Volume 37
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Contents

Identification and Protection of a Burial Mound in Riley County, Kansas: Archeological Investigation of 14RY652
Jakob Hanschu and Lauren W. Ritterbush

A Kickapoo Horse Race North of Fort Leavenworth, Kansas, in 1833
Jim D. Feagins

The Thomas Johnson/Henry Williams Homestead: A Rural Component of the Nineteenth-Century Settlement of Nicodemus, Kansas
Christine D. Garst, Robert J. Hoard, Daniel E. Hougland, Dan Morrow, Margaret C. Wood, and Virginia A. Wulfkuhle

The Kansas Anthropologist

Journal of the Kansas Anthropological Association

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KAA 37 cover.indd 4 2/25/19 8:49 AM

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KAA 37 cover.indd 1 2/25/19 8:49 AM

Contents

Identification and Protection of a Burial Mound in Riley County, Kansas: Archeological Investigation of 14RY652	Jakob Hanschu Lauren W. Ritterbush	1
A Kickapoo Horse Race North of Fort Leavenworth, Kansas, in 1833	Jim D. Feagins	46
The Thomas Johnson/Henry Williams Homestead: A Rural Component of the Nineteenth-Century Settlement of Nicodemus, Kansas	Christine D. Garst Robert J. Hoard Daniel E. Hougland Dan Morrow Margaret C. Wood Virginia A. Wulfkuhle	53
Book Reviews	Jim D. Feagins	114
About the Authors		118
2016 Kansas Anthropological Association Members		120

Notes

IDENTIFICATION AND PROTECTION OF A BURIAL MOUND IN RILEY COUNTY, KANSAS: ARCHEOLOGICAL INVESTIGATION OF 14RY652

Jakob Hanschu
Lauren W. Ritterbush
Kansas State University

Scattered through parts of northeastern and north-central Kansas are prehistoric burial sites in the form of relatively small rock and earthen mounds located on the uplands overlooking stream valleys. While these are far from scarce, few have been investigated using professional archeological methods. In June 2016 the Kansas Archaeological Field School (KAFS) conducted limited test excavations of a low knoll (14RY652) atop a bluff in the northern Flint Hills. The goals of the project were to determine the origin (human or natural) of this subtle feature and whether it had served as a burial monument, assess the extent of damage to its cultural deposits caused by non-systematic digging, and collect additional data about the site's age, construction, and associated human behavior. Excavation confirmed that 14RY652 was humanly built and served as a place of burial, as indicated by human remains. The prehistoric builders used unmodified limestone available in its immediate vicinity to construct this mortuary feature. Debitage scattered in the fill suggests that flintknapping occurred, perhaps in the production of offerings for the dead. Three bifaces uncovered in the southern portion of the rock fill may reflect this. Overall, much of the structure is intact despite historic digging near its center. Although many similar features in the region appear on the surface to have been disturbed in a like manner, excavations at 14RY652 suggest that some still hold valuable information about the people and cultures associated with them and deserve protection and study.

BACKGROUND

Prehistoric burial sites, some in the form of rock and earthen mounds located atop bluffs overlooking stream valleys, are scattered across much of north-central and northeastern Kansas. These are relatively common, and Euroamericans have been aware of them for more than 150 years, yet few have been professionally investigated. As a result, precise information about their form and contents is limited. Most interpretations of these features have had to rely on limited and imprecise information derived from nonprofessional excavations (Eyman 1966; Kauffman 2013; Krause 1995; Phenice 1969).

This report describes the results of test excavations completed in June 2016 at 14RY652 in the northern Flint Hills physiographic province in Manhattan, Riley County, Kansas (Hanschu and Ritterbush 2017). The primary goals of this project were to determine if this low rise in the landscape was artificially constructed, if it had a burial function, and if or how much of it had been disturbed by non-systematic post-construction digging (looting). A secondary goal was to collect other data about its age, construction, and associated human behavior. It is hoped that other investigators will gain knowledge and insights from this case study that can guide future research designed to expand understanding of early Native American inhabitants of this area, their lifeways, and culture.

Regional Cultural Historical Overview

Evidence of humans in the Central Plains spans more than 13,000 years. No archeological remains predating 13,500 years ago are known in present-day Kansas, although earlier traces exist elsewhere in North America. At this time the earliest clear archeological evidence identified in Kansas, including in Riley County, dates between about

13,500 and 13,000 calendar years ago, early in the Paleoindian period. The Paleoindian period generally is dated to about 11,500- 7000 B.C. (approximately 13,500–9,000 years ago) and spans the transition between the end of the Pleistocene epoch and the beginning of the Holocene. During this period mobile hunting and gathering bands adapted to changing environmental conditions. Post-glacial foraging continued into the Archaic period, which is commonly defined in Kansas between about 7000 and 500 B.C. (Blackmar and Hofman 2006). Archaic bands were mobile, likely within a familiar territory. Their knowledge allowed efficient use of diverse plants and animals, stone, and other materials throughout the year. While harvesting of wild resources predominated, some native plants may have been cultivated during the Late Archaic. Stone technology expanded from earlier times with new forms of chipped stone tools and more frequent use of pecking and grinding to form woodworking and milling tools. Early experiments with shaping and firing clay occurred during the Middle Archaic as demonstrated by clay beads and effigies recovered from two sites in the region (Schmits 1978; Witty 1982:124–126).

Changes in the lifeways and technology of the area's foragers become increasingly evident in the archeological record of the Woodland period, a term that Plains archeologists borrowed from studies in eastern United States. During this period indigenous peoples supplemented wild resources with locally domesticated native plants. Perhaps due to increased reliance on seeds (wild and domesticated), they expanded ceramic technology to include the manufacture and regular use of cooking and other pottery vessels. In addition to early farming and regular use of ceramic technology, this stage is associated with the transition from the atlatl and dart as the primary hunting tools to the bow and arrow. By the end of the Woodland period at roughly A.D. 1000, the bow and arrow replaced the atlatl and dart. Also during this period in the north-central to northeastern portion of Kansas, people commonly interred their dead in upland mounds, as discussed in more detail below (Eyman 1966; Kauffman 2013; Logan 2006).

The lifeway of American Indians in the Flint Hills after about A.D. 1000 was characterized by sedentary living and farming not only native domesticates but cultigens introduced from outside the region. The most significant of these was corn, but beans as well. Central Plains tradition (CPt) farmers lived in dispersed farmsteads along stream valleys, constructing permanent houses of poles and wattle and daub. They made extensive use of the nearby rich and varied resources, including water, arable land, and wide ranges of wild flora and fauna. Remains from CPt sites reflect a very diverse subsistence base with variability in localized adaptations. These hunter-gatherer-gardeners exploited different habitats in the Central Plains from western Missouri and Iowa across Nebraska and northern Kansas to eastern Colorado and southeastern Wyoming. CPt burial practices in central Kansas and neighboring areas include communal cemeteries shared by nearby households (Roper 2006a, 2006b, 2015). Although commonly located in valley settings, occasional recovery of CPt artifacts from upland burial mounds indicates that the dead sometimes were disposed of in new or existing tumuli (Eyman 1966). (Tumulus [plural tumuli] is another word for a mound of earth or stones raised over a grave or graves.)

Additional changes in regional culture history occurred late in the prehistoric period. Recent analysis of radiocarbon samples from CPt sites suggests the end of small-scale farming by individual households scattered across the landscape by about A.D. 1400 (Roper 2014). The factors contributing to this lifeway change were multifaceted and varied across the Central Plains, but environmental conditions (e.g., salinity), the arrival of Oneota peoples from the east, and other influences stimulated population movements, coalescence, and adjustments in subsistence and settlement patterns (Ritterbush 2006; Roper 2006a, 2015). By the 1500s a succession of populations practicing a dual economy of corn agriculture and large-scale seasonal bison hunting had developed. These are identified with the Protohistoric period ancestors of historically documented native populations, including northern Caddoan Pawnee and Wichita bands. The ancestors of the Kanza, Osage, and other Siouan-speaking peoples arrived during the latter portion of the Protohistoric period (Blakeslee and Hawley 2006; Ritterbush 2015; Roper 2006c; Unrau 1971; Vehik 2006). All of these groups were dramatically affected by direct and indirect contact with

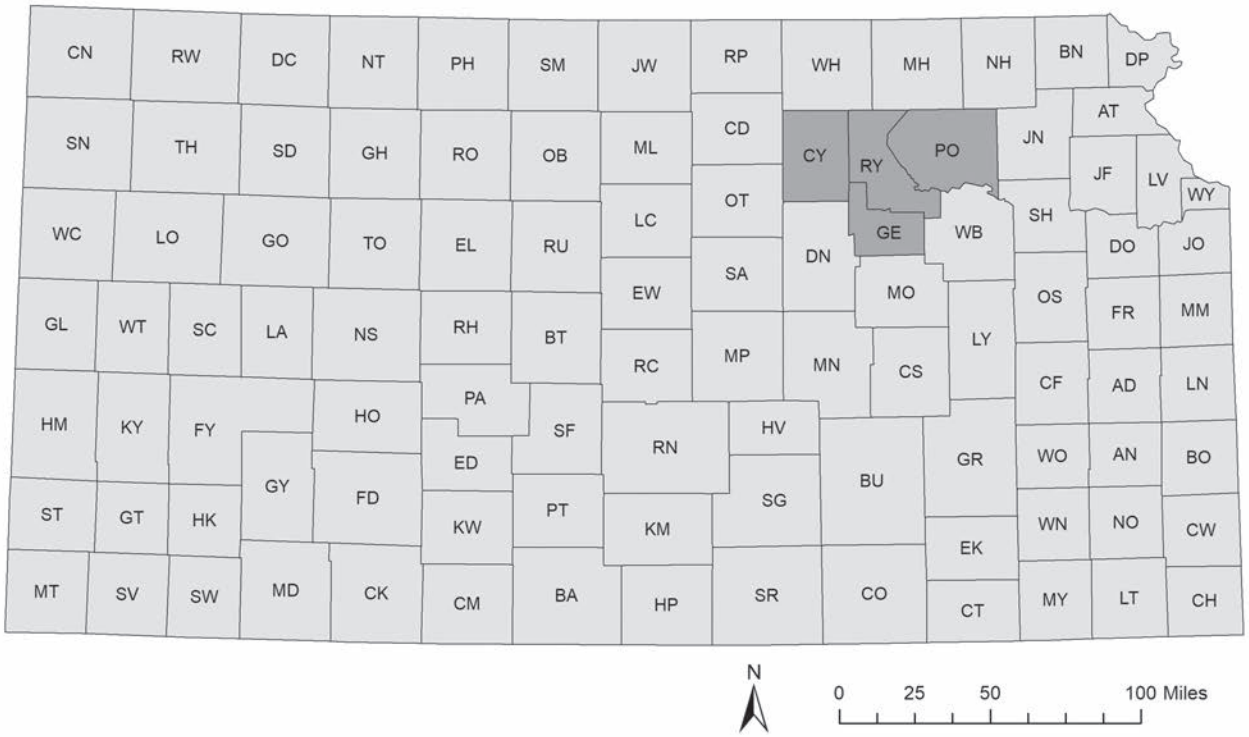

Figure 1. Map of northeastern Kansas study area. Comparative archeological information for this study is derived primarily from prehistoric burial mounds in Clay, Geary, Pottawatomie, and Riley counties. County abbreviations are those of the Smithsonian Trinomial System for formally recorded archeological sites.

