clay, and organic matter" (Proctor et al. 1970). Some of the gravel in the Holocene alluvial deposits may have been suitable for knapping by local prehistoric populations and is the most likely raw material source for the chert and quartzite lithic artifacts recovered during previous survey within the mine (cf. Dixon and Sherman 2010; Sherman and Watkins 2007; Sherman et al. 2006). The sandstone and ironstone in the Calvert Bluff Formation, if it outcrops locally, may have served as a raw material resource for prehistoric populations for making ground stone tools and grinding implements or for use in roasting pits (see Sherman et al. 2007). Significant deposits of clay suitable for pottery manufacture were recorded in southern Limestone County and northern Robertson County, and specifically, near Headsville (Potter and McKnight 1931). A large outcrop of kaolinite, which appeared to have been exploited at least historically, was identified at site 41LT424 (Sherman and Watkins 2007). The Eocene-aged Willis Point Formation outcrops just to the west of the Kosse Mine on either side of the Little Brazos River. This formation is mostly white calcareous clay in the upper part but has a thin bed of limestone in the middle part (Proctor et al. 1970).

SOILS

General Soil Map Units within the Kosse mine area (Griffin 1998) are Edge-Tabor or Crockett-Normangee soils. These soils typically have a dark brown fine sandy loam surface layer underlain by a red clay subsoil. Specific soil types mapped at the two sites tested are listed in Table 1, with
their general topographic position and taxonomic designation. Of these series, three soils were classed as Alfisols (Edge, Rader, and Silstid) and one was classed as an Inceptisol (Oletha).

Table 1. Soil Types on Sites 41LT172 and 41LT354

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<td>Edge fine sandy loam, 1 to 5 percent slopes</td>
<td>Site 41LT354, ridge tops and broad stream divides</td>
<td>Alfisol</td>
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<tr>
<td>Oletha silty clay, frequently flooded</td>
<td>Site 41LT354, floodplain of Steele Creek</td>
<td>Inceptisol</td>
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<tr>
<td>Rader fine sandy loam, 0 to 2 percent slope</td>
<td>Terraces</td>
<td>Alfisol</td>
</tr>
<tr>
<td>Silstid loamy fine sand, 1 to 3 percent slopes</td>
<td>Site 41LT172, broad uplands</td>
<td>Alfisol</td>
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Alfisols are the dominant soil order at the tested sites. These soils typically have light-colored, loamy A horizons with clay-enriched B horizons. Most of these soils formed in sandy or loamy residuum, and all are found on upland landforms. Archeological sites found in these soils can be expected to be shallow, unless buried in colluvium. All of these soils are acidic, and their low pH is generally detrimental to the preservation of organic archeological materials.

Inceptisols are immature soils that have weakly expressed profile features. They are deep and moderately well-drained soils that formed in loamy and clayey alluvium. Found in elevated portions of floodplains (relict terraces and natural levees), these soils range from slightly to extremely acidic and are moist for most of the year. They may be flooded for brief durations between November and May. Archeologically, they are important, since they may harbor the buried remains of Late Prehistoric occupations. In addition to habitation sites, because these soils are among the most fertile of any in the project area, they may have been utilized by semisedentary populations for seasonal cultivation.
PREVIOUS ARCHEOLOGICAL INVESTIGATIONS AND CULTURAL CONTEXT

PREVIOUS INVESTIGATIONS

Substantial archaeological investigation has been undertaken within the immediate project vicinity. Several surveys have been completed within the Kosse Mine (Dixon and Sherman 2010; Glander et al. 1984, 1986, 1988; Sherman and Watkins 2007; Sherman et al. 2006). Fifteen prehistoric sites have been subjected to NRHP eligibility testing in the Kosse Mine including 41LT56, 41LT310, 41LT387, 41LT397, 41LT415, 41LT422, and 41LT425 (Fischbeck et al. 2011), 41LT247, 41LT248, 41LT253, 41LT259, 41LT320, 41LT336, and 41LT347 (Sherman et al. 2007), and 41LT321 (Sherman and Watkins 2008). Five historic sites, including 41RT413 and 41LT424 (Fischbeck et al. 2011) as well as 41RT530, 41RT537, and 41RT538 (Loftus and Harris 2011) were also subjected to NRHP eligibility testing. Of the 20 total sites tested to date, only 41LT320 and 41RT413 were determined to be eligible for NRHP inclusion. Site 41LT320 is a Late Prehistoric site located on a toeslope above Heads Creek, and site 41RT413 is a late-nineteenth-century cotton gin in the former Headsville community.


In the 1970s, a series of cultural resources investigations was conducted in the Lake Limestone reservoir on the Navasota River, sponsored by the Brazos River Authority. Lake Limestone is a few miles east of sites 41LT172 and 41LT354, lying just east of Oletha in southeastern Limestone County and neighboring counties. Archeological survey of the reservoir identified 60 prehistoric
and 2 historic sites (Prewitt 1974). Test excavations were conducted at 2 of the prehistoric sites, 41LN20 and 41RT2 (Prewitt 1975), and later at 11 of the prehistoric sites (Prewitt and Mallouf 1977). All of the tested sites yielded diagnostic artifacts representing multiple prehistoric time periods with high artifact densities, but poor stratigraphic separation of cultural components. Four of these sites—41LT12, 41LT17, 41LT44, and 41LN21—received intensive excavations as the final efforts expended for mitigation of impacts to the cultural resources of Lake Limestone (Mallouf 1979:ix).

Three of the four intensively excavated sites yielded one or more small hearths or hearth pavements of hematitic sandstone or sandstones mixed with siliceous rocks. They varied from 30 to 80 centimeters below the surface (cmbs) and were estimated to date to the Middle Archaic through Late Prehistoric periods. The four excavated sites lacked pits as at 41LT354. The sites altogether yielded 609 ceramic sherds, divided into seven paste groups (Mallouf 1979:236–256). Canton Incised and Poyner Engraved sherds were identified among the paste groups, as were sherds decorated with engraving, incising, punctation, and ticking.

Recent natural gas pipeline cultural resources surveys conducted by PBS&J have also recorded prehistoric and historic sites within this region (Dixon and Norton 2005; Dixon et al. 2005, 2006; LeFevre et al. 2008; Norton and Dixon 2007). These investigations have shown that this part of Texas has been inhabited by human populations since approximately 10,000 B.P.

**CULTURAL CONTEXT**

**Prehistoric Periods**

This brief discussion follows closely the regional synthesis outlined by Fields (1995) for the Post Oak Savannah region of Texas, which is based largely on the numerous survey, testing, and data recovery investigations conducted at the nearby Jewett Mine, as well as the results of the RCAP (McGregor and Bruseth 1987). This chronology is broken down into three periods—pre–Late Archaic (prior to 2000 B.C.), Late Archaic and Woodland (2000 B.C.–A.D. 800), and Late Prehistoric (A.D. 800–1650).

Few components dating to the pre–Late Archaic period have been excavated in this region, and little is known about it. Occupation during this time appears to have been sporadic, with highly mobile populations subsisting on hunting and collecting strategies (Fields and Tomka 1993). The earliest dated component excavated at the Jewett Mine was identified at 41LN106 and was represented by a burned rock hearth with a radiocarbon date of 8000 B.C. and late Paleoindian–Early Archaic projectile points (Fields 1995). Components from this period are often found mixed with materials from later periods or are represented by isolated artifact finds. A recent study of private collections and reported and unreported sites (Young 2011) inventoried Clovis, Folsom and Midland artifacts in a nine-county area between the drainages of the Trinity and Brazos rivers, including Limestone County. The report included 53 Clovis finds, 1 Folsom artifact, and 2 Midland
3. Previous Archeological Investigations and Cultural Context

projectile point fragments. The settings of the finds were predominantly low terraces and floodplains of the Trinity and Brazos rivers and their major named tributaries.

Relatively more information has been recovered relevant to the Late Archaic to Woodland division for this part of Texas. An increase in population density and a decrease in territory size have been postulated for the Late Archaic, based on the RCAP and Jewett Mine investigations. The presence of nonlocal lithic raw materials indicates some degree of mobility or interaction with other peoples (Fields 1995). McGregor and Bruseth (1987) noted a decrease in the distribution of Pisgah Ridge Chert and an overall decrease in the amount of chert used during the Late Archaic. These observations are interpreted as indicative of a reduction in territory size during the Late Archaic (McGregor and Bruseth 1987).

Distinctive site types appear during this period, with base camps located in riverine settings and subsistence resource processing-extraction sites located in the uplands. A subsistence shift or shift in culinary technology seems to be evidenced by the presence of ceramics and a decrease in the frequency of burned rock features at Woodland sites.

Wylie pits, thought to represent evidence of “transitional Archaic band coalescence,” were excavated at the Bird Point Island site (41FT201) and the Adams Ranch site (41NV177) during the RCAP investigation (McGregor and Bruseth 1987:237). These pits are thought to indicate an increased reliance on plants over animals for subsistence during the transitional Late Archaic. Shell-tempered ceramics, dated to between A.D. 200 and 700, were recovered in a large depression at the Adams Ranch site (McGregor and Bruseth 1987).

Twenty components dating to the Late Archaic and Woodland period were excavated at the Jewett Mine by Prewitt and Associates (Fields 1995). Of these components, 15 were interpreted as residential bases and 5 as procurement-processing locales. Artifacts recovered include Late Archaic dart points such as Dawson, Gary, and Yarbrough as well as a small number of sandy paste and grog-tempered or grog-and-bone-tempered ceramic sherds. Two possibly early shell-tempered sherds were also recovered.

A sparse Woodland or Early Ceramic component was identified at 41GM282 in the Gibbons Creek Mine (Rogers 1995a), from where an Ellis and a Williams dart point were recovered. Four other sites with Late Archaic components were tested at the Jewett Mine by EH&A (Sherman et al. 1998). These four components yielded Gary, Edgewood, and Elam dart points and are thought to represent short-duration occupations.

Settlement and subsistence patterns changed during the Late Prehistoric period. Late Prehistoric sites suggest a higher use-intensity and increased sedentism, represented by a greater variety of artifacts and features as well as an increase in the numbers of discarded ceramics over earlier sites.
Three archeological phases (Richland Creek – A.D. 700 to 900; Round Prairie – A.D. 900 to 1300; and St. Elmo – A.D. 1300 to 1650) were defined for the RCAP to describe components dating to the terminal Woodland and Late Prehistoric periods (McGregor and Bruseth 1987).

Eight sites dating to the Richland Creek phase were investigated during the RCAP. A further reduction in territory size over the Late Archaic is postulated for this period (McGregor and Bruseth 1987). Evidence of impermanent residential structures, in the form of posthole clusters, along with the presence of middens, suggests semisedentary habitation at some sites. The bow and arrow (represented by Scallorn and Steiner arrow points) was introduced during this period and appears to have been used in conjunction with the atlatl (represented by dart points). Drills and awls also make their appearance during this phase. The shell-tempered ceramics found on some Late Archaic sites are absent on sites dating to this period, while undecorated sandy paste ceramics and decorated ceramics with grog, grit, and bone tempering have been recovered. Large roasting pits, smaller than those identified at Late Archaic sites, continued in use during this period.

Round Prairie phase components were recognized at eight sites investigated during the RCAP (McGregor and Bruseth 1987). The most detailed data representing this phase came from the Bird Point Island site, which is interpreted as a sedentary settlement. The trend of decreasing territorial size that began during the Late Archaic appears to have continued during this phase. Although no new technological advances were introduced during this period, the presence of dart points in features inside House 1 at Bird Point Island demonstrates their continued use, perhaps as multipurpose tools, after the introduction of the bow and arrow (McGregor and Bruseth 1987:244-245). Alba arrow points became more common, while earlier types, Steiner and Scallorn, became less so during this phase. Animal species exploited included deer, turtle, fish, and bison. Plant species exploited included hickory, pecan, Psoralea, and seeds.

Five St. Elmo phase components were recognized during the RCAP investigation, with the components at Bird Point Island and Little Cedar Creek (41NV173) being the most intensively investigated (McGregor and Bruseth 1987). A decrease in the number of components dating to this phase over the previous two argues for a reduction in population. Settlement patterns appear to have shifted during this phase toward reduced sedentism. Clusters of postholes, rather than complete circular patterns, are suggestive of impermanent structures. A centrally based settlement pattern, with increased foraging over the preceding phase, is postulated (McGregor and Bruseth 1987:246). The most common projectile points used during this phase were Perdiz and Cliffton. Grog-, grit-, and bone-tempered ceramics continued to be used but with an increase in engraved designs and a decrease in punctuated ones. A reduction in the variety of animal species exploited along with an increase in the importance of deer is suggested by faunal remains recovered in features. Maize makes its appearance in the RCAP area during this phase but does not appear to represent a significant component of a subsistence strategy based largely on hunting and gathering wild resources. Hickory, Psoralea, and acorn are the most common plant remains recovered from St. Elmo phase components.
Eleven Late Prehistoric components were excavated at the Jewett Mine by Prewitt and Associates (Fields 1995). Arrow points, most commonly Perdiz, outnumbered dart points by a factor of almost two to one at these sites. The ceramics of this period appear to have either a sandy paste or kaolin paste. The decorative motifs represented are often similar to those prevalent in the Caddo area, farther east. The majority (96 percent) of the ceramics recovered from these components were tempered with either grog or bone. Another Late Prehistoric component at the Jewett Mine (41FT425, the McGuire’s Garden site) that was subjected to data recovery investigations yielded Perdiz arrow points and ceramics with motifs similar to Caddo types including Pennington Punctated-Incised, Crockett Curvilinear Incised, and Canton Incised (Gadus et al. 2002; Sherman et al. 1998). Northwest of the mine area, at the Peerless Bottoms site (41HP175) in Hopkins County, Fields (1995) noted the presence of two ceramic vessel forms typical of the Southern Plains, as well as some sherds with Caddo motifs.

Two Late Prehistoric components were excavated at the Gibbons Creek Mine (Rogers 1995a) that appear to represent short-duration seasonal occupations. Ceramics with Caddo motifs were also recovered from both of these sites. One of these (41GM282) appears to have resulted in part from intensive subsistence processing activities with an apparent emphasis on the exploitation of deer. At that site, 100 complete or near-complete Perdiz arrow points and 25 Perdiz preforms were recovered.

Historic Indians

The accounts of early explorers in Texas indicate that the Hasinai Caddo and the Kichai Wichita (who spoke a Caddoan language distinct from the Wichita) were present to the northeast and northwest, respectively, of the Kosse East mine area (Bolton 1970; Newcomb 1993). Historically, the Caddo area consisted of large portions of northeastern Texas, northwestern Louisiana, southwestern Arkansas, and southeastern Oklahoma. The Caddo “exerted considerable influence and perhaps dominance over the natives of Central Texas” (Newcomb 1993:3). Fray Francisco Casañas de Jesús María noted the Tonkawa (Tanquaay) in Texas in 1691 as enemies of the Hasinai Caddos (Swanton 1942).

When first encountered by Europeans, the Caddo consisted of approximately 25 tribes that were organized into four confederated groups. The four confederated groups identified by Swanton include the Hasinai (in Nacogdoches, Rusk, Cherokee, and Houston counties), Kadohadacho (on the Red River), Natchitoches (around the present-day city of Natchitoches, Louisiana), and Yatasi (between the Kadohadacho and Natchitoches). The first direct contact was through the DeSoto-Moscoso Expedition of 1541–1542, when a number of tribes were discovered living near the great bend of the Red River (Swanton 1942). The Caddo were an agricultural people organized in economic units of extended matrilocal families living in scattered hamlets with access to soil suitable for agriculture (Woodall 1969). Subsistence crops included maize, beans, calabash, watermelon, and sunflowers (Hatcher 1927). The diet was supplemented by hunting game.
By 1835 Caddo populations to the northeast ceded all their lands in the United States and moved into Texas. Other Indian tribes also began to move into Texas and the Caddo territory. Remnants of the Caddo were forced to move to the Brazos Indian Reservation before eventually being removed to Indian territory.

The Wichita were originally natives of the Canadian and upper Red rivers but moved southward around 1700 to eventually inhabit the territory between the Brazos and Trinity rivers (Bolton 1914). The Wichita Confederacy comprised four subtribes: the Wichita proper, Waco, Tawakoni, and Kichai (Douglas 1932; Newcomb 1993). The "prehistoric origins of the Kichai lie to the north in the Arkansas River basin" (Newcomb 1993:30). The Kitchai spoke a Caddoan language distinct from that spoken by the Wichita, one that may be more closely related to Pawnee (Newcomb 1993). During the nineteenth century, they became affiliated with and were eventually absorbed by the Wichita.

Bénard de la Harpe encountered the Wichita around the upper Trinity and Canadian rivers in 1719 (Hodge 1959; Wedel 1971). Athanase de Mézières noted a Kichai village near the Trinity and on the right bank of the Brazos near present-day Waco (Bolton 1914). The Kichais occupied the area in present-day Anderson, Houston, and Leon counties into the nineteenth century (Newcomb 1993). The Wichita diet included buffalo meat, cultivated vegetables (such as maize, squash, melons, beans, peas, and pumpkins), and gathered fruits, nuts, berries, and seeds (Douglas 1932; Johnson and Jelks 1958; Witte 1938). On the buffalo hunt, the Wichita lived in hide tipis; they also constructed more-permanent beehive-shaped grass structures.

Norteno focus is used to describe historic Kichai components dating to the early historic period (Duffield and Jelks 1961). The Pearson site (41RA5) in Rains County was described as "largely a mixture of Plains and Caddoan elements" (Duffield and Jelks 1961:75). Norteno focus sites often contain European trade goods in association with triangular arrow points and Emory Punctated and Womoc Engraved pottery. The ceramics are usually sand or clay-grit tempered, though shell was also used as a tempering agent. The Vinson site (41LT1) in northern Limestone County is a Norteno focus site excavated by The University of Texas at Austin and the Texas Archeological Society, as well as local groups. Preserved house patterns along with English and French trade items were found on-site (Smith et al. 1993).

The Tonkawa homeland was in north central Oklahoma. In the seventeenth century, Apache expansion forced the Tonkawa from their homeland, and they began to move south into north central Texas (Newcomb 1993). The Tonkawa were hunter-gatherers and ranged widely depending on the availability of game and their relationships with other tribes. During the eighteenth century, they were reported between the Brazos and Trinity rivers. Tonkawa were also reported at Rancheria Grande, near Cameron, Texas, south of the Kosse mine area. Relations with other tribes continued to force the Tonkawa south, and by the nineteenth century, they were reported to be between the Trinity and San Antonio rivers (Newcomb 1993).
By the end of the eighteenth century, remnants of eastern tribes including the Shawnee, Delaware, Kickapoo, and Cherokee moved west after the advance of Anglo settlement and passed through central Texas (Newcomb 1993).

European Activity in Robertson and Limestone Counties during the Colonial Period

Spanish claims on the area comprising present-day Robertson and Limestone counties extend back to the sixteenth century, though there is no evidence that any of the documented French or Spanish expeditions into east and central Texas during the sixteenth, seventeenth, and eighteenth centuries passed through the region during the era of exploration. During the late eighteenth century, the Spanish became increasingly concerned with French encroachment into their outlying territories, including east Texas, and authorized the establishment of permanent settlements across the region. None of the subsequently constructed presidios or missions was in Robertson or Limestone county, but one, Nuestra Señora del Pilar de Bucareli was founded where the Old San Antonio Road crossed the Trinity River southwest of the project area. While Bucareli is important because it represents the first attempt by any European group to settle in this section of the state, permanent settlement did not occur until Anglo-Americans from the United States reached the area in the 1820s and 1830s (Sherman et al. 2006).

The Robertson Colony and Early Anglo-American Settlement in the Project Vicinity

The early years of the nineteenth century marked a turning point in the history of Limestone County, as Mexico gained its independence from Spain, Anglo-American settlement began, and conflicts with Native American tribes continued. During the first decades of the century, Anglo-Americans reached territory that encompasses present-day Limestone and Robertson counties for the first time. Zebulon Montgomery Pike’s expedition through Texas in 1807 marked the beginning of Anglo-American involvement in the region. In 1812–1813, the Gutierrez-Magee Expedition, established to help Mexico gain independence from Spain, exposed east central Texas to still more Anglo-Americans. In 1819–1820, James Long led an unsuccessful expedition against Spanish forces in Texas.

As early as 1822, Anglo-American settlement in what now comprises Robertson County was reported for the first time. William B. De Wees, as a member of Stephen F. Austin’s Old Three Hundred settlers, wrote that two families were building homesteads near the crossing of the Old San Antonio Road over the Brazos River. In all likelihood, this small settlement was not approved by the Mexican government and was merely a group of squatters with no legal rights or claims to the land. This trend continued even while formal permission to settle the region was under way and caused considerable controversy and legal problems in later years.
The first organized and government-sanctioned efforts by Anglo-Americans to settle in the region date to 1821 when the Texas Association, forerunner of the Robertson Colony, was officially chartered in Nashville, Tennessee. Amid political turmoil within the Mexican government and growing tensions between Mexico and Anglo-American settlers, the claims and efforts of this colony became confused with those of the Nashville Company. Subsequent attempts to establish permanent settlement were less than successful, and few, if any, surviving settlements were established. However, in June 1830, Sterling C. Robertson and Alexander Thomson Jr. agreed to bring 100 families to the Leftwich Grant.

The Leftwich Grant, from which both Robertson and Limestone counties were created, was initially part of two empresario grants made by the Coahuila y Texas legislature in 1825 to Hayden Edwards and Robert Leftwich (Maschino 2011). The grants authorized the men to settle 800 families each within the boundaries of their individual holdings. The Leftwich Grant was also known as the Nashville Colony, the upper colony, and in its final incarnation, as Robertson's Colony. After much wrangling, Leftwich eventually secured a contract with Mexico to bring settlers into Texas in his own name. He subsequently sold the contract back to the organization he had originally been working for, a Nashville-based group known as the Texas Association, with the stipulation that the colony bear his name. It was one of the group's original stockholders, Sterling Clack Robertson, along with his partner Alexander Thomson Jr., who undertook the daunting task of recruiting colonists under the contract in 1830 (McLean 2011). Unlike others who tried before him, Robertson eventually overcame many obstacles to make the operation a success.

By 1830, the Mexican government was becoming increasingly alarmed at the growing number of Americans immigrating to Texas from the United States and the influence they had over the region. In reaction, they implemented a policy designed to reassert their control, which became known as the Law of April 6, 1830. The most controversial articles of the legislation annulled incomplete empresario land grants and called for a halt to United States immigration to Texas. While Stephen F. Austin successfully argued for a reinterpretation of the law and eventually helped to amend major provisions, the grants to the Texas Association remained suspended. Believing that the law had halted activity by the group, Austin and his agent, Samuel M. Williams, secured the rights to the Leftwich Grant from the Mexican government (Sherman et al. 2006). Consequently, between 1831 and 1834, Leftwich's Grant was referred to as the upper colony, and Austin and Williams proceeded to "sell permits to nonresident speculators to locate huge grants in that area." This action by Austin caused conflict between him and Robertson, as well as between potential colonists, which, along with the constant threat of Indian raids, worked to impede settlement in the region for many years (McLean 2011).

After years of legal tribulations, Robertson finally regained his contract on May 22, 1834. In the same decree, he was named as the colony's empresario and was given until 1838 to introduce the remainder of his 800 families into the area (McLean 2011). He successfully brought approximately 600 families into the colony by the deadline, but few if any settled in the project vicinity during this
3. Previous Archeological Investigations and Cultural Context

early period. The slow rate of settlement was due in large part to fear of local Native American
groups. In 1836, Comanche and Kiowa warriors raided and destroyed the earliest Anglo settlement
in Limestone County, known as Fort Parker. In the aftermath of the legendary raid, settlement in
the region was halted until Sam Houston initiated a treaty with the Native Americans in 1844. Two
years later, Limestone County was formed out of northern Robertson County, and settlement began
in earnest (Maschino 2011).

Upper Southern Anglos represented the principal settlers in the project vicinity during the mid-
nineteenth century. As in adjacent counties, both large and small landowners from the Upper South
migrated to Robertson and Limestone counties throughout the 1850s. These groups brought with
them traditions and customs derived from the plantation-slave system of the southeastern United
States (Sherman et al. 2006). However, within the project area, relatively few households were
listed as slave owners in the 1850 Slave Census. This may have been due to the isolated nature of
the area. With limited access to markets, large-scale commercial agricultural operations such as
plantations were not as common, given the effort required to transport large amount of crops to
processing and commercial centers. Despite their lack of participation in the plantation-slave
system, the vast majority of the area’s early inhabitants strongly supported its continued existence,
as evidenced by the overwhelming participation of local men in the Confederate cause during the
Civil War (Maschino 2011).

Community development in the project vicinity began during the early history of Anglo settlement
in the county. Early settlers Joseph and Hannah Ferguson, who patented a large land grant near the
current project area, are credited as being the founding members of the Oletha community, which is
located approximately 4 miles northeast of site 41LT172. The Ferguson family moved to the area in
the 1830s, prior to the formation of Limestone County, and claimed a large tract of land, which
included the present-day communities of Box Church and Oletha. The Ferguson Cemetery that
continues to serve local residents was named after the family, and both Hannah and Joseph
Ferguson are interred there (Texas Historical Commission [THC] Historic Sites Atlas, “Ferguson
Cemetery,” Marker #13198). W.W. Barnett purportedly opened the first store in Oletha. Though
primary and secondary sources disagree on the dates, census and tax evidence suggest that he
opened it circa 1894 rather than in the 1870s. Following the construction of W.W. Barnett’s store,
Joseph Wallace established a second general store. Secondary sources indicate a post office opened
in 1886, followed by a church in 1890 (Panus 2011).

**Postbellum Development**

Economic depression and sometimes-violent resistance to Republican Reconstruction
characterized the postbellum era in Robertson and Limestone counties. Despite the political and
social upheaval, the region remained rural and economically dependent upon agriculture. In 1869,
the Houston and Texas Central Railroad arrived in Limestone County, ending where the town of
Kosse is currently located approximately 10 miles southwest of Oletha. The railroad ran north-
south across the county, and the town of Thornton, situated approximately 10 miles west of Oletha, was one of several towns established along the line. The slow and unimproved transportation lines of the past had hampered economic growth, but the arrival of the railroad offered many new opportunities and possibilities to local residents. Farmers whose yield increased dramatically during the late nineteenth century shipped their goods to markets that had previously been inaccessible or unprofitable. With their increased wealth, many of these farmers expanded their purchase of goods from local stores, and merchants carried a greater variety of goods that had been too expensive or difficult to obtain in the prerailroad era. The railroad also physically linked the region to much of the rest of the nation, thereby helping to bring the area out of its isolated and economically depressed state, and attracted new residents to the area. In Limestone County, the population increased from 8,581 in 1870 to 16,246 by 1880 (Maschino 2011). Simultaneously, existing communities bypassed by the railroad, such as Oletha and nearby Headsville, dwindled.

As in many other areas of Texas and the South, farm tenancy increased during the period from the Reconstruction Era through the Great Depression. In many areas, particularly those heavily dependent on slave labor, a large percentage of this increase could be attributed to landowners leasing out lands to African American farmers. However, white farm tenancy also increased as former landowners were unable to maintain ownership of their property when property values declined. Additionally, Texas saw an increase in settlement in the 1870s from immigrants from the Deep South, where the soils had been exhausted by physical destruction of the Civil War and the depletion of farmland by decades of intensive agricultural cultivation.

Besides the general impetus provided by railroad construction, the county’s newly freed African American residents also participated in community development during the postbellum era. In some cases, black residents settled in ethnic enclaves that in time developed into self-sustaining communities with their own churches and schools. In some instances, these communities were formed as a result of de facto segregation wherein African Americans were prohibited from settling within the boundaries of Anglo-established communities. These communities were often in areas that were considered undesirable by white residents and tended to be far-removed and isolated from existing communities and railroad access. This pattern is apparent in the project vicinity, where African Americans and Hispanics were prohibited from settling in the area surrounding the Oletha community.

The arrival of the railroad also encouraged limited industrial development such as pottery making and petroleum extraction during the early 1900s; however, agriculture, particularly cotton and corn cultivation, continued to be the county’s economic mainstay well into the twentieth century. Local residents began to experiment with cotton cultivation in the 1880s. During the same period, improvements were made in the process of refining cotton, such as Robert S. Munger’s development of a continuous ginning system in nearby Mexia (Britton 1992). Ray Walter reports in his History of Limestone County that between 40 and 50 cotton gins were located in the county at one time with nearby examples at Ferguson Prairie, Kosse, Mexia, and Groesbeck (Walter 1959).
addition to cotton cultivation, Agricultural census research indicated that corn cultivation was also a primary activity for area farmers. Deed records from the period indicate that there was also a cotton gin and grist mill in Headsville that operated at least during the 1880s (Robertson County Deed Records 14:245).

Within the current project vicinity, archival evidence suggests that many residents engaged in self-sustaining rather than commercial agriculture and practiced ranching on a small but more-industrious scale. The decision to ranch instead of commercially farm may have been based partly on soil quality, but was also likely supported by the relatively low cost of beef cattle, which sold for a few dollars, and the minimal expense involved in raising them (Walter 1959).
METHODS

FIELD METHODS

A multiphase approach was utilized to determine the NRHP eligibility status of the tested sites where the results of each phase were used to determine the necessity of subsequent phases. Additional shovel testing, magnetometer survey, backhoe trenching, and hand unit excavation were utilized at 41LT354. Only shovel testing and backhoe trenching were conducted at 41LT172.

Horizontal Control

A grid was established on both sites with a Total Station. All shovel tests, trenches and hand-excavated units were tied to the grid with the Total Station.

Shovel Testing

Additional shovel testing was proposed for the historic component at site 41LT172 and subsite area 3 at site 41LT354. Shovel testing was conducted at 10-meter (m) grid intercepts at 41LT172 with additional shovel tests conducted at 5-m grid intercepts in areas of high historic artifact density. Shovel tests were conducted at 10-m grid intercepts along 20-m east-to-west transects at subsite area 3 at 41LT354. Additional shovel tests were conducted at 10-m grid intercepts within high artifact density and diversity areas at the site.

Magnetometer Survey

A magnetometer survey was conducted on subsite area 3 at site 41LT354. Past studies at prehistoric sites in the Post Oak Savannah have demonstrated the effectiveness of using magnetometers to locate hearth features (Rogers 1995a, 1995b, 1999, 2000; Sherman 1999; Sherman et al. 2007). The technique constitutes an efficient, nondestructive method of locating buried rock hearth features, as the rocks within the hearths retain a remnant magnetization from the heating process. When a material containing magnetite (for example hearth rocks or clay) is heated, especially past the Curie point, many of the magnetic domains within the material realign, orienting themselves with magnetic north. In a magnetometer survey, this heated material (from hearths, pottery, bricks, kilns, etc.) will stand out against the surrounding unheated material whose magnetic domains are randomly oriented (Breiner 1999:46).
4. Methods

Atkins used a Geometrics, Inc. G-858 Magmapper to provide continuous magnetic surveying and automatic data logging. The G-858 automatically stores and outputs each sensor reading and the difference between the two sensor readings. In continuous mode, the G-858 can record data at 0.10-second intervals and store readings and positions sequentially with a time stamp. The gradiometer mode automatically removes the regional gradient and increases the resolution of local anomalies.

This survey was conducted within a controlled metric grid. Measurements of the magnetic field were recorded automatically by the magnetometer at 0.10-second intervals. Grid spacing, or the distance between adjacent magnetometer transects, was 1 m.

At the completion of the magnetometer survey, the data stored internally was transferred to a computer, and the resulting files were processed using MagMap2000 software. The magnetometer files were then exported from MagMap2000 as ASCII files in a format compatible with SURFER, a terrain-modeling software package, and magnetic contour maps were produced.

**Mechanical Excavation**

A backhoe with a smooth blade affixed to the bucket was used to prospect for features in artifact high density and diversity areas located through shovel testing at 41LT172. To the extent the terrain and vegetation allowed, all mechanical excavation units were aligned with the grid. At site 41LT354 a backhoe was used to investigate a representative sample of dipolar magnetic anomalies (with the negative pole to the north) identified by the magnetometer survey. Such anomalies have been shown to be strongly associated with burned rock hearths in the Kosse Mine (Fischbeck et al. 2011; Sherman et al. 2007). Mechanical excavation was halted when features were encountered, and the feature was sampled with hand-excavated units.

**Hand Excavation**

Hand-excavated units were used to gather data from cultural features identified at 41LT354. All sediment removed by hand excavation was screened using ¼-inch (0.635-centimeter [cm]) mesh hardware cloth. Burned rock features were first exposed, mapped, and photographed. Next, the features were bisected to reveal their construction in profile. Flotation samples were collected from the intact cultural features identified.

**LABORATORY METHODS**

All recovered cultural materials were returned to the Archeological Laboratory at Atkins for processing preparatory to analysis. Nonorganic remains were washed, dried, and catalogued by provenience. The Texas Archeological Research Laboratory (TARL) at The University of Texas at Austin will be the curation repository.
Prehistoric Artifacts

All lithic materials were classified by raw material type. Lithic artifacts exhibiting traits characteristic of thermal alteration were examined in detail in an effort to distinguish intentionally heated materials from those heated by chance.

The assemblage of lithic artifacts was first divided by the technology used to produce the implement, distinguished between either chipped stone or ground stone techniques. The chipped stone artifacts were then divided into tool and nontool groups. Chipped stone tools include objects that were modified for a direct function. Nontool lithic artifacts are the unutilized byproducts of lithic reduction and are further distinguished by type, either debitage or core. All lithic tools were subjected to low-power microscopy in an effort to identify patterned wear consistent with use.

Raw Material Type

Raw material types represented in the lithic assemblage include chert, hematite, hematitic sandstone, litharenite, metaquartzite, quartz arenite, and silicified wood. The selection of raw materials by prehistoric populations appears to have been based primarily on local availability. This conclusion is based on the paucity of clearly imported raw material types as well as the dominance of chert in the assemblage.

Thermal Alteration

Each lithic artifact was examined for the presence of traits diagnostic of thermal alteration. Thermally altered materials were distinguished based on whether the application of heat appears to have been intentional or unintentional. Attributes characteristic of thermal alteration include color, luster, and fracturing. Specimens exhibiting hues of red, increased luster, and/or fracture patterns consistent with such heat treatment were considered to be thermally altered.

Some lithic raw materials respond well to heat and become easier to work because they fracture more conchoidally and consistently than unheated specimens. This is caused by the fusing of impurities with the microcrystals, which allows the material to fracture with less pressure and in a more even and conchoidal manner. This fusing also results in a more lustrous and even surface (Purdy and Brooks 1971). Unintentional heat alteration is apparent if the specimen exhibits the properties of intentional heat alteration along with abrupt fracturing and an increase in friability.

Chipped Stone Tools

The chipped stone tool assemblages recovered from sites 41LT172 and 41LT354 were subcategorized by morphology and raw material type. The presence or absence of thermal alteration was also noted. The dimensions of each tool were taken with digital calipers. Lithic tools were also examined under low-power microscopy in order to identify patterns of use-wear. The morphological characteristics of projectile points were used to assess manufacturing techniques.
4. Methods

and identify cultural affiliation when possible. The assemblage of chipped stone tools was placed into the following categories: projectile point, biface, unifacially modified flake, and utilized flake.

Bifacially worked lithic artifacts with an identifiable hafting element are classified as projectile points. Based on size and manufacturing techniques, these artifacts were further subdivided into dart points and arrow points and assigned a cultural affiliation when possible. Dart points are larger, bifacially worked projectile points with wide bases, moderate to fine thinning, and a hafting element allowing for attachment to a shaft. Such tools generally precede the use of arrow points. Arrow points are small, often finely worked projectile points with a hafting element allowing for attachment to an arrow shaft. Dart points and arrow points were then further classified by typology, when possible.

Bifacially worked lithic artifacts lacking a discernible hafting element are categorized as bifaces. Following Dial and Collins (1998), bifaces were further categorized by reduction phase. Stage 1 bifaces are irregular in outline, retain large amounts of cortex, and exhibit minimal to no thinning along the edges. Stage 2 bifaces are more symmetrical in outline, retain minimal to no cortex, and exhibit minimal thinning. Stage 3 bifaces are symmetrical in outline, retain no cortex, exhibit secondary thinning, and some represent preforms. Biface fragments were not categorized by stage.

Unifacially modified flakes are pieces of lithic debitage that exhibit intentional modification on one side along one or more edges, often evidenced by micro-chipping. Tools of this type often show evidence of wear along the modified edge.

Utilized flakes are pieces of lithic debitage that exhibit use-wear on one or more edges. Patterned wear was evaluated with the goal of identifying the material(s) on which the tool was used. Utilized flakes evidence patterned wear consistent with use but lack evidence of intentional modification.

**Chipped Stone Nontools**

Nontool lithic artifacts recovered at sites 41LT172 and 41LT354 consist of unmodified lithic debitage and lithic cores. Debitage was further categorized by morphology and by the presence or absence of thermal alteration.

Lithic debitage refers to unused, detached manufacturing debris, while core refers to flaked lithic artifacts that show only negative scars of percussion. Following Sullivan and Rozen (1985), debitage was separated into the following categories: complete flake, broken flake, flake fragment, and debris. Complete flakes include all debitage with a discernible single interior surface that retains a point of applied force and has intact margins. Broken flakes differ from complete flakes because they lack intact margins. Flake fragments have a discernible single interior surface but do not retain a point of applied force or intact margins. Debris includes all debitage that lacks all of the above morphology.
Cores are the byproducts of lithic reduction that exhibit only negative scars of percussion. The reduction of cores can be either unidirectional or multidirectional, based upon the recognizable direction from which flakes are removed. Unidirectional cores have flakes removed in the same direction from a single point or area, whereas multidirectional cores have flakes removed in varying directions and from multiple points of applied force. Raw materials were categorized by size, when determinable, as boulder (diameter greater than 256 millimeters [mm]), cobble (diameter greater than 64 mm and less than 256 mm), or pebble (diameter less than 64 mm) following Neuendorf et al. (2005). Extensively reduced cores that did not retain sufficient attributes to categorize by size are referred to as exhausted cores.

**Ground and Battered Stones**

Ground and battered stone tools are generalized tools in the sense that a single tool may not be functionally specific with regard to the manner in which it is used or the things it is used to process or prepare. To systematically classify these tools, it is important to use well-defined criteria for recognizing their diverse nature and possible function. Since a variety of processes can produce distinctive wear, tools were assigned to specific analytical categories on the basis of several key variables: the mechanical processes, the outcome of those processes, and the material being processed. Microscopic examination of each tool aided in the identification of the key mechanical processes and the subsequent wear patterns still visible on the tool. Because any specific tool can be used in a range of activities, multifunctional tools were categorized on the basis of the predominant type of wear still visible on the tool.

The primary mechanical operations involved while using a ground stone tool are rubbing and pounding. Rubbing combines pressure and friction in order to reduce mass through abrasive action, such as the grinding down of coarse particles into finer particles, by scouring or scraping away the surface, or by sharpening, smoothing, or refining. The mechanical operation of rubbing can be used to reduce the mass of vegetal material (such as corn kernels, roots, or seeds) or nonplant material (such as clay or ocher). In this case, the material(s) to be ground are placed on the hard stationary surface or platform, and processing occurs when the upper hand-held stone slides across the lower anvil stone (see Carter 1977 and Kraybill 1977). However, the same mechanical operation is performed when ground stone tools are used to rub across a soft surface, such as hides or wood. Thus, the mechanical operation (rubbing) is the same, but surface to surface contacts vary depending on the type of material being processed, thereby resulting in wear patterns with different characteristics.

Pounding is a process of forceful impact. It is a pulverizing or crushing action that dehulls (as in the case of seeds and nuts) or reduces volume through the exertion of pressure (as in the case of roots and/or nutmeats). Pounding can also be used to reduce the volume of nonplant materials such as the pulverizing of old potsherds for use as temper. Pounding can be employed to roughen the
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surface, as when the surface of a grinding slab is pecked; however, pounding can also be used as a means of softening, such as pounding the inner side of hide blankets (see Opler 1941:378).

Pounding and rubbing are processes that produce certain outcomes. Apart from the objective of the process (such as dehulling nuts or grinding grass seeds), the process itself (i.e., rubbing or pounding) results in certain types of wear on the tool. Depending on the surface to surface contacts (i.e., hard-object-to-hard-object or hard-object-to-soft-object), rubbing can produce at least five different types of wear. (1) **Grinding** is wear that results from surface fatigue associated with the pressure and friction generated when two objects are repeatedly rubbed together (see Adams 1996; Teer and Arnell 1975). (2) **Polishing** is a form of tribochemical wear that occurs when surface fatigue and abrasive wear produce surfaces that are flat enough and smooth enough for the buildup of films and/or oxides. These smooth, shiny, glossy, or greasy surface(s) can result from actions such as rubbing a fine-grained piece of stone against a coarser-grained piece of stone, from friction against a softer material such as a hide, or from the residual buildup of the materials being ground (Adams 1996; Semenov 1964; Vaughan 1975). (3) **Striations** are fine, thin lines that occur on the working edge and/or surface of the tool. They can occur as sets of lines that run parallel to one another in the same direction, as sets of crosscutting multidirectional lines, or as circular swirls. This type of wear is often used to infer the direction of use. (4) **Grooves**, by contrast, are broad furrows or channels characterized by linear, often parallel, troughs that have been cut into the surface of the tool. (5) **Notches** are indentations that occur at or close to the edge of a tool. These indentations can be shallow or deep, but differ from striations and grooves in that they are generally wider and shorter and occur as V-shaped or U-shaped troughs close to the edge of the tool (see Vaughan 1975).

Pounding also results in distinctive wear patterns that differ from those produced by the mechanical operation of rubbing. (1) **Battering** is wear that results from forceful impact. This type of wear is characterized by irregular indentations in the stone or crushed areas usually on the ends or sides (see Bell and Cross 1980). (2) **Pecking** is a special form of battering related to the refurbishing or roughening of a hand stone and/or the surface of an anvil stone. Wear associated with pecking is characterized by small indentations or dimples across the ground or polished face or along the edges. (3) **Pitting** occurs when large sections of a stone’s surface are displaced during repeated pounding in the same area. These larger pitted areas are often characterized by jagged depressions or holes on the working surface.

**Prehistoric Ceramics**

Six prehistoric ceramic sherd s were recovered at 41LT354. The analysis proceeded in two phases. The first phase involved an initial sort in which the six sherds in the assemblage were examined in order to identify those that could be conjoined or confidently be determined to be part of the same vessel (i.e., fitters). During the initial sort, one sherd could be matched with one other sherd, leaving a total of five sherd s in the analyzed sample.
The second phase involved a detailed analysis of the ceramic assemblage. Analysis of the recovered ceramics focused primarily on their technological aspects and the observable modes that would aid in more-detailed classification. In the absence of whole vessels or vessel sections large enough to discern typologically distinct decorative motifs, one way to distinguish subtle differences between relatively similar ceramics is to look at the technological variations found on individual sherds (see Brown 1998; Lechtman 1977; Rice 1987; Rye 1981). Thus, all sherds in the analyzed sample were characterized according to a suite of key attributes (for detailed discussions of the analytical methods and definitions of the individual attributes, see Brown 1998; Ellis 1992, 1995, 2010; Perttula 2004, 2005, 2010). The technological attributes recorded for each sherd in the analyzed sample included (1) paste constituency (i.e., identification of the type of nonplastic inclusions [sand, bone, grog]), the predominant size range of nonplastic inclusions [i.e., medium sand, fine sand, very fine sand per Wentworth 1922, 1933], and texture; (2) exterior and interior surface treatment; (3) exterior and interior decorative treatment; (4) morphological class (i.e., body, base, or rim); (5) average thickness; and (6) firing environment (i.e., oxidizing vs. nonoxidizing). Each of these attributes provides information about technological variability enabling finer-grained distinctions, which in turn allows the analyst to more fully characterize the assemblage even in the absence of identifiable types, thereby providing a basis for placing the ceramics within a broader regional ceramic context.

**Historic Artifacts**

Historic artifacts were initially divided by material into three broad categories: ceramic, glass, and metal. Additional attributes such as material, surface treatment, decorative element, maker's mark, morphological characteristics, technological variables, form, color, size, and condition were evaluated as warranted. Sorting criteria for each artifact category are discussed below.

**Ceramics**

Ceramics were initially categorized according to ware type and then subdivided by paste attributes. Historic ware types recovered were refined earthenware (ironstone and semiporcelain) and stoneware. Paste attributes such as color, hardness, and porosity can be used to identify paste types within each ware type.

Refined earthenware has a fine paste, delicate form, and thin vessel walls. It is relatively less porous than coarse earthenware but not porcelain or stoneware. Ironstone is a refined earthenware with a colorless to blue-tinted glaze and a white paste with a hardness on Moh's scale of 2.5 or higher. Semiporcelain is a refined earthenware with a colorless to blue-tinted glaze. It has a harder, more-vitrified paste than ironstone and is considered to be stronger and more durable.

Stoneware has a harder, more-vitrified paste than that of earthenware. It is distinguished by a thick, coarse-looking paste in which a temper is sometimes visible. Stoneware is nonporous and therefore nonabsorbent. Due to the impermeability of the fabric, vessels are sometimes left unglazed and are
commonly found in utilitarian forms, such as crocks, jugs, churns, and pitchers. However, it is more common that stoneware is given a surface treatment of a slip or glaze, such as Albany or Bristol.

Historic ceramics were also categorized by form, specifically the general shape of the original vessel, such as hollow or flat. Hollow forms include bowls, cups, storage jars, etc., while examples of flat vessels include plates, platters, etc. When vessel form could not be assigned due to incompleteness, earthenwares were generically assigned to indeterminate tableware, and stoneware to indeterminate storageware. Artifact condition, such as evidence of burning or crazing, was included for all ceramic sherds when observed.

Decorative techniques can be an important chronological indicator for ceramics. Certain types of decoration have periods of usage that are well established, although there is some variability from region to region. Only two types of decoration were identified. Decalcomania is an overglaze application of a decal, which is typically polychrome and most often has a floral design. Molding is expressed in various styles of embossed and impressed designs. This form of decoration has only gross temporal significance as it has been commonly employed from the 1840s until the present day.

**Glass**

Glass was initially sorted according to identifiable morphological attributes associated with object category and subsequent object form. Object categories include container glass, window, and lighting. The specimens were then identified by the object form, when applicable. Decorative techniques were also noted for all glass when observed. Color variations for each glass shard were recorded in addition to artifact form and condition. Lastly, the artifact condition, such as evidence of burning, was recorded for all glass shards when observed.

**Morphological Attributes (Object Category/Form)**

**Container Glass:** Container glass includes all glass shards exhibiting curvature and thickness consistent with bottle and jar forms as well as lids. When recognizable, object form was also recorded. Subcategories of container glass include jar, bottle, vessel, dinnerware, and unknown. Jar glass was categorized by the part of the jar represented. Jar specimens have a threaded rim or neck or embossing that describes the contents or size of jar. All bottle glass was also categorized by the part of the bottle represented or the type of finish represented. Bottles meet one or more of the following criteria: color of amber, brown, or very dark olive; embossing alluding to bottle containment; or a rim, lip, shoulder, or base shard with attributes of known bottle forms. Snuff bottle glass is a specific type of bottle glass identified by its unique square body shape, bead finish, amber hue, and the presence of an Owens suction scar. Vessel glass includes all curved glass specimens that cannot be attributed to any other containment variety.
Additional morphological attributes, such as finish type, were recorded for rims of bottle and jar forms. Finish refers to the top of the vessel that contains elements such as the lip and rim that allow for the closure of the container (Jones and Sullivan 1989).

**Window Glass:** Window glass is flat sheet glass exhibiting an average thickness of less than 3.2 mm. Flat glass thicker than 3.2 mm is considered specialty glass not consistent with use as window panes (Moir 1987).

**Lighting:** All lighting glass or chimney lamp glass specimens are very thin and curved and are remnants of the outer glass lamp covering of a kerosene lantern.

**Decoration**

Decorative treatments to glass include embossing and pressing. When applicable, the decorative motif and/or text was recorded. In the case of identifiable patterns, a pattern name and accompanying manufacturing information was noted.

**Embossing:** Embossing is a type of molding that results in raised decoration. Embossing is a common method employed for presenting text on a container, such as item contents or graduation marks.

**Pressing:** Pressing is a type of molding that was originally produced as an inexpensive and efficient alternative to making an object appear as if it had been hand cut. Most often, the patterns are ornate and geometric in style. A common characteristic of pressed glass is that the pattern is repeated across the entire surface area of the vessel.

**Maker's Marks**

Maker's marks can be attributed to particular glass manufacturers. Because designs change over time, they also provide temporal information.

**Technological Attributes**

Technological attributes, such as mold seams, bubble inclusions, and finishing marks, are indicative of manufacturing processes and were recorded when present. These attributes indicate three generalized production methods for glass containers that evolved during the nineteenth and early twentieth centuries, including handmade, semimachine-made, and machine-made processes. For centuries, containers, such as bottles, were made by glass blowers by hand using blow pipes and pontil rods. After around 1830, molds were introduced to the free-blowing process, which created uniformity of shape. Later, with the innovation of semiautomatic machines, bottles were produced by a mold within a glass-blowing mechanism. Bottles produced prior to full automation required a final step known as "finishing," in which the neck and lip of a bottle were produced. However, bottle
finishing was no longer required with the advent of the Owens Automatic Bottle Machine in 1904, although machine-made bottles did not become common until around 1915 (Lindsey 2011a).

**Mold Seams:** Mold seams are raised lines on the body, shoulder, neck, finish, and/or base of the bottle that are formed where the edges of different mold sections meet (Lindsey 2011b). Seams indicate manufacture within a mold form and are conclusive evidence that a bottle was not free-blown. Mold seams prior to the automatic bottle machine do not extend beyond the neck of the bottle to the rim. Therefore, mold seams provide broad temporal indications that a glass container was manufactured after 1830, and when present on neck/rim fragments, they can date a container to after 1904.

**Suction Scars:** Suction scars were produced by the first automatic bottle-making machine made by the Toledo Glass Company in 1904. The process of filling a mold through the bottom and finishing with a mechanical blade cutting off the feed left a distinctive rough circular scar on the base of the bottle, referred to as Owens (after Michael Owens) suction scars (Lindsey 2011a). While suction scars could have been created until the Owens machine fell out of use in 1982, they were usually a result from an earlier Owens machine, narrowing the date range from 1904 through the 1920s (Lindsey 2011a).

**Bubbles:** Bubbles are variably sized gas or air pockets in glass. By the twentieth century, the introduction of arsenic or sodium nitrate into the glass production process eliminated impurities such as bubbles (Kendrick 1963). Therefore, glass containing bubble inclusions usually has a production date prior to 1920 (Polak 2000).

**Finishing:** Finishing is the last step in producing a mouth-blown bottle and requires the "finishing" of the bottle rim where the blowpipe was removed. Varying techniques have been employed, including hand-tooled and applied finishes. Tooling is the process of applying a lipping tool to the rim of a vessel in order to produce the desired finish, which often produces obliteration of mold seams near the rim and the "swirling" of the glass at the point of contact. Applied finishes involve an extra application of glass to the rim in order to form the finish, and also employ the use of a lipping tool in order to produce the desired rim form. Glass container rims exhibiting tooled and applied finishes generally predate 1915 when fully machine-made bottles dominated commercial production (Lindsey 2011c).

**Color**

Color is an important descriptive element; however, it provides limited temporal data due to significantly broad popularity and production date ranges (Jones and Sullivan 1989). Glass colors have no standard terminology; however, every glass shard's color was recorded using nomenclature proposed by the Society of Historical Archaeology (Lindsey 2011d). Modifying terminology, such as light or dark, was also employed to more precisely describe the color intensity or hue. Colors recorded were amber, aquamarine, colorless, solarized, light green, and opaline.
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**Metal**

Metal specimens were initially categorized by metal type (e.g., copper, ferrous metal, or lead). Morphological attributes were identified, which permitted classification into object category and subsequent object form. Technological variables were also noted for temporally sensitive object forms. Artifact completeness and condition were also recorded.

Two types of nails were collected. Cut nails are made mechanically by "cutting" a blank off the end of an iron or steel plate, which is then headed by hand or machine. As a result, the shaft of the nail is quadrilateral in cross section. Wire nails are machine made from drawn wire, and the shafts display a round cross section. Lastly, the artifact condition, such as evidence of oxidation or rust, was noted.

**Thermally Altered Rocks**

All thermally altered rocks were classified as fire-cracked rocks because their exhibited signs of heating, which includes color change, increased luster, and fracturing. Thermally altered rocks are not temporally diagnostic and could have resulted from either prehistoric or historic processes. The raw material type, the degree of thermal alteration, and the mass were recorded for all specimens. Raw material types were metaquartzite and silicified wood.
SITE 41LT172

NATURAL SETTING

Site 41LT172 is a multicomponent historic/prehistoric site located on a ridge summit at an approximate elevation of 410 feet (ft) above mean sea level (msl). An unnamed tributary to Steele Creek is located about 170 m southeast of the site. Silstid loamy fine sandy soils, 1 to 3 percent slopes (Griffin 1998) are present on-site. A large tree with a very dense brushy understory was located near the site's center. The prehistoric component was previously determined to be ineligible for NRHP inclusion (Martin 2009) and was not considered in detail as part of the present testing investigation.

Site 41LT172 was originally recorded as a historic site by EH&A (Glander et al. 1984:176). During that investigation, a surface inspection revealed the presence of a collapsed log cabin and probable brick chimney (TARL site form). The excavation of six shovel tests around the cabin yielded no cultural remains to a depth of 15 cmbs. Surface remains at the southeast corner of the cabin included cut and wire nails and a variety of regionally manufactured bricks. Based on surface inspection, the site was estimated to cover a 10-x-10-m area. Most of the brick types noted in the report were in production from the late nineteenth century to the mid-twentieth century.

The site was revisited during survey of the Kosse East mine area (Dixon and Sherman 2010). During the more recent survey, no remains of the cabin or chimney were noted on the surface. Shovel testing of a much larger area of the landform expanded the site boundaries. Shovel testing exposed a brown to very pale brown sandy loam extending from the ground surface to a maximum depth of 90 cm above a strong brown to reddish brown clay subsoil. The expanded site boundaries, based on the distribution of five positive shovel tests excavated during the revisit, extend roughly 90 m east-west by 45 m north-south. The site covers an area of 4,050 m².

A 1933 aerial photograph of the site area depicts what appears to be one structure, located approximately 100 m to the northeast of the site. Shovel testing there did not yield any cultural materials, although a late-1940s-vintage panel van was abandoned along the largely overgrown fenceline to the east.

The vegetation covering the majority of the site was composed of short grasses and dense weeds. One large dead tree was situated near the western end of the site, while the slopes to the west were covered with small oaks, cedars, and a thick understory of yaupon and briar. Across most of the site, ground surface visibility was nonexistent due to the dense or patchy vegetation.
PREVIOUS INVESTIGATIONS

During the revisit of site 41LT172 (Dixon and Sherman 2010), a total of 13 shovel tests were excavated in the four cardinal directions from the estimated center of the site as previously recorded. Five shovel tests were culturally positive, three shovel tests yielded both historic and prehistoric artifacts, while one yielded only historic artifacts, and one yielded only prehistoric artifacts. Shovel testing yielded a total of 66 artifacts, 53 of which were recovered from one shovel test. Artifacts were densely concentrated in levels 3–5 (20–50 cmbs), from where 46 artifacts were recovered. The remaining 20 artifacts were recovered from levels 1–2 (0–20 cmbs) and 6–9 (50–90 cmbs) with three artifacts from Level 1, five from Level 2 eight from Level 6, one from Level 7, two from Level 8, and one from Level 9.

Of the recovered artifacts, 7 were prehistoric and 59 were historic. The historic artifact assemblage is composed of ceramic, glass, brick, and metal artifacts. The ceramic assemblage (6 artifacts) is composed of 1 coarse earthenware sherd with a Bristol glaze, 1 decalcomania ironstone sherd, 2 undecorated ironstone sherds, 1 undecorated semiporcelain sherd, and 1 stoneware sherd with a Rockingham glaze. The glass assemblage (32 artifacts) is composed of 1 aqua-tint fragment, 3 aqua vessel fragments, 1 amber bottle fragment with a mold seam, 1 colorless vessel fragment with a mold seam, 3 amber bottle fragments, 5 colorless vessel fragments, 2 window glass fragments, 3 solarized vessel glass fragments with bubbles, 1 solarized vessel glass fragment, 5 colorless vessel fragments with a mold seam and bubbles, 1 colorless pressed glass fragment with bubbles, 1 aqua-tint vessel glass fragment with bubbles, 1 colorless glass fragment with bubbles, 3 amber glass fragments with bubbles, and 1 snuff jar fragment with bubbles. The brick assemblage consists of two machine-made brick fragments.

The metal assemblage (19 artifacts) is composed of 3 fence staples, 2 barbed wire fragments, 8 wire nails, 3 indeterminate nail fragments, 1 cast iron unidentifiable object, and 2 unidentifiable iron fragments.

Most of the historic artifacts recovered during the revisit are consistent with a late-nineteenth- to early-twentieth-century occupation. Temporally diagnostic artifacts recovered at the site include solarized glass and glass with bubbles. The solarized glass dates to between 1880 and 1918 (Stelle 2008), and the glass with bubbles dates between 1880 and 1920 (Polak 2000). Ironstone became popular in the 1850s and remains in production today (Roberson 1972). Decalcomania wares became popular in Texas after 1900 (Potter et al. n.d.). The undecorated coarse earthenware with a Bristol glaze is similar to wares observed at the nearby Kimik Kiln site (41LT198) and the Alberry Johnson Kiln site (41LT122), suggesting that it likely represents a locally produced product.

The prehistoric artifact assemblage includes five pieces of nondiagnostic chert debitage, one piece of metaquartzite debitage, and one chert unifacially modified flake. The unifacially modified flake has evidence of modification along its lateral distal edge and was likely utilized on medium-hard
material for sawing. The unifacially modified flake and three of the chert debitage pieces appear to have been thermally altered. The prehistoric component at site 41LT172 appeared to represent the remains of a short-duration, possibly single-event, occupation.

PREVIOUS ARCHIVAL RESEARCH

Limited archival research conducted as part of previous investigations (Dixon and Sherman 2010; Glander et al. 1984) indicated a possible association of the site with early Limestone settler Joseph Ferguson and his daughter Melissa Ferguson Donaldson Goodwin. That research indicated that Ferguson owned the property containing the site from as early as 1850 through 1876, when he deeded it to his daughter Melissa.

NRHP TESTING, ARCHIVAL RESEARCH

As part of the NRHP testing effort, historians sought to determine whether 41LT172 was associated with the Ferguson or Goodwin family's occupation of the property in the late nineteenth century and whether the site may be eligible for inclusion in the NRHP under Criterion A or B. Project historians conducted additional deed, probate, census, and vital records (birth, death, marriage, etc.) research at the Waco Genealogy Library in Waco, Texas, and the Texas State Library and Archives Commission in Austin, Texas. This research included intensive, year-by-year ad valorem tax research at the Waco Genealogy Library for the time periods suggested by the deed and archeological record, and supplemented the previous census research as needed. Historians also examined the nonpopulation census rolls for Limestone County at the Texas State Library and Archives Commission in Austin. Historians used this research to determine whether Joseph Ferguson or his daughter Melissa Ferguson Donaldson Goodwin and her family ever occupied the subject tract.

The archival research provided evidence that the parcel containing site 41LT172 was not associated with the homestead of Joseph Ferguson or Melissa Ferguson Donaldson Goodwin but may have been associated with tenant farmers.