Europeans and Euroamericans by the 1600s and by immigrant tribes moved to eastern Kansas by the federal government in the 1800s. The government enacted a series of treaties with local tribes, starting in the early 1800s, which, along with often devastating impacts of contact, such as epidemics, eventually resulted in removal of most American Indians from Kansas by the late 1800s (Miner and Unrau 1990; Parks 2014).

Burial Mounds in North-Central and Northeastern Kansas

Relatively small stone and earth mounds that functioned as prehistoric burial sites are common in north-central and northeastern Kansas (Eyman 1966; Kivett 1947:9; Phenice 1969; Roper 2006b:293; Smith 1949:229; Wedel 1943, 1959:172–175, 203–208, 498-502, 525-526). Knowledge of these is not new. Since Euroamericans first settled this area in the mid-nineteenth century, private individuals and scholars have wondered about these features (e.g., Brower 1898:4-5, 47–70; O'Brien 2006). Curious people often dug into them, primarily during the late nineteenth and early twentieth centuries, and much of what is known comes from the poorly reported findings of nonprofessional explorations. Most of the current information regarding burial mounds in northeastern Kansas has been drawn from meager records of limited content and analysis of the few curated remains (Eyman 1966; Krause 1995; Phenice 1969; Roper 2006b:282; Schultz and Spaulding 1948). Additional data are derived from more recent professional investigations (e.g., Cumming 1958:48-56; Reynolds 1977). Most of these studies, both amateur and professional, pertain to tumuli in Clay, Geary, Pottawatomie, Riley, and adjacent counties (Figure 1). These serve as a comparative database for this study.

EARLY BURIAL MOUND EXPLORATIONS

Some of the early mound explorations in the area closest to 14RY652, specifically near present-day Manhattan, Kansas, were carried out by individuals involved directly or indirectly with Kansas State Agricultural College (KSAC) and its "Scientific

Club," which existed between about 1879 and 1893 (O'Brien 2006). Among its members were Benjamin Mudge, Kansas' first state geologist and former KSAC professor of Natural Science, Professor G. H. Failyer, Superintendent Graham, and William James Griffing. Mudge had an interest in archeology and presented a paper on "Indian mounds" in Kansas as early as 1873 (Brower 1898:49). Griffing, a 19-year-old KSAC student, observed the club's work at Bluemont Mound, which sparked his lifelong passion for archeology.

Historical references, although limited, clearly show that early mound explorations were extensive. The Scientific Club dug into at least 18; others were explored by single members and associates during and after the organization's existence (Failyer 1881; O'Brien 2006; Parker 1885). A published comment by Griffing (1904:134) illustrated the prevalence of these features and extent of his diggings: "I have either opened or assisted in opening more than 100 of these burial mounds." Sixteen years earlier at age 28, Griffing (1888) produced a map of the Manhattan vicinity, showing archeological site locations of which he was aware at that time, including 25 tumuli. Given his 1904 claim and current knowledge, this was an incomplete identification of those in the Manhattan area. The present study site, 14RY652, and adjacent feature 14RY653 were not among those on Griffing's map. As he had mapped mounds on bluffs adjacent to 14RY652 and 14RY653 in 1888 and continued to pursue his archeological interests, he may have investigated them sometime later. Records suggest that of the KSAC Scientific Club members, Griffing was the most active explorer in this area over many years (Brower 1898, 1899; Griffing 1904).

While few documents mention the excavations of the KSAC Scientific Club and contemporary individuals (Brower 1898; Failyer 1881; Griffing 1904; O'Brien 2006; Parker 1885), no formal documents describe their methods or detail their finds. Presumably the excavators dug into each mound near its center, assuming that most of the artifacts and skeletal material would be found there (O'Brien 2006). Visible remnants of these early pits appear as shallow depressions in the center of many of the remaining earth and stone features (Schultz and Spaulding 1948:306; Wedel 1943:109, 111, 113).

Another person interested in the archeological remains of this region was Jacob V. Brower, a Minnesota businessman, explorer, naturalist, and amateur archeologist. Having been advised initially of artifacts found near Manhattan by L. R. Elliott, Brower visited Kansas in 1898 and 1899 to gain information that he hoped would help interpret Coronado's expedition into the Plains in 1540–1542. Brower met with many local landowners and knowledgeable people to learn about regional sites. Griffing toured Brower around and provided additional information through correspondence (Brower 1898:14, 25, 64–65; 1899:79). He may have been one of the individuals with whom Brower dug several burials (Brower 1898:14, 25; 1899:79). Brower (1898:28) wrote, "I have opened or assisted in opening some thirty or more of these mounds." It is evident that these two men were responsible for many disturbances of archeological sites in northeastern Kansas.

In addition to those explored by the KSAC Scientific Club, Griffing, and Brower, amateur archeologist Floyd Schultz excavated at least 32 similar features. Schultz was a businessman who resided in Clay Center through the first half of the twentieth century. As a hobby, he explored sites around Clay Center and the surrounding territory. Among these were burial mounds from which he collected artifacts, as well as skeletal remains. He was not formally trained in archeology but read professional studies and later in life collaborated with professional archeologists at the University of Kansas. In 1948 Schultz donated his extensive collection to the University of Kansas (Eyman 1966; Hawley 1993; Kauffman 2013; Phenice 1969; Ritterbush and Logan 1991). While his methods did not match today's standards, Schultz recorded general site locations, often prepared rough sketches of his excavations, made some notes, took occasional photos, and prepared a catalog of his finds. From these and analyses of his donated collection, modern archeologists have gained a basic understanding of these tumuli, the people who built them, and the individuals interred within them.

Many others, less well documented, explored similar sites in the region. For example, William J. Henderson opened several bluff-top burials and discovered other archeological remains in Geary County before his early death in 1888, as recounted by his father, Robert Henderson (Brower 1898:51-

53). Chaplain John D. Parker (1885:73) commented on several mounds near Junction City that were opened as early as 1879. Brower (1899:59, 99–116) referenced late-nineteenth century diggings along Mill Creek in Riley County and by Sherman A. Baldwin in Pottawatomie County. Smithsonian Institution archeologist Waldo R. Wedel learned about three mounds investigated by N. L. Roberts of Manhattan in the early twentieth century: Fremont Point 1 and 2 along the Kansas River in Riley County and another along the Blue River in Pottawatomie County (Wedel 1959:198, 203–206). No doubt many others dug into suspected burials scattered throughout northeastern and north-central Kansas. Schultz and Spaulding (1948:306) noted "the prevalence of unsystematic amateur excavation on the more prominent stone cairns in the area." Likewise, Wedel (1959:203) lamented, "Of the numerous mounds and cairns that formerly occurred at many points on the Big Blue and Kansas River bluffs, most have apparently been destroyed and few still remain untouched."

ARCHEOLOGICAL AND CULTURAL CONTEXT OF BURIAL MOUNDS

The above-noted early explorations, although non-professional and usually poorly documented, provide some information about the culture history and past cultural practices of native peoples. Occasionally artifacts associated with the CPt or the early Historic period have been recovered from particular mounds, but most of the reported or curated objects are diagnostic of the Woodland period. Analyses of Schultz's mound exploration collections, some of the best recorded in this region, led to definition of the Schultz phase, a local variant of the Woodland period in northeastern Kansas (Eyman 1966; Hawley 1993; Kauffman 2013; Logan 2006; Phenice 1969). While originally defined based only on materials from mortuary contexts, the Schultz phase is somewhat better understood and more clearly defined today because of professional studies of non-mortuary sites completed over the past half-century. Woodland period habitation sites that have attracted some study are 14GE41 and the Don Wells (14RY404), Elliott (14GE303), Ashland Bottoms (14RY603), and Macy sites (14RY38) (Banks et al. 2001; O'Brien 1972; O'Brien and Parks-Mandel 2007; O'Brien et al. 1973, 1979; Parks 1978; Sorrell 1974). Located in the valleys of the Republican River, Wildcat Creek, McDowell Creek, and the Kansas River, these are near and often just below known bluff-top mounds. Their spatial relationship offers the potential to identify other Schultz phase sites, especially the less well-known habitation sites, possibly buried in valley settings.

Artifact classes commonly associated with the Schultz phase include chipped and ground stone tools, ceramics, and tools and ornaments made of bone and shell. Medium-sized to large stemmed, corner-notched, and occasionally side-notched projectile points similar to Steuben, Ensor, and Gibson types have been identified at habitation and mortuary sites. These tipped spears or darts launched with atlatls. Small, often finely serrated, corner-notched Scallorn points, associated with Late Woodland components, indicate transition to use of the bow and arrow for hunting during the latter portion of this period. Pottery vessels are "elongate straight-walled jars with rounded or conoidal bases" (Logan 2006:79). These commonly are tempered with stone (grit, sand, limestone) and have smooth (even burnished), cord-roughened, or smoothed-over cord-roughened exteriors. Interiors sometimes display brush marks. Decoration is lacking on many, but some display a notched lip or more elaborate ornamentation on the rim or body. The exterior portion of the rims sometimes bears crosshatching or horizontal or vertical rocker stamping, which also occurs on some body sherds. Other decorations include dentate stamping, cord-wrapped stick impressions, and punctates. These motifs compare favorably with ceramics from Kansas City Hopewell sites in northwestern Missouri and extreme northeastern Kansas, while the cordmarked sherds are more typical of the Plains. Other artifact forms are disk and blocky end scrapers, ground stone celts, grinding tools, decorated and undecorated bird bone beads, shell pendants, and other tools and ornaments (Banks et al. 2001; Eyman 1966; Logan 2006; O'Brien et al. 1979; Wedel 1959:199, 201).