Site 41LT172 is located southwest of the small farming community of Oletha in Limestone County, Texas, near its border with Robertson County. Archeological evidence suggests that this represents a domestic occupation dating to circa 1880–1920. Early settler Joseph Ferguson owned the land containing the site from as early as 1850 through 1876, when he deeded it to his daughter Melissa. However, archival research suggests that the archeological deposits were not likely associated with early settler Joseph Ferguson or his daughter Melissa Ferguson Donaldson Goodwin, who owned the property during the period of occupation. Thus, it was most likely associated with resident tenant farmers.

Following the turn of the twentieth century, the property was owned by area businessman and stock raiser W.W. Barnett. However, the parcel does not appear to have constituted his homestead.
Thus, any archeological deposits dating to Barnett's tenure of ownership would also be associated with resident tenant farmers.

**Early History of the Joseph Ferguson Survey, Abstract 194 (Luminant Tracts 11, 20, and 40)**

The early history of Ferguson's land holding in Texas is somewhat unclear. Land records indicate that Joseph Ferguson was originally granted a League and Labor (4,428.4 and 177.1 acres, respectively) Survey by the Mexican government; however, only a portion of it was located in Limestone County. Ferguson received his first land grant in Texas under David Burnet's land contract (McKeehan 2002). Because he arrived with his family, he received 1 League and 1 Labor (4,428.4 and 177.1 acres) located in what became Anderson and Henderson counties (Texas General Land Office Records, Anderson County Abstract 22; Henderson County Abstract 7). Although it is unknown why Ferguson was granted an additional 4,605.5 acres in Limestone County, he had initiated the process of having the land surveyed in the area by January of 1835. In that month, field notes for one labor (177.1 acres) of "arable or temporal" land and 24 labors (4,250.4 acres) of "pasture or upland" in Limestone County were recorded. The field notes, described as being for "one league of land on Turkey Creek," were filed for record in November of 1841 (Limestone County Surveyor's Records A:174). However, it is unknown where this property was located in Limestone County or whether Ferguson resided on this particular survey.

A cursory review of records available at the Texas General Land Office revealed that Ferguson used his headright to patent tracts in various other counties. Under his Robertson District 1st-class headright, he patented three tracts in Freestone County in 1862 (278.25, 608.71, and 352 acres) and is listed as grantee for a large tract (2,623.34 acres) in neighboring Leon County that Roger Coleman patented in 1874. Less the 110.5-acre parcel in Limestone County, which was not patented officially until 1954, the 743.26-acre tract combined with his grants in other counties totaled 4,605.5 acres, or the sum of his League and Labor headright. Though only 853.76 acres of the survey are currently located in Limestone County, individuals rendered taxes on significantly more acreage purportedly located within the county through at least 1880.

Historians also noted that it appears that Ferguson was involved in a land dispute with Galveston resident Memucan Hunt concerning some of his holdings in Limestone County prior to the mid-1850s. In 1854, Hunt, listed as a resident of Galveston County, relinquished his interest in the property in question "for a valuable consideration ... in hand paid by Joseph Ferguson," a resident of Limestone County (Limestone County Deed Records A:683). A reaffirmation of this relinquishment filed for record in 1873 reveals that Ferguson had originally located his headright on land within the Manuel Rejón 11 League Survey. The document indicates that Hunt had claimed "that portion of said 11 Leagues covered by ... [Ferguson's] ... headright league." In compromise, Hunt had been allowed to retain a 640-acre tract beginning at the northwest corner of Ferguson's
headright league (Limestone County Deed Records 14:95). Such disputes were common during this period, and the conflict explains why the majority of Ferguson’s survey was later relocated.

Ferguson continued to own a large tract of land in Limestone County, including the tract on which site 41LT172 is located, through the early 1870s, gradually deeding pieces of it to others. In the late 1840s, Ferguson rendered taxes on 4,428 acres in Limestone County. The property was valued at $2,214 from 1846 through 1848, and he owned 45 and 35 head of cattle, respectively, for those years. Given the low value per acre of the property and the relatively low amount of livestock reported, it is evident that most of the property was unimproved during the time period. Ferguson continued to sell pieces of the survey, with four owners appearing in the 1858 census. Ferguson’s tract, recorded as 3,831 acres, was valued at $4,746 in the late 1850s. Ferguson continued to appear in the tax rolls through at least 1870, when he owned 1,000 acres in Limestone County valued at $1,500, and it appears that his homestead was likely located somewhere within the 1,000-acre property.

The earliest census record for Ferguson and his family occurs in the 1850 Limestone County census. That record lists Ferguson as a 63-year-old farmer whose household included his wife Hannah (age 36), daughters Elizabeth, Nancy, and Rachael (ages 18, 14, and 4), and sons Joseph and Heflon (ages 17 and 1), at which time he lived one household away from the James Stephenson family, owners of the survey adjacent to Ferguson’s holdings in the Kosse East mine area (Dixon and Sherman 2010). The record indicates that Ferguson’s 17-year old son Joseph was born in Illinois, but that his 14-year old daughter Nancy was born in Texas. This seems to indicate that the Fergusons came to Texas from Illinois between 1833 and 1836.

In 1860, Limestone County census records list Ferguson as residing in the Steele Creek post office precinct with his wife and three of their children, R.J. (Rachael), V.F. (Virginia), and M.D. (Melissa Desdamonia), as well as J.H. Taylor (2), Mary Young (32), and A. Young (10). He owned $6,500 in real estate and $800 in personal property. The 1860 census records indicate that he did not own any slaves. He still lived one household away from J.Y. Stevenson [sic], suggesting he may have been living in the Kosse East mine area, and one household away from Jno. Henson and his wife N.J., whom secondary sources reveal was the daughter of J.Y. and E.A. Stevenson (Jordan 2003). The Hensons also resided in the vicinity of the Kosse East mine area and are both buried in the Ferguson Cemetery (Find A Grave Inc. n.d.a, n.d.b). The 1860 Limestone County agricultural census lists Joseph Ferguson’s farm as a 2,980-acre farm, of which only 40 acres were improved. The total cash value of the farm was $5,800. Ferguson claimed to own 3 horses, 17 milch cows, 65 other cattle, and 20 swine. His farm produced 400 bushels of Indian corn and five 400-pound bales of cotton in 1859.

According to census records, Joseph Ferguson resided in his daughter Rachael (Ferguson) Sadler’s household in 1870. His wife Hannah died in 1866 and is buried in the Ferguson cemetery located northeast of the site. The record lists the head of the household as Rachael’s husband Henry Saddler.
[sic], a planter with $320 in real estate and $300 in his personal estate. Ferguson (84) is listed as a retired planter with $1,320 in real estate and $350 in his personal estate. The household also included Ferguson's daughters Virginia F. (age 16), Malysa [sic] D. (age 13), and Joseph Taylor (age 13). That year, he paid taxes on 1,000 acres in Limestone County valued at $1,500. These 1,000 acres included his homestead, as it was the only land he owned in the county, and the land on which site 41LT172 is located. The 1870 Limestone County agricultural census lists the farms of Henry Sadler and Joseph Ferguson one after the other, implying that they were adjacent properties. Sadler's farm comprised 160 unimproved acres and was worth a mere $220. Sadler is listed as owning 3 horses, 2 working oxen, 30 other cattle (nonmilch cows), and 10 swine, and his farm produced 100 bushels of Indian corn. Ferguson claimed his farm consisted of 500 unimproved acres and had a cash value of $1,500. The Ferguson farm had 1 horse, 50 nonmilch cattle, 75 swine, and produced 200 bushels of Indian corn in 1869. There was no report on his other land holdings in this record.

Joseph Ferguson died on March 18, 1875 (Find A Grave Inc. n.d.c). His probate records did not include an inventory of his estate, but historians were able to examine his last will and testament, filed for record on August 30, 1874. In this document, Ferguson bequeathed 160 acres to his daughter Rebecca Ann Roberts and noted that this parcel was the land on which she was living in 1874 (Limestone County Probate Records B:87). More importantly, he left to his daughter Rachael Ferguson Sadler 100 acres of timberland and 50 acres upon which he (Ferguson) currently resided with all improvements and buildings thereon. The record also mentions that such provisions were made in appreciation of Rachael's caring for Ferguson "in his old age" (Limestone County Probate Records B:87). This stipulation, coupled with Ferguson's enumeration in the Sadler household in 1870, suggests that the Sadler family moved into Ferguson's home to care for him in his old age. In return, Ferguson left his dwelling and home farm to his daughter Rachael. Ferguson's will divided the remainder of his estate between his, "youngest daughters (Virginia Francis, Melissa Desdamona [sic]), and Joseph Ferguson Taylor" (Limestone County Probate Records B:87).

Although Ferguson left an unspecified amount of property to Melissa Ferguson Donaldson in his will in 1874 and died in 1876, an official record of conveyance for said property was not filed until February 1876, when a deed was recorded conveying the 160-acre subject tract to Melissa D. Donaldson from Joseph Ferguson. This deed specified that it was Ferguson's "express wish under forfeiture of this deed that the present husband of his daughter has nothing to do with the above described land and never to live on it" (Limestone County Deed Records E:79). Based upon the provisions of Ferguson's will, the Joseph Ferguson homestead was not located on the subject tract, which was willed to Melissa Ferguson Donaldson.

In 1876, Melissa Ferguson Donyson [sic] rendered taxes on 160 acres in the Joseph Ferguson Survey valued at $240. Historians did not find any records of Donaldson paying taxes on the property in 1877, but in 1878 Mrs. D. Donaldson paid taxes on 160 acres valued at $320. Given the high value of the property, it is likely that it included improvements. However, no livestock or

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personal property was listed in the tax valuation for the property, suggesting that Melissa Ferguson Donaldson did not reside on the property. In 1879, Ms. Desdamona [sic] Donaldson only paid taxes on 71.5 acres in the Ferguson survey, valued at $540. This value indicates that the property included substantial improvements. But, as in 1876 and 1878, no livestock or personal property was included in the taxable value and suggests that Donaldson did not occupy the property and that it may have been occupied by tenants residing in the property’s improvements.

In 1880, Malissa Donelson [sic] was enumerated in the Limestone County census as a 23-year-old residing in the household of her brother-in-law Henry (Richard) Sadler, a 35 year-old farmer. The household included Sadler’s wife and Melissa Ferguson Donaldson’s 34-year-old sister Rachael and 4-year-old son E. Eugene Donaldson. The record indicates that Donaldson identified herself as a widow at the time of enumeration. In 1880, an unknown person paid taxes on the behalf of Mrs. D. Donaldson on 270 acres in the Ferguson Survey, valued at $1 per acre. The low value of the property in 1880 suggests that it was unimproved that year. Donaldson’s residence with her sister and brother-in-law in 1880 further suggests that she did not occupy the subject parcel.

There is no entry in the 1880 Limestone County agricultural census for Melissa Donaldson. Henry Saddler’s [sic] farm was listed as a 160-acre property, with 50 improved acres and 110 unimproved acres. The 50 improved acres may have referred to the 50 improved acres left to Sadler’s wife Rachael in Ferguson’s will. Although there was no entry for Melissa Donaldson in this record, several farmers identified as renters were enumerated in the vicinity. These included the farms of Melissa’s future husband Jacob B. Goodwin, as well as Newton Haws, Joseph Martin, and John Carroll. It is possible that any of these tenants, or others not listed in this record, may have resided on the subject tract.

By 1881, Melissa Ferguson Donaldson had remarried Jacob Bennett Goodwin. Although no marriage record of the couple is on file in the Limestone County records, it is possible that they were married in another county or that the record is not available. In 1881, Mrs. M.D. Goodwin rendered taxes on 271 acres in the Ferguson survey valued at $400. Goodwin is listed in the nonresident rolls as a resident of neighboring Robertson County. The 1880 Limestone County agricultural census lists Jacob B. Goodwin as a farm operator in the vicinity of the subject parcel, one household away from the farm of Melissa Goodwin’s brothers-in-law Henry Frazier and Henry Sadler. Goodwin rented his farm on shares and owned $85 in livestock.

Melissa and Jacob Goodwin continued to pay taxes on 160 acres in the Ferguson Survey through the 1880s, but no property was ever associated with the land. The value of the property fluctuated slightly, but remained between $250 and $350 until 1887, when it increased sharply from $240 to $960. This increase seems to suggest a major improvement or improvements were added to the parcel in 1886. In 1889, the Goodwins sold the property to W.W. Barnett for $160 (Limestone County Deed Records 7:598). No census information is available for Limestone County in 1890, but
the 1900 Robertson County census lists the Goodwin family as residents of Seale Village in Robertson County.

Barnett owned the property for a little over a year, selling it to T.E. Cowart of Limestone County on March 20, 1890, for $420. Cowart sold the property to H.P.N. Gammel of Travis County in 1892 for $452 cash and $548 payable in books from Gammel's store located in Austin. The property remained in the hands of nonresident owners through 1895, when the subject tract and other lands were awarded to Margaret C. Frazier as a judgment in the case of Margaret C. Frazier vs. N.J. McArthur et al. (Limestone County Deed Records 21:293). The Estate of Margaret C. Frazier held the property through the end of the nineteenth century, when it was sold back to W.W. Barnett for an unspecified amount (Limestone County Deed Records 70:327).

NRHP TESTING, FIELDWORK

Shovel Tests

Initially, shovel testing was conducted at 10-m grid intercepts across the landform (Figure 2). Additional shovel tests were excavated at 5-m grid intercepts around several of the most productive tests excavated initially. In all, 77 shovel tests were excavated at 41LT172 during the current investigation, 41 of which were culturally positive. Of these, 20 contained only historic artifacts, 8 contained only prehistoric artifacts, while 12 contained both historic and prehistoric artifacts, and 1 contained a single piece of fire-cracked rock of unknown origins. The number "26" was not assigned to a shovel test. Two historic ceramic sherds and one glass shard were collected from the surface.

The assemblage of historic artifacts recovered through shovel testing includes 14 ceramic sherds, 5 brick fragments, 64 glass fragments, and 17 metal fragments. The prehistoric shovel testing artifact assemblage includes 24 pieces of nondiagnostic lithic debitage, 1 lithic core, 3 utilized flakes, and 1 unifacially modified flake. Four thermally altered rocks and one fragment of charred organic material were also recovered through shovel testing.

A total of 24 pieces of nondiagnostic lithic debitage was recovered, making it the most common prehistoric artifact type on-site. Between 1 and 3 pieces of lithic debitage were recovered from each of the 17 shovel tests positive for this class of material, with an average of 1.4 and a standard deviation of 0.61. Only one shovel test (66) had a debitage recovery rate greater than one standard deviation above the mean. Lithic tools (all of which were expedient) came only from four shovel tests (17, 32, 57, and 71), none of which were found in proximity to the shovel tests with the debitage concentration. Shovel testing demonstrated that no prehistoric artifact high density and diversity areas are present on-site.
Figure 2
Site 41LT172
Plan Map

Prepared By: Atkins/15490
Job No.: 100021558
Date: August 29, 2011

File: N:\Clients\K_IL\luminant\Kosse\100021558\geo\figs\41LT172_bx27c.mxd

ATKINS

Trench
Two-Track
Topographic Contour
Negative Shovel Test
Positive (Historic) Shovel Test
Positive (FCR Only) Shovel Test
Positive (Prehistoric) Shovel Test
Positive (Historic and Prehistoric) Shovel Test

0 20 40 Meters
A total of 64 glass shards were recovered through shovel testing, making it the most common historic material class on-site. Between 1 and 9 glass shards were recovered from each shovel test positive for this material, with an average of 2.37 and a standard deviation of 1.94. Only four shovel tests (2, 6, 12, and 52) yielded glass recovery rates more than one standard deviation above the mean.

Shovel testing showed wide variability between the distribution of different classes of artifacts. Brick artifacts were recovered from only three adjacent shovel tests (70, 74, and 78) located in the northwest corner of the site (see Figure 2). Metal artifacts were more widely distributed across the site but were found concentrated within two small areas, one defined by shovel tests 74 and 78 and one defined by shovel tests 66 and 68 (Figure 3). Historic ceramic artifacts were equally widely distributed, but recovered in the highest concentrations from shovel tests 12, 15, 67, 68, 72, 73, 74, and 78 (see Figure 3). Glass artifacts were by far the most widely distributed class of artifacts recovered on-site (see Figure 3). These artifacts were most heavily concentrated, however, in shovel tests 6, 12, and 52.

The site area with the highest artifact density and diversity of historic artifacts was a roughly 20 m north-south by 30 m east-west area with its southwest corner at Shovel Test 3. The large tree near the center of the site was located near the center of the artifact high density and diversity area, which presumably was in close proximity to the former location of the structure and chimney fall identified when the site was first recorded (Glander et al. 1984). All of the charred organic remains recovered came from Shovel Test 14. Thermally altered rocks were recovered from only three shovel tests, 13, 41, and 49.

Two of the shovel tests positive for thermally altered rocks were located more than 10 m to the south of the historic artifact high density and diversity area. The third shovel test positive for thermally altered rocks was located on the far eastern edge of the site, well away from the historic artifact high density and diversity area. Thermally altered rocks and charred organic remains were not found in proximity to the single shovel test that yielded a concentration of lithic debitage nor any of the shovel tests that yielded lithic tools. Based on these findings, it remains unclear during which occupation thermally altered rocks and charred organic remains were discarded.

Trenches

Four backhoe trenches were excavated to prospect for features within the historic artifact high density and diversity area at 41LT172 (see Figure 2). This effort failed to locate any remnants of the former structure or chimney or any intact cultural deposits or features. Profiles of the four trenches are provided in Appendix A.

Trench 1 extended west from Shovel Test 6. It was 5 m in length by 1 m in width and was oriented east to west. The trench was excavated to an average depth of 80 cmbs.
Figure 3
41LT172 HISTORIC ARTIFACT DENSITY CLINES

Positive Shovel Test
Negative Shovel Test
Trench 2 extended east of Shovel Test 15. The trench was 5 m in length by 1 m in width and was oriented east to west. Trench 2 was excavated to an average depth of 100 cmbs.

Trench 3 was excavated on the eastern edge of the large tree in the middle of the site. Trench 3 was oriented north-south and extended 5 m in length by 1 m in width. It was excavated to an average depth of 70 cmbs.

Trench 4 was located on the west side of the large tree. It extended north from Shovel Test 2 and was 10 m north to south by 1 m east to west. Trench 4 was excavated to an average depth of 120 cmbs.

Artifacts

Historic Artifacts

A total of 104 historic artifacts were recovered from site 41LT172 (Appendix B). Building upon ideas put forth by Stanley South (1977:92–102), a functional classification system was used to analyze the historic artifact assemblage. The assemblage was divided into four functional groups, assumed to reflect the majority of the inhabitants' daily behavior utilizing items of material culture found in the archeological record. Table 2 presents the functional groups and the total number of artifacts assigned to each group. The historic assemblage is discussed below within each functional group. This classification system is intended only as a general tool as artifacts may have had multiple uses that could be associated with entirely different categories and/or functions (Beaudry et al. 1991). Archeological context is central to understanding how patterns of behavior may be reflected in material culture.

Table 2. Historic Artifact Functional Group Classification System at Site 41LT172

<table>
<thead>
<tr>
<th>Artifact Group</th>
<th>Artifact Class</th>
<th>No.</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>Building materials</td>
<td>18</td>
<td>Flat window glass, brick, nails, washer</td>
</tr>
<tr>
<td></td>
<td>Lighting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communal domicile effects</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medicinal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tobacco-related items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household</td>
<td>Food preparation</td>
<td>71</td>
<td>Ironstone, semiporcelain, stoneware, glass bottles, glass jars, jar lid liners, glass vessels</td>
</tr>
<tr>
<td></td>
<td>Food storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>Indeterminate</td>
<td>12</td>
<td>Fragments of various materials that could not confidently be assigned to any specific functional group.</td>
</tr>
</tbody>
</table>
Structural Materials

A total of six flat glass shards representing window pane fragments were recovered, of which five are aqua-tint shards, and one is colorless. The presence of flat glass less than 3.2 mm in width suggests that at least one structure at the site contained paned windows.

Four handmade brick fragments (12.31 grams [g]) and one machine-made brick fragment (31.03 g) were recovered. The handmade brick fragments are all reddish brown while the machine-made brick is red. The brick assemblage lacked any maker's marks or evidence of surface treatments. The presence of handmade bricks suggests that some construction activities began prior to the turn of the century (Steinbomer 1982).

Construction Hardware

A total of two complete iron nails and four iron nail fragments were assigned to the Construction Hardware subcategory of the Architecture Group. One of the complete wire nails was recovered rusted alongside an iron washer. All of the nails recovered from site 41LT172 are heavily rusted, which prohibited identification of any characteristics other than basic manufacturing techniques. Four of the nails are wire, and two are cut. Although cut nails are still manufactured today, and wire nails were introduced during the first quarter of the nineteenth century, wire nails only began replacing cut nails in 1890, when quality wire nails could be made more cheaply and quickly. Wire nails did not become ubiquitously available and commonly used until sometime after 1900 (Adams 2002; Edwards and Wells 1993).

Household (n = 3)

This group includes items that are commonly found within a domicile and are considered to have been utilized by multiple occupants at the site. Only three artifacts recovered belong to the Household Group at site 41LT172. One colorless chimney lamp glass fragment, considered a household lighting item, was recovered and is presumably from a kerosene lantern, which required drafting in order to burn. Kerosene lanterns were most common between 1860 and 1880 (Spillman 1983). A fragment of a medicinal bottle base, embossed with "OXIDINE," was also recovered (Figure 4, Lot 94.1). Oxidine was a medicinal tonic once sold as a cure for malaria. Oxidine was bottled by numerous bottling companies, and the specific manufacturer could not be determined; however, the base shard does retain a suction scar. Suction scars have a general date range between 1904 and 1982, but most likely resulted from earlier machines from 1904 through the 1920s (Lindsey 2011a). A single amber snuff bottle rim fragment was recovered and retains the snuff bottle's distinctive bead finish (see Figure 4, Lot 77.1). The amber shard has bubble inclusions and most likely dates pre-1920 (Polak 2000).
Kitchen (n = 51)

The Kitchen Group includes subcategories of artifacts related to food preparation, storage, and consumption. These artifacts include ceramic vessel fragments and glass container fragments. No specimens within this group exhibited evidence of burning.

Ceramics

A total of 16 ceramic sherds were recovered from site 41LT172, all of which belong to the Kitchen Group. The ware types present include ironstone (n = 12), semiporcelain (n = 3), and stoneware (n = 1). These specimens represent vessels designed for use as tableware and storageware. No makers' marks and only two decorative techniques were observed. Although most sherds lack decoration, it is possible some represent blank portions of decorated vessels.

The ironstone sherd assemblage is comprised of six body sherds, three base sherds, and three rim sherds. Eleven of the 12 ironstone fragments represent indeterminate tableware types, while 1 rim is a fragment of a flatware specimen. Another rim sherd exhibits a molded indeterminate pattern in a scroll motif on the exterior of the sherd beneath the rim. This form of decoration has only gross temporal sensitivity as it has been commonly employed from the 1840s until the present day.

The semiporcelain sherd assemblage is comprised of two undecorated body sherds and one decalcomania rim sherd (see Figure 4, Lot 93). The rim sherd has an unidentified polychrome floral design on the exterior of the sherd. Decalware is still commonly produced today, but declined in popularity after the 1930s (Stelle 2011).

Only one stoneware fragment was recovered. It is a body sherd from an indeterminate hollowware storageware vessel. It exhibits a Bristol glaze, both on the interior and exterior. After 1915, Bristol glazes were commonly used to glaze the interior and exterior of stoneware vessels (Greer 1981).

Glass

Kitchen container glass (n = 55) includes fragments of vessel glass (n = 40), bottles (n = 11), jars (n = 2), and jar lid liners (n = 2). Numerous artifact forms of each vessel type were identified and include rim shards, body shards, base shards, and neck shards (Table 3). Multiple attributes of glass containers can be temporally indicative and may include color, technological characteristics, decorations, and manufacturing marks.
Table 3. Shard Forms of Glass Containers at 41LT172

<table>
<thead>
<tr>
<th>Category</th>
<th>Artifact Form</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottle</td>
<td>Neck</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Body</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>11</td>
</tr>
<tr>
<td>Jar</td>
<td>Rim</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2</td>
</tr>
<tr>
<td>Jar Lid Liner</td>
<td>Rim</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2</td>
</tr>
<tr>
<td>Vessel</td>
<td>Body</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Base</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>55</td>
</tr>
</tbody>
</table>

**Color:** Colors in the glass assemblage include amber, aquamarine, aqua tint, colorless, light green, opaline, and opaque white (Table 4). Solarized glass, or sun-colored amethyst glass, is a subcategory of colorless glass. The glass assemblage includes four shards of solarized glass. Of these colors, the most temporally sensitive are solarized glass—which dates from around 1890 to 1920, and the various shades of amber glass—which generally predate 1920 (Lindsey 2011d). Shades of aquamarine are a natural side effect resulting from the impurities found in most sands used for the production of glass and only became uncommon after the 1920s with the prevalence of colorless glass (Lindsey 2011d). Colorless glass became quite common around the late 1910s after the use of automatic bottle-making machines became more widespread (Lindsey 2011d). Opaque white is commonly referred to as “milk glass” and was very rarely used prior to 1870 (Lindsey 2011d).

**Technological Attributes:** Technological attributes of historic glass containers encompass a wide variety of characteristics, and in many cases, relate closely to the manner in which the container was produced. Temporally indicative features observed in this assemblage include bubbles and finishes.

**Bubbles:** Air bubble inclusions were observed in 11 shards of container glass, accounting for 20 percent of the sample. These inclusions are the result of irregularities in the production process, which were all but successfully eliminated by 1920 (Polak 2000).
Table 4. Glass Container Colors Present at 41LT172

<table>
<thead>
<tr>
<th>Category</th>
<th>Artifact Color</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottle</td>
<td>Amber</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Aqua tint</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Colorless</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
</tr>
<tr>
<td>Jar</td>
<td>Aquamarine</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Colorless</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>Jar Lid Liner</td>
<td>Opaline</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>Vessel</td>
<td>Aquamarine</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Aqua tint</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Colorless</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>(Solarized</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Light Green</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Opaque White</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Grand Total</strong></td>
<td><strong>55</strong></td>
</tr>
</tbody>
</table>

**Finishes:** A total of three glass specimens retain portions of identifiable finishes. The finishes include a crown cap finish (n = 1) and an external continuous thread (n = 2) (See Figure 4, lots 46.1 and 16). The crown cap finish is a very popular finish that is still used today. While patented in 1892, it did not become popular until the early twentieth century with the invention of automatic bottle-making machines (Lindsey 2011c). While not temporally sensitive, this particular crown-capped specimen was machine-made as evidenced by the mold seams, and is colorless, which most likely dates it no earlier than the 1920s. External continuous thread finishes are not temporally indicative and date from the early twentieth century to the present day.

**Decorations:** A total of six glass shards exhibited decorative elements including embossing (n = 4) and pressing (n = 2). Types of embossing present in this assemblage include text (n = 1) and indeterminate motifs (n = 3). One of the pressed glass decorations is an Early American Pattern Glass pattern known as Cobb, or Zipper (see Figure 4, Lot 40), and was produced by Richards and Hartley Glass Company of Tarentum, Pennsylvania, from 1884 until 1894 (Edwards and Carwile 2000). Richards and Hartley Glass Company, founded in 1869 in Pittsburgh, Pennsylvania, moved to Tarentum, Pennsylvania, in 1884, and in 1891 the factory joined the United States Glass Company as Factory E, but continued to produce their original patterns until the factory was sold in 1894.
(Heacock 1986). The other pressed glass decoration is an unidentified curvilinear pattern and is not temporally diagnostic.

**Maker's Marks:** A single jar lid liner fragment exhibited a partial maker's mark, rendering it unidentifiable (see Figure 4, Lot 86.1). Along the surface of the lid liner, "INED" was embossed, most likely the end of the commonly embossed jar lid liner phrase "PORCELAIN LINED." Lewis R. Boyd patented the "porcelain" lid liners in 1869 and the product was widely used among many canning companies. Any jar lid liner embossed with "PORCELAIN LINED" dates post-1869 (Toulouse 1970).

**Unknown (n = 12)**

A total of 12 historic artifacts recovered from site 41LT172 were categorized as unknown. Seventeen metal artifacts were too fragmentary to assign to a functional group, and 1 piece of glass was lost in the field and thus not analyzed but categorized as unknown. The metal artifacts include 1 brass strap fragment, 6 flat iron fragments, 1 thick curved fragment, and 3 iron fragments too small to discern any attributes.

**Prehistoric Artifacts**

A total of 29 prehistoric artifacts were recovered from site 41LT172. These artifacts, all of which are lithics, were categorized by raw material and subdivided into tools and nontools. Figure 5 provides density clines for the chipped stone tools and nontools, as well as for the thermally altered rocks.

**Chipped Stone Tools**

A total of four chipped stone tools were recovered from site 41LT172, including one unifacially modified flake and three utilized flakes.

**Unifacially Modified Flakes (n = 1)**

Lot 41.1 is a chert flake fragment that was unifacially modified along a lateral edge and subsequently utilized for cutting on medium-soft material. Cutting requires the tool to be held with the working edge parallel to the direction of use (Keeley 1980).

**Utilized Flakes (n = 3)**

Three pieces of lithic debitage exhibited patterned use-wear and were categorized as utilized flakes. Lot 49 is a chert flake fragment that shows wear indicative of scraping on medium-hard materials on two separate edges. Lot 65 is a chert flake fragment that also evidenced scraping on medium-hard materials. Lot 87.2 is a complete chert flake with use-wear consistent with scraping on medium-hard materials. Scraping entails holding the tool with the working edge at an approximate right angle to the direction of use (Keeley 1980).
Figure 5
41LT172 PREHISTORIC ARTIFACT DENSITY CLINES

Lithic non-tools, contour interval = 1
Lithic tools, contour interval = 0.5
FCR, contour interval = 2

- Positive Shovel Test
- Negative Shovel Test

Drawn by: C. Wallace
The higher frequency of wear patterns on medium-hard materials in the chipped stone tool assemblage suggests activities such as wood working or bone working were more common than activities on medium-soft materials such as hide working or plant processing. None of the chipped stone tools evidenced heat treatment.

**Chipped Stone Nontools**

**Core (n = 1)**

Lot 87.3 is a metaquartzite exhausted core that exhibits unidirectional negative scars of percussion. Its mass is 97.04 g and it has a maximum dimension of 46.14 mm.

**Debitage (n = 24)**

The 41LT172 debitage assemblage is composed of 24 pieces of nondiagnostic lithic debitage consisting of 11 complete flakes, 6 broken flakes, and 7 flake fragments. Broken flakes and flake fragments compose 54.2 percent of the debitage assemblage, while complete flakes represent 45.8 percent of the assemblage.

More than 76 percent of the debitage assemblage is chert. Silicified wood is the second most common debitage raw material and accounts for just 19 percent of the assemblage. Metaquartzite represents under 5 percent of the assemblage represented by just one specimen.

Three pieces of debitage showed evidence of heat treatment. Two silicified wood pieces appear intentionally heated, while one chert flake appears unintentionally heated.

**Temporally Unknown Artifacts**

**Thermally Altered Rocks (n = 4)**

A total of 33.79 g of thermally altered rocks was recovered, of which 75 percent is silicified wood while the remaining 25 percent is metaquartzite.

**Artifact Assemblage Analysis Summary**

Site 41LT172 resulted in part from both Prehistoric and Historic occupations. The prehistoric component is ephemeral, consists of 29 artifacts, and is thought to represent a short-duration occupation. None of the prehistoric materials recovered are temporally sensitive. The absence of temporally diagnostic artifacts and intact cultural features is consistent with this interpretation. These findings also demonstrate that significant data resources representing the prehistoric occupation of the site have not been preserved.

The historic artifact assemblage appears to have been discarded during a domestic occupation dating from the late nineteenth to the early twentieth century. For the most part, the historic
artifact assemblage was not particularly temporally sensitive. None of the historic artifacts retained a complete maker's mark. Bricks were rare on-site, although a combination of hand made (12.31 g) and machine-made fragments (31.03 g) was recovered, suggesting construction may have initially begun during the nineteenth century and continued into the twentieth century. The fact that the nail assemblage contains both cut \( n = 2 \) and wire \( n = 3 \) specimens is consistent with this interpretation. The glass assemblage includes specimens with bubbles \( n = 17 \) or that had become solarized and were clearly produced prior to the 1920s, when the impurities that caused these were eliminated in the glass-making process. The glass assemblage also contains specimens that lacked bubbles and were not solarized \( n = 48 \), and were presumably produced and discarded after 1920. These findings are also consistent with an occupation beginning during the nineteenth century and ending during the twentieth century.

No intact cultural features, deposits, or structural remains representing the historic component were identified on-site. These findings suggest further that significant data resources from the historic occupation have not been preserved on-site.

**DISCUSSION AND RECOMMENDATIONS**

The prehistoric component at site 41LT172 is ephemeral and thought to represent a short-duration occupation sometime during the prehistoric period. The site lacks intact cultural features dating to this period and does not appear to harbor significant data resources. This component was previously determined to be ineligible for NRHP inclusion under Criterion D. No additional investigation of this component is warranted or recommended.

Archival evidence indicates that site 41LT172 likely resulted, at least in part, from occupation by tenants of Melissa Ferguson Donaldson Goodwin or squatters from circa 1875 through 1890. The site does appear to represent the remnants of the homestead of Melissa Ferguson Donaldson Goodwin or her father Joseph Ferguson. The artifact assemblage is consistent with a domestic occupation spanning the period of Ferguson's/Donaldson's tenureship.

Any archeological deposits from 1890 through 1900 may have been associated with squatters or tenants of several subsequent landowners, including T.E. Cowart, H.P.N. Gammel, the Estate of Margaret Frazier, or W.W. Barnett. Site 41LT172 fits into a regional pattern of tenant farming in Limestone County during the late nineteenth and early twentieth centuries. This site has no known associative significance that would qualify it for inclusion in the NRHP under Criterion A or B.

The historic component of site 41LT172 is an artifact scatter lacking any structural remains. The disintegrating wooden structural remains observed when the site was first recorded (Glander 1984:N-160–N-164) was not rediscovered. The absence of distinctive intact structural remains or features is thought to preclude NRHP inclusion under Criterion C. The site has not yielded, nor is it likely to yield, information important to regional history and is therefore thought to be ineligible for NRHP inclusion under Criterion D.
The site fails to meet any of the eligibility criteria for inclusion in the NRHP. In the opinion of the Principal Investigator, site 41LT172 is not eligible for nomination to the NRHP. No further work at site 41LT172 is recommended.
SITE 41LT354

NATURAL SETTING

Site 41LT354 is situated on a dissected terrace remnant located just above the Steele Creek floodplain. Nascent drainages are cut through the terrace remnant forming slight parallel ridges at lower-elevated portions of the site, indicating the site had been subject to some erosion. The elevation ranges from 350 to 420 ft msl. The main channel of Steele Creek flows approximately 300 m south of the site at its closest point. The site is just downstream from the confluence of Steele and Owens creeks. The soils present on-site include Edge fine sandy loam, 1 to 5 percent slopes and 5 to 12 percent slopes, Rader fine sandy loam, 0 to 2 percent slopes, and Oletha clay, frequently flooded (Griffin 1998). The soils on-site generally consisted of a fine sandy loam extending to an average depth of 40 cmbs above a sandy clay. The site is almost entirely in pasture and vegetated with dense short grasses and scattered patches of prickly pear and dewberry vines. Stands of oak and elm with a briar and yaupon understory are also present on the steeper slopes above Steele Creek and along shallow swales to the north. In the southwestern corner of the site, the site extends to the west into an oak woods. Ground surface visibility was nonexistent due to the dense vegetation. The Lindley gas well pad is situated on the eastern end of the site, and the construction of an XTO Energy Inc. pipeline appears to have impacted a narrow swath through the midsection of the site.

PREVIOUS INVESTIGATIONS

Site 41LT354 was revisited and shovel tested during survey of the Kosse East Mine (Dixon and Sherman 2010). Shovel tests conducted during that visit showed the site to be limited to a roughly L-shaped area. The north-south portion of the "L" is roughly 300 m in length by 40 m in width, while the east-west portion, located to the south and the east, is roughly 400 m long by 200 m wide. The entire site comprises an area of about 92,000 m². During the revisit, a total of 129 shovel tests were excavated at 15- to 30-m intervals across the site to determine its horizontal and vertical limits. Forty-one shovel tests were culturally positive for prehistoric artifacts, while four shovel tests were culturally positive for both historic and prehistoric artifacts, and two shovel tests were positive for historic artifacts only. Shovel testing resulted in the recovery of 141 prehistoric lithic artifacts, 22 thermally altered rocks, 1 fragment of burned clay, 1 historic ceramic sherd, 20 glass artifacts, and 4 iron artifacts. In addition, 1 historic stoneware sherd, 1 amber snuff jar, and 1 machine-made brick fragment were collected from the surface of the site.
Shovel testing during the revisit identified five separate subsite areas, numbered 1 through 5. Only subsite area 3 was judged to be a contributing element to the site’s overall NRHP eligibility potential, and was the only subsite area considered as part of the current NRHP testing investigation. Subsite area 3 yielded only prehistoric artifacts. The presence of thermally altered rocks, a debitage concentration, and lithic tools in the subsite area 3 shovel testing assemblage suggested it resulted in part from intensive subsistence processing.

**NRHP TESTING**

**Horizontal Control**

An 80-m north-south by 60-m east-west control grid was established with a total station. The total station was used to set out pin flags at grid intercepts, spaced at 20-m intervals north to south and 10-m intervals east to west. All shovel tests were tied to the control grid with the total station.

**Shovel Tests**

A total of 63 shovel tests were excavated at site 41LT354 to assess the distribution of cultural materials across subsite area 3 (Figure 6). Of these shovel tests, 38 were culturally positive, yielding 7 chipped stone tools, 120 chipped stone nontools, 6 ground stone tool fragments, 1 ceramic sherd, and 684.7 g of fire-cracked rock.

Nontool lithic artifacts (n = 118) were the most common class of cultural material recovered through shovel testing. Between 1 and 16 nontool lithic artifacts were recovered from 34 shovel tests positive for this class of material. An average of 3.53 nontool lithic artifacts were recovered from each shovel positive for this class of material with a standard deviation of 3.695. Four shovel tests (39, 40, 45, and 46) had nontool lithic artifact recovery rates greater than one standard deviation above the mean.

The second most common class of cultural material recovered on-site is fire-cracked rocks. Fire-cracked rocks were recovered from 17 shovel tests in amounts ranging from 2.77 to 180.1 g, with an average of 40.3 g and a standard deviation of 49.82. Three shovel tests (40, 48, and 49) had fire-cracked rock recovery rates more than one standard deviation above the mean.

The remaining classes of cultural material were recovered less frequently. A total of seven chipped stone lithic tools were recovered from seven shovel tests (20, 27, 33, 39, 43, 56, and 59). A total of six ground stone tools were recovered from five shovel tests (33, 39, 46, 48, and 56). Shovel Test 39 yielded two ground stone artifacts. The single ceramic sherd was recovered from Shovel Test 20.

Shovel testing was undertaken during two phases. During the first phase, 38 shovel tests were excavated across subsite area 3 at grid intercepts spaced 20 m north to south and 10 m east to west.
Figure 6
Site 41LT354
Subsite Area 3
Plan Map

Prepared By: Atkins
Scale: 1" = 10 m
Job No: 100021558
Date: June 2, 2011
File: N:\Clients\KL\Luminant\Kosse\100021558\geo\figs\41LT354.mxd
This effort identified dark organic soil in shovel tests excavated in the southwestern corner of the site (17, 22, 23, 34, and 35) thought to potentially represent an intact cultural deposit or buried cultural zone. During the second shovel testing phase, 25 additional shovel tests were excavated at 5-m grid intercepts to define the limits of the organic soil deposit.

Dark, organically rich soil was encountered in most of the 25 shovel tests excavated at 5-m grid intercepts in the southwestern corner of the site, where the soil typically ranged from a 10YR 2/2 very dark brown to a 10YR 4/4 dark yellowish brown. The area with the highest organic content was restricted to a 40-m north-south by 20-m east-west area along the southern and western margins of the control grid. In shovel tests excavated elsewhere across the site, the soil typically ranged from a 10YR 5/4 yellowish brown to a 10YR 6/4 light yellowish brown. It should be noted however, that several shovel tests excavated within the southwestern portion of the site had uncharacteristically lighter-hued soils. Similarly, several of the shovel tests excavated over the remainder of the site had uncharacteristically darker-hued soils.

The southwestern corner of the site appears to harbor an artifact high density and diversity area. All of the ground stone as well as nearly all of the fire-cracked rocks, lithic nontools, and lithic tools recovered from shovel tests came from this area. This apparent pattern, however, may be due in part to sampling strategy. The southwestern corner of the site received six times as many shovel tests per square meter than the rest of the site (Figure 7).

Cultural materials were unevenly distributed throughout the vertical column. Table 5 presents the vertical distribution of the three most common artifact classes recovered from site 41LT354. A large majority of the cultural materials recovered through shovel testing came from levels 2 through 4. These levels presumably contained the systemic living surface. Below level 4, the artifact recovery rate dropped precipitously. The presence of artifacts in these levels presumably resulted from vertical artifact cycling that could be attributed to a variety of sources of bioturbation, such as burrowing rodents and rooting feral pigs. Postabandonment cultural processes, stemming largely from land clearing, agriculture, and pasturing, also likely resulted in additional mixing to the soil. The similarity between the patterned distributions of these artifact classes is notable due to the fact that larger materials, such as fire-cracked rocks, are more subject to down-migration than up, as burrowing rodents tend to tunnel below larger obstacles rather than remove them, while smaller materials, such as lithic debitage, are more likely to cycle both up and down (see Bocek 1986).

Magnetometer Survey

A magnetometer survey was conducted within the 80-m north-south by 60-m east-west control grid, which was established to contain the portion of the site that was determined to contribute to the site's overall potential NRHP eligibility status based on previous survey (Dixon and Sherman 2010), and referred to as Area 3. Atkins utilized a Geometrics, Inc. G-858 Magmapper with dual sensors configured. The G-858 automatically stored and output each sensor reading. The operator
Figure 7

41LT354
ARTIFACT DENSITY CLINES

L:\Projects\He1\CLIENTS\Luminant\100021558 Kosse Testing at 41LT354 and 41LT172\Report\Figures\Figure 07_41LT354_Artifact Density Clines

Drawn by C. Wallace
walked parallel north-south transects holding the sensors approximately 0.4 m above the ground. The sensors were mounted 1 m apart on a sensor staff, allowing for one transect to cover a 2-m-wide swath. In continuous mode, the G-858 recorded data at 0.10-second intervals using reference points marked at 20-m intervals. The readings and positions were stored sequentially with a time stamp.

### Table 5. Site 41LT354 Vertical Distribution of Cultural Materials from Shovel Tests

<table>
<thead>
<tr>
<th>Level</th>
<th>Nontool</th>
<th>Count</th>
<th>Percent</th>
<th>Ground Stone</th>
<th>Count</th>
<th>Percent</th>
<th>Fire-cracked Rock</th>
<th>Mass (g)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30</td>
<td>25.42</td>
<td></td>
<td>1</td>
<td>16.67</td>
<td></td>
<td></td>
<td>36.57</td>
<td>5.34</td>
</tr>
<tr>
<td>2</td>
<td>34</td>
<td>28.81</td>
<td></td>
<td>2</td>
<td>33.33</td>
<td></td>
<td></td>
<td>240.02</td>
<td>35.04</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>25.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>175.39</td>
<td>25.61</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>11.02</td>
<td></td>
<td>1</td>
<td>16.67</td>
<td></td>
<td></td>
<td>158.12</td>
<td>23.09</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>6.78</td>
<td></td>
<td></td>
<td>16.67</td>
<td></td>
<td></td>
<td>36.35</td>
<td>5.31</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>1.69</td>
<td></td>
<td>1</td>
<td>16.67</td>
<td></td>
<td></td>
<td>16.2</td>
<td>2.37</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.53</td>
<td>0.81</td>
</tr>
<tr>
<td>8</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td>2.48</td>
<td>0.36</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14.24</td>
<td>2.08</td>
</tr>
<tr>
<td>Totals</td>
<td>118</td>
<td>100.00</td>
<td>6</td>
<td>100.00</td>
<td>684.9</td>
<td>100.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At the completion of the magnetometer survey, the raw data were processed using MagMap2000 software to remove any spikes in the data. The processed data were then imported into a Microsoft® Excel spreadsheet containing a mathematical filter to remove diurnal fluctuations. Any total field value differing by greater than 0.5 nT from the average of either the preceding or following three recorded values was considered part of an anomaly. The difference between anomalous values and the ambient magnetic field was then substituted for the actual total-field value recorded by the magnetometer. Magnetic values not meeting this criterion were considered part of the magnetic background or ambient level. The difference between two adjacent readings (a number very close to zero) was substituted for the magnetic total-field readings in these cases. This algorithm results in a data set in which abnormally high and low magnetic values (anomalies) center around a zero background level. The resulting data set represents the magnetic total-field amplitude relative to the ambient magnetic field. When this method is employed, relatively long-term trends in the magnetic data amplitude, such as those caused by diurnal variations or geologic gradients, are filtered out of the data set, leaving only local magnetic anomalies.

Following the application of the filter to remove any low-frequency diurnal variations, digital terrain-modeling software was used to map the data. The magnetometer data are illustrated as a contour map, a shaded-relief map, and as a grayscale image map (Figure 8). The contour map was
Figure 8
Site 41LT354
Subsite Area 3
Magnetometer Survey Results

Prepared By: Atkins/19895
Scale: 1" = 15m
Job No.: 10027556
Date: June 24, 2011

File: C:\Clients\K_L\Luminant\Kosse\100021558\geo\figs\41LT354_mag.mxd

ATKINS
created using Bentley's GEOPAK® and depicts the anomalies as a series of color-coded contour lines. The data were contoured using a 5-nT interval with the red lines indicating positive total-field values, exceeding the local (ambient) 0-nT amplitude of the earth's magnetic field, and blue lines indicating negative amplitudes. The contour map allowed for the measurement of the peak amplitudes, inflection points, and declinations of the dipolar anomalies. The shaded relief and grayscale image maps were created using Surfer (Golden Software®) and are used to illustrate sitewide patterns of anomaly distribution.

A total of 18 dipolar anomalies (numbered 1 through 18) were identified as being potentially associated with a prehistoric feature such as a burned rock hearth or roasting oven (Table 6). Additionally, four complex anomalies (numbered 19 through 22), were also identified as being potentially associated with a cultural feature (Table 7). Anomalies of both types were concentrated within the southwestern corner of the site where dark organically rich soil was encountered in shovel tests. A total of 16 dipolar anomalies and 3 complex anomalies were sampled through either hand excavation or mechanical excavation or both. The results of the magnetometer survey suggest that the area west of subsite area 3 that is within the woods also has the potential to harbor similar anomalies that may represent cultural features.

Table 6. 41LT354 Dipolar Anomalies

<table>
<thead>
<tr>
<th>Anomaly</th>
<th>Northing</th>
<th>Easting</th>
<th>Amplitude (nT)</th>
<th>Distance Between Poles (m)</th>
<th>Declination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19.80404</td>
<td>67.26531</td>
<td>-14/18</td>
<td>0.55</td>
<td>15.1 W</td>
</tr>
<tr>
<td>2</td>
<td>27.2695</td>
<td>54.96745</td>
<td>-20/54</td>
<td>0.69</td>
<td>20.9 E</td>
</tr>
<tr>
<td>3</td>
<td>36.29009</td>
<td>51.49539</td>
<td>-20/16</td>
<td>0.66</td>
<td>21.6 W</td>
</tr>
<tr>
<td>4</td>
<td>40.68096</td>
<td>51.78395</td>
<td>-18/22</td>
<td>0.85</td>
<td>15.6 E</td>
</tr>
<tr>
<td>5</td>
<td>50.73623</td>
<td>57.91298</td>
<td>-22/32</td>
<td>1.02</td>
<td>21.7 W</td>
</tr>
<tr>
<td>6</td>
<td>51.65061</td>
<td>60.67977</td>
<td>-68/176</td>
<td>0.95</td>
<td>22.1 W</td>
</tr>
<tr>
<td>7</td>
<td>51.22527</td>
<td>61.18278</td>
<td>-90/176</td>
<td>1</td>
<td>43.6 E</td>
</tr>
<tr>
<td>8</td>
<td>50.46847</td>
<td>61.66213</td>
<td>-96/62</td>
<td>0.62</td>
<td>51.4 E</td>
</tr>
<tr>
<td>9</td>
<td>52.17338</td>
<td>63.42343</td>
<td>-18/104</td>
<td>0.39</td>
<td>23.3 W</td>
</tr>
<tr>
<td>10</td>
<td>44.77781</td>
<td>65.81526</td>
<td>-56/56</td>
<td>0.37</td>
<td>17.3 W</td>
</tr>
<tr>
<td>11</td>
<td>40.08951</td>
<td>73.0417</td>
<td>-26/42</td>
<td>0.55</td>
<td>32.5 W</td>
</tr>
<tr>
<td>12</td>
<td>45.04475</td>
<td>87.85078</td>
<td>-12/24</td>
<td>0.58</td>
<td>15.6 W</td>
</tr>
<tr>
<td>13</td>
<td>53.09077</td>
<td>84.01072</td>
<td>-22/38</td>
<td>0.59</td>
<td>21.5 W</td>
</tr>
<tr>
<td>14</td>
<td>54.64113</td>
<td>87.02813</td>
<td>-26/12</td>
<td>0.7</td>
<td>7.9 E</td>
</tr>
<tr>
<td>15</td>
<td>57.52308</td>
<td>77.93409</td>
<td>-60/70</td>
<td>0.48</td>
<td>18.2 W</td>
</tr>
<tr>
<td>16</td>
<td>76.99533</td>
<td>51.42136</td>
<td>-18/20</td>
<td>0.44</td>
<td>4.8 W</td>
</tr>
<tr>
<td>17</td>
<td>80.99056</td>
<td>50.65496</td>
<td>-16/18</td>
<td>0.45</td>
<td>28.7 W</td>
</tr>
<tr>
<td>18</td>
<td>30.32602</td>
<td>83.01987</td>
<td>-22/42</td>
<td>0.78</td>
<td>38.7 W</td>
</tr>
</tbody>
</table>
Table 7. 41LT354 Complex Anomalies

<table>
<thead>
<tr>
<th>Anomaly</th>
<th>Northing</th>
<th>Easting</th>
<th>Diameter (m)</th>
<th>Maximum Amplitude (nT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>32.04848</td>
<td>52.81303</td>
<td>8.26</td>
<td>55</td>
</tr>
<tr>
<td>20</td>
<td>38.65522</td>
<td>56.26003</td>
<td>6.79</td>
<td>20</td>
</tr>
<tr>
<td>21</td>
<td>39.18185</td>
<td>50.46716</td>
<td>4.64</td>
<td>23</td>
</tr>
<tr>
<td>22</td>
<td>44.56482</td>
<td>51.36851</td>
<td>5.45</td>
<td>27</td>
</tr>
</tbody>
</table>

Trenches

Twelve backhoe trenches were excavated at 41LT354. Eleven were excavated to explore anomalies identified by the magnetometer, and one (Trench N60 E50) was excavated as a control to allow comparison to the soils outside the southwestern corner of the site. A representative profile of each trench was drawn and photographed (Appendix C) for comparative purposes.

**Trench N60 E50**

Trench N60 E50 was located between shovel tests 17 and 55 in the east central portion of subsite area 3. The trench was approximately 7 m long by 1 m wide and was oriented east to west. The trench was excavated to an average depth of 100 cmbs. Three soil zones were observed in the south wall of the trench. Zone I extended from the ground surface to about 10 cmbs and was a 7.5YR 6/4 light brown sandy loam A horizon. The underlying Zone II extended from the base of the above to an unknown depth and was a 7.5YR 6/8 reddish yellow fine to coarse sand E1 horizon. Zone Ila was 5YR 3/2 dark reddish brown sand lamellae E2 horizon that occurred between 78 and 95 cmbs. No cultural features were identified in Trench N60 E50. The profile was notably lighter throughout than the more organic profiles in trenches and excavation units southeast of Trench N60 E50.

**Trench A1**

Trench A1 was located at the southern limits of the tested area to sample Anomaly 1. The trench extended approximately 5 m north to south by 1 m east to west and was excavated to an average depth of 50 cmbs. Three soil zones were observed in the east wall profile. Zone I extended from the ground surface about 30 cmbs and was a 10YR 4/4 dark yellowish brown loamy sand A horizon. The underlying Zone II extended from the base of the above to an average depth of 40 cmbs and was a 10YR 5/6 yellowish brown loamy sand E horizon. Zone III extended from the base of the above to an unknown depth and was a 10YR 5/6 yellowish brown sandy clay Bt horizon. A Yarbrough dart point and a few pieces of fire-cracked rocks were recorded in the east wall of the trench. Units 10, 11, and 13 were excavated along the east edge of the trench to look for features. Features 4 and 5 were identified in those units.
**Trench A2**

Trench A2 was excavated to sample anomalies 2, 3, 4, and 19 (Figure 9). The trench extended approximately 8 m northeast before turning north for another 8 m. The width of the trench was approximately 1 m. Trench A2 was excavated to an average depth of 110 cmbs. Feature 3 was exposed in the east and west wall of the trench. Four soil zones were observed in the east wall of the trench. Zone II 10YR 4/4 dark yellowish brown sandy loam A1 horizon that extended from the ground surface to about 20 cmbs. The underlying Zone II extended from the base of the above to approximately 40 cmbs and was a 10YR 3/2 very dark brown sandy loam A2 horizon. The underlying Zone III extended from the base of the above to about 90 cmbs and was a 10YR 4/6 yellowish red coarse clayey sand Bt1 horizon. The underlying Zone IV extended from the base of the above to an unknown depth and was a 7.5YR 6/6 reddish yellow coarse clayey sand Bt2 horizon.

**Trench A5**

Trench A5 was excavated to sample anomalies 5, 6, and 9. The trench extended approximately 8 m east to west by 1 m north to south. The trench was excavated to an average depth of 90 cmbs. Feature 2 was exposed in the south wall of the trench. Two soil zones were observed in the south wall of Trench A5. Zone I extended from the ground surface to an average depth of 12 cmbs and was a 10YR 4/3 brown fine sandy loam A horizon. The underlying Zone II extended from the base of the above to an unknown depth and was a 7.5YR 4/6 strong brown sandy clay Bt horizon.

**Trench A10**

Trench A10 was excavated to sample Anomaly 10. The trench was 4 m in length by 1 m in width and was oriented north to south. Trench A10 was excavated to an average depth of 30 cmbs. Two soil zones were observed in the east wall profile of Trench A10. Zone I extended from the ground surface to an average depth of 5 cmbs and was a 10YR 4/4 dark yellowish brown sandy loam A horizon. The underlying Zone II extended from the base of the above to an unknown depth and was a 2.5YR 4/6 red coarse sandy loam Bt horizon. No cultural features were encountered during excavation.

**Trench A11**

Trench A11 was excavated to sample Anomaly A11. The trench was approximately 4 m long by 1 m wide and was oriented north to south. The trench was excavated to an average depth of 70 cmbs and did not locate any cultural features. Three soil zones were observed in the east wall profile of Trench A11. Zone I extended from the ground surface to an average depth of 12 cmbs and was a 10YR 5/4 yellowish brown fine sandy loam A horizon. Zone II extended from the base of the above to an average depth of 60 cmbs and was a 2.5YR 4/6 red coarse sandy clay Bt1 horizon. The underlying Zone III extended from the base of the above to an unknown depth and was a 5YR 5/8 yellowish red mottled with 10YR 6/6 brownish yellow, loamy clay Bt2 horizon.
A1 Horizon 10YR 4/4 dark yellowish brown sandy loam, clear and smooth boundary, single grain, friable, no mottles, fine roots

A2 Horizon 10YR 3/2 very dark brown sandy loam, smooth abrupt boundary, single grain, friable, no mottles, few roots

Bt1 Horizon 10YR 4/6 yellowish red coarse clayey sand, clear and smooth boundary, single grain, friable

Bt2 Horizon 7.5YR 6/6 redish yellow coarse clayey sand, unknown boundary, friable

Figure 9
SITE 41LT354
TRENCH A2
EAST WALL PROFILE
Trench A12

Trench A12 was excavated to sample Anomaly 12. The trench was approximately 4 m in length by 1 m in width and was oriented north to south. Trench A12 was excavated to an average depth of 80 cmbs and did not locate any cultural features. Two soil zones were observed in the east wall profile of Trench A12. Zone I extended from the ground surface to between 20 and 30 cmbs and was a 7.5YR 5/6 strong brown sandy loam A horizon. Zone II was a 2.5YR 4/8 red sandy clay Bt horizon that extended from the base of the above to an unknown depth.

Trench A13

Trench A13 was excavated to sample Anomaly 13. The trench extended approximately 4 m north to south by 1 m east to west and was excavated to an average depth of 100 cmbs. No cultural features were encountered during excavation. Three soil zones were observed in the east wall profile of the trench. Zone I extended from the ground surface to an average depth of 15 cmbs and was a 5YR 6/4 light reddish brown sandy loam A horizon. The underlying Zone II was a 2.5YR 4/6 red clayey sand Bt1 horizon that extended from the base of the above to an average depth of 65 cmbs. Zone III was a 2.5YR 5/8 fine to coarse structureless sand Bt2 horizon that extended from the base of the above to an unknown depth.

Trench A14

Trench A14 was excavated to sample Anomaly 14. The trench was 5 m in length by 1 m in width and was oriented north to south. Trench A14 was excavated to an average depth of 100 cmbs and did not locate any cultural features. Three soil zones were observed in the east wall profile of the trench. Zone I was a 7.5YR 4/4 brown sandy loam A horizon that extended from the ground surface to about 10 cmbs. Zone II was a 2.5YR 4/8 red sandy clay Bt1 horizon that extended from the base of the above to about 60 cmbs. Zone III was a 2.5YR 4/8 red hard sandy clay Bt2 horizon that extended from the base of the above to an unknown depth.

Trench A15

Trench A15 was excavated to sample Anomaly 15. The trench extended 4 m north to south by 1 m east to west and was excavated to an average depth of 90 cmbs. No cultural features were encountered during excavation. Four soil zones were identified in the east wall of the trench. Zone I was a 5YR 5/2 reddish gray organic sand O horizon that extended from the ground surface to about 5 cmbs. Zone II was a 5YR 5/6 yellowish red clayey sandy loam A horizon that extended from the base of the above to approximately 15 cmbs. Zone III was a 5YR 5/8 yellowish red sandy clay Bt1 horizon that extended from the base of the above to an average depth of 75 cmbs. Zone IV was a 5YR 5/8 yellowish red sandy clay Bt2 horizon that extended from the base of the above to an unknown depth.
Trench A17

Trench A17 was excavated to sample anomalies 16 and 17. The trench extended approximately 7 m in length by 1 m in width and was oriented north to south. Trench A17 was excavated to an average depth of 100 cmbs and did not expose any cultural features. Three soil zones were observed in the east wall of the trench. Zone I was a 10YR 6/3 pale brown sandy loam A horizon that extended from the ground surface to 5 cmbs. Zone II was a 7.5YR 5/6 strong brown coarse sandy clay Bt1 horizon that extended from the base of the above to an average depth of 35 cmbs. The underlying Zone III was a 2.5YR 8/1 white clay with 10YR 6/6 brownish yellow clay mottles Bt2 horizon that extended from the base of the above to an unknown depth.

Trench A18

Trench A18 was excavated to sample Anomaly 18. Trench A18 extended approximately 4 m in length by 1 m in width and was oriented north to south. The trench was excavated to an average depth of 75 cmbs. A piece of silicified wood 20 cm in length by 10 cm in width was found at 65 cmbs and may be the source of Anomaly 18. No cultural features were found in association with the silicified wood. Two soil zones were identified in the east wall profile of the trench. Zone I was a 10YR 5/4 yellowish brown loamy sand A horizon that extended from the ground surface to an average depth of 35 cmbs. Zone II was a 10YR 6/2 light brownish gray clay with 7.5YR 6/8 reddish yellow clay mottles Bt horizon that extended from base of the above to an unknown depth.