The archeological data, especially from sampled Woodland habitation sites, suggest that groups were mobile foragers. They subsisted on wild and some cultivated plants and on animals, such as deer, bison, smaller mammals (e.g., raccoons), and fish (Banks et al. 2001; O'Brien and Parks-Mandel 2007; Parks

1978). No evidence of substantial structures that demonstrate permanent or long-term occupation has been found. Families or bands camped at different places throughout the year. In the stream valleys, where their habitations were most commonly located, they had ready access to riparian resources and were not far from upland prairies and outcrops of Flint Hills cherts. Excavations at occupation sites have uncovered hearths; projectile points, bifaces, scrapers, and other stone tools; flaking debris indicative of tool manufacture and maintenance; broken ceramics; and animal bone (Banks et al. 2001; O'Brien 1972; O'Brien and Parks-Mandel 2007; O'Brien et al. 1973, 1979; Parks 1978; Sorrell 1974). Certain sites, such as Macy, were revisited on multiple occasions over two centuries (Banks et al. 2001). Burial mounds atop bluffs overlooking frequently visited habitation areas may have served as markers of loosely defined territories for different groups or families. Human remains from the Elliott habitation site suggest that not all burials were placed in upland tumuli (O'Brien et al. 1973; O'Brien and Parks-Mandel 2007; Roper 2000, 2008).

DISTRIBUTION OF BURIAL MOUNDS IN NORTHEASTERN KANSAS

Archeological evidence shows that past residents of north-central and northeastern Kansas tended to live primarily along stream or river valleys. Woodland period interments typically are situated on prominent bluff tops overlooking stream valleys or in other upland settings (Brower 1898, 1899; Hanschu 2018; Logan 2006; Ritterbush 2009; Schultz and Spaulding 1948; Wedel 1959). Although the age of 14RY652 has not been determined and only a small artifact sample has been acquired, its location fits the Woodland period pattern. Brower (1898:28), in a reference to archeological features near Wildcat Creek west of Manhattan, stated, "The mounds are, with hardly an exception, located on the tops of the bluffs overlooking the streams, and were all used for burial purposes." Hanschu (2018) quantified this geographical context using GIS software and statistical operations. The placement of burials in upland settings no doubt had a shared significance, sacred or practical, but the exact meaning is unknown. Some of these upland mortuary sites encompass not just a single mound but several within a short distance of one another. The reasons for this have yet to be understood.

AGE

Until recently only relative ages of excavated burials could be determined, relying on diagnostic artifacts and comparative analysis. Most mounds are believed to date to the Plains Woodland period (ca. 500 B.C.-A.D. 1000), although they may have been built or used occasionally in earlier and later times (Eyman 1966:333; Kauffman 2013; Phenice 1969). Pottery and projectile points are the most commonly used diagnostic artifacts for dating, as differences in style are suggestive of different time periods and archeological cultures. For example, certain projectile point types typify the Woodland period, namely corner-notched and expanding-stemmed dart points and smaller corner-notched arrow points, all of which have been recovered from regional mounds. Pottery has been identified primarily as Woodland ware, with a few mounds yielding CPt ceramics or early historic artifacts, which may be intrusive or reflect CPt or later Native American activities. Thus, these features were constructed at least during the Woodland period but occasionally were reused centuries later (Eyman 1966:55-57).

While evidence indicates that most of the excavated burial mounds date to the Woodland period, some archeologists claim that two in north-central Kansas were built earlier. The Range (14ML307) and Matter (14JW303) mounds in Mitchell and Jewell counties, respectively, are thought by some to have possible Archaic affiliation (Feagins 2000; Reynolds 1977). This identification is based on a small sample of projectile points that may be comparable to styles identified elsewhere with the Archaic period. For example, John Reynolds (1977:5–7) described four projectile points or point fragments from Range as expanding-stemmed and corner-notched dart points, which fit the general description of common Woodland point styles. About one he (Reynolds 1977:5) noted, "typologically it is close to a Table Rock stemmed Archaic point." Based on the limited published information about these points, alternative identifications (e.g., Steuben) may be possible. Nonetheless, based on the Table Rock identification and personal communications with Thomas A. Witty, Jr., about Matter Mound in a nearby drainage system, Reynolds (1977) believed

that Range was built during the Archaic period. Archaic affiliation of Matter also is based on projectile point styles but has not been formally evaluated and published. Among the points from the latter were six medium-sized dart points or knives: three generally straight stemmed, two expanding stemmed, and one lanceolate without a clear hafting element.

In the background section of his report on the Begin Ossuary (14JW312) in Jewell County, Randy Thies (1982:11) referred to "Lamoka-like projectile points," which he used to assign Matter Mound to the Late Archaic. In their discussion of Range and Matter, Thies and Witty (1992:159) refer to "projectile points stylistically similar to the Table Rock and Lamoka types." Most other items were shell and bone ornaments. The former consisted of many distinctive bar, diamond-shaped, notched, and other forms of shell beads, while the latter included tubular bone beads, an artifact class common with Woodland burials in the current study area (Feagins 2000). No ceramics were recovered from the fill. Thies (1991), Thies and Witty (1992), and others (Conner 2001; Hofman 1996:95; Schmits 1987:170–171) accepted the limited information from these sites as evidence of Archaic mound building for mortuary purposes, although some question this interpretation or simply note that this has been suggested by others (e.g., Logan and Ritterbush 2001:416). Two radiocarbon dates from different labs were obtained on non-human bone from Matter Mound. One is consistent with an Archaic affiliation (4190+15 rcybp, NZA 35108), while the other from a slightly higher level in a different excavation unit is more consistent with the Woodland period (1620+15 rcybp, ISGS A1515) (Kansas Archeological Inventory form for 14JW303). Given the small sample of diagnostic materials, few radiocarbon assays, uncertainties with point typologies, and the lack of formal analysis and reporting of investigations of this site, the authors consider the interpretation of Archaic mound building in northeastern Kansas to be tentative at best and in need of more research.

In his 1966 analysis of artifacts recovered from the Schultz mounds, Charles Eyman (1966:333, 334) assigned their construction between about A.D. 200 and 600. Temporal understanding has been tested more recently through radiocarbon dating of bone from assemblages curated as part of the Schultz Collection at the University of Kansas. Curator of Archaeology Mary J. Adair submitted 11 fragments of human bone and a piece of deer bone from five mounds in Clay and Geary counties for accelerator mass spectrometry (AMS) dating by the Illinois Geological Survey. Tests on the human remains produced a two-sigma range of cal. 349 B.C.–A.D. 376. Furthermore, the two-sigma range for 10 of the human specimens was cal. A.D. 29–376, while one was earlier at cal. 349–95 B.C. The deer bone assay calibrated to A.D. 1440–1615 and seems to be anomalous. The collective dates for the human remains placed these burial features generally in the early Woodland period (Early Plains Woodland and early Middle Plains Woodland periods, according to Kauffman [2013]).

These radiometric ages are helpful for addressing connections between the mounds and nearby habitation sites, three of which have been radiocarbon dated over the past four decades. The most recently dated components at a Woodland habitation site are those at the Macy site in Riley County. The averaged calibrated range for the lowest cultural component was A.D. 2–258. The two-sigma range obtained from the next higher occupation was A.D. 240–456. No dates are available for the third component, but above this were materials dated between A.D. 531 and 654. (See Adair [2012:20] for recalibrated but similar ranges for these assays.) The uppermost deposit was not sampled because of disturbance and churning of materials (Banks et al. 2001). These dates indicate that Woodland peoples used 14RY38 at different times between about A.D. 2 and 654, as well as somewhat later, based on Woodland artifacts in the mixed upper level. This range of dates subsumes the calibrated range of 10 assays obtained from human bone from Schultz mounds in Clay and Geary counties but points to later occupation, too. Two statistically similar dates (A.D. 423–685) from 14GE41 confirm this (Parks 1978). Recalibrated dates (not averaged together) by Adair (2012:20) suggest a broader range, especially later, due in large part to the large standard deviation for one of them. A single sample from the Elliott site hints at a possible early occupation (O'Brien et al. 1973:70). The latter (98 B.C.–A.D. 252, recalibrated to 112 B.C.-A.D. 245 [Adair 2012:200]) is problematic when linked to a Scallorn (Late Woodland) point and ceramics at Elliott. As

noted by Donna Roper (2000:51-52), the two may not be linked directly, representing instead different occupations or plagued by old wood or a different problem with the sample. In summary, given the available radiocarbon determinations for Woodland mortuary and habitation sites in Clay, Geary, and Riley counties, the two generally overlap for the period between about A.D. 2 and 654 with possible earlier and later extensions. More dates and investigations are needed to further refine the temporal definition of Woodland activities in this region.

FORM

Burial mounds in northeastern Kansas tend to be circular to oval in plan. The alignment or orientation of oval examples is variable. The maximum diameter or length is 10–100 ft (3–33 m), while most fall between 15 and 40 ft (5 and 14 m). Generally, the features stand no more than 3 ft (1 m) high, with excavated depths below the original ground surface of up to 4 ft (1.25 m) (Brower 1898; Cumming 1958:49; Eyman 1966; Krause 1995; Phenice 1969; Schultz and Spaulding 1948; Smith 1949).

The mounds are composed of stone and earth. The size, shape, and any formal modifications to the rocks usually were not documented. Schultz and Spaulding (1948:306) noted that stones were commonly rough natural blocks, capping a burial pit or burial materials, laid on a minimally prepared surface. Robert Cumming (1958:49) described the Sweat Bee Mound (14PO14) as follows:

> The mound structure consisted of a pile of irregularly shaped limestone slabs, placed without any semblance of order, but in sufficient quantity to completely cover and protect that which lay beneath. The covering rocks ranged from small fragments to slabs 3 feet long, 1½ feet wide, and nearly a foot thick. . . . It seems most probable that the dirt over and about the stones had blown in during later years, and that the mound, as originally built was a stone-slab mound.