Units

Units 1, 2, and 3

Units 1, 2, and 3 were located in the southeast quadrant of the site to explore the burned rock concentrations found in Shovel Test 46. Nearly identical soils were encountered in all three units. The east wall profiles of units 1 and 3, as well as the west wall profile of unit 2 (Figure 10) expressed A1, A2, and Bt soil horizons. A thin surface O horizon was also present in the east wall profile of Unit 1. The A1 horizon extended from the ground surface in units 2 and 3, and from the base of the O horizon in Unit 1, to an average depth of 15 cmbs and consisted of a 7.5YR 5/4 brown to a 10YR 6/4 light yellowish brown silty sand. The underlying A2 horizon was a much darker 10YR 3/3 to 7.5YR 4/2 dark brown sandy loam that extended from the base of the above to approximately 40 cmbs. This was underlain by a 7.5YR 4/6 strong brown to 2.5YR reddish brown sandy clay Bt horizon.

Unit 1 yielded 8 chipped stone tools, 156 pieces of lithic debitage, 1 ground stone, 1 prehistoric ceramic, 1 faunal bone, and 388.72 g of thermally altered rocks. Excavation of Unit 2 exposed a concentration of burned rocks in Level 3 recorded as Feature 1, and yielded 7 chipped stone tools, 170 pieces of lithic debitage, 3 ground stones, 21 faunal bones, 0.2 g of charred organic material,
Figure 10

SITE 41LT354
FEATURE 1
PLAN VIEW AND WEST WALL PROFILE
UNIT 2

ATKINS

Drawn by: S. Laurence

Burned Rock
Hematite
Silicified Wood
Lithic Debitage
Unexcavated artifact pedestal
Krotovina - 10YR 6/4 light yellowish brown

A1 Horizon
silty sand

A2 (Feature 1) Horizon
sandy loam

Bt Horizon
sandy clay

10YR 6/4 light yellowish brown
7.5YR 4/6 strong brown coarse

10YR 3/3 dark brown

0 40 centimeters

62
and 2,997.73 g of thermally altered rocks. Unit 3 yielded 6 chipped stone tools, 135 pieces of lithic debitage, 8 ground stones, 20 faunal bones, and 545.76 g of thermally altered rock. Table 8 shows the vertical distribution of artifacts from units 1, 2, and 3.

Table 8. Vertical Distribution of Artifacts from Units 1, 2, and 3

<table>
<thead>
<tr>
<th>Level</th>
<th>Chipped Stone Tools</th>
<th>Lithic Debitage</th>
<th>Ground Stone</th>
<th>Prehistoric Ceramic</th>
<th>Faunal Bone</th>
<th>Charred Organic Material (g)</th>
<th>Thermally Altered Rock (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>83</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>84.08</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>132</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>197.85</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>189</td>
<td>1</td>
<td>-</td>
<td>24</td>
<td>0.2</td>
<td>3,116.02</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>52</td>
<td>11</td>
<td>-</td>
<td>9</td>
<td>-</td>
<td>435.04</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>99.22</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>461</td>
<td>12</td>
<td>1</td>
<td>42</td>
<td>0.2</td>
<td>3,932.21</td>
</tr>
</tbody>
</table>

Diagnostic artifacts recovered include a cf. Alba arrow point in level 1 of Unit 1, a Perdiz arrow point in Level 2 of Unit 2, another cf. Alba arrow point in Level 3 of Unit 2, a Yarbrough dart point in Level 3 of Unit 3, and a Caddo-like ceramic sherd in Level 2 of Unit 1. Other tools included 4 bifaces and 13 expedient tools used for cutting, sawing, and scraping soft to medium-hard materials. Identifiable faunal bone fragments included turtle, small mammal, and medium-sized mammal. The ground stone assemblage includes 4 mano/hammerstones, 1 indeterminate grinding stone, 2 hide-processing stones, 1 mano fragment, and 4 polishing stones. The artifact assemblage from units 1, 2, and 3 indicates a variety of subsistence, processing, and manufacturing activities occurred in the vicinity of Feature 1.

**Feature 1**

Feature 1 was identified in Level 3 of Unit 2. The feature is an amorphous cluster of thermally altered rock extending beyond the limits of the 1-x-1-m excavation unit (see Figure 10). During excavation, the feature did not appear to be associated with a soil stain. For this reason a flotation sample was not taken. However, the organically rich A2 soil horizon that was encountered in units 1, 2, and 3 and yielded the majority of the cultural materials that came from these units is presumably associated with the feature.

When fully exposed at the base of Level 3, the feature was shown to consist of 2,140 g of thermally altered rocks, 1 chipped stone tool, and 1 ground stone. The feature was composed of a single layer of hematite, metaquartzite, silicified wood, and quartz arenite fire-cracked rocks. Feature 1 likely represents the remains of a disarticulated hearth. The origins of Feature 1 remain somewhat ambiguous. The feature rocks did not appear to be in their primary depositional context, and they conceivably could represent a disarticulated burned rock hearth or oven subjected to turbation.
following abandonment. It is equally plausible that they represent secondarily discarded burned rocks that were tossed in a midden after use in a nearby cooking feature.

**Units 4, 7, 8, 9, 12, and 14**

Units 4, 7, 8, 9, 12, and 14 were located in the west-central portion of the site. They were excavated to sample the fire-cracked rock concentration (Feature 2) exposed in the south wall of Trench A5. As noted above (see Trench A5), two soil zones were recognized in the south wall of Trench A5, a fine sandy loam A horizon extending from the ground surface to around 12 cmb underlain by a sandy clay Bt horizon. Feature 2 was recognized at the transition between the A and Bt soil horizons.

Unit 4 yielded 6 chipped stone tools, 34 pieces of lithic debitage, 2 ground stones, and 12,323.42 g of thermally altered rocks. Unit 7 yielded 8 chipped stone tools, 55 pieces of lithic debitage, and 4 ground stones. Unit 8 yielded 13 chipped stone tools, 39 pieces of lithic debitage, 4 ground stones, and 1,245.56 g of thermally altered rock. Unit 9 yielded 10 chipped stone tools, 48 pieces of lithic debitage, 3 ground stones, and 404.57 g of thermally altered rock. Unit 12 contained 6 chipped stone tools, 40 pieces of lithic debitage, 3 ground stones, 1 prehistoric ceramic sherd, and 209.43 g of thermally altered rock. Unit 14 yielded 11 chipped stone tools, 31 pieces of lithic debitage, 2 ground stones, and 537.93 g of thermally altered rock. Table 9 shows the vertical distribution of artifacts from units 4, 7, 8, 9, 12, and 14.

<table>
<thead>
<tr>
<th>Level</th>
<th>Chipped Stone Tools</th>
<th>Lithic Debitage</th>
<th>Ground Stone</th>
<th>Prehistoric Ceramic</th>
<th>Thermally Altered Rock (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (0–20 cmbd)</td>
<td>18*</td>
<td>53</td>
<td>–</td>
<td>–</td>
<td>35.97</td>
</tr>
<tr>
<td>2 (20–30 cmbd)</td>
<td>35*</td>
<td>190*</td>
<td>18*</td>
<td>1</td>
<td>14,684.9*</td>
</tr>
<tr>
<td>3 (30–40 cmbd)</td>
<td>1</td>
<td>4</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>247</td>
<td>18</td>
<td>1</td>
<td>14,720.84</td>
</tr>
</tbody>
</table>

*Counts include 5 chipped stone tools and 18 pieces of lithic debitage from Level 1 of Feature 2 and 1 chipped stone tool, 17 pieces of lithic debitage, 8 ground stones, and 14,006.90 g of thermally altered rock from Level 2 of Feature 2.

Diagnostic artifacts included a Gary dart point and a cf. Alba arrow point in Level 2 of Unit 8, an untyped dart point in Level 1 of Unit 8, and a decorated Caddo sherd from Level 2 of Unit 12. Other tools included 5 bifaces and 46 expedient tools used for scraping, cutting, planing, and sawing soft to hard materials. Ground stone tools included 3 abraders, 1 deflesher/beamer, 1 hammerstone/mano, 4 hide-processing stones, 3 indeterminate grinding stones, 2 mano fragments, a muller, a pitted anvil stone, and a polishing stone. The artifact assemblage from units 4, 7, 8, 9, 12, and 14 indicates a variety of subsistence, processing, and manufacturing activities occurred in the vicinity of Feature 2.
Feature 2

Feature 2 was first exposed in the south wall of Trench A5 (Figure 11) and was expressed in levels 1 and 2 of units 4, 8, 9, and 14 (Figure 12). The feature is a dense cluster of thermally altered rocks approximately 40 cm in diameter in Unit 4 with a diffuse scatter of thermally altered rocks extending up to 1 m away in the surrounding units. The feature rocks were concentrated at the transition between the A and Bt soil horizons. A portion of the feature appears to have been lost when Trench A5 was excavated. The feature is composed of thermally altered hematite, metaquartzite, and silicified wood. The feature was bisected during excavation, which revealed it to contain up to three layers of rocks, suggesting it may have been constructed in a shallow basin, though no pit outlines were discerned. Some of the feature rocks in the densest portion appeared to have cracked in place, suggesting parts of the feature may not have been disturbed since abandonment. Feature 2 likely represents the remains of a partially intact hearth or roasting pit. A 7-liter flotation sample was taken from amongst the feature rocks, which yielded a carbonized hickory nutshell fragment and a carbonized copperleaf seed. Carbonized oak, plum/cherry, and unidentified hardwoods were also recovered from the flotation sample.

Units 5 and 6

Units 5 and 6 were excavated along the east side of Trench A2 to sample the pit feature, Feature 3, exposed in the east and west wall of the trench. Five soil zones were identified in the east wall profile of units 5 and 6. Zone I extended from the ground surface to about 1 cmbs and was a 5YR 6/2 pinkish gray organic sand 0 horizon. Zone II extended from the base of the above to an average depth of the 27 cmbs and was a 5YR 5/3 reddish brown clayey sand A1 horizon. Zone III was the upper deposit of Feature 3. It extended from the base of the above to an average depth of 70 cmbs and consisted of 7.5YR 4/4 brown organic sand and silt with pebbles, cobbles, artifacts, and faunal remains. Zone IIIa was a lower feature deposit, present in Unit 5 and the southern half of Unit 6. Zone IIIa extended from the base of the above to an average depth of 85 cmbs and was a 7.5YR 3/2 dark brown organic silt and sand with artifacts and faunal remains. The underlying Zone IV was a 5YR 4/4 reddish brown sand E horizon that extended from the base of the above to an unknown depth.

The artifact assemblage recovered from Unit 5 includes 54 chipped stone tools, 303 pieces of lithic debitage, 21 pieces of ground stone, 1 prehistoric ceramic sherd, 2 pieces of modified ochre, 23 faunal bone fragments, 10.62 g of charred organic material, 3,718.8 g of thermally altered rocks, and an iron tow hook. The tow hook, recovered from Level 2, is the only historic artifact recovered at the site during the NRHP eligibility testing. The artifact assemblage recovered from Unit 6 includes 35 chipped stone tools, 424 pieces of lithic debitage, 15 pieces of ground stone, 1 prehistoric ceramic sherd, 6 pieces of modified ochre, 40 faunal bone fragments, 16.56 g of charred organic material, and 9,256.09 g of thermally altered rocks. Table 10 shows the vertical distribution
Feature 2, FCR

I  A Horizon  10YR 4/3 brown fine sandy loam, clear and smooth boundary, single grain, friable, no mottles, small grass roots

II  Bt Horizon  7.5YR 4/6 strong brown coarse sandy clay, unknown boundary, no mottles, subangular, firm

Figure 11
SITE 41LT354
TRENCH A5
SOUTH WALL PROFILE

ATKINS

Drawn by: S. Laurence
prehistoric ceramic sherd, 6 pieces of modified ochre, 40 faunal bone fragments, 16.56 g of charred organic material, and 9,256.09 g of thermally altered rocks. Table 10 shows the vertical distribution of prehistoric artifacts from units 5 and 6. All artifacts from levels 3 through 10 are part of Feature 3.

Table 10. Site 41LT354, Units 5 and 6, Vertical Distribution of Artifacts

<table>
<thead>
<tr>
<th>Level</th>
<th>Chipped Stone Tools</th>
<th>Lithic Debitage</th>
<th>Ground Stone</th>
<th>Sherd</th>
<th>Ochre</th>
<th>Faunal Bone Fragments</th>
<th>Charred Organic Material (g)</th>
<th>Thermally Altered Rock (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (13–30 cmbd)</td>
<td>4</td>
<td>36</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>72.73</td>
</tr>
<tr>
<td>2 (30–40 cmbd)</td>
<td>7</td>
<td>111</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.14</td>
<td>143.15</td>
</tr>
<tr>
<td>3 (40–50 cmbd)</td>
<td>7</td>
<td>74</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.02</td>
<td>70.08</td>
</tr>
<tr>
<td>4 (50–60 cmbd)</td>
<td>8</td>
<td>75</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>13</td>
<td>0.59</td>
<td>1201.8</td>
</tr>
<tr>
<td>5 (60–70 cmbd)</td>
<td>12</td>
<td>111</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>4.58</td>
<td>653.81</td>
</tr>
<tr>
<td>6 (70–80 cmbd)</td>
<td>4</td>
<td>88</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>4.31</td>
<td>672.94</td>
</tr>
<tr>
<td>7 (80–90 cmbd)</td>
<td>9</td>
<td>78</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>11</td>
<td>4.09</td>
<td>917.12</td>
</tr>
<tr>
<td>8 (9–100 cmbd)</td>
<td>20</td>
<td>94</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>10.16</td>
<td>242.18</td>
</tr>
<tr>
<td>9 (100–110 cmbd)</td>
<td>13</td>
<td>55</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>3.29</td>
<td>2092.2</td>
</tr>
<tr>
<td>10 (110–120 cmbd)</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>6908.99</td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>727</td>
<td>36</td>
<td>2</td>
<td>8</td>
<td>63</td>
<td>27.18</td>
<td>12,975</td>
</tr>
</tbody>
</table>

Temporally diagnostic artifacts recovered include a cf. Alba arrow point and an untyped arrow point from Level 2 of Unit 6, an untyped dart point from Level 3 of Unit 6, a cf. Alba arrow point from Level 4 of Unit 6, a Steiner arrow point from Level 5 of Unit 5, a cf. Harvey/Mineola biface from Level 8 of Unit 6, an untyped arrow point from Level 9 of Unit 6, and a Gary dart point from Level 10 of Unit 6. Additionally, 2 ceramic sherds with possible deep East Texas or Mossy Grove affiliations were recovered from Level 7. Other recovered tools include 7 bifaces and 74 expedient tools used for scraping, sawing, cutting, and planing soft to hard materials. Ground stone artifacts include 5 abraders, 1 grinding/cutting tool, 8 indeterminate grinding stones, 4 manos, 6 mano fragments, 2 mullers, 2 possible net weights, 7 polishing stones, and 1 punch. Eight pieces of modified ochre were recovered from levels 7 and 8.
**Feature 3**

Feature 3 was first identified in the east and west walls of Trench A2. Units 5 and 6 sampled the east side of the feature, and the west side was left unexcavated. In profile, Feature 3, a large pit feature, extended in places up to 110 cmbs and more than 2 m north to south. The east to west dimension of the feature remains unknown. The pit is roughly basin shaped but undulates slightly both in circumference and at its base (Figure 13). The pit did not appear to be lined with rocks, but contained thermally altered rocks throughout the vertical column. Thermally altered rocks recovered from the feature include hematite, metaquartzite, chert, silicified wood, and quartz arenite. In plan, at the base of Level 10, the soil within the pit appeared to be organically enriched and was much darker (10 YR 2/2 very dark brown) than the surrounding E horizon soil outside of the feature (5YR 5/3 reddish brown).

A total of 15.7 g of carbonized plant remains was recovered from the ¾-inch screens and from a 9-liter flotation sample taken from near the base of the feature. The carbonized plant assemblage includes persimmon, red oak, white oak, indeterminable oak, holly, elm, plum/cherry, indeterminable wood charcoal, carbonized and semicarbonized bark, hickory and hickory/walnut family nutshell, and a plum/cherry seed. Sixty-two faunal bone fragments recovered from the feature included white-tailed deer, deer-sized artiodactyls, medium-sized mammal, and undeterminable specimens.

The origins of Feature 3 remain somewhat ambiguous after sampling. The feature does appear to have arisen in part through a variety of activities associated with subsistence processing, presumably in a domestic context. Compared to other features excavated within the Kosse Mine (Fischbeck et al. 2011; Sherman et al. 2007) or elsewhere at 41LT354, Feature 3 is unique. It yielded substantially more carbonized plant remains than any of the other sampled features. Burned rock features excavated at 41LT56 and 41LT387 (Fischbeck et al. 2011) yielded less than 0.3 g of identifiable carbonized plant remains and only 1 bone fragment combined (Fischbeck et al. 2011). None of the features excavated at sites 41LT253 or 41LT320 yielded more than 0.1 g of identifiable carbonized plant remains, and only Feature 2 at 41LT320 yielded any faunal remains (n = 5) (Sherman et al. 2007). Additionally, none of the previously sampled features within the Kosse Mine showed remnant stains or pit outlines, and they are typically much smaller.

Feature 3 is similar in morphology and content to the roasting pits recorded at the Bird Point Island site (41FT201) and the Adams Ranch site (41NV177) during the RCAP investigation (McGregor and Bruseth 1987). These pits were typically larger than Feature 3 (20 to 50 m²) but ranged in depth from 100 to 225 cm and were roughly basin shaped with undulating bases. All contained high frequencies of macrobotanical remains, thermally altered rocks, baked clay, dart points, bifaces, cores, and steeply chipped unifaces. Interestingly, the roasting pits in the north area of 41FT201 formed a ring around three house features identified there. Feature 3 does not appear to resemble
I  O Horizon, 5YR 6/2 pinkish gray organic sand, smooth boundary, single grain, loose, structureless, many roots, grass, twigs
II  A Horizon, 5YR 5/3 reddish brown clayey sand, wavy boundary, massive, firm
III Feature 3 Deposit 1, 7.5YR 4/4 brown organic sand and silt, abrupt boundary, single grain, firm, structureless, large mottles, upper pit fill, mixed pebbles and cobbles, artifacts, bone, many roots
IIia Feature 3 Deposit 2, 7.5YR 3/2 dark brown organic sand and silt, wavy boundary, single grain, loose, friable; lower pit fill, artifacts, bone
IV  E Horizon, 5YR 4/4 reddish brown sand with minor clay, structureless, single grain, loose, friable

EAST WALL PROFILE

---

**PLAN VIEW**

- **Trench A2**
  - 7.5YR 4/6 strong brown
  - 10YR 2/2 very dark brown

**Unit 5**
- Very dark brown; 0.0 Horizon, SYR 6/2 pinkish gray organic sand, smooth boundary, single grain, loose, structureless, many roots, grass, twigs
- II  A Horizon, 5YR 5/3 reddish brown clayey sand, wavy boundary, massive, firm
- III Feature 3 Deposit 1, 7.5YR 4/4 brown organic sand and silt, abrupt boundary, single grain, firm, structureless, large mottles, upper pit fill, mixed pebbles and cobbles, artifacts, bone, many roots
- IIia Feature 3 Deposit 2, 7.5YR 3/2 dark brown organic sand and silt, wavy boundary, single grain, loose, friable; lower pit fill, artifacts, bone
- IV  E Horizon, 5YR 4/4 reddish brown sand with minor clay, structureless, single grain, loose, friable

**Unit 6**
- O Horizon, 5YR 6/2 pinkish gray organic sand, smooth boundary, single grain, loose, structureless, many roots, grass, twigs

---

**ATKINS**

**Figure 13**

SITE 41LT354
FEATURE 3
PLAN VIEW AND EAST WALL PROFILE
UNITS 5 AND 6

Drawn by: S. Laurence
"Wylie focus pits" in form or function (Bruseth and Martin 1987). The diverse artifact assemblage recovered from Feature 3 suggests additionally it may have served as a midden following its use life.

**Units 10, 11, and 13**

Units 10, 11, and 13 were excavated along the east side of Trench A1 to prospect for features associated with a Yarbrough dart point and thermally altered rocks identified during trenching. Two soil zones were observed in the east wall profile of units 11 and 13 (Figure 14). Zone I was a 10YR 5/4 yellowish brown sandy loam A horizon that extended from the ground surface to between 20 and 25 cmbs. In Unit 12 the above soil was underlain by a 10YR 5/6 yellowish brown sandy clay Bt horizon that extended from the base of the above to an unknown depth. Several burned feature rocks were present at the conformation of the A and the Bt horizons. No soil staining associated with the feature was noted.

Unit 10 yielded 19 chipped stone tools, 101 pieces of lithic debitage, 0.22 g of charred organic remains, and 509.32 g of thermally altered rocks. No cultural features were identified in Unit 10. Unit 11 yielded 8 chipped stone tools, 66 pieces of lithic debitage, and 216.54 g of thermally altered rocks. Unit 13 yielded 10 chipped stone tools, 76 pieces of lithic debitage, 6 ground stones, and 2,414.12 g of thermally altered rocks. Feature 4 was more or less bisected by the boundary between units 11 and 13. Feature 5 was located at the northern limit of Unit 13. Table 11 shows the vertical distribution of artifacts from units 10, 11, and 13. Feature 4 yielded 3,923.01 g of thermally altered rocks while Feature 5 yielded 2,069.00 g of thermally altered rocks.

<table>
<thead>
<tr>
<th>Level</th>
<th>Chipped Stone Tools</th>
<th>Debitage</th>
<th>Ground Stone</th>
<th>Charred Organic Remains (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>24</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>108</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>66</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>13</td>
<td>-</td>
<td>0.22</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>243</td>
<td>8</td>
<td>0.22</td>
</tr>
</tbody>
</table>

*Includes 3,923.01 g of thermally altered rocks from Feature 4 and 2,069.00 g of thermally altered rocks from Feature 5.

Two cf. Harvey/Mineola bifaces were recovered, one from Level 1 of Unit 13 and the second from Level 2 of Unit 10. A single untyped arrow point was recovered from Level 1 of Unit 11. Other tools recovered include 8 bifaces and 26 expedient tools used for cutting, scraping, planing, and sawing.
Figure 14

SITE 41LT354
FEATURES 4 AND 5
PLAN VIEW AND EAST WALL PROFILE
UNITS 11 AND 13

A Horizon, 10YR 5/4 yellowish brown sandy loam

Bt Horizon, 10YR 5/6 yellowish brown sandy clay

ATKINS

Drawn by: S. Laurence
on soft to medium-hard materials. Ground stone tools recovered include 3 abraders, 4 indeterminate grinding stones, and 1 mano fragment. The artifact assemblage from units 10, 11, and 13 indicates a variety of subsistence, processing, and manufacturing activities occurred in the vicinity of features 4 and 5.

**Feature 4**

Feature 4 was exposed in Level 3 of units 11 and 13. The feature extended approximately 70 cm north to south and extended beyond the limits of the excavation to the east. The exposed portion of the feature extended more than 80 cm east to west. Only the portion of the feature exposed in units 11 and 13 was sampled. The feature was composed of an irregular and diffuse cluster of two courses of burned silicified wood, hematite, and metaquartzite resting directly on the clay Bt soil horizon and likely represents a disarticulated hearth. Charred botanical remains recovered from an 8-liter flotation sample collected from among the feature rocks includes three pieces of carbonized oak wood.

**Feature 5**

Feature 5 was exposed in Level 3 at the northern limit of Unit 13. The exposed portion of the feature extended approximately 45 cm east to west and 20 cm north to south. The feature extended into the north wall of the unit, but only the portion of the feature exposed in Unit 13 was excavated. The feature was composed of a loose cluster of burned hematite, metaquartzite, chert, and silicified wood embedded in the clay subsoil. Feature 5 is thought to represent a disarticulated hearth. Charred organic remains recovered from a 2-liter flotation sample collected from among the feature rocks contained only one fragment of carbonized hardwood.

**ARTIFACT ASSEMBLAGE ANALYSIS**

A total of 2,135 artifacts and 1,049 ecofacts were recovered from site 41LT354 during NRHP testing (Appendix D). Ecofacts include faunal remains, charred organic remains, and thermally altered rocks. Only one of the artifacts, a tow hook, is historic. Tow hooks like this one would have been used on a durable car or tractor for general towing activities. Tow hooks are not temporally diagnostic and are still made today.

The 2,134 prehistoric artifacts were categorized by raw material and subdivided into lithics, prehistoric ceramics, and ochre. The lithics were subdivided into tools and nontools. The tools were divided by chipped stone or ground stone technology; the nontools were divided into debitage and cores.

**Chipped Stone Tools**

A total of 211 chipped stone tools were recovered from site 41LT354. Of the 2,134 prehistoric artifacts recovered, chipped stone tools represent just less than 10 percent of the assemblage.
chipped stone tool assemblage is comprised of 16 projectile points, 29 bifaces, 5 unifacially modified flakes, and 161 utilized flakes.

**Projectile Points (n = 16)**

While 16 projectile points were recovered from site 41LT354, only 13 could be typed. The 13 typed projectile points date from the Middle Archaic to the Late Prehistoric.

**Arrow Points (n = 10) (Figure 15)**

The arrow point type classifications follow closely the categories employed at the Adams Ranch and Bird Point Island sites (Bruseth and Martin 1987) as well as those employed by Turner and Hester (1993). The 41LT354 assemblage is dominated by the types Alba, Catahoula, and, most prominently, Steiner. A single Perdiz specimen was also recovered. Two Alba specimens were recovered. Both have wide barbed shoulders and concave blade edges. One (Lot 215.1) exhibits small serrations on the blade edge. The stem on Lot 179.1 is rectangular expanding with a convex base. The two arrow points classified as Catahoula have serrated recurved blade edges, squared shoulder barbs, and expanding stems. None of the specimens classified as Steiner were fully complete. Specimens included in this category exhibited prominent blade serrations, relative to the other serrated points in the assemblage.

cf. Alba: Two cf. Alba arrow points were recovered from site 41LT354. Both were formed from chert. Lot 215.1 is complete chert point. The extant body is triangular with slightly concave lateral edges. Serration was observed on the lateral blade edges of Lot 215.1, which also has moderately barbed shoulders. Lot 215.1 has a mass of 0.92 g and extends 28.28 mm in length by 14.38 mm in width, with a maximum thickness of 3.81 mm. The second cf. Alba arrow point (Lot 179.1) is a chert proximal-medial fragment with a triangular body, moderately barbed shoulders, rectangular stem, and a convex basal edge. Lot 179.1 has a mass of 0.63 g and extends 16.21 mm in length by 19.43 mm in width, with a maximum thickness of 2.66 mm. No use wear was discerned on any the cf. Alba projectile points. Alba arrow points date to the Late Prehistoric, between A.D. 800 and 1200 (Turner and Hester 1993).

Catahoula: Two Catahoula arrow points were recovered from site 41LT354. Lot 186.1 is a nearly complete metaquartzite specimen lacking only portions of the lateral blade edges, and Lot 213.1 is a complete chert specimen. Lot 186.1 has a triangular body, serrated concave lateral blade edges, lightly barbed shoulders, a rectangular stem, and a straight basal edge. Lot 186.1 has a mass of 0.95 g and extends 29.01 mm in length by 15.43 mm in width, with a maximum thickness of 2.92 mm. Lot 213.1 has straight lateral edges, weak shoulders, a rectangular stem, and a straight basal edge. Lot 213.1 has a mass of 1.16 g and extends 32.12 mm in length by 14.07 mm in width, with a maximum thickness of 3.42 mm. Catahoula arrow points date to the Late Prehistoric, between A.D. 700 and 1100 (Tuner and Hester 1993).
Lot 186.1
Catahoula Metaquartzite

Lot 203.1
Steiner Metaquartzite

Lot 231.1
Steiner Metaquartzite

Lot 185.1
Perdiz Chert

Lot 215.1
Alba Chert

Lot 213.1
Catahoula Chert

Lot 231.1
Steiner-like Chert

Lot 237.1
Steiner-like Chert

Lot 213.2
Steiner-like Chert

Lot 220.1
Untyped Chert

Figure 15
SITE 41LT354 ARROW POINTS

Drawn by: C. Wallace
Steiner: Four Steiner arrow points were recovered from site 41LT354. Lot 203.1 has a triangular body, straight lateral spurred edges, moderately barbed shoulders, an expanding stem, and a straight basal edge. It has a mass of 0.82 g, and it extends 21.08 mm in length by 17.35 mm in width, with a maximum thickness of 2.66 mm. Lot 213.2 is a proximal-medial chert fragment retaining a triangular body, straight lateral edges, weak shoulders, expanding stem, and a straight basal edge. This specimen has a mass of 0.36 g and measures 12.81 mm in length by 10.83 mm in width, with a maximum thickness of 2.92 mm. Lot 231.1 is a nearly complete metaquartzite specimen lacking only portions of the lateral blade edges with a triangular body, serrated concave lateral blade edges, lightly barbed shoulders, rectangular stem, and straight basal edge. This specimen has a mass of 0.44 g and extends 19.32 mm in length by 12.28 mm in width, with a maximum thickness of 2.66 mm. Lot 237.1 is a unifacially worked medial fragment of a chert arrow point. It has a triangular body, straight serrated lateral edges, and lightly barbed shoulders. This specimen has a mass of 0.44 g and extends 12.48 mm in length by 12.59 mm in width, with a maximum thickness of 2.42 mm. No use wear was discerned. Steiner arrow points date to the Late Prehistoric (Turner and Hester 1993).

Perdiz: Lot 185.1 is a nearly complete chert Perdiz arrow point missing a portion of one of the lateral edges. This specimen has a triangular body with straight lateral edges, moderately barbed shoulders, a contracting stem, and a pointed basal edge. It has a mass of 0.36 g and measures 18.42 mm in length by 11.98 mm in width, with a maximum thickness of 2.78 mm. Perdiz points date to the Late Prehistoric, between A.D. 1200 and 1500 (Turner and Hester 1993).

Untyped: A single untyped chert arrow point was recovered from site 41LT354. Lot 220.1 is a distal-medial chert fragment. This specimen has a lanecolate-shaped body and slightly convex serrated lateral edges. No stem remains and it is only unifacially worked. Lot 220.1 has a mass of 0.36 g and measures 16.33 mm in length by 10.53 mm in width, with a maximum thickness of 2.81 mm.

Dart Points (n = 6) (Figure 16)

Gary: Two complete Gary dart points were recovered from 41LT354. Lot 223.1 was formed from chert and was reworked prior to discard. This specimen has a triangular body, slightly convex lateral edges, lightly barbed shoulders, a contracting stem, and a straight basal edge. It has a mass of 4.44 g and extends 36.88 mm in length by 22.98 mm in width, with a maximum thickness of 7.18 mm. While Lot 223.1 has largely retained the characteristic outline typical of Gary dart points, the blade appears diminished in size and the proximal tip is off-centered. Lot 228.1 is a complete Gary dart point formed of metaquartzite. This specimen has a triangular blade, slightly convex lateral edges, moderate shoulders, a contracting stem, and a slightly rounded basal edge. It has a mass of 8.57 g and extends 45.69 mm in length by 25.45 mm in width, with a maximum thickness of 7.55 mm. Gary dart points date from the Middle to Transitional Archaic periods, ca. 2500 B.C. to A.D. 800 (Turner and Hester 1993).
Lot 223.1
Reworked Gary Chert

Lot 228.1
Gary Metaquartzite

Lot 191.1
Reworked Yarbrough Chert

Lot 251.1
Yarbrough Chert

Lot 214.1
Untyped Metaquartzite

Lot 227.1
Untyped Metaquartzite

Figure 16
SITE 41LT354 DART POINTS

Drawn by: C. Wallace
Yarbrough: Two chert Yarbrough dart points were recovered. Lot 191.1 is complete but appears to have been reworked prior to discard. It has a triangular-shaped body, slightly concave lateral edges, weak shoulders, expanding stem, and a convex basal edge. While the stem has largely retained the same shape and size, the blade appears diminished in overall size after having been reworked. It has a mass of 3.38 g and extends 31.67 mm in length by 19.55 mm in width, with a maximum thickness of 6.83 mm. Lot 251.1 is a proximal-medial fragment with a triangular-shaped body, straight lateral edges with alternating beveling on the right side, moderate shoulders, an expanding stem, and a straight basal edge. The stem and basal edges have been slightly ground. Its mass is 8.51 g, and it extends 41.21 mm in length by 28.19 mm in width, with a maximum thickness of 8.06 mm. Yarbrough dart points date to the Archaic and possibly to later times (Turner and Hester 1993).

Untyped: Lot 214.1 is a metaquartzite stem fragment from an untyped dart point. The extant stem has expanding edges and a convex basal edge. It has a mass of 1.55 g and is 14.56 mm in length by 19.68 mm in width, with a maximum thickness of 5.14 mm. Missing its shoulders, this specimen cannot be securely typed. However, the extant portion is similar in outline to the base of Lot 191.1. Lot 227.1 is a metaquartzite distal-medial fragment from an untyped dart point. It has a triangular-shaped blade, straight lateral edges, and moderate shoulders. It has a mass of 6.29 g and is 44.24 mm in length by 29.82 mm in width with a maximum thickness of 7.24 mm.

Projectile Point Summary

A total of 10 arrow points and 6 dart points were recovered. The dart point assemblage includes two Gary points, two Yarbrough points, and two unidentified specimens. Although the date ranges for these two types overlap, it is likely that they were deposited during separate occupations. The arrow point type classifications follow closely the categories employed at the Adams Ranch and Bird Point Island sites (Bruseth and Martin 1987) as well as those employed by Turner and Hester (1993). The 41LT354 assemblage is dominated by the types Alba, Catahoula, and, most prominently, Steiner. A single Perdiz specimen was also recovered. Two Alba specimens were recovered. Both have wide barbed shoulders and concave blade edges. One (Lot 215.1) exhibits small serrations on the blade edge. The stem on Lot 179.1 is rectangular expanding with a convex base. The two arrow points classified as Catahoula have serrated recurved blade edges, squared shoulder barbs, and expanding stems. None of the specimens classified as Steiner were fully complete. Specimens included in this category exhibited prominent blade serrations, relative to the other serrated points in the assemblage. Perdiz points date from A.D. 1200 to 1500. The Perdiz and the Alba, Steiner, and Catahoula points most likely do not represent the same occupation. Steiner, Catahoula, and Alba points date generally to an earlier Late Prehistoric period from A.D. 700 to 1200. The untyped specimen is an arrow point fragment that was presumably discarded after manufacturing failure.
Based on projectile points alone, site 41LT354 appears to have resulted in part from sporadic occupation during the Archaic period. The site also appears to have resulted in part from at least two occupations during the Late Prehistoric, an early intensive occupation represented by two Catahoula, four Steiner, and two Alba arrow points and a later, short-duration occupation represented by a single Perdiz specimen. These conclusions, however, must be considered speculative in light of the fact that one of the Alba specimens, one of the Catahoula specimens, the Perdiz specimen, and the Yarbrough specimen were all recovered from the vicinity of Feature 1, along with a single Caddo-like ceramic sherd.

**Bifaces (n = 29)**

The 41LT354 biface assemblage is composed of 29 specimens including 8 Stage 3 specimens, 6 Stage 2 specimens, and 10 Stage 1 specimens. The remaining 5 specimens are too fragmentary to assign to a reduction stage; 4 are chert fragments and 1 was formed from metaquartzite. Only 3 of the 29 bifaces showed use-wear under low-power microscopy. The fragmentary nature of the biface assemblage, coupled with their general lack of use-wear, points to discard after manufacturing failures.

**Stage 3**

The eight Stage 3 bifaces include seven chert specimens and one metaquartzite specimen. Lot 185.2 is a decorticated triangular chert fragment with a rounded distal tip and is missing one of the lateral edges. It has a mass of 2.55 g, and it extends 28.34 mm in length by 14.97 mm in width, with a maximum thickness of 6.29 mm. This specimen exhibits signs of unintentional heat alteration evidenced by heat fracturing.

Lot 219.1 is a decorticated, pointed distal chert biface fragment with straight lateral edges and no evidence of utilization. Its mass is 2.29 g, and it extends 25.49 mm in length by 17.87 mm in width and 6.79 mm in maximum thickness.

Lot 225.1 is a decorticated proximal chert biface fragment that retains a hafting element and presumably represents an arrow point preform. Only the stem and shoulders have been bifacially worked. The shoulders are strong, and the stem contracts to a point at the base. It has a mass of 1.27 g and extends 24.51 mm in length by 23.25 mm in width and a maximum thickness of 2.85 mm.

Lot 227.2 is a rectangular decorticated distal chert biface fragment. It has parallel lateral edges and a straight basal edge. It has a mass of 1.89 and extends 16.72 mm in length by 18.14 mm in width, with a maximum thickness of 5.03 mm.
Lot 228.2 is a decorticated distal chert biface fragment with concave lateral edges and a straight basal edge. It has a mass of 1.01 g. It extends 10.95 mm in length by 19.15 mm in width and 4.32 mm in maximum thickness.

Lot 235.1 is a decorticated distal chert biface fragment with contracting lateral edges and a convex basal edge. The lateral edges have been ground. This specimen has a mass of 3.21 g and extends 26.51 mm in length by 17.65 mm in width, with a maximum thickness of 8.14 mm.

Lot 238.1 is a decorticated medial chert biface fragment. It is triangular shaped with straight lateral edges with evidence of grinding. It has a mass of 0.29 g and extends 10.70 mm in length by 8.97 mm in width, with a maximum thickness of 3.19 mm.

Lot 241.1 is a decorticated metaquartzite medial fragment. It is of an indeterminate shape but retains one serrated straight lateral edge, most likely representing a lateral portion of a projectile point. This specimen has a mass of 1.26 g, and it extends 21.69 mm in length by 9.23 mm in width, with a maximum thickness of 6.62 mm.

Stage 2

There are six bifaces that were assigned to Stage 2; two were formed of chert, and four were formed of silicified wood. Lot 240.1 was typed as a Harvey/Mineola biface, while lots 219.2 and 243.2 were typed as cf. Harvey/Mineola bifaces (Figure 17). Harvey/Mineola bifaces were originally referred to as “knives” by Jelks (1965). They are tools made from flat pieces of silicified wood that are modified on two to three sides with steeply angled beveled edges, but rarely modified along the base (Turner and Hester 1993).

Lot 240.1 is a heavily corticated complete silicified wood Harvey/Mineola biface with flake reduction observed only on one face. It is rectangular in shape with beveled lateral edges. The distal end shows wear indicative of planing medium-hard materials. It has a mass of 83.66 g. It extends 78.98 mm in length by 41.74 mm in width and 18.97 mm in maximum thickness.

Lot 219.2 is a nearly complete decorticated silicified wood cf. Harvey/Mineola biface. It has a subtriangular-shaped body with a portion of a lateral side missing. Both faces of the specimen have been modified. This specimen has the least uniform flake scarring, and no use wear was discerned. Lot 219.2 has a mass of 67.99 g. It is 82.61 mm in length by 38.16 mm in width and 15.58 mm in maximum thickness.

Lot 234.2 is a moderately corticated silicified wood proximal-medial cf. Harvey/Mineola biface fragment. This fragment appears to have split from the original tool. It retains only one face of the original artifact and one beveled lateral edge. Use-wear consistent with cutting on medium-soft materials was observed on the straight lateral edge. Lot 234.2 has a mass of 28.47 g and extends
Lot 240.1

Lot 219.2

Lot 234.2

Figure 17
SITE 41LT354
HARVEY/MINEOLA BIFACES

Drawn by: C. Wallace
48.85 mm in length by 39.49 mm in width and 12.15 mm in maximum thickness. It is the only Stage 2 biface that shows evidence of intentional heat treatment.

Lot 140.1 is a decorticated chert fragment of indeterminate shape. It has a round end and ground edges. Its mass is 3.96 g, and it extends 26.34 mm in length by 25.08 mm in width, with a maximum thickness of 8.42 mm.

Lot 235.3 is a moderately corticated silicified wood lateral biface fragment of indeterminate shape. It retains a ground lateral edge. Its mass is 5.34 g, and it extends 42.82 mm in length by 19.11 mm in width, with a maximum thickness of 7.19 mm.

Lot 237.2 is a decorticated chert proximal-medial biface fragment. It has a lanceolate-shaped body and a mass of 1.47 g. It has a length of 19.81 mm, a width of 17.19 mm, and a maximum thickness of 4.24 mm.

**Stage 1**

There are 10 Stage 1 bifaces, 4 of which are formed of silicified wood, 3 of chert, and 3 of metaquartzite. Lot 110.1 is a decorticated subtriangular silicified wood distal-medial biface fragment. It is the only Stage 1 biface with evidence of use-wear. The use-wear pattern is consistent with planing soft materials. It also has signs of unintentional heat alteration. It has a mass of 17.06 g, and it extends 50.79 mm in length by 22.32 mm in width, with a maximum thickness of 13.18 mm.

Lot 181.1 is a slightly corticated ovate-shaped indeterminate chert biface fragment. It exhibits signs of unintentional heating, evidenced by heat fractures and a change in color. It has a mass of 14.58 g, and it extends 37.68 mm in length by 30.67 mm in width, with a maximum thickness of 12.19 mm.

Lot 196.1 is a slightly corticated medial fragment of a silicified wood biface. It is a lanceolate-shaped fragment with ground edges. It has a mass of 40.76 g, and it extends 65.41 mm in length by 36.42 mm in width, with a maximum thickness of 16.11 mm.

Lot 203.2 is an ovate-shaped decorticated complete metaquartzite biface that exhibits signs of intentional heating. Its mass is 12.14 g, and it extends 32.87 mm in length by 28.16 mm in width, with a maximum thickness 11.97 mm.

Lot 206.1 is a complete decorticated ovate chert biface. Its mass is 24.22 g, and it extends 40.46 mm in length, 34.55 mm in width, and 15.15 mm in maximum thickness.

Lot 214.2 is an indeterminately shaped, moderately corticated medial metaquartzite biface fragment. It exhibits signs of intentional heat treatment. It has a mass of 5.86 g, and it extends 9.36 mm in length by 23.91 mm in width, with a maximum thickness of 8.83 mm.
Lot 215.2 is an ovate-shaped chert biface fragment missing the lateral edges. It is slightly corticated. It has a mass of 4.35 g, and it extends 33.29 mm in length by 18.39 mm in width, with a maximum thickness of 7.55 mm.

Lot 215.3 is a decorticated metaquartzite biface fragment. It has an indeterminate shape and could not be orientated. It has a mass of 4.81 g, and it extends 18.27 mm in length by 27.51 mm in width, with a maximum thickness of 9.77 mm.

Lot 228.3 is a moderately corticated distal-medial silicified wood biface fragment. It is a subtriangular-shaped specimen and has a mass of 29.82 g. It extends 61.75 mm in length by 23.01 mm in width, with a maximum thickness of 17.33 mm.

Lot 235.4 is a rectangular-shaped complete silicified wood biface. It is heavily corticated and exhibits signs of unintentional heat alteration. It has a mass of 49.41. It extends 71.52 mm in length, by 25.71 mm in width, with a maximum thickness of 16.85 mm.

**Indeterminate**

The remaining biface specimens are too fragmentary to assign to a reduction stage. Lot 181.2 is a slightly corticated chert biface fragment. Its mass is 5.81 g, and it is 19.93 mm in length by 30.16 mm in width, with a maximum thickness of 7.79 mm.

Lot 190.1 is a chert biface fragment that retains minimal cortex with straight lateral edges. It exhibits signs of intentional heating and is the only biface unassigned to a stage that exhibits evidence of use-wear. The use-wear observed is consistent with cutting medium-soft materials. It has a mass of 3.21 g, and it extends 20.89 mm in length by 23.08 mm in width, with a maximum thickness of 8.79 mm.

Lot 201.1 is a very small chert biface fragment that retains no cortex and exhibits signs of intentional heating. It has a mass of 0.35 g, and it extends 16.98 mm in length by 8.01 mm in width, with a maximum thickness of 3.48 mm.

Lot 234.1 is a decorticated chert biface fragment with a mass of 1.17 g. It has one convex lateral edge and one concave lateral edge. It extends 15.12 mm in length by 13.94 mm in width, with a maximum thickness of 6.48 mm.

Lot 235.2 is a metaquartzite biface fragment that retains no cortex. It has a mass of 2.44 g, and it extends 19.06 mm in length by 18.39 mm in width, with a maximum thickness of 5.94 mm.

**Unifacially Modified Flakes (n = 5)**

Five unifacially modified flakes were recovered from site 41LT354. All five of these artifacts appear to have been utilized, two of which shows wear indicative of use as a multipurpose tool. The basic
attributes of these materials are presented in Table 12. The wear patterns observed are consistent with cutting, sawing, planing, and scraping. Cutting and sawing both require the tool to be held with the working edge parallel to the direction of use. Sawing generally refers to use on harder materials such as bone or wood (Keeley 1980). For scraping and planing, the tool is held with the working edge at an approximate right angle to the direction of use. With planing, the flake edge is pushed, while with scraping, the flake edge is pulled (Keeley 1980). Scraping was the most common wear type observed and is evidenced on three flakes. Two specimens exhibited wear consistent with scraping medium-soft materials, while wear consistent with scraping soft materials was present on a third. Wear consistent with sawing on medium-hard materials was evidenced on two flakes. Wear consistent with cutting was evidenced on two flakes. One appears to have been used on medium-soft materials, and one appears to have been used to work soft materials. Wear consistent with planing on medium-soft materials was observed on one flake. Three of the unifacially modified flakes appear to have been thermally altered. This alteration appears to have been intentional on one of the specimens.

Table 12. Site 41LT354, Unifacially Modified Flake Attributes

<table>
<thead>
<tr>
<th>Lot No.</th>
<th>Material</th>
<th>Utilization</th>
<th>Use Material</th>
<th>Form</th>
<th>Thermal Alteration</th>
</tr>
</thead>
<tbody>
<tr>
<td>190.2</td>
<td>Chert</td>
<td>Cutting</td>
<td>Soft</td>
<td>Complete</td>
<td>None</td>
</tr>
<tr>
<td>195.2</td>
<td>Quartz Arenite</td>
<td>Scraping</td>
<td>Soft</td>
<td>Complete</td>
<td>None</td>
</tr>
<tr>
<td>212.2</td>
<td>Metaquartzite</td>
<td>Cutting</td>
<td>Medium soft</td>
<td>Fragment</td>
<td>Unintentional</td>
</tr>
<tr>
<td>216.1</td>
<td>Chert</td>
<td>Planing</td>
<td>Medium soft</td>
<td>Complete</td>
<td>Intentional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sawing</td>
<td>Medium hard</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scraping</td>
<td>Medium soft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>220.2</td>
<td>Chert</td>
<td>Sawing</td>
<td>Medium hard</td>
<td>Fragment</td>
<td>Unintentional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scraping</td>
<td>Medium hard</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Utilized Flakes (n = 161)**

A total of 161 piece of lithic debitage exhibited patterned use-wear and are categorized as utilized flakes. Utilized flakes were, by far, the most common chipped stone tool type recovered at site 41LT56 and account for 76.3 percent of the chipped stone tool assemblage. The basic attributes of these materials are presented in Table 13. Wear patterns present in the utilized flake assemblage are consistent with cutting, sawing, scraping, planing, and drilling on materials that range from soft to hard. Of the 161 specimens, 41 evidence wear indicative of use as multipurpose tools. A total of 211 instances of patterned use-wear were identified on the 161 artifacts. The number of instances of patterned use-wear observed is thought to be more directly related to the number of activities conducted rather than raw artifact counts.
Table 13. Site 41LT354, Use-Wear Attributes of Utilized Flakes

<table>
<thead>
<tr>
<th>Activity</th>
<th>Soft Material</th>
<th>Medium-soft Material</th>
<th>Medium-hard Material</th>
<th>Hard Material</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting</td>
<td>36</td>
<td>60</td>
<td>3</td>
<td>0</td>
<td>99</td>
</tr>
<tr>
<td>Scraping</td>
<td>10</td>
<td>26</td>
<td>46</td>
<td>8</td>
<td>90</td>
</tr>
<tr>
<td>Sawing</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Planing</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Drilling</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>91</strong></td>
<td><strong>63</strong></td>
<td><strong>8</strong></td>
<td><strong>211</strong></td>
</tr>
</tbody>
</table>

Wear patterns consistent with cutting are the most common and were observed 99 times across 92 specimens. Scraping was evidenced 90 times across 77 specimens, while sawing was evidenced 11 times on 11 specimens. Planing was evidenced 10 times on 9 specimens, and drilling was evidenced 1 time on 1 specimen. Chert is the most common material in the utilized flake assemblage, with 149 specimens. Metaquartzite was the next most common, with 10 specimens. There was 1 quartz arenite and 1 silicified wood specimen.

There are 91 instances of patterned wear consistent with use on medium-soft materials present on 80 specimens. There are 63 instances on 50 specimens of patterned wear consistent with use on medium-hard materials. There are 49 instances on 41 specimens of patterned wear consistent with use on soft materials. There are only 8 instances on 6 specimens consistent with use on hard materials.

Based on frequency of wear patterns consistent with different material types, the 41LT354 utilized flake assemblage was used on a wide variety of materials. Artifacts used on medium-soft to soft materials account for 66.4 percent of the utilized flake assemblage, suggesting that hide working and plant processing were more common than wood working and bone working. A total of 11 utilized flakes exhibit signs of thermal alteration. This alteration appears to have been unintentional in 9 cases.

**Chipped Stone Nontools**

**Cores**

Eight lithic cores were recovered from site 41LT354. The basic attributes of these materials are presented in Table 14. Raw material types represented by the core assemblage include chert (n = 4), metaquartzite (n = 2), and silicified wood (n = 2). Two cores were exhausted, while five were categorized as pebbles and one as a cobble. Four have multidirectional negative scars, and the other four are unidirectional. None showed any signs of thermal alteration, suggesting that if heat treatment of lithic raw materials took place on-site, it was undertaken on flakes already removed from cores.
Table 14. Site 41LT354, Lithic Core Attributes

<table>
<thead>
<tr>
<th>Lot No.</th>
<th>Material</th>
<th>Direction</th>
<th>Size</th>
<th>Mass (g)</th>
<th>Maximum Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>136.1</td>
<td>Chert</td>
<td>Unidirectional</td>
<td>Pebble</td>
<td>24.08</td>
<td>37.94</td>
</tr>
<tr>
<td>181.5</td>
<td>Metaquartzite</td>
<td>Multidirectional</td>
<td>Pebble</td>
<td>155.35</td>
<td>63.67</td>
</tr>
<tr>
<td>205.9</td>
<td>Chert</td>
<td>Unidirectional</td>
<td>Exhausted</td>
<td>24.62</td>
<td>28.57</td>
</tr>
<tr>
<td>210.1</td>
<td>Chert</td>
<td>Multidirectional</td>
<td>Pebble</td>
<td>40.89</td>
<td>52.42</td>
</tr>
<tr>
<td>213.3</td>
<td>Silicified Wood</td>
<td>Unidirectional</td>
<td>Pebble</td>
<td>14.33</td>
<td>47.88</td>
</tr>
<tr>
<td>221.1</td>
<td>Chert</td>
<td>Multidirectional</td>
<td>Exhausted</td>
<td>10.35</td>
<td>28.26</td>
</tr>
<tr>
<td>227.4</td>
<td>Metaquartzite</td>
<td>Multidirectional</td>
<td>Pebble</td>
<td>56.23</td>
<td>53.45</td>
</tr>
<tr>
<td>231.1</td>
<td>Silicified Wood</td>
<td>Unidirectional</td>
<td>Cobble</td>
<td>62.13</td>
<td>67.06</td>
</tr>
</tbody>
</table>

**Debitage**

The 41LT354 debitage assemblage comprises 1,810 pieces of nondiagnostic lithic debitage that consists of 806 complete flakes, 468 broken flakes, 388 flake fragments, 145 pieces of debris, and 3 microflakes. Complete flakes and debris compose 52.5 percent of the debitage assemblage, while broken flakes and flake fragments represent 47.3 percent of the assemblage. Microflakes represent just 0.2 percentage of the debitage assemblage.

The vast majority of the debitage assemblage is chert, which accounts for 73 percent of the assemblage. Metaquartzite is the next most common debitage raw material and accounts for 17.4 percent of the assemblage. The remainder of the assemblage is made up of silicified wood (7.6 percent), quartz arenite (1.9 percent), and hematite (0.1 percent). A portion of the debitage assemblage (16.6 percent) exhibits signs of thermal alteration. An overwhelming majority of the thermally altered debitage specimens (93.3 percent) exhibit signs of being unintentionally heated. These observations suggest that heat treating of lithic raw materials was not an important activity for the site’s prehistoric occupants.

**Ground, Polished, and Battered Stone Tools**

Eighty-two ground, polished, and battered stone tools were recovered from site 41LT354 (see Appendix C). Many of the stones are weathered; however, based on microscopic examination and comparison with other collections from the region (see Ellis 2010; Fischbeck 2011; Fischbeck et al. 2011; Sherman et al. 2007), the 82 tools could be assigned to 12 functional categories: pitted anvil stone \((n = 1)\), abrader \((n = 11)\), mano/mano fragments \((n = 16)\), pitted manos \((n = 3)\), hammerstone/mano \((n = 6)\), muller \((n = 3)\), polishing stone \((n = 14)\), hide-processing stone \((n = 6)\), deflesher/beamer \((n = 1)\), grinding/cutting tool \((n = 1)\), punch \((n = 1)\), and net weight \((n = 2)\). Seventeen indeterminate grinding stones were also recovered, which include either broken
fragments from larger tools or small stones that exhibited wear patterns that could not confidently be assigned to any particular functional category (see Figure 19, Lot 207.19).

Fifty-six percent (n = 46) of the ground stone tools recovered at the site came from feature contexts, with most (n = 32) being recovered from Feature 3 (Table 15). An additional 16 tools were recovered from units.

Table 15. Site 41LT354 Ground Stone Tool Type by Raw Material

<table>
<thead>
<tr>
<th>Classification</th>
<th>Hematitic</th>
<th>Sandstone</th>
<th>Litharenite</th>
<th>Metaquartzite</th>
<th>Quartz Arenite</th>
<th>Silicified Wood</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrader</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Deflesher (Beamer)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Grinding/Cutting Tool</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Hide-processing Stone</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Mano</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Mano Fragment</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>5</td>
<td>-</td>
<td>12</td>
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<tr>
<td>Hammerstone/Mano</td>
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<td>-</td>
<td>-</td>
<td>3</td>
<td>3</td>
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<td>6</td>
</tr>
<tr>
<td>Muller</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Pitted mano</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Polishing Stone</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13</td>
<td>1</td>
<td>-</td>
<td>14</td>
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<tr>
<td>Punch</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Indeterminate Grinding Stone</td>
<td>6</td>
<td>-</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>1</td>
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<td>Total</td>
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<td>2</td>
<td>2</td>
<td>36</td>
<td>15</td>
<td>17</td>
<td>82</td>
</tr>
</tbody>
</table>

Recognizing the range of use-related activities associated with any particular tool can be difficult; however, certain key attributes help to identify the different actions (or processes) and the range of materials that produced the distinctive wear found on specific tools (see Ground Stone Methods in Chapter 4). Examination under 10x power binocular magnification revealed the presence of eight types of wear, with more than one type of wear usually occurring on the same tool. The observed wear types included grinding, pecking, polishing, pitting, battering, striations, grooves, and notches (see Appendix C).

Among the 82 ground, battered, and polished stone tools, six raw material types were found. Metaquartzizite is the most common, with 44 percent of the tools made from this material (see Table 15). Interestingly, there is also a high representation of silicified wood (21 percent) and chert (12
percent). The range of raw material types is fairly small given the size of the sample, and the high percentage of tools made from metaquartzite, silicified wood, and chert is also relatively high when compared to other sites in the region. For example, at 41LT56, less than half the number (n = 34) of ground, battered, and polished stone tools were recovered during NRHP testing (Fischbeck et al. 2011); however, 10 raw material types were represented in that assemblage, with quartz arenite being the most common (47 percent). The percentage of stones made from metaquartzite was much lower at 21 percent, as was the percentage of silicified wood (9 percent) and chert (6 percent). The percentage of tools made from hematitic sandstone is also much lower at 41LT354 (2 percent) than at 41LT56 (12 percent). While this diversity could be a factor of raw material availability, it seems odd that two similarly aged sites located within 4 kilometers of each other on the same drainage system would have such differences. A more likely functional explanation seems to be that different subsistence remains were processed and/or different manufacturing activities were carried out at the two sites.

Among the tools that could be assigned a functional category, the majority were upper hand-held stones (n = 51; 63 percent). In addition, most of the 17 indeterminate grinding stones also appear to be upper stones. These are the stones that are the most easily manipulated and supply pressure during the two primary mechanical operations of pounding and rubbing. By contrast, the lower anvil stones (n = 12) are the tools that absorb the pressure of pounding and rubbing (see Carter 1977; Kraybill 1977). Two of the recovered stones were classified as net weights and do not fit neatly into either category.

**Lower Anvil Stones (n = 12)**

On the basis of microscopic examination, the 12 lower anvil stones or stone fragments were assigned to two functional categories: pitted anvil stone and abrader.

**Pitted Anvil Stone (n = 1)**

A pitted anvil stone is a platform stone with one or more cupped depressions used in a distinctive grinding and/or pounding operation. Although the tool (Lot 249.1; Figure 18) recovered at 41LT354 is heavily eroded, pitted areas are still visible on both surfaces, and its remnant wear resulted from two mechanical operations. On the relatively flat surface, the pits are small, jagged, and irregular, suggesting forceful areas of impact (such as dehulling nuts). On its opposite surface, one shallow, smooth depression or pit is located roughly in the center of the face. The relatively smooth edges of this pitted depression suggest rubbing or grinding rather than pounding (such as reducing the mass of nut kernels).
Lot 249.1
Pitted Anvil Stone

Lot 205.21
Abrader
Side A

Lot 205.21
Abrader
Side B

Figure 18
SITE 41LT354 GROUND STONE
LOWER ANVIL STONE EXAMPLES

Drawn by: C. Wallace
**Abrader (n = 11)**

The tools assigned to this category exhibit a variety of wear patterns, but all are made of silicified wood and have at least one or more grooves cut into their surfaces (see Appendix C). These types of tools result from the abrasive use of the stone to grind, smooth, shape, or sharpen a variety of implements such as grinding the base of a projectile point, straightening and polishing an arrow shaft, and/or sharpening the tip of a bone awl. All of the tools assigned to this category are small enough to be comfortably held in the hand; however, functionally they all serve as stationary platforms that absorb the pressure of rubbing. The distinct areas of polish present on many of them suggest they were used to work softer material such as wood or bone.

One unusual abrader (Lot 205.21; see Figure 18) exhibits grinding and light polish on two surfaces. On one side, a series of grooves emanate from a knot in the wood, and extensive grinding has left a trough-shaped depression in the surface. On the opposite face, the grooves are much shallower and there are traces of ochre along one edge and the end. A step fracture has several polished notches along the edge, suggesting that it may also have been used as a scraper.

**Upper Hand Stones (n = 51)**

On the basis of microscopic examination, the upper hand stones were assigned to nine functional categories including mano/mano fragments, pitted mano, mano/hammerstone, muller, deflesher/beamer, grinding/cutting tool, hide-processing stones, polishing stones, and punch.