Most of the described mounds are in the northern Flint Hills, a physiographic province underlain largely by limestone, which comprises most of the construction stone. Outside this region mound builders selected other local materials, such as sandstone (e.g., Smith 1949). No quarry marks have been identified, suggesting that people gathered natural blocks from the surface at or near the site or from a nearby outcrop (Brower 1898; Schultz and Spaulding 1948). Some tumuli in the Kansas City area were constructed primarily of earth (Wedel 1943:137–145), though these do not appear to be common. None has been confirmed at this time outside of the Kansas City locality. Wedel (1959:205) mentioned earthen features in the Manhattan vicinity but stated that they lacked signs of human remains. Today stones are partially exposed on the surfaces of most existing mounds. In 1881 Failyer speculated that earth once covered the limestone, but weathering and other natural processes removed it, exposing the underlying rock. Another possibility, as proposed by Cumming (1958:49) for Sweat Bee, is that people used stone for construction, then dirt and other debris accumulated naturally around these, settling into the gaps (see also Reynolds 1977:4). Detailed interdisciplinary analyses of the form and composition of 14RY652 should help to better understand the cultural and natural processes that have affected the formation of these structures.

Using Schultz's notes and drawings, Eyman (1966:32) defined three types of burial mounds. Variety 1 had an inner chamber of stacked slab-like pieces of stone. The chamber was small in comparison to the overall dimensions and usually held most of the artifacts and skeletal remains. Common in the Kansas City vicinity where the Kansas City Hopewell culture was defined, traditionally this variety is thought to have a Hopewellian connection (Eyman 1966:248; Wedel 1959:207, 502-503, 547). Variety 2 had a central basin with individual burial pits, as exemplified by the James Younkin Mound (14GE6), excavated and described by Schultz (Schultz and Spaulding 1948). This form generally is considered older than Variety 1 because those defined by Eyman yielded a mixture of Plains Woodland and Hopewellian artifacts. This has not been verified with radiocarbon or other dates. Variety 3 also had central basins but lacked individual pits (Eyman 1966:32). Eyman (1966:272) suggested that these mounds "represent a rather lengthy temporal and culturally persistent Central Plains region burial phenomenon" in the broader geographical area. He based this statement primarily on the cultural materials that Schultz recovered, which can be assigned to the entire Plains Woodland period.

The variation in burial arrangements raises questions about whether they are indicative of different mortuary concepts, although Eyman (1966:32) did not believe this to be the case. Because he primarily used data derived from amateur excavations, his structural varieties must be viewed with healthy skepticism. Further data collection and analyses are needed to address the questions raised by Eyman's work.

CULTURAL MATERIALS ASSOCIATED WITH BURIAL MOUNDS

The most abundant artifacts from mounds in north-central and northeastern Kansas are ornaments, especially beads and pendants of bone, shell, limestone, and clay in a variety of forms (cylindrical, discoidal, spherical, and other) (Figure 2). Cylindrical beads, made by scoring and snapping the ends of hollow bird long bones, are the most numerous kind of ornament. These are undecorated or decorated; the latter commonly scored around the circumference of the bone (Figure 2, upper right). Disk-shaped shell beads, most likely made from local freshwater mussel shell, are abundant (Wedel 1959:204). Several larger shell, bone, and carved stone pendants also have been discovered (Figure 2, lower right). These are rectangular, subtriangular, trapezoidal, circular, crescentic, and other shapes. Most display biconical perforations (drilled from both faces of the object). Polishing and incised lines are occasionally evident (e.g., Eyman 1966:112). Some of the beads are partially charred, perhaps during cremation of those interred (Brower 1898, 1899; Eyman 1966; Failyer 1881; Krause 1995; Schultz and Spaulding 1948; Wedel 1959:203, 204, 206).

Chipped stone tools and debitage collected (Figures 2 and 3) (Cumming 1958:52-54; Eyman 1966; Failyer 1881; Schultz and Spaulding 1948) include projectile points and knives, bifaces, scrapers, and drills. Among the projectile points are medium to large dart or spear points or knives. Many are stemmed or corner- or side-notched. Some are Woodland types, whereas others are less diagnostic. Smaller notched arrow points also are found. Delicate corner-notched triangular (Scallorn) points, sometimes with serrated blade edges, represent the earliest styles of arrow points in the region and document incipient use of the bow and arrow (Figure 2, upper left; Figure 3f). They are

Figure 2. Chipped stone arrow points, tubular bone and tubular and disk shell beads, shell pendants, and modified bear tooth from Fremont Point mounds 1 and 2 (Wedel 1959:Plate 20).

believed to be associated with the Late Woodland period. Late Prehistoric use of certain mounds is inferred from occasional discovery of small triangular side-notched points (Figure 2 left center). The presence of debitage suggests the testing of locally outcropping chert, the production or maintenance of tools, or perhaps ritual practices. A few ground stone artifacts have been recovered, such as abraders and a limestone platform pipe, the latter diagnostic of the Woodland period (Figure 3d) (Schultz and Spaulding 1948).

Pottery also has been uncovered (Brower 1898; Eyman 1966; Schultz and Spaulding 1948). Most are potsherds from different vessels. In at least one instance, a complete miniature straight-sided cup was retrieved (Figure 3c) (Schultz and Spaulding 1948). In general, two kinds of ceramics have been recognized. Both are commonly stone tempered (occasionally grog) and are elongated, conical vessels. One type (referred to by Eyman as Plains Woodland) has a cord-roughened exterior, sometimes with vertically oriented cordmarks (Figure 3a). These vessels usually are undecorated, but occasionally tool impressions mark the lip. Early

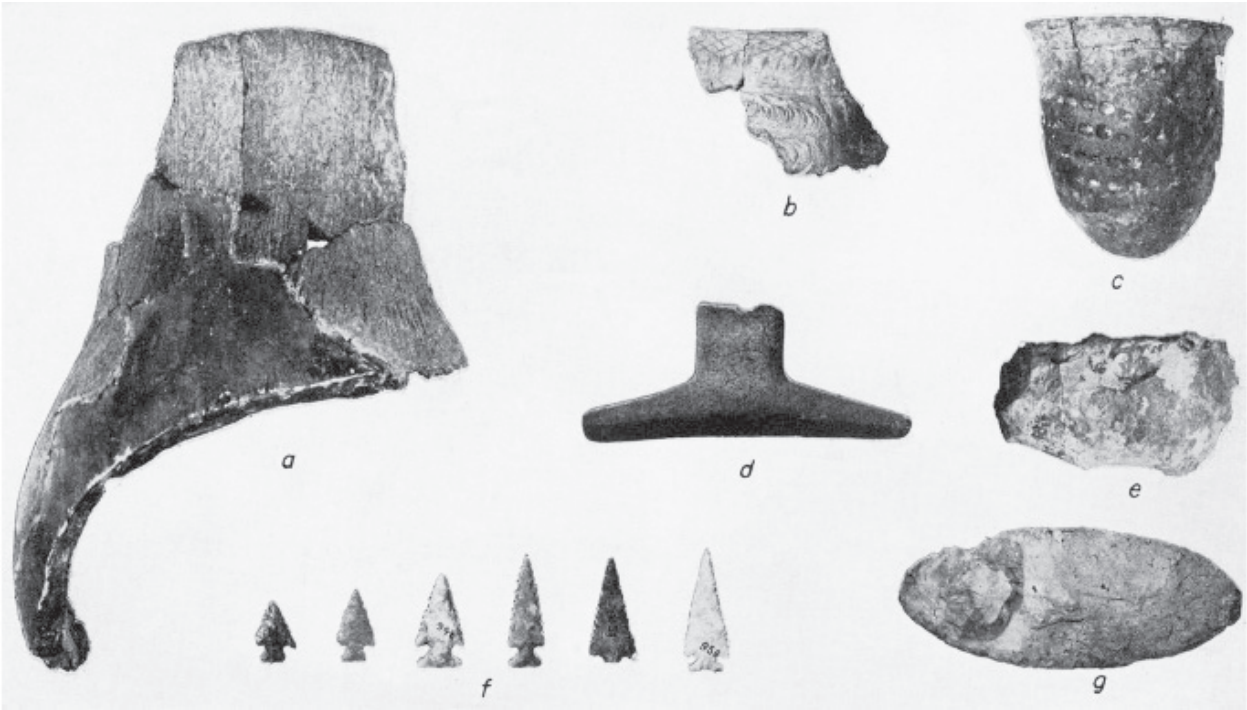

Figure 3. Sample of artifacts from the James Younkin Mound. Illustrated are a vessel fragment, rim sherd, and miniature vessel (a, b, c); limestone platform pipe (d); chipped stone scraper, Scallorn arrow points, and biface (e, f, g) (Schultz and Spaulding 1948:Plate XXIX).

investigators often referred to the other ceramics as Hopewell (or Hopewell-like) because of their similarities to Kansas City Hopewell ceramics from eastern Kansas and western Missouri. They have a smooth exterior surface and are variously decorated, especially on the rim, but sometimes on the body with cross-hatching, dentate stamping, punctates, and rocker-stamping (e.g., Figure 3b). Despite the variance, both types were made during the Woodland period. Different ideas have been raised to explain the mingling of these two regional ceramic traditions (e.g., migration, diffusion, chronological variation) (e.g., Logan 2006), but insufficient inquiry into this question leaves only speculations or hypotheses yet to be tested through additional research.

A variety of other cultural materials also has been recovered from burial mounds in north-central and northeastern Kansas. These include scored and unscored pieces of animal bone, bone awls and pins, bone fishhooks, antler flintknapping tools, copper beads, hammered copper ornaments, brass wire, clay pipes, sandstone abraders, and red ocher (Brower 1898, 1899; Cumming 1958:51, 54; Eyman 1966; Schultz and Spaulding 1948; Wedel 1959:203–208).

Some materials, such as ornaments of marine shell and copper, indicate that Woodland period peoples of the Central Plains were part of an exchange network that extended well beyond the Great Plains. Artifacts made from seashells originate from the Atlantic coast, Gulf of Mexico, and Pacific coasts, including *Busycon* columellae and *Marginella* and *Olivella* marine gastropods (Eyman 1966:156–157; Wedel 1959:204). Artisans shaped the shells into beads, pendants, and other ornaments, such as "a tubular conch shell bead . . . found close to one wrist of the skeleton" of Burial 4 in Sweat Bee Mound. Near this object were fragments of copper. Circular or disk-shaped beads, made by rolling hammered copper, were uncovered near the sides of that skeleton's skull, which also displayed copper staining on both sides near the ears and ascending mandibular ramus, suggestive of earbobs (Cumming 1958:51, 54, 78). Copper is not available in the Great Plains; thus, this must have

been brought to the area through travel or exchange from far-off locales, perhaps the upper Great Lakes region or even more distant sources.