**Manos/Mano Fragments (n = 16)**

Four complete manos and 12 mano fragments were recovered, representing 20 percent of the ground, battered, and polished stone tool assemblage from site 41LT354. In general, the wear patterns found on these 16 tools and tool fragments point to use in a range of processing activities such as the grinding of plant material and pigments, as well as generalized pulverizing/pounding activities (see Appendix C). In particular, the wear patterns observed point to the processing of both hard and soft substances.

As a group, the recovered manos are relatively small when compared to other sites in the region. For example, the four complete manos recovered at 41LT354 ranged from 48.88 mm to 72.02 mm in length, with an average length of 61.46 mm and a standard deviation of 10.1722 mm. By contrast, the total number of mano and mano fragments found at 41LT56 represented 53 percent of the ground, battered, and polished stone tools, and the 10 complete manos found at this site ranged from 53.2 mm to 114.64 mm in length, averaging 89.976 mm with a standard deviation of 18.8911 mm. This hints at some functional difference between the two sites and suggests that whatever substance(s) were being processed at 41LT354 may not have required as heavy a stone (i.e., less pressure to process). This interpretation, however, remains speculative due to the small sample size from 41LT354.
Twelve of the 16 complete or fragmented manos found at the site were recovered from features (Table 16). In particular, one of the two mano fragments recovered from Feature 2 (Lot 197.2; Figure 19) stands out from the rest. This stone probably represents the largest mano recovered from the site, measuring 88.35 mm in length. At some point during its use life, the stone split longitudinally; however, it continued to be used as grinding occurs on the high-relief areas of the broken surface, and random striations occur on the rounded surface of the tool.

Table 16. Site 41LT354 Ground Stone Distribution

<table>
<thead>
<tr>
<th>Classification</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>Feature 3</th>
<th>Feature 4</th>
<th>Between Features 4 and 5</th>
<th>Units or General</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrader</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>11</td>
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<tr>
<td>Deflesher (Beamer)</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
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<td>Grinding/Cutting Tool</td>
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<td>1</td>
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<tr>
<td>Hide Processing Stone</td>
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<td>-</td>
<td>5</td>
<td>6</td>
<td>6</td>
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<tr>
<td>Mano</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Mano Fragment</td>
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<td>2</td>
<td>6</td>
<td>1</td>
<td>3</td>
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<tr>
<td>Pitted mano</td>
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<td>-</td>
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<tr>
<td>Hammerstone/Mano</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Polishing Stone</td>
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<td>6</td>
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<td>14</td>
</tr>
<tr>
<td>Punch</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
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<td>1</td>
</tr>
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<td>Indeterminate Grinding Stone</td>
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<td>8</td>
<td>17</td>
</tr>
<tr>
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<td>8</td>
<td>32</td>
<td>3</td>
<td>2</td>
<td>36</td>
<td>82</td>
</tr>
</tbody>
</table>

Three of the four complete manos were recovered from Feature 3. The largest of these is an oval-shaped mano that measures 72.02 mm by 65.69 mm (Lot 210.4; see Figure 19). Although the stone is weathered, ground areas and faint patches of polish are still visible on its surfaces. Faint unidirectional striations are randomly distributed across its surfaces. The wear patterns observed on this tool suggest that it was used to process hard substances.

The smallest of the four complete manos is a small half-moon-shaped stone that measures 48.88 mm by 41.70 mm (Lot 204.15; see Figure 19). Patches of polish dot its surfaces, and the flat end exhibits grinding and numerous peck marks. The wear patterns on this tool indicate use on both hard and soft objects.
Pitted Manos (n = 3)

The stones in this category exhibit pitted areas on at least one surface, in addition to evidence for generalized grinding. On the three pitted manos recovered at 41LT354, these pitted areas appear as small, shallow dimples or depressions with smoothly ground edges, rather than deep, conical-shaped pits with jagged edges. This suggests that they were used in a circular motion to crush or grind down substance(s) rather than pulverize them.

The only complete pitted mano recovered at the site (Lot 171.5; see Figure 19) is also relatively small when compared with assemblages from other sites in the region. This small oval-shaped stone measures 62.48 mm by 51.74 mm. Relatively smooth, shallow depressions occur on both plane surfaces. Grinding occurs on the high-relief areas, and the stone exhibits light battering on one end. The wear patterns observed on this tool indicate use on relatively hard substances.

Hammerstone/Mano (n = 6)

The five stones assigned to this category all show evidence of repeated battering. While their primary function appears to have been for delivering some degree of forceful impact, the five stones assigned to this category also exhibit other types of wear such as grinding and patches of polish. They vary from intensely battered, with little remaining of the ground surface (Lot 192.9; see Figure 19), to moderately battered, with larger sections of the ground surface still visible (Lot 193.10; see Figure 19).

Muller (n = 3)

These small multipurpose grinding tools differ from manos in that they are generally smaller and manipulated with the fingers rather than the palm of the hand. They also exhibit distinctive wear patterns such as polishing and/or shallow striations that are oriented in a more-circular or horizontal direction. Both experimental evidence (Adams 1988, 1996; Semenov 1964) and ethnographic evidence (Kraybill 1977; Riddell and Pritchard 1971) suggest that these types of wear patterns result from the pressure of a hard object against a soft object (such as a hide, a wooden bowl, or a basket) and/or they were used to grind or crush softer and more-fragile seeds or grains.

The three mullers recovered at 41LT354 range from 40.66 to 56.56 mm at their maximum length. One of the three mullers (Lot 207.16) is made of silicified wood. This stone is heat fractured and broken in half, but still retains patches of grinding and polish on its remaining surfaces. The two complete mullers (lots 222.3 and 225.17; see Figure 19) are small metaquartzite cobbles. Both exhibit ground and polished areas that are crosscut by multidirectional striations.

Polishing Stone (n = 14)

The majority of stones in this category are small, hard stones with well-weathered rinds. They vary in overall shape. Their smooth polished surfaces and well-rounded edges indicate long use. Both
ethnographic and archeological evidence suggest that these small, smooth stones were often elements in potters' tool kits; however, small polishing stones may also have been used in processing a variety of materials other than pottery such as animal skins, bone, wood, and ground stone axes (see Cosgrove and Cosgrove 1932; Price and Griffin 1979; University of Arizona 2005). Thus, the overall wear patterns noted on any specific stone should be coupled with parallel lines of evidence in order to support the inference of a specific use-related activity.

Thirteen of the 14 polishing stones recovered at 41LT354 are made of metaquartzite. Although many of them are weathered, their varied size, shape, and wear patterns suggest they were used in a wide range of activities. Specimen 220.19 is a loaf-shaped stone with one relatively flat surface that exhibits grinding on the high relief areas. Polish occurs on both the flat and mounded surfaces (see Figure 19). Specimen 222.4 is a highly polished, oval-shaped stone with light battering on one end (see Figure 19). Specimen 203.25 is a small paddle-shaped stone with tapered ends and flattened curved sides. Polish occurs on all faces (see Figure 19). Wear on these three stones points to their use on medium to hard substances such as bone, wood, and stone.

**Hide-processing Stone (n = 6)**

Six probable hide-processing stones were identified in the ground stone assemblage. Ethnographic evidence indicates that nonflaked stone was frequently used during hide processing. For example, the Apache used a sharp-edged stone to deflesh the hide. The hide was then stretched out to dry. If it was too lumpy or thick in places, it was worked with a rough stone to even it up and soften the lumpy places (Opler 1941). The Apache also used rough stones to rework or resoften prepared buckskin (Opler 1941), and the Comanche used nonflaked stones during the braining task (Wallace and Hoebel 1952).

Experimental work has demonstrated that there are distinctive differences between the wear patterns on stones used to process hides and those used to grind harder materials such as dried corn, nuts, or clay (see Adams 1988, 1996; Keeley 1980). These experiments have shown that the overall working surfaces of hide-processing stones appear smoother with a noticeably greasy sheen, while the working surfaces of the manos used for grinding harder materials appear rougher.

On hide-processing stones, the interstices between the grains are free of debris, smooth, and as shiny as the grains themselves. Although the surface appears fairly uniform when viewed with the naked eye, microscopic examination reveals that the individual grains are left in high relief and rarely is there micro-flaking. There is also a distinctive sheen or polish that occurs on both the grains and in the interstices. Thus, wear is visible as a lustrous sheen produced by adhesive and tribochemical wear processes, and is concentrated on the topographic lows as well as the high-relief grains (Adams 1988, 1996; Keeley 1980).

Based on these criteria, six of the ground, battered, and polished stones recovered at 41LT354 were classified as hide-processing stones. Four of the six stones are fractured, but traces of the tell-tale
lustrous sheen or polish is still visible. The two complete stones are unusual in size and form. Both are made of chert.

Specimen 187.2 is a large shoe-shaped stone that appears to have been intentionally shaped (Figure 20). Its forked end has a smooth ground, pitted area located in the center area of the fork. Pairs of grooved and flattened areas located on either side of the tool suggest that it may have been hafted. Two wide flattened areas located on the blunt end of the tool are ground and polished. This large, heavy stone would have worked well at resoftening and preparing hides.

Specimen 228.27 is much smaller (see Figure 19). This stone is wedge-shaped in profile, and has two strategically placed flake scars on one corner and another on the opposite side of the tool, suggesting that it may also have been hafted. The flat plane surface and the corner flake scars are all coated with a lustrous polish that is concentrated on the topographic lows as well as the high-relief grains. The upper angled surface is heavily battered, and polish occurs on the unbattered portions. It may be that one side of the tool was used to roughen the surface of the hide while the opposite side was used to soften it.

**Deflesher/Beamer (n = 1)**

This unusual tool resembles a bone “beamer” and provides additional evidence for hide processing at 41LT354. The tool, along with one of the hide-processing stones (Lot 225.19), was found in Level 2 of Unit 7.

As mentioned above, the Apache used a sharp-edged stone to deflesh the hide (Opler 1941), and “beamers” were used to remove hair from skins. Beamers are most frequently made from bone, usually artiodactyl metapodials, by creating a “trough like longitudinal groove in the diaphysis (shaft) in either the posterior or anterior side of the bone” (see Henderson 1995:7, Figure 3; Shafer 2006). The groove creates two parallel edges with acute angles much like a double-edged razor blade that easily serves to shave the hair from hides. This double edge could also be used to deflesh or scrape off any remaining tissue still clinging to the hide.

Although specimen 225.21 is made from silicified wood, its overall shape, size, and wear patterns suggest that its purpose may have been similar to those of beamers (see Figure 19). The tool measures approximately 53 mm in length. A flake scar and two strategically placed pitted areas on either side of the tool suggests that it may have been hafted. One surface is little more than a troughlike, longitudinal groove that exhibits a glossy polish or distinctive sheen that occurs on both the grains and between the interstices. The polish laps over the edges of the tool and occurs on the high relief areas of the opposite, mounded surface. This wear pattern is indicative of stones used to process hides and supports the classification of this tool as a deflesher/beamer.
Figure 20
SITE 41LT354 GROUND STONE
HIDE-PROCESSING STONE, LOT 187.2

Drawn by: C. Wallace
Punch \( (n = 1) \)

Specimen 205.19 (see Figure 19) is a silicified wood punch recovered from Feature 3. Although the tool is eroded, ground and polished patches are still visible on both surfaces. The tip of the tool has a lustrous polish that suggests it was used on hides.

Grinding/Cutting Tool \( (n = 1) \)

Also recovered from Feature 3 was a small tool that appears to have been used for both grinding and cutting of soft objects. This specimen (Lot 207.17; see Figure 19) exhibits grinding on both surfaces, both sides, and one end. A flaked notch occurs on one end and there is a distinct polish along the notched edge that laps over onto both surfaces. Its concave surfaces provide comfortable finger holds to position the tool for use of this wide notch. The distinct polish surrounding the notch could have resulted from activities such as cutting and/or stripping the spines off fiber used to make baskets. This is consistent with the grinding wear, which points to the tool's use on soft material such as wood.

Net Weights \( (n = 4) \)

Two possible net weights were recovered from Level 10 of Feature 3. These two small circular orbs were made from hematitic sandstone (lots 210.5 and 210.6; see Figure 19). Both exhibit patches of grinding on their surfaces and both have crosscutting linear striations that encircle their surfaces.

Summary

The 82 ground, polished, and battered stone tools recovered from 41LT354 represent a varied and somewhat unusual mix of tool types. Several aspects of the collection illustrate this. First, the range of raw material types is relatively narrow given the size of the ground stone assemblage. Second, the percentage of tools made from hematitic sandstone (2 percent) is very low when compared to other sites in the region. Third, the relatively small size of the manos suggests some functional differences between 41LT354 and other sites in the region.

The wear patterns present in this assemblage indicate use in a diverse range of activities such as food processing, tool manufacturing and maintenance, hide working, and possibly fishing, as well as the pounding and grinding of nonfood substances such as ochre.

This functional diversity can be seen in wear patterns preserved on the manos, pitted manos, and mullers, which point to the processing of both hard and soft vegetal material. For example, the presence of shallow, smooth depressions on the two pitted manos and the pattern of micro-fracturing noted on several of the manos and mano fragments point to the grinding of hard food substances such as nutmeats or dried corn. Alternatively, the wear patterns noted on the three mullers are often associated with the grinding of softer substances such as more-fragile seeds or grains.
A number of nonfood-related activities are also indicated. The presence of the 11 abraders exhibiting trough-shaped grooves points to the manufacture and maintenance of a variety of wood, stone, and/or possibly bone implements. Hide working was also a likely activity given the presence of the six hide-polishing stones with their distinctive polish, the deflesher/beamer, and the punch.

The deflesher/beamer is especially interesting. Shafer (2003, 2006) documented the geographic and temporal distribution of a suite of artifacts that includes beaming tools, Bonham-Alba arrow points, and early Caddo pottery and noted an interesting pattern that extends from the Neches River to the Balcones Edge. His research suggests that the use of metapodial beamers was incorporated into a Caddo technological style of deer-hide processing. The presence of Alba points, the presence of ceramics with laminated textures (i.e., possible early), and the presence of the deflesher/beamer at 41LT354 seem consistent with this pattern.

Modified Ochre

Eight ochre fragments were recovered from levels 7 and 8 of Feature 3 (Table 17). All have been ground, and linear striations are visible on their surfaces. Specimen 205.20 (Unit 5, Level 7) is irregular in shape and exhibits heavily ground edges and deep striations. Specimen 205.22 (Unit 5, Level 7) is blocky in form (Figure 21a), while the fragments recovered from Unit 6, Level 7 resemble small loaf-shaped bars (Figure 21b). Specimens Lot 219.15 and 219.16 (Unit 6, Level 8) are unusual in that both have been shaped by heavy grinding and have been drilled. Specimen 219.15 is roughly disc-shaped measuring 17.8 mm by 14.1 mm by 15.2 mm, with a single drill hole (Figure 21c). Specimen 219.16 appears to be half of a tubular-shaped object (possibly a bead) that measures 13 mm in length by 7.8 mm in width. The smooth round portion of the drill hole runs the length of the object (Figures 21d). Interestingly, all the fragments were recovered in and around the lowest levels of Feature 3.

<table>
<thead>
<tr>
<th>Lot No.</th>
<th>Unit No.</th>
<th>Feature No.</th>
<th>Northing</th>
<th>Easting</th>
<th>Level</th>
<th>Depth (cmbd)</th>
<th>Count</th>
<th>Comments</th>
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</thead>
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<td>5</td>
<td>3</td>
<td>N33</td>
<td>N53</td>
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<td>80–90</td>
<td>2</td>
<td>Blocky</td>
</tr>
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<td>218</td>
<td>6</td>
<td>3</td>
<td>N34</td>
<td>E53</td>
<td>7</td>
<td>80–90</td>
<td>4</td>
<td>Brick shaped</td>
</tr>
<tr>
<td>219</td>
<td>6</td>
<td>3</td>
<td>N34</td>
<td>E53</td>
<td>8</td>
<td>90–100</td>
<td>2</td>
<td>Drilled</td>
</tr>
</tbody>
</table>

The term “ochre” is loosely applied to a geochemically and mineralogically complex suite of earth materials suitable for use as pigments. Its use as a pigment was widespread prehistorically, and red pigmented artifacts are frequently recovered at sites throughout Texas (e.g., Perttula 1992:192; 2010; 2011; Highley et al. 1978:170; see also Ellis et al. 1997 for a more detailed discussion). Ocher nodules (e.g., Ellis 2009:333; Lukowski 1988:72) and bars (Pearce and Jackson 1933:55–56) are
Figure 21

SITE 41LT354
MODIFIED OCHRE

Figure 21

CENTIMETER

0 1 2 3 4 5

L:\Projects\Hel\CLIENTS\Luminant\100021558 Kosse Testing at 41LT354 and 41LT172\Report\Figures\Figure 21_41LT354 Modified Ochr

Drawn by C. Wallace
also found. Pearce and Jackson (1933:55) suggest that the linear striations may result from wear associated with use of a fiber brush. The striations observed on the ochre fragments recovered at 41LT354 point to their use as a source of pigment, and the presence of the drilled fragments hints at an ornamental use, as well.

**Prehistoric Ceramics**

Six prehistoric ceramic sherds were recovered at 41LT354 (Table 18). The analysis proceeded in two phases. The first phase involved an initial sort in which the six sherds in the assemblage were examined in order to identify those that could be conjoined or confidently be determined to be part of the same vessel (i.e., fitters). During the initial sort, one sherd could be matched with one other sherd, leaving a total of five sherds in the analyzed sample (Figure 22).

The second phase involved a detailed analysis of the ceramic assemblage. Analysis of the recovered ceramics focused primarily on their technological and decorative attributes that would aid in more-detailed classification. In the absence of whole vessels or vessel sections large enough to discern typologically distinct decorative motifs, one way to distinguish subtle differences between relatively similar ceramics is to look at the technological variations found on individual sherds (see Brown 1998; Lechtman 1977; Rice 1987; Rye 1981). Thus, all sherds in the analyzed sample were characterized according to a suite of key attributes (for detailed discussions of the analytical methods and definitions of the individual attributes, see Brown 1998; Ellis 1992, 1995, 2010; Perttula 2004, 2005, 2010). The technological attributes recorded for each sherd in the analyzed sample included (1) paste constituency (i.e., identification of the type of nonplastic inclusions [i.e., sand, bone, grog]), the predominant size range of nonplastic inclusions [i.e., medium sand, fine sand, very fine sand per Wentworth 1922, 1933], and texture; (2) exterior and interior surface treatment; (3) exterior and interior decorative treatment; (4) morphological class (i.e., body, base, or rim); (5) average thickness; and (6) firing environment (i.e., oxidizing vs. nonoxidizing). Each of these attributes provides information about technological variability enabling finer-grained distinctions, which in turn allows the analyst to more fully characterize the assemblage even in the absence of identifiable types, thereby providing a basis for placing the ceramics within a broader regional ceramic context.

The ceramic assemblage includes three plain body sherds and two decorated body sherds. All were part of utility ware vessels. Three paste groups were defined based on microscopic examination of a freshly broken cross section of each sherd (see Table 18). Group designations were based on the presence or absence of specific sets of tempering agents.
Table 18. Technological and Decorative Attributes of Ceramics from 41LT354
(Note: All ceramics were utilityware)

<table>
<thead>
<tr>
<th>Paste Group</th>
<th>Lot No.</th>
<th>Class</th>
<th>Paste Texture</th>
<th>Exterior Surface</th>
<th>Interior Surface</th>
<th>Exterior Decoration</th>
<th>Decorative Motif</th>
<th>Average Thickness (mm)</th>
<th>Form</th>
<th>Type</th>
<th>No. of Fitters</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>180.1</td>
<td>Plain body sherd</td>
<td>Laminated</td>
<td>Weathered</td>
<td>Weathered</td>
<td>None</td>
<td>None</td>
<td>8.9</td>
<td>Indeterminate</td>
<td>0</td>
<td></td>
<td>Very small</td>
</tr>
<tr>
<td>2</td>
<td>106.3</td>
<td>Decorated body sherd</td>
<td>Laminated</td>
<td>Dry-smoothed, unburnished</td>
<td>Dry-smoothed, unburnished</td>
<td>Narrow incised line</td>
<td>2 vertical incised lines</td>
<td>6.6</td>
<td>Indeterminate</td>
<td>0</td>
<td>Very small</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>239.2</td>
<td>Decorated body sherd</td>
<td>Laminated</td>
<td>Dry-smoothed, unburnished</td>
<td>Dry-smoothed, unburnished</td>
<td>Narrow incised line</td>
<td>1 diagonal incised line</td>
<td>7.3</td>
<td>Indeterminate</td>
<td>0</td>
<td>Very small</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>205.2</td>
<td>Plain body sherd</td>
<td>Fine</td>
<td>Floated, unburnished</td>
<td>Floated, unburnished</td>
<td>None</td>
<td>None</td>
<td>7.6</td>
<td>Indeterminate</td>
<td>1</td>
<td>Fresh break</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>218.2</td>
<td>Plain body sherd</td>
<td>Fine</td>
<td>Floated, burnished</td>
<td>Floated, burnished</td>
<td>None</td>
<td>None</td>
<td>3.9</td>
<td>Jar</td>
<td>Indeterminate</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Paste Group 1

The one sherd (180.13) assigned to Paste Group 1 was manufactured from silty clay to which grog, crushed hematite, and larger-sized sand grains had been added. Paste texture for this sherd appears laminated (i.e., a stepped or platy look, with relatively straight lamina oriented at an oblique angle) in cross section.

This undecorated, body sherd (Lot 180.13) is small, and its exterior and interior surfaces were too weathered to determine its overall surface treatment. Its thickness averages 8.9 mm, and its overall coloration suggests that it was part of a vessel fired in a reducing environment then cooled in a high-oxygen environment (Teltser 1993, Figure 2-F, G, and H).

Paste Group 2

The two sherds (lots 106.3 and 239.22) assigned to Paste Group 2 were both manufactured with a silty clay to which both bone and grog tempering agents had been added. The overall matrix of the two sherds differed somewhat. Sherd 239.22 contains only crushed bone and grog and its paste texture is irregular (i.e., an uneven appearance due to the large inclusions added to the paste). In the case of specimen 106.3, larger-sized sand grains had also been added to the paste matrix, and its paste texture appears laminated (i.e., a stepped or platy look, with relatively straight lamina oriented at an oblique angle) in cross section. This indicates that these two sherds were part of two different vessels and that different paste preparation and forming techniques were used to manufacture them.

Both of the sherds in Paste Group 2 are decorated, exhibiting one (sherd 239.22) or two (sherd 106.3) short segments of narrow incised lines that had been executed on a leather-hard paste. Unfortunately, both sherds are too small (i.e., between 16 and 21 mm at their maximum dimension) to determine an overall design motif, rendering them typologically indistinct.

The exterior and interior surfaces of both sherds had been dry smoothed but left unburnished. Sherd 106.3 averages 6.6 mm in thickness, and sherd 239.22 averages 7.3 mm. The general coloration of both sherds indicates that they were part of vessels fired in a reducing environment then cooled in a high-oxygen environment (Teltser 1993, Figure 2-F, G, and H).

Paste Group 3

Paste Group 3 includes two sherds (lots 205.23 and 218.16) with untempered sandy pastes. Both sherds have a paste matrix that contained sand falling within the very fine to fine size range (Wentworth 1933) and containing no additional tempering agents. The grains were fairly well sorted, and the overall arrangement and orientation of the grains of both sherds are fine (i.e., a relatively uniform paste fabric having small, closely spaced irregularities across the face of the cross section) in texture.
Apart from their similar paste constituencies, sherds 205.23 and 218.16 differ in several respects. Sherd 218.16 is thin, averaging 3.9 mm in thickness, and its curvature indicates that it was part of a small jar. Both the exterior and interior surfaces of this sherd had been floated then burnished. Its light reddish yellow coloration (7.5YR 6/6) indicates that it was part of a vessel fired in an oxygen-rich environment (Teltser 1993, Figure 2-A).

By contrast, sherd 205.23 is much thicker, averaging 7.6 mm in thickness. Its surfaces had been floated, but left unburnished, and its grayish brown coloration (10YR 5/2) indicates that it was fired in a reducing atmosphere then cooled in a high-oxygen environment (Teltser 1993, Figure 2-F).

**Summary**

Based on their overall decorative and technological attributes, the five sherds recovered at 41LT354 suggest that the site was occupied by groups having different temporal and/or regional affiliations. The three sherds in paste groups 1 and 2 are similar to Caddo ceramics found throughout the region. They were recovered from widely distributed locations (Shovel Test 20, Unit 1, and Unit 12), but all were found in levels 1 and 2.

The two untempered sherds in Paste Group 3 were recovered from units 5 and 6, in association with Feature 3 and at much lower levels (Level 7). Given their observed technological attributes, the two sherds in this paste group closely resemble the Bear Creek Plain types found in deep East Texas and/or the Goose Creek Plain types found in Mossy Grove Gulf Coastal Plain sites (see Aten 1983; Ellis 1992, 1995, 2002; Jelks 1965; Story 1990). This suggests that, at some point, the site may have had temporal and/or regional affiliations with prehistoric sites in the Big Cypress, Sabine, Neches, and Angelina river basins (see Perttula et al. 2008) to the east-southeast and/or the Mossy Grove culture area to the south-southwest (see Story 1990). The potential time periods of production of any of these sandy paste types and wares are long, and they overlap partially with the known chronologies of both the Archaic-Woodland dart points and the Caddo I–Late Prehistoric arrow points recovered from 41LT354.

**Artifact Assemblage Analysis Summary**

The artifact assemblage from site 41LT354 appears to have resulted largely from multiple prehistoric occupations during the period spanning from the Archaic to the Late Prehistoric periods. An isolated historic artifact was also recovered. Recovered diagnostic projectile points include cf. Alba, Perdiz, and Steiner arrow points along with Gary and Yarbrough dart points. The arrow points indicate the site was occupied during the Late Prehistoric period; the Gary dart points indicate occupation from the Middle to Transitional Archaic period; the Yarbrough dart points indicate an Archaic, possibly Late Archaic occupation (Turner and Hester 1993). Harvey/Mineola bifaces are commonly found in East Texas with Late Archaic and Late Prehistoric assemblages.
The ceramic assemblage at 41LT354 is small (n = 5). Prehistoric ceramics include three Caddo-like sherds and two sherds with possible deep East Texas or Mossy Grove affiliations.

Analysis of use-wear on lithic tools indicates they were used for a variety of activities on a wide range of materials. The wear patterns on the ground stone assemblage points to use in a diverse range of activities such as food processing, tool manufacturing and maintenance, hide working, and possibly fishing. Analysis of ochre at the site suggests use as a pigment.

**FAUNAL REMAINS**

During NRHP testing at site 41LT354, 105 vertebrate faunal specimens were recovered in five of the test units, 1, 2, 3, 5, and 6. The condition of preservation is very poor. The assemblage exhibits extensive predepositional and postdepositional breakage, and degradation from soil chemical processes and erosion.

Fifty-nine specimens could not be identified at any taxonomic level. The remaining 46 remains included 45 mammalian bones and one reptile bone (Table 19).

Of the 45 mammalian bones, 43 are attributed to medium-sized mammals. Of these, 5 specimens are attributable to white-tailed deer (*Odocoileus virginianus*), and 3 were from deer-sized artiodactyls. The remaining 35 medium-sized mammal bones are also likely attributable to deer, given the prehistoric context, but could represent a large canine or possibly immature bison or bear. Of the 35 medium-sized mammal bones, 27 were longbone diaphyseal fragments.

The remaining two mammalian specimens include one boney scute attributable to armadillo (*Dasypus novemcinctus*), suggesting more-recent intrusion into the archeological record since armadillos were not present in the area until the early twentieth century. The final mammal bone is a mandibular fragment attributable to a small, unidentified mammal. The only nonmammalian specimen in the assemblage was a carapace or plastron fragment from an undetermined species of turtle.

Only limited evidence of cultural modification was apparent in the assemblage. Two specimens exhibited evidence of burning. Both specimens were nearly completely oxidized suggesting close proximity to a very hot fire as may have resulted from intentional discard in a campfire or intentional burning of domestic refuse as was common in the historic period. No evidence of tool marks from butchering, spiral fracturing indicating intentional predepositional breakage, or carnivore or rodent gnawing was observed. Considering the very poor condition of preservation exhibited by the bones, it is likely that such evidence, if present, has been obliterated by natural erosion.
Table 19. Site 41LT354 Faunal Analysis

<table>
<thead>
<tr>
<th>Lot No.</th>
<th>Unit No.</th>
<th>Trench No.</th>
<th>Feature No.</th>
<th>Northing</th>
<th>Easting</th>
<th>Level</th>
<th>Depth (cmbd)</th>
<th># of Specimens</th>
<th>Animal Type</th>
<th>Skeletal Element</th>
<th>Side</th>
<th>Burning</th>
<th>Comment</th>
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<td>-</td>
<td>-</td>
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<td>55</td>
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<td>20-30</td>
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</tr>
<tr>
<td>185</td>
<td>2</td>
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<td>-</td>
<td>36</td>
<td>56</td>
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<td>55</td>
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<td>55</td>
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<td>unidentified fragment</td>
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<td>Trench No.</td>
<td>Feature No.</td>
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Total 105
Regarding procurement practices, the presence of elements of a carcass such as cranial and foot bones not normally transported any distance suggests that deer were probably butchered near the site and brought to the site and processed there.

The only evidence of the age of animals when harvested was a single complete mandibular first molar from a white-tailed deer. The degree of wear on the tooth suggests an approximate age of about 3 to 4 years at death. Because it is a single tooth with no additional associated teeth, no estimation of the seasonality of occupation was possible.

MACROBOTANICAL REMAINS

Five flotation samples and 14 carbon samples from site 41LT354 were submitted to Leslie Bush at Macrobotanical Analysis for identification. The full report of the analysis is presented in Appendix E. A total of 110 wood charcoal fragments (8.45 g) were identified from the samples. Identifiable specimens were predominantly oak (73 percent), with hickory (11 percent) and holly or yaupon (10 percent) making up most of the remainder. Persimmon and plum/cherry wood were also identified. The wood charcoal assemblage represents trees that would have been locally available to exploit for fuel. Recovered food plants included 64 (6.5 g) carbonized nutshell fragments and a fragment of a plum pit. Nutshell consisted exclusively of thick-shelled hickory. A copperleaf seed, more commonly called wild mercury in Texas, was also recovered. Its presence may be incidental at the site, although the plant does have recorded medicinal uses (Moerman 1998).
SUMMARY AND RECOMMENDATIONS

This chapter provides a summary of the results of testing, provides site-specific recommendations, and attempts to answer the research questions set out prior to the initiation of fieldwork in a research design (Sherman 2010). The results of testing at site 41LT172 are presented first, followed by the results of testing at 41LT354.

RESEARCH QUESTIONS FOR HISTORIC SITE 41LT172

1) **Is behaviorally interpretable patterning present on-site?**

Behaviorally interpretable cultural patterning was found to be present at 41LT172. Shovel testing at site 41LT172 revealed a historic artifact high density and diversity area in the central portion of the site. Historic artifacts recovered from these shovel tests indicate a domestic occupation dating from the late nineteenth into the early twentieth century.

The low density of prehistoric materials on-site points to a short-duration prehistoric occupation. This, coupled with an absence of intact cultural features suggests that significant data resources representing the prehistoric occupation are lacking.

2) **Has the site maintained depositional integrity? Are intact or interpretable cultural features present?**

No intact cultural features or deposits were identified at site 41LT172. Nails, window glass, and brick fragments are the only remaining evidence of the previously recorded structure at the site. These findings indicate that the depositional integrity of the site has been compromised, presumably through ranching activity and bioturbation.

3) **Does the site represent the homestead of Joseph Ferguson and/or his daughter Melissa Donaldson Goodwin during the nineteenth century?**

Archival evidence indicates that this is not the former homestead of Melissa Ferguson Donaldson Goodwin or her father Joseph Ferguson. Archival evidence does suggest that site 41LT172 likely resulted from a tenant or squatter occupation during Melissa Ferguson Donaldson Goodwin’s tenureship of the property from circa 1875 through 1890 or after she sold the property. The artifact assemblage appears to represent a domestic occupation dating to late nineteenth century to early twentieth century.
SITE 41LT172 SUMMARY AND RECOMMENDATIONS

The prehistoric component at site 41LT172 appears to have resulted from a short-duration occupation sometime during the prehistoric period. The prehistoric component lacks intact cultural features and deposits. The prehistoric component was previously determined not to be eligible for NRHP inclusion (Martin 2009).

The NRHP testing program at the site failed to locate intact cultural features. Nails, window glass, and brick fragments are the only remaining evidence of the previously recorded structure at the site. The historic artifact assemblage indicates a domestic occupation during the late nineteenth to the early twentieth century.

Archival evidence indicates that the historic component at site 41LT172 likely resulted from a tenant domestic occupation that began when the property containing the site was owned by Melissa Ferguson Donaldson, circa 1875 through 1890. Archival evidence suggests that this site does not constitute the remnants of the homestead of Melissa Ferguson Donaldson Goodwin or her father Joseph Ferguson.

Site 41LT172 is representative of a regional pattern of tenant farming in Limestone County during the late nineteenth and early twentieth centuries. This site has no known associative significance that would qualify it for inclusion in the NRHP under Criterion A or B. Although the site is representative of the regional pattern of tenant farming it lacks remains that embody distinctive characteristics of that pattern suggesting it does not merit NRHP listing under Criterion C. The poor preservation on-site indicates that it is not likely to yield information important to regional history (Criterion D). No further work is recommended at site 41LT172.

RESEARCH QUESTIONS FOR PREHISTORIC SITE 41LT354

1) Is behaviorally interpretable patterning present on-site?

The site has maintained behaviorally interpretable cultural patterning. Shovel testing, trenching, and hand-unit excavation identified an artifact high density and diversity area located in the southwest corner of the site associated with intact cultural features and middenlike soil. The magnetometer survey identified numerous magnetic anomalies in this area that were shown to be associated with burned rock features. Preserved subsistence and spent fuel remains were recovered from these features. The abundance of recovered artifacts and cultural features suggest 41LT354 resulted, in part, from a semipermanent residential occupation.

Temporally diagnostic artifacts, including Gary and Yarbrough dart points, Alba, Perdiz, and Steiner arrow points, and Caddo-like ceramics, indicate occupation from the Archaic to the Late Prehistoric period. Based on the vertical and horizontal distribution of temporally diagnostic materials, however, it was not possible to isolate individual components.
2) Has the site maintained depositional integrity? Are intact or interpretable cultural features present?

Five features were excavated during NRHP eligibility testing at 41LT354. Of these, two are thought to represent partially intact hearths, two represent disarticulated hearths, and one is a large pit feature. Several magnetic anomalies recorded during the magnetometer survey were not sampled and may represent additional features. The large pit feature (Feature 3) yielded more than 98 percent of the charred organic remains recovered on-site. Organic remains are better preserved there than at any other previously excavated prehistoric feature within the Kosse Mine (Fischbeck et al. 2011; Sherman et al. 2007).

3) Does the site reflect primarily short-term, task-specific, extractive or processing activities or does it reflect a more sedentary occupational regime?

The abundance of recovered artifacts and cultural features suggest 41LT354 resulted, in part, from a semipermanent residential occupation. Use-wear analysis on lithic and ground stone tools indicates a variety of activities took place at the site. Botanical and faunal remains suggest a variety of plant and animal species were utilized at the site. Based on the assemblage of diagnostic projectile points recovered, the site seems to have been occupied sporadically during the Archaic period, most intensively during the early part of the Late Prehistoric period, and less intensively later. This interpretation remains speculative, as the date ranges of most these materials partially overlap.

4) Is there any evidence of extraregional trade or communication?

Two ceramic sherds with untempered sandy pastes were recovered from Level 7 of Feature 3. The two sherds in this paste group closely resemble the Bear Creek Plain types found in deep East Texas and/or the Goose Creek Plain types found in Mossy Grove Gulf Coastal Plain sites (see Aten 1983; Ellis 1992, 1995, 2002; Jelks 1965; Story 1990). This suggests that at some point, the site occupants may have exchanged information or goods with populations in the Big Cypress, Sabine, Neches, and Angelina river basins (see Perttula et al. 2008) to the east-southeast and/or the Mossy Grove culture area to the south-southwest (see Story 1990). Similar ceramics have been recovered from 41LT56, 41LT387, and 41LT320 (Fischbeck et al. 2011; Sherman et al. 2007). The presence of Caddo-like ceramics suggest possible interaction with Caddo populations to the east and north in the upper Neches, Trinity, and Red river basins. No lithic artifacts made from nonlocally available materials were identified.

SITE 41LT354 SUMMARY AND RECOMMENDATIONS

Site 41LT354 appears to have resulted in part from multiple prehistoric occupations spanning the Archaic to the Late Prehistoric periods. The cultural features identified and the diverse artifact assemblage recovered indicate the site resulted from a wide variety of activities and likely include...
some level of sedentism. The site appears to have been occupied sporadically during the Archaic period and more intensively during the Late Prehistoric period.

Four of the five features excavated represent partially intact or disarticulated hearths or cooking features. Feature 3, a large pit that was deeply buried (compared to other features on-site), appears to have resulted from multiple depositional events possibly during more than one occupational episode. Feature 3 yielded a dense concentration of charred organic remains that includes spent fuel and subsistence remains. More than 98 percent of the charred organic remains recovered on-site came from Feature 3. The size, shape, and level of preservation of this feature make it unique when compared to any previously investigated feature in the Kosse Mine. Feature 3 was centrally located within a 40-x-20-m portion of the site where a buried, organically rich, A2 horizon was identified in shovel tests that was shown to be associated with an artifact high density and diversity area. The A2 horizon is considered to be a cultural zone and it may represent a sheet midden, presumably deposited as a result of intensive, semipermanent, residential occupation.

The high recovery rate of preserved botanical remains and artifacts from in and around Feature 3 indicates the site has maintained a high degree of contextual integrity in some portions, and it is likely to yield additional significant data through further investigation.

If the site did indeed result from a semipermanent residential occupation during the Late Prehistoric period, it may harbor structural remains. The soil over much of the site is relatively shallow. If structures were built on-site prehistorically, it is likely that they would have been supported by posts that extended in depth into the Bt soil horizon. If this was the case, prehistoric house patterns may be preserved on-site.

NRHP testing has yielded information significant to the prehistory of the region, and the site is likely to yield further significant information through additional research. The site appears to be eligible for NRHP inclusion under Criterion D. For this reason, it is recommended that mine-related impact to site 41LT354 be avoided.

If avoidance is not possible, it is recommended that the site be subjected to a targeted data recovery investigation focused on acquiring additional preserved macrobotanical remains from features suitable for radiocarbon dating and identifying any structural remains that might be present. It is recommended further that the area just to the west of the treeline be included in any future investigation.
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Wentworth, C.K.

Witte, A.H.
Woodall, J. N.

Young, W. L.
Appendix A

41LT172, Trench Profiles
10YR 2/2 very dark brown, organic sandy loam, single grain, thinly bedded, roots and twigs, grass, very friable

10YR 5/6 yellowish brown sand, thickly bedded, pebbles, glass, very friable, fine to medium sand
I 10YR 2/2 very dark brown, organic sandy loam, single grain, thinly bedded, clear boundary, roots and twigs, grass, very friable

II 10YR 5/6 yellowish brown sand, thickly bedded, pebbles, glass, charcoal flecks, very friable, fine to medium sand

IIa A 10YR5/6 zone of thinly distributed granule charcoal flecks, unknown boundary with II

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Appendix A

SITE 41LT172
TRENCH 2
NORTH WALL PROFILE
I 10YR 3/3 dark brown sandy loam, single grain, thinly bedded, smooth boundary, roots and pebbles, very friable

II 10YR 5/4 yellowish brown sand, thickly bedded, single grain, massive structure, very friable

IIa 10YR 5/6 yellowish red, thin scatter of small ferrous pebbles, firm, subrounded
I 10YR 6/3 pale brown sandy loam, clear and wavy boundary, firm, single grain, friable, no mottles

II 10YR 7/4 very pale brown sandy loam, clear and smooth boundary, single grain, friable, krotovina

III 10YR 7/3 very pale brown loose sand mottled with 7.5YR 5/1 strong brown sandy clay, clear and smooth boundary, 10% coarse mottles

IV 10YR 6/4 light yellowish brown mottled with 10YR 6/8 brownish yellow clayey sand, unknown boundary, 50% mottles, friable, subangular
Appendix B

41LT172, Specimen Inventory and Artifact Data Analysis Sheets (on CD)
Appendix C

41LT354, Trench Profiles
I  A Horizon   7.5YR 6/4 light brown sandy loam, structureless wavy boundary, single grain, very friable, roots, grass, twigs

II  E1 Horizon  7.5YR 6/8 reddish yellow fine to coarse sand, thickly bedded, single grain, very friable, massive

IIa  E2 Horizon  5YR 3/2 dark reddish brown lens of fine to granule-sized sand with ferrous pebbles, thin, interior lamellae of same material, very friable, no cultural materials or burning, clear boundary
I A Horizon 10YR 4/4 dark yellowish brown loamy sand, diffuse wavy boundary, single grain, very friable, very few roots

II E Horizon 10YR 5/6 yellowish brown loamy sand, clear and smooth boundary, single grain, very friable, few roots

III Bt Horizon 10YR 5/6 yellowish brown sandy clay, unknown boundary, subangular, friable

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**Appendix C**

**SITE 41LT354**

**TRENCH A1**

**EAST WALL PROFILE**
I  A Horizon  10YR 4/4 dark yellowish brown (moist) sandy loam, clear irregular boundary, single grain, friable, many fine roots

II  Bt Horizon  2.5YR 4/6 red (moist) coarse sandy loam, unknown boundary, subangular, friable, few fine roots
A Horizon 10YR 5/4 yellowish brown (very dry) fine sandy loam, clear smooth boundary, single grain, very friable, no mottles, many fine roots

Bt1 Horizon 2.5YR 4/6 red coarse sandy clay, clear smooth boundary, friable, no mottles, very few fine roots

Bt2 Horizon 5YR 5/8 yellowish red mottled with 10YR 6/6 brownish yellow, loamy clay, unknown boundary, firm, subangular, 5 percent fine mottles

Anomaly flag

ATKINS
Appendix C
SITE 41LT354
TRENCH A11
EAST WALL PROFILE

Drawn by: S. Lawrence
I  A Horizon    7.5YR 5/6 strong brown sandy loam, single grain, very friable, roots, few pebbles

II  Bt Horizon  2.5YR 4/8 red sandy clay, massive, very firm, few roots, few pebbles

Roots

Pebble

0 40 centimeters
AR gbyy

structueless, ver:y rabl, ros e peble

*I

I

II

III

A Horizon  
5YR 6/4 light reddish brown sandy loam, wavy boundary, 
structureless, very friable, roots, few pebbles

Bt1 Horizon  
2.5YR 4/6 red clayey sand, strong massive structure, very firm, single grain

Bt2 Horizon  
2.5YR 5/8 red mottled with 10YR 8/8 yellow fine to coarse sand, single grain, friable, structureless, fine mottles

Roots

0 40
centimeters

Appendix C

ATKINS

SITE 41LT354
TRENCH A13
EAST WALL PROFILE

L:\Projects\Hec\CLIENTS\Luminant\S000021558 Kosse Testing at 41LT354 and 41LT372\Report\Figures\Appendix C 41LT354 Trench A13

Drawn by: S. Laurence
A Horizon 7.5YR 4/4 brown sandy loam, wavy boundary, single grain, very friable, many roots

Bt1 Horizon 2.5YR 4/8 red sandy clay, massive, smooth boundary, very firm, few pebbles at boundary

Bt2 Horizon 2.5YR 4/8 red hard sandy clay with small to medium mottles of 7.5YR 6/4 light brown silty clay, massive, very firm
I  O Horizon  5YR 5/2 reddish gray organic sand, smooth boundary, single grain, structureless, thin, loose, many roots and grass, ferrous pebbles

II  A Horizon  5YR 5/6 yellowish red clayey sandy loam, wavy boundary, weak crumb structure, few roots

III  Bt1 Horizon  5YR 5/8 yellowish red sandy clay, very firm, thickly bedded, smooth boundary, ferrous pebbles

IV  Bt2 Horizon  5YR 5/8 yellowish red sandy clay, very firm, thickly bedded, ferrous pebbles

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Appendix C
SITE 41LT354
TRENCH A15
EAST WALL PROFILE

Drawn by: S. Laurence
A Horizon 10YR 6/3 pale brown sandy loam, clear abrupt boundary, single grain, friable, no roots

Bt1 Horizon 7.5YR 5/6 strong brown coarse sandy clay, clear boundary, subangular, firm

Bt2 Horizon 2.5Y 8/1 white with 10YR 6/6 brownish yellow clay, unknown boundary, firm, blocky, 50 percent mottles, calcium carbonate inclusions
I  A Horizon   10YR 5/4 yellowish brown loamy sand, abrupt smooth boundary, single grain, friable, no mottles, few small roots

II  Bt Horizon   10YR 6/2 light brownish gray with 7.5YR 6/8 reddish yellow clay, unknown boundary, subangular, friable, 50 percent mottles, very few roots
Appendix D

41LT354, Specimen Inventory and Artifact Data Analysis Sheets (on CD)
Appendix E

41LT354, Macrobotanical Analysis
PLANT REMAINS FROM
SITE 41LT354
LIMESTONE COUNTY, TEXAS

October 12, 2011

Prepared for:
Linda Ellis, M.A., R.P.A.
Archaeology Laboratory Director
Atkins
6504 Bridge Point Parkway, Suite 200
Austin, Texas 78730-5091

Prepared by:
Leslie L. Bush, Ph.D., R.P.A.
Macrobotanical Analysis
12308 Twin Creeks Rd., B-106
Manchaca, Texas 78652
Five flotation samples and 14 carbon samples from site 41LT354 were submitted for identification and analysis of plant material (Table E.1). The site is recorded as a prehistoric campsite and historic artifact scatter (THC Site Form 11/18/2008). Site 41LT354 lies on a terrace approximately 300 meters north of Steele Creek, in the Brazos River drainage. The site is in the southeastern third of Limestone County, which is part of the Post Oak Savannah vegetation region. Soils in the area are generally sandy loams. As of 2008, the site area was in pasture with a woodlands adjacent (THC Site Form 11/18/2008).

Ecological Setting

Many ecologists conceptualize the Post Oak Savannah as a transition zone between the Eastern Woodlands and the grasslands of the mid-continent (Diggs et al. 2006). The Post Oak Savannah is broadly characterized by sandy soils, grasslands, and widely spaced trees. The most common trees are post oak (Quercus stellata) and blackjack oak (Q. marilandica). Common grasses include the tallgrass prairie trio of little bluestem (Schizachyrium scoparium), indiangrass (Sorghastrum nutans), and switchgrass (Panicum virgatum) (Diggs et al. 2006:116). There is much local variation within the Post Oak Savannah, however. Streams and nearby slopes would have conditioned variation in plant species near site 41LT354. In the wetter areas, water-oak (Quercus nigra) and post oak would dominate floodplain forests along with elms (Ulmus spp.), and green ash (Fraxinus pennsylvanica). Grape vines (Vitis spp.), poison ivy (Toxicodendron radicans), sedges (Cyperaceae), and wetland grasses such as wildrye (Elymus spp.) and wood oats (Chasmanthium spp.) would also have been common (Diggs et al. 2006:122–3).

Vegetation Reconstructions. The most notable changes on the Post Oak Savannah since presettlement times include an increase in woody vegetation and the loss of “bottom prairie” communities along major rivers (Diggs et al. 2006:115–116). In addition, more frequent fires would have made the woody vegetation less prominent than during the last century or so (Diggs et al. 2006; MacRoberts et al. 2002). Pollen studies indicate that use of the modern vegetation zones described above is appropriate for understanding the plants and attendant animal resources available to people during the first and second millennia. Weakly Bog, situated in the Post Oak Savannah vegetation, provides some of the best data for vegetation reconstruction in the eastern half of Texas during the last 3,000 years (Bousman 1998). Pollen profiles from this bog indicate oak and later oak/hickory woodlands, suggesting that modern plant communities generally provide good analogs for historical Texas plant communities. Some fluctuations in rainfall and temperature have taken place (Bousman 1998:204), however. Spikes in grass pollen at approximately 500 BP and 1500 BP suggest drier conditions during those times (Bousman 1998).
**Table E.1: Macrobotanical Samples from Site 41LT354**

<table>
<thead>
<tr>
<th>Lot Number</th>
<th>Unit</th>
<th>North</th>
<th>East</th>
<th>Feature</th>
<th>Level</th>
<th>Depth (cmbd)</th>
<th>Sample type</th>
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</tr>
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<td>53</td>
<td>3</td>
<td>3</td>
<td>40–50</td>
<td>carbon</td>
</tr>
<tr>
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<td>53</td>
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<td>4</td>
<td>50–60</td>
<td>carbon</td>
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<td>60–70</td>
<td>carbon</td>
</tr>
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<td>70–80</td>
<td>carbon</td>
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<td>80–90</td>
<td>carbon</td>
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<td>8</td>
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<td>70–80</td>
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<td>33</td>
<td>53</td>
<td>3</td>
<td>9</td>
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<td>53</td>
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<td>3</td>
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<td>14</td>
<td>52</td>
<td>59</td>
<td>2</td>
<td>2</td>
<td>20–30</td>
<td>flotation, 7 liters</td>
</tr>
</tbody>
</table>
Flotation samples from site 41LT354 were processed at Atkins Austin offices in a Flot-Tech closed flotation system. Light fractions were caught in a 0.212 mm mesh, and heavy fractions were caught in 1.0 mm bottom. Little to no charcoal was apparent in the heavy fractions at Atkins, so only light fractions were forwarded for sorting and identification.

Samples were treated according to standard procedures at the Macrobotanical Analysis laboratory in Manchaca, Texas. All samples were subject to full radiocarbon protocols to retain suitability for radiocarbon dating. Samples were sorted on freshly cleaned glassware and handled only with latex gloves and metal forceps. Screens used to size-sort material were cleaned between samples. Contact with paper and other plant products was avoided. Only one sample was open at a time in the laboratory. Writing instruments used for data recording of samples were plastic mechanical pencils.

Sorting of flotation samples was also accomplished according to standard procedures (Pearsall 2000). Each sample was size-sorted through a stack of graduated geologic mesh to facilitate sorting. Materials that did not pass through the No. 10 mesh (2 mm) were completely sorted, and all carbonized botanical remains were counted, weighed, recorded, and labeled. Weights were measured with an Ohaus Scout II 200 x 0.01 g electronic balance. Uncarbonized botanical material greater than 2 mm (usually rootlets) was weighed, recorded, and labeled as “contamination.” Materials that fell through the 2 mm mesh (“residue”) were examined under a stereoscopic microscope at 7-45 X magnification for carbonized botanical remains. Identifiable material other than wood charcoal was removed from residue, counted, weighed, recorded, and labeled. Uncarbonized seeds were recorded on a presence/absence basis on laboratory forms.

Carbon samples were not screened prior to identification but were otherwise sorted in the same manner as flotation samples. Sediment adhering to carbon samples (e.g., in the interior crevices of hickory nutshell) was removed with a dissection probe under the microscope and discarded so that the sample weight better reflects the actual charcoal weight.

Wood charcoal identification was attempted for twenty randomly selected specimens larger than 2 mm from each sample. When fewer than 20 fragments were present, identification was attempted for progressively smaller fragments until identification became impractical or until 20 fragments were identified. Wood charcoal fragments were snapped to reveal a transverse section and examined under a stereoscopic microscope at 28-180 X magnification. When necessary, tangential or radial sections were examined for ray seriation, presence of spiral thickenings, types and sizes of intervessel pitting, and other minute characteristics that can only be seen at the higher magnifications of this range.

Botanical materials were identified to the lowest possible taxonomic level by comparison to materials in the Macrobotanical Analysis comparative collection and
through the use of standard reference works (e.g., Core et al. 1979; Davis 1993; Hoadley 1990; Inside Wood 2004; Martin and Barkley 1961; Musil 1963; Panshin and de Zeeuw 1980). Plant nomenclature follows that of the PLANTS Database (USDA, NCRS 2011).

Results and Discussion

Table E.2 details the archeological plant remains recovered at site 41LT354. The majority of the remains consists of wood charcoal, but hickory nutshell and two seeds were also recovered. Uncarbonized seeds and leaves noted in the flotation samples are shown in Table E.3.

Archeological versus modern plants. Uncarbonized seeds were present in all five flotation samples (see Table E.3). Uncarbonized seeds are a common occurrence on most archeological sites, but they usually represent seeds of modern plants that have made their way into the soil either through their own dispersal mechanisms or by faunalturbation, floralturbation, or argilliturbation (Bryant 1985:51-52; Miksicek 1987:231-232). In all except the driest areas of North America, uncarbonized plant material on open-air sites can be assumed to be of modern origin unless compelling evidence suggests otherwise (Lopinot and Brussell 1982; Miksicek 1987:231). Site 41LT354 has been in pasture with woodlands nearby, and the uncarbonized seeds and leaves recovered consist of plants typical of such situations. They are interpreted as modern here. Semicarbonized bark fragments were recovered from Feature 2 Level 2 and Feature 3 levels 8 and 9. It is possible that the semicarbonized material has survived from ancient times, since bark was also recovered in carbonized form. Nonetheless, it should be treated with caution in interpretation and is not recommended for radiocarbon dating.

Wood charcoal. A total of 8.45 g of wood charcoal was identified from the samples. Identification was attempted for 110 wood charcoal fragments, of which 99 could be identified to family, genus, or species (Figure E.1). Seventy-three percent of identified specimens were oaks, with hickory (11 percent) and holly or yaupon (10 percent) making up most of the remainder. Most of the oak wood is not identified beyond the genus level. Usually, such lack of precision is due to small fragment size, and this is, in part, the case at 41LT354. Many of the specimens at this site, however, exhibit characteristics of both red group and white group oaks, suggesting hybridization. The wood charcoal assemblage represents trees that would have been available in the immediate area of site 41LT354.

Nutshell consisted exclusively of thick-shelled hickory. Hickory nutshell is extremely common on archeological sites in regions where hickory trees are present. Some of this abundance may be attributed to the durability of hickory nutshell and its utility as a fuel, which results in significant exposure to fire. In addition, hickory nuts are high-density foods that can be processed far more efficiently than other types of nuts. Traditional hickory processing methods used by Iroquois, Choctaws, Cherokees, and many other peoples involved pounding hickory nuts into small pieces and then heating them in water, where the oil can could skinned off, the nutmeat retrieved from
Table E.2: Carbonized and Semicarbonized Plants from Site 41LT354

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<tr>
<th>Lot number</th>
<th>Unit</th>
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<th>State</th>
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<th>Common name</th>
<th>Count (g)</th>
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<td>3</td>
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<td>Hand</td>
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<td>Plum/cherry</td>
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<td>Seed</td>
<td>Prunus sp.</td>
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<td>Plum/cherry</td>
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<td>4</td>
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<td>3</td>
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<td>Nutshell</td>
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<td><em>Quercus</em></td>
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<td>Hickory</td>
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<td>3</td>
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<td>Hand</td>
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<td>9</td>
<td>Flotation</td>
<td>Carbonized</td>
<td>Nutshell</td>
<td>Ilex sp.</td>
<td>Holly</td>
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<td>0.01</td>
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<td>Wood</td>
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<td>0.01</td>
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<td>Carbonized</td>
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<td>Carbonized</td>
<td>Wood</td>
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<td>Flotation</td>
<td>Carbonized</td>
<td>Wood</td>
<td>Ilex sp.</td>
<td>Holly</td>
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<td>3</td>
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<td>Carbonized</td>
<td>Wood</td>
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<td>Oak</td>
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<td>Carbonized</td>
<td>Wood</td>
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<td>3</td>
<td>Flotation</td>
<td>Carbonized</td>
<td>Wood</td>
<td>Quercus sp.</td>
<td>Oak</td>
<td>3</td>
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<td>Indeterminable</td>
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<td>Hickory</td>
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<td>0.02</td>
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<td>14</td>
<td>2</td>
<td>2</td>
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<td>2</td>
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<td>Carbonized</td>
<td>Wood</td>
<td>Prunus sp.</td>
<td>Plum/cherry</td>
<td>1</td>
<td>0.01</td>
</tr>
<tr>
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<td>14</td>
<td>2</td>
<td>2</td>
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<td>Carbonized</td>
<td>Wood</td>
<td>Quercus sp.</td>
<td>Oak</td>
<td>7</td>
<td>0.08</td>
</tr>
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</table>
Table E.3: Uncarbonized Seeds (and Leaves) from Site 41LT354

| Lot #            | Parsley family | Crop \n|------------------|----------------|-------|
| Apiaceae         |                |       |
| Asteraceae, small| Daisy family, small | X     |
| Asteraceae, medium| Daisy family, medium | X     |
| Chamaesyce sp.   | Sandmat        |       |
| Croton sp.       | Croton         |       |
| Cyperus sp.      | Flatsedge      |       |
| Juniperus sp. (leaf) | Juniper (leaf) | X     |
| Mollugo verticillata | Carpetweed     | X     |
| Oenothera sp.    | Evening primrose|       |
| Oxalis sp.       | Wood sorrel    |       |
| Phytolacca americana | Pokeweed      |       |
| Poaceae          | Grass family   |       |
| Rudbeckia/Echinacea spp. | Coneflower | X     |
| Rumex crispus    | Curly dock     |       |
| Ulmus crassifolia (leaf) | Cedar elm (leaf) | X     |
| Unknown          | Unknown, 0.7 mm, black, coiled, smooth | X     |
| Verbascum sp.    | Mullein        |       |

Lot # 208 209 243 244 250
---|---|---|---|---|---|
X  X  X  X  X
X  X  X  X  X
X  X  X  X  X
X  X  X  X  X
X  X  X  X  X
X  X  X  X  X
X  X  X  X  X
X  X  X  X  X
X  X  X  X  X
X  X  X  X  X
Figure E.1: Wood Charcoal from Site 41LT354
all sources
N=99

- Persimmon
- Plum/cherry
- Elm
- Holly/Yaupon
- Hickory
- Oak, unspecifiable
- Red group oak
- White group oak
- Oaks
suspension, and the shells allowed to sink to the bottom (Fritz et al. 2001; Moerman 1998:140–141). Experiments by archeologists show that this process yields a much larger number of calories per labor invested than does cracking and picking (Talalay et al. 1984:353). Other common nuts cannot be processed in this manner because either their meats float (acorn, hazelnut) or the nuts become bitter (walnut).

**Other seeds.** Two seeds were identified in the 41LT354 samples. A fragment of a plum pit was recovered from Feature 3 Level 3. Rodent gnawing was apparent on the broken edge of the fragment. Plum fruits have obvious food uses and are particularly valuable because they can be eaten fresh or dried for future use (Anson 1970; Moerman 1998). Three species of plum currently grow in the region. Chickasaw plum (*Prunus angustifolia*) produces a particularly good fruit and grows in open woodlands and edge situations. Mexican plum (*P. mexicana*) grows from east Texas north to the Red River, and a shrubby species known as sand plum or Oklahoma plum (*P. gracilis*) occurs mostly on the Post Oak Savannah (Diggs et al. 1999; Turner et al. 2003). Two fragments of wood charcoal from the plum genus (*Prunus* spp.) at site 41LT354 suggest the presence of plum trees in the immediate vicinity of the site.

A copperleaf seed was recovered from Feature 2 (Lot 250). This genus, more commonly called wild mercury in Texas, is a common forb of grasslands and an occasional lawn weed today. Its presence may be incidental at site 41LT354, although the plant does have recorded medicinal uses (Moerman 1998).

**Summary**

Macrobotanical remains recovered from site 41LT354 consist of wood charcoal, hickory nutshell, bark, and one seed each of wild plum and copperleaf. Wood from local forests was exploited for fuel. Hickory nuts and plum are the recovered food plants.

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Hoadley, R. Bruce

InsideWood

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USDA, NRCS (United States Department of Agriculture, Natural Resources Conservation Service)  