Most diagnostic artifacts associated with prehistoric tumuli in northeastern Kansas reflect construction and use during the Woodland period. As described by Eyman (1966) concerning the Schultz mounds, some of them yielded items made during later periods. Those found on or near the surface may reflect temporary activities conducted well after construction of the monument (Ritterbush and Logan 2009:36–37). In other cases later materials retrieved from the fill may represent its reuse for later burials or other intrusions, perhaps other post-construction natural or cultural activities. At present the past behaviors associated with these materials are unclear, although during which period they occurred can be estimated.

In most cases where intrusive artifacts have been found, they originated during the Late Prehistoric (Middle Ceramic) period (ca. A.D. 1000–1400). Side-notched and unnotched arrow points, such as those from Fremont Point 1, reflect Late Prehistoric activities (Figure 2 left center) (Wedel 1959:204). Potsherds and a restored vessel of Riley Cord Roughened ceramics from three and possibly three more mounds in the study area also originated during this period (Eyman 1966:62–68). These are stone-tempered, globular jars with rounded bases, constricted necks, and flaring rims. They have cord-roughened and smoothed-over exteriors. Rims are uncollared and collared. Lips are sometimes decorated with diagonal incisions. Other motifs occur on rims; for example, parallel horizontal lines incised in the collar encircling the rim, pinching along the border of the collar, opposed diagonal incisions on the collar, diagonal notching of the lower portion of the collar, and a "rainbow" element bordered by a series of vertical incisions. No decoration appears on shoulders or bodies. These ceramics clearly are affiliated with the CPt and indicate an occasional association of local hunter-gatherer-gardeners with upland interments. In certain situations CPt peoples may have buried their dead in tumuli constructed by earlier groups. The more common CPt burial form was a cemetery, located along the edges of stream valleys in proximity to several farmsteads (Roper 2006a, 2006b).

Even later reuse of Woodland burial mounds is suggested. A few examples, especially in the Manhattan vicinity where the Kanza maintained a village between about A.D. 1790 and 1828, held historic trade goods. Griffing, in an 1897 letter to Brower (1898:64, 65), mentioned glass beads in a Riley County mound. From another in adjacent Pottawatomie County, Wedel (1959:205–206) recovered glass beads and three brass wire coils, a common ornament and tool used by Kanza men to tweeze unwanted hairs.

OSTEOLOGICAL MATERIALS ASSOCIATED WITH BURIAL MOUNDS

Most reported mound excavations have uncovered human skeletal remains (Cumming 1958:48-56, 65–78; Eyman 1966; Failyer 1881; O'Brien 2006; Phenice 1969; Schultz and Spaulding 1948; Wedel 1959:203). Exact proveniences of skeletal remains and artifacts were rarely documented during the early diggings (Phenice 1969:7), although Schultz and others sometimes mentioned general locational information. An example of this is given by Failyer (1881:131).

> About one foot below this skeleton, and two feet west of it, was another [skeleton]. It was better preserved and many of the bones were taken out; but they were fragile and easily broken. This body had been placed in a sitting posture, facing the east or northeastern. No arrowheads, pottery or beads were found about this skeleton.

Schultz occasionally gave accounts that revealed the location and context of skeletal materials as evident in his publication of findings at the James Younkin Mound (Hawley 1993; Schultz and Spaulding 1948). From writings like these archeologists have gathered data about regional burial practices. More recent professional investigators were better at recording at least general provenience of skeletal and cultural materials. At Sweat Bee Mound Cumming (1958:51, 53) documented cultural material in close association with skeletal remains. Reynolds' (1977:5–8) excavation of Range Mound yielded artifacts only within the fill, not in direct association with human bone.

Early analysis of the skeletal material from the Schultz mounds by Terrell Phenice (1969) provides

the most extensive description of human remains and interpreted burial practices in northeastern Kansas, but other identifications are presented for the few more recent excavations (Cumming 1958:65–78; Reynolds 1977:7–8). Phenice's study was based on analysis of human remains in the Schultz Collection, primarily from sites in Clay and Geary counties, curated by the University of Kansas. Just as there is a wide range in the size and construction of the mounds, there is much variation in the burials contained within them. Both sexes are represented, in addition to individuals ranging from infant to middle-aged adults. Variance also is shown in the number of interments documented in each tumulus, although many of the skeletal remains are fragmentary, making it difficult to differentiate one set of remains from another. Most mounds apparently held more than one individual (Phenice 1969; Schultz and Spaulding 1948; Wedel 1959:203). The nature of the connections among individuals within a single feature is unknown.

Based on his comparison of three Archaic and five Kansas City Hopewell skulls, Phenice (1969:67–77) proposed that those buried in the Clay and Geary county mounds were of the same "physical stock" as individuals whose remains were recovered from nine Kansas City Hopewell sites to the east (i.e., the morphological and osteometric characteristics were similar). He also found similarities with the skeletal remains from Archaic burials in the Central Plains. Thus, the mound builders in north-central and northeastern Kansas may have descended from earlier inhabitants. Because of similarities with Woodland-age skeletal remains from Kansas City-vicinity burial sites in eastern Kansas and western Missouri, Phenice also considered the possibility that the individuals buried in Schultz phase tumuli may have descended from Hopewell-tradition peoples of the Midwest or east-central United States or from mixed Hopewell and Archaic Central Plains ancestry. This would be plausible if Kansas City Hopewell peoples were migrants from the Midwest (e.g., Illinois River valley), although this issue is undecided (Logan 2006:76, 77, 91). Phenice's cranial comparisons stimulate interesting questions, but further analysis with a larger sample is needed to formulate valid conclusions.

The burial types and practices vary within and among mounds. Evidence for primary and secondary burials and cremations exists. Primary burials are represented by largely complete skeletons with articulated bones in anatomical order. These include extended burials, where the body was laid out in an outstretched position, and semi-flexed or flexed burials in a contracted sitting or fetal position (Cumming 1958:54; Phenice 1969). Secondary burials, in which the bones are not in anatomical order, are also present, in the forms of bone bundles and burials grouped by parts. In a bundle burial the flesh was removed from the bones, which then were gathered together for interment. Cut marks on some long bones near major muscle and ligament attachments suggest that some bodies were manually defleshed prior to burial (Phenice 1969). Some burials consisted of groups of multiple bones of the same element (often long bones or skulls) from different individuals, interred together. In other instances bones were burned, broken before interment, or scattered within the mound fill. Variously burned or charred bones have been found in many of the region's tumuli (Eyman 1966; Failyer 1881; Krause 1995; Phenice 1969; Wedel 1959:203). Phenice noticed that cremated remains in the Schultz Collection rarely included burned facial or cranial pieces and that mounds appearing to contain only one individual tended to show no signs of burning. None of the limited documents indicated that ceramic vessels were used to hold cremated remains or offerings.

Analyses of burials and skeletal remains from northeastern Kansas mounds provide clues to cultural practices related to treatment of the dead by the living. Likewise, they reveal cultural practices related to the living. For example, crania with somewhat unusual shapes (e.g., flattened occipital and lateral frontal compression) were recovered from three sites (Phenice 1969:65). These imply deformation that may have been purposeful in certain cases or a result of specific childcare or child-rearing practices (e.g., use of cradleboards). Phenice (1969:65–67) also noted eight skulls from Schultz sites that exhibited signs of trepanation or cutting through the bone to create an opening. He proposed that these were made after death for an unknown reason. Skeletal remains potentially provide clues to diet as discussed in two stable isotope studies of human bone in the Schultz Collection (Conner 2001; Kauffman 2013). These studies

stimulate a wide range of questions about cultural practices during the Woodland period that require further investigation to gain a fuller understanding of regional lifeways of early inhabitants.

MODERN INVESTIGATIONS

Many of the mounds investigated by the KSAC Scientific Club and Floyd Schultz, as well as several excavated and documented by others, have provided initial clues about burials and cultural practices. However, because few of these were systematically conducted following professional analytical and ethical practices, the majority being done largely out of curiosity and relic hunting rather than to understand past peoples and cultures, the insights they provide are limited. Most prominently, these early studies suggest variation in burial practices. Although based on incomplete collection and poor records, the range of artifacts is wide in terms of classes and quantities of goods. Some mounds appear to have held a relatively large number of objects, while others had few or possibly no non-perishable funerary objects. Important questions persist; for example, did variation in grave goods signify differences in rank? The data currently available about prehistoric mound building in north-central and northeastern Kansas provide enough clues to formulate initial hypotheses about past societies; new approaches, analytical techniques, and legal and ethical issues have led to the development of new hypotheses and questions and means of testing these. Well-documented and detailed investigations, applying systematic data recovery and analytical techniques, are required for developing credible interpretations of this region's past cultures and cultural dynamics.

Investigations of prehistoric mortuary sites are uncommon for various reasons. Both 1989 state and 1990 federal regulations protect burials. In Kansas the Unmarked Burial Sites Preservation Act (UBS statute) protects any burial that does not fall under cemetery laws by prohibiting purposeful disturbance of unmarked burials on land that is not under tribal or federal ownership (Kansas Historical Society 2016a, 2016b). At the federal level the Native American Graves Protection and Repatriation Act (NAGPRA) serves to protect Native American and Native Hawaiian human remains, funerary and sacred objects, and items of cultural patrimony in the possession of any federally funded agency or institution and provides guidelines for treatment of human remains discovered on federal property (National Park Service 2017). While these laws dutifully aim to protect known burials from damage out of respect for the interred individuals and their descendants, they hinder archeologists' ability to gather information about the human past. Archeologists understand the protective intent of the laws pertaining to human remains and do not seek to harm burial sites or disrespect past and present peoples. Yet, ethical study of burial sites and human remains have the potential not only for learning about past peoples, but also for revealing knowledge useful for contemporary populations. For example, professional investigators seek to provide insights into past lifeways and cultural practices, including information related to interment and memorialization of the dead, values and beliefs, population movements, ties among past groups, ancestral relationships with modern populations, and much more.

INVESTIGATION OF 14RY652

The focus of this report is 14RY652, a mound in southern Riley County, located near the center of a flat-topped bluff overlooking Wildcat Creek valley to the north. Wildcat Creek is a tributary of the Kansas River that flows through part of the present-day City of Manhattan. The Kansas River valley is roughly 1.5 miles (2,400 m) to the south over the narrow divide between Wildcat Creek and the Kansas River. The landform on which the site is located is informally referred to as "the Knob." It rises roughly 200 ft (60 m) above the Wildcat Creek valley floor. A prairie grassland has been reestablished on the Knob and surrounding property through removal of red cedars and controlled spring burns over the past 20 years. The low stone and earth mound is clearly visible after a controlled burn but is easily obscured by vegetation later in the season because of its subtle relief (Figure 4). The Knob and immediately adjacent property are currently used for light grazing. However, this presently undeveloped land is surrounded by growing residential neighborhoods and is planned for future development.

14RY652 is one of a number of prehistoric arche-

Figure 4. View north over 14RY652, identified by the circular scatter of limestone, after a spring burn. (Photograph by L. W. Ritterbush, April 2013.)

ological sites in the area, revealing long-term use of the Wildcat Creek locality. 14RY653 and 14RY654 occupy the same landform. 14RY653 consists of a generally circular, low-relief structure of rough stones atop the limestone bedrock ledge at the north end of the Knob overlooking Wildcat Creek valley (Figure 5). Based on surface indications, it appears to be the disturbed remnants of a stone and earth mound. 14RY654 is a scatter of chipped stone debris along the eastern slope of the Knob. The debitage is largely of a whitish or light gray chert. Similar material is present at 14RY656, situated along the upper slopes of the long north-south ridge west of the Knob (Figure 6). It is defined as a lithic collection station where prehistoric peoples gathered and tested chert. Although no outcrop of chert is clearly definable on the surface, gray chert nodules and discontinuous lenses of chert are present near the upper surface of much of this ridge in what is tentatively identified as the Three Mile member of the Wreford limestone. That prehistoric groups visited this location in search of chert suitable for chipped stone tools is evident from abundant debitage, tested pieces, and a few bifacial blanks found during surveys along the ridge slopes. The sites noted here were recorded during the Manhattan Archaeological Survey in 2009 (Ritterbush 2009). Others have been reported over the years in nearby Wildcat Creek valley, including a series of sites spanning at least the Archaic to Late Prehistoric periods. Most were probably camps or more permanent habitations (e.g., CPt farmsteads). 14RY642, unfortunately destroyed in the 1930s, appears to have been a CPt cemetery, located along the southern edge of the valley near the mouth of a north-flowing tributary of Wildcat Creek immediately east of the Knob (Ritterbush 2009:102–103, 2010). The number and diversity of sites in Wildcat Creek valley, together with those on the nearby uplands, indicate a landscape used for thousands of years by people who pursued a wide variety of daily activities. 14RY652 demonstrates the connection of past inhabitants with this landscape, as do the adjacent 14RY653 and other upland mounds (e.g., 14RY42, 14RY43, and 14RY44) that once stood nearby on the divide between Wildcat Creek and the Kansas River. Griffing (1888) and others knew many of these and likely dug into them. A number have since been destroyed through construction of modern residential neighborhoods (Ritterbush 2009).

Figure 5. View north over 14RY653 at the north end of the Knob after a spring burn. (Photograph by L. W. Ritterbush, April 2013.)

Figure 6. View west from the Knob of the eastern side of 14RY656, a lithic collection station along the upper slope of the upland ridge. (Photograph by B. Logan, June 2016.)

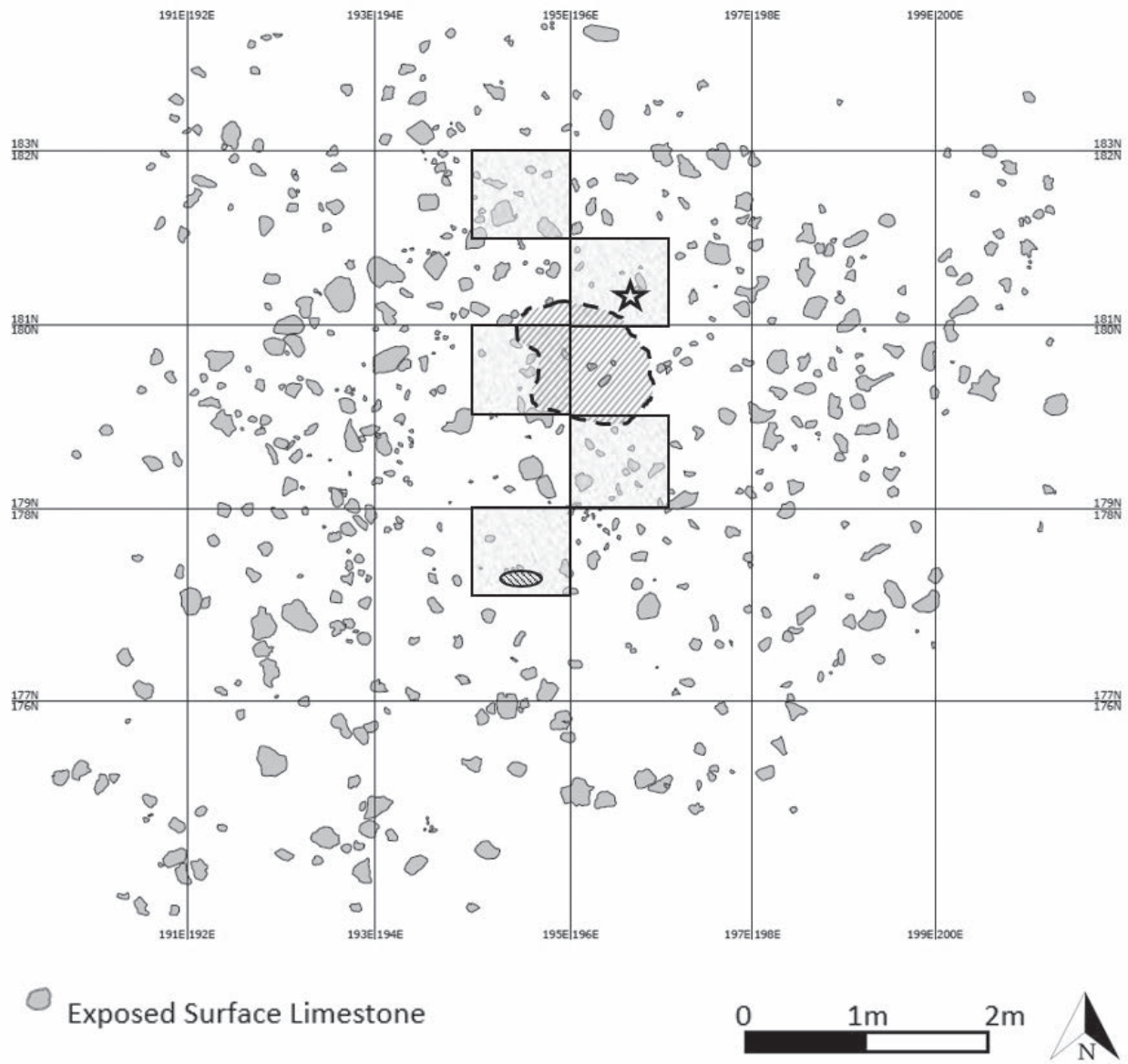

Figure 7. Plan map of the 14RY652 surface. Excavated 1 by 1-m units are lightly shaded, and the central depression is outlined. The star in 181N 196E indicates the location of the tibia fragments, and the hatched area in 178N 195E marks the tool cache. (Base map by S. Kempf with additions by J. Hanshu.)

14RY652 is a low, dome-shaped feature, circular to oval in shape, measuring approximately 7–8 m along its north-south axis and 5–6 m along its east-west axis (Figures 4 and 7). With a maximum height of about 40 cm above the surrounding surface, the relief of the mound is not great. Its location, general form, and exposed limestone suggest that it is not of natural origin. Limestone blocks of varying sizes and shapes were used in construction. The general dome shape is interrupted in part by an oval depression near the center. This depression, with a maximum depth of 30 cm and irregular outline no more than 2 m in diameter, gives the overall feature a doughnut-like appearance. Similar depressions observed in other regional mounds traditionally are assumed to be remnants of early nonprofessional explorations or the possible result of collapsed inner chambers.

The decision to conduct limited test excavations of 14RY652 was driven by the landowners' desire to initiate development plans of the Knob and adjacent lands. Most of the parcels surrounding this

property have been developed over the past decade, primarily for residential purposes. Continued growth of the City of Manhattan has placed high demand on this property. When land modification and construction proceed, stone and earth fill will be needed for city roads across the dissected terrain. The closest source of fill is the Knob where 14RY652, 14RY653, and 14RY654 are located. Removal or modification of this landform threatens these cultural resources. Based on surface survey, the first two of these were interpreted as possible burial features and, therefore, potentially fall under the State of Kansas UBS statute. It was imperative that the landowners learn whether these features contained burials requiring UBS protection. Thus, archeological testing was necessary to evaluate the origin and function of these hypothesized tumuli. One of the primary goals of the testing project was to determine whether one or both held burials. If so, it was necessary to evaluate the condition of their deposits and the remains within. Fieldwork timing was influenced by the fact that a Kansas State University (KSU) landscape architecture class was scheduled to create development proposals for the property and needed information to guide that process.

Methods

14RY652 and adjacent 14RY653, 14RY654, and 14RY656 originally were identified during a pedestrian survey conducted in 2009. The Manhattan Archaeological Survey included inspection of selected parcels of land believed to have high potential for future development within the Manhattan Urban Area (Ritterbush 2009:111–113). Discussions with the landowners about the likelihood that 14RY652 and 14RY653 contained prehistoric interments and the UBS implications eventually led to a request for confirmation of the function and contents of these sites.

KSU Professor of Anthropology Lauren W. Ritterbush submitted a request in April 2016 to the UBS Preservation Board to conduct limited controlled excavations of one or both of these features to test the hypothesis that they are prehistoric mortuary structures. Given the presence of a depression near the center of 14RY652 and the generally flat form and haphazard scatter of stones defining 14RY653, a second goal was to determine the extent of post-construction damage. Members of the UBS Preservation Board were polled by the chair Robert J. Hoard, and consent was given. Due to time limitations, only one of the two sites could be tested. Because it appeared to be less disturbed and more readily defined on the surface, 14RY652 was selected.

Test excavations were conducted as part of the 2016 Kansas Archaeological Field School (KAFS) under the direction of KSU archeologists Ritterbush and Brad Logan. Twelve KSU undergraduate students participated. Prior to the investigation, the students were trained over two weeks in general excavation techniques at another site in Wildcat Creek valley, archeological ethics, and the UBS statute. The project at 14RY652 was conducted between June 20 and 30, 2016, with the first week devoted to surface mapping and gridding. Hoard was present during the June 27–30 fieldwork as a representative of the Kansas Historical Society and the UBS Preservation Board.

Preparations for excavation and collection of detailed data from the site locality included surface survey, detailed mapping, and photography of surface indications of human modification; mapping of the Knob; and establishing a grid. Pedestrian survey involved the student crew walking transects approximately 3 m apart over the upper surface (and later the slopes) of the Knob, scanning the ground for artifacts and past disturbances. Ground visibility was limited by prairie grasses. The landowner typically burns the property each spring to remove red cedar saplings and other unwanted vegetation and grazes a few cattle during the summer. However, because of unique circumstances this year, neither was done, resulting in somewhat taller and thicker prairie grasses than in past years. The pedestrian survey located only a few flakes and other debitage, which were marked with pin flags and later mapped but not collected. 14RY652 and 14RY653 were difficult to discern due to ground cover, attesting to their subtle nature and the familiarity with the terrain needed to distinguish displaced limestone blocks from natural limestone outcrops. Students reexamined the specific spots where the mounds previously had been recorded. Then they were able to identify the low rise of each site, formed in large part by dis-

placed stones. Later the vegetation was cut back to better define surface indications. The students tuned into subtle clues and used comparative information to identify the possible burial features. Key characteristics were the bluff-top location overlooking a stream valley, displaced stones situated away from or adjacent to a natural outcrop, some stones that were not flat lying or were piled atop one another, and a depression with scattered small stones near the center, suggesting possible disturbance or subsidence.

Following survey, an arbitrary datum was established with rebar set in the ground in an unmodified spot near the top center of the Knob between 14RY652 and 14RY653. Its position was set arbitrarily as 200 m north, 200 m east with elevation at 100 m. This datum was used for mapping the upper surface of the Knob, for gridding 14RY652, and for measuring depths of excavation units and piece-plotted finds.

An Electronic Distance Measurement (EDM) device was used to map 14RY652 and 14RY653 and the surrounding land. Locational data collected in the field were entered into Golden Surfer 9 software to create a general topographic map (Figure 8). As indicated by this map, the upper surface of the Knob is generally flat, but not level, and measures roughly 100 m north-south by 50 m east-west. The bluff has a distinct edge, marked by blocky outcropping limestone. Below this edge on the south, east, and north, a fairly steep slope of about 5–7 m gives way to a more gently inclined surface. On the west the slope from the Knob edge extends largely unbroken down to the head of a north-flowing intermittent tributary of Wildcat Creek. The surface of this landform is mapped as Crouse limestone (a non-chert bearing limestone), with Blue Rapids shale forming the slopes (Kansas Geological Survey 2000). Beyond the upper limestone ledge that delineates the Knob, bedrock is only occasionally and subtly visible on the surface. One thin bedrock layer is barely exposed in scattered places between the ledge and 14RY652, generally marking the highest and near-central part of the landform (Figure 8). 14RY653 sits on and only slightly back from the ledge at the Knob's northern end. Not well defined, it is visible as a rough oval of displaced limestone blocks and shallow surface depression.

Close interval measurements were taken across 14RY652 and the associated depression to create a detailed map of the site (Figure 9). Its edges are not clearly defined, but elevation and scatter of limestone were used to estimate spatial dimensions. A grid of 2 by 2-m units, aligned north-south, was established, delineating an area of 120 m^2 that fully incorporated the mound (Figure 7). After the grid was marked with rebar and string, the locations of surface-exposed rocks in selected units were plotted on hand-drawn plans for each of the 2 by 2-m units in which a test pit was planned. These units and all others within the grid were photographed using a tripod stand to create 1 by 1-m images of comparable scale, which were later "stitched" together using image software. While these procedures were tedious, they provide a detailed surface map that represents the feature prior to excavation (Figure 7).

Five 1 by 1-m units were excavated alternately along a north-south transect across the approximate center of the low stone rise (Figures 7–9). Their southwest corner grid coordinates from south to north are 178N 195E, 179N 196E, 180N 195E, 181N 196E, and 182N 195E. These units provided a cross section of the main portion of the mound, including part of the central depression. 180N 195E encompassed the western portion of the central depression, while the southwest corner of 181N 196E covered a small segment of this disturbed area (Figures 7 and 9).

Each unit was dug in 10-cm levels, with a plan of the exposed rocks and summary notes recorded at each level floor. Depths were measured using the EDM. The highest elevation relative to the mapping point north of the site was approximately 100.40 m. Levels were measured below this point, making level 1 from 100.40 to 100.30 m (40–30 cm), level 2 from 100.30 to 100.20 m (30–20 cm), and so forth. In this way levels were determined above and below the vertical datum (100.00 m, as the ground surface of the mapping point was designated), rather than their depth below the mound surface, as that varied.

As rocks were encountered, the matrix around them was removed for screening through ¼-inch hardware mesh. The screening area was located a short distance south of the mound, with a screen assigned to each unit. Exposed rocks were drawn on graph paper, photographed to document construction, and removed. These were placed near the screened matrix from their units so they could

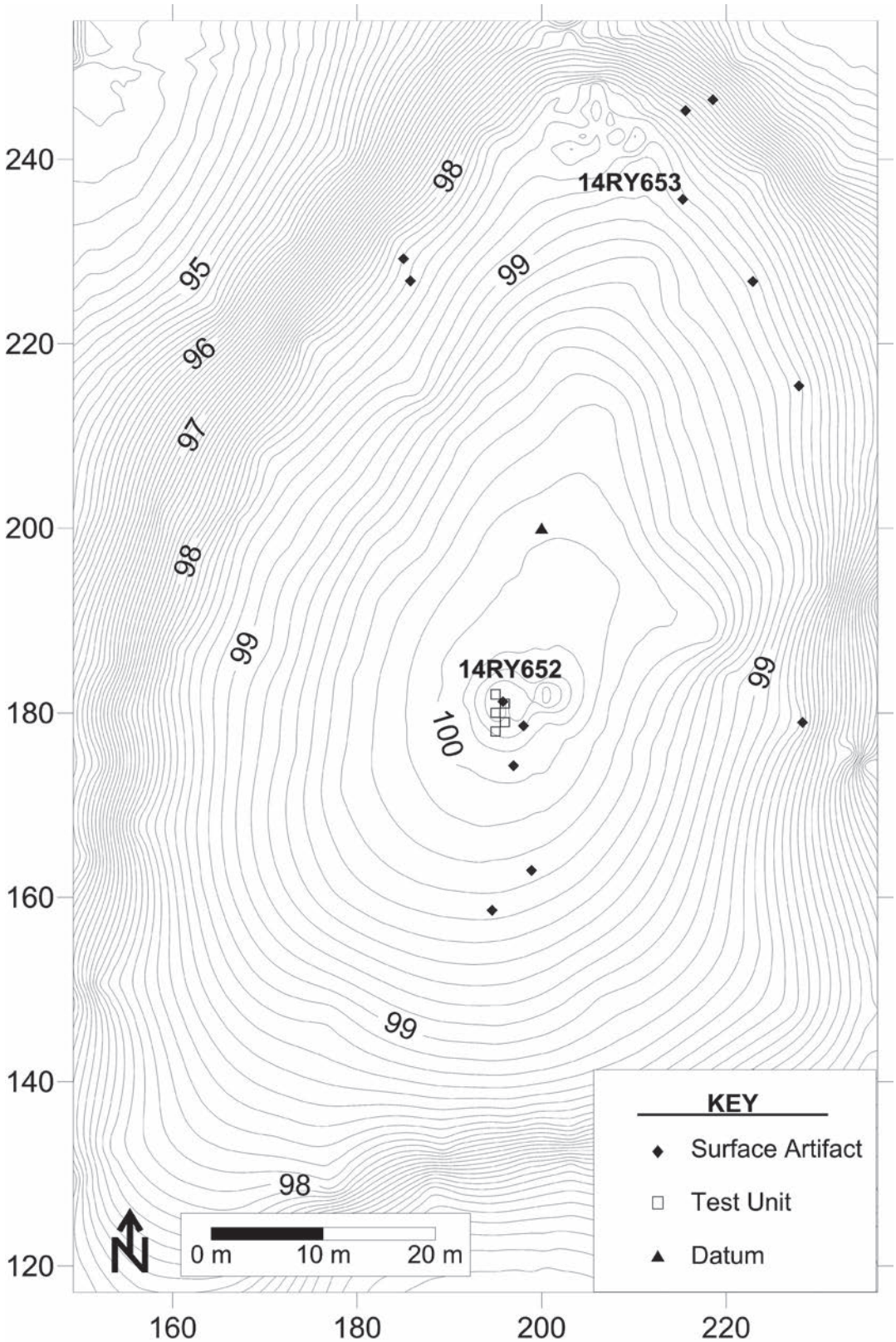

Figure 8. Topographic map of the Knob, showing 14RY652 and 14RY653, surface artifacts, test units to scale, and site datum. The contour interval is 10 cm.

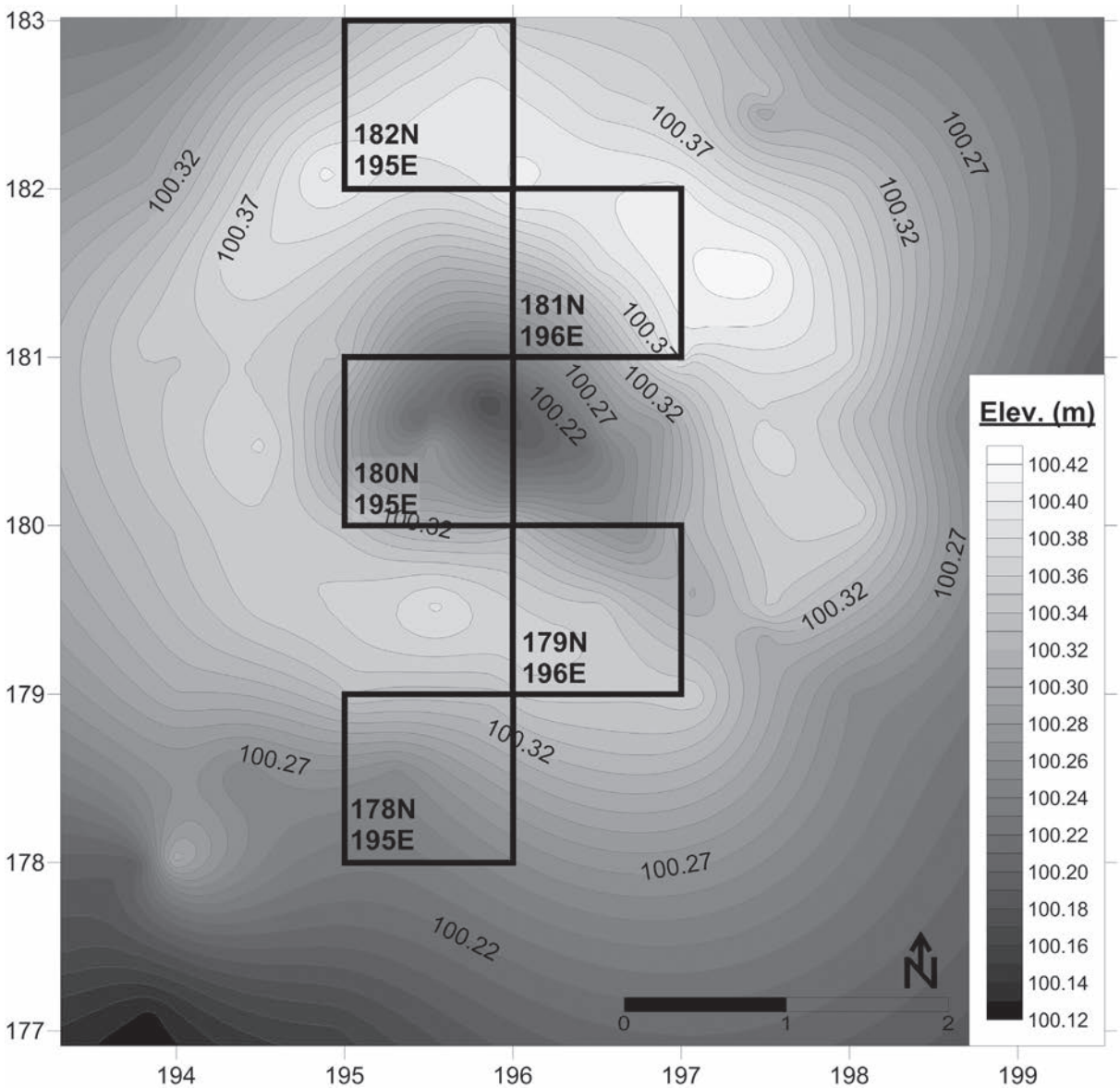

Figure 9. Detailed topographic map of 14RY652, showing excavated test units. Elevations are based on the datum, which was set arbitrarily at 100.00 m. The contour interval is 1 cm.

be returned to the unit of origin when the excavation units were backfilled at the conclusion of the project.

All artifacts or bone fragments encountered during excavation larger than about 2 cm in greatest dimension were mapped in situ and recorded with a field number (FN) at the mapping station, on the appropriate level form, and on the bag into which the object was placed. Items recovered from the screen were put in bags labeled with the corresponding unit and level. Mapping data, surface plans, level forms and plan maps, photographs, FN sheets, and other documents pertaining to the 14RY652 investigation are curated at the Archaeology Lab Archives of the KSU Department of Sociology, Anthropology, and Social Work in Manhattan.

Results

Investigation at 14RY652 included complete or partial excavation of five 1 by 1-m units. The information gathered for each unit from south to north

Figure 10. Plan view of 178N 195E. This southernmost excavation unit extended through irregularly laid limestone blocks to an underlying brown loess. Soft gray sediments were present in the extreme northeast corner below an overlying flat stone, visible in the upper right portion of the unit.

across the mound is described below, followed by a summary and discussion of results. While sufficient data were amassed to address the project's primary goals (origin and function and extent of previous damage), additional excavation would have resulted in a larger database from which other research questions could be addressed, such as form and construction of the overall feature, number and kind of interments, distribution of burial goods, age, and more.

178N 195E

The southernmost unit, identified by the coordinates of its southwest corner, 178N 195E, was located at the outer portion of the mound where the ground surface slopes to the south and west. The elevation of the northeast and southwest unit corners were 6.5 and 16.5 cm below the highest point of the feature, respectively. Because of the slope (10 cm over a distance of 1 m), the first level did not encompass the entire unit. Six levels were excavated, with the lowest extending into undisturbed deposits (Figure 10). The fill was composed of roughly laid natural limestone blocks of various sizes and shapes and gray sediments among the rocks. The stones, similar to others elsewhere in the feature, did not display quarry marks or evidence of shaping. They were very similar to naturally fractured and weathered stones present along bedrock outcrops associated with the Knob. Minute red and yellow dots were noticed on one surface of a specific limestone slab. Upon close visual inspection in the field, these specks proved to be naturally oxidized iron minerals, not remnants of paint or prepared pigment. Similar flecks were observed on some of the naturally outcropping limestone exposed on the Knob. Given that this stone was found below the surface, these oxidized particles suggest that it was once on the surface, exposed to the air, and later was moved as construction material for the mound.

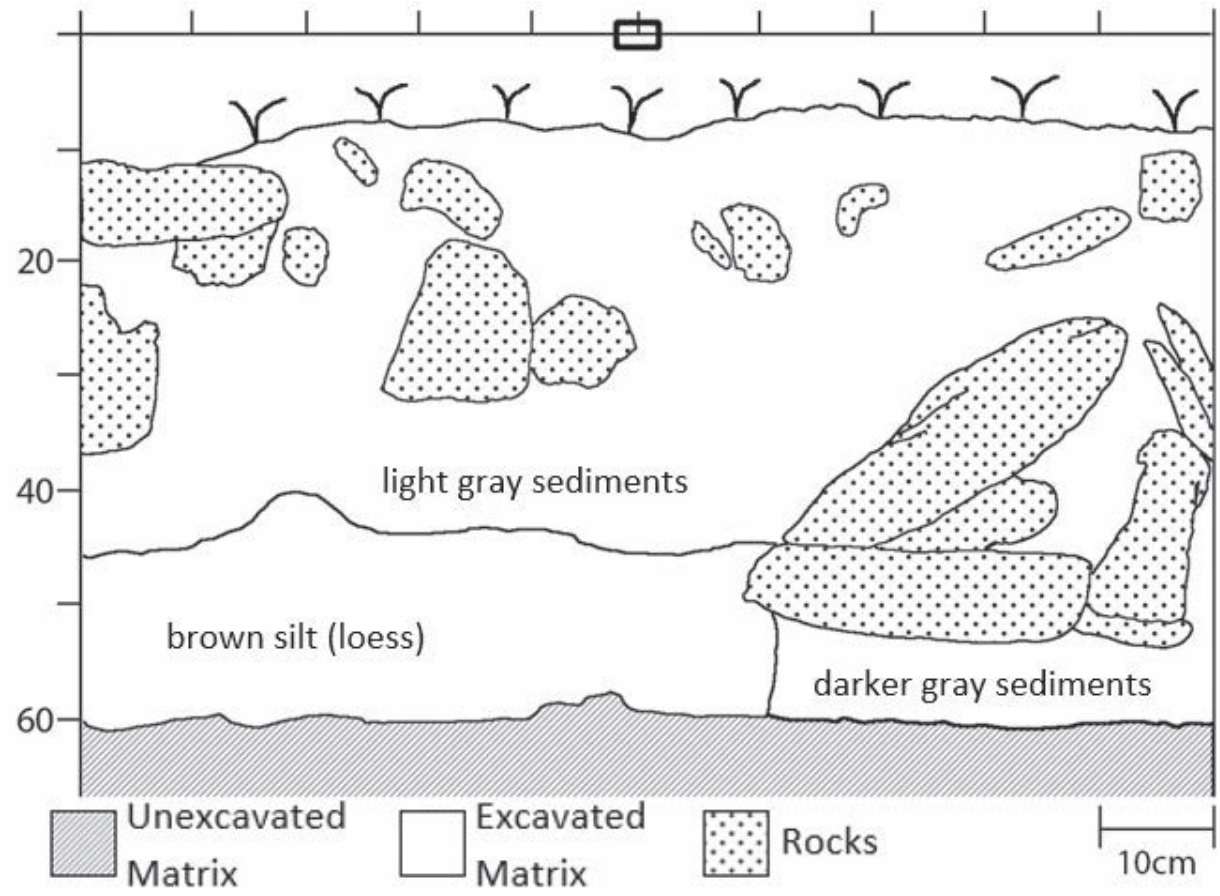

Figure 11. North wall profile of 178N 195E.

Although the depth of the fill was variable due to slope, it was approximately 35 cm thick in much of the unit (Figure 11). This layer was somewhat thicker in the northeast corner where several large stones, at least one steeply inclined, one flat-lying, and another vertical, appeared to overlie soft gray silt comparable to that in the fill. Unfortunately, these stones prevented further exploration of that possibility. Excavation in the adjacent unit immediately northeast did not reach an equal depth; thus, it is unclear if a below-mound pit had been dug into the natural silts (loess) topping this part of the Knob.

Natural sediments were encountered at the base of the rocky fill (Figures 10 and 11), approximately 45 cm below the high point of the mound. KSU Professor of Soil Classification and Mineralogy Mickey Ransom identified the compact brown silt as a B horizon formed in Peoria loess, which is a fine-grained sediment deposited during the Last Glacial Maximum of the Late Pleistocene, a period before humans entered continental North America. The loess seemed undisturbed except possibly in the northeast corner under the lowest stones, although, as discussed below and in Table 1, some debitage was collected from the deepest two levels. The sediments in these lower levels were partially or mostly brown silt, but dislocated fill also was intermingled in parts of these levels (e.g., under the northeastern corner rocks). As most artifacts from these lowest levels were recovered through screening general level fill, it is impossible to identify their provenience more exactly. One large (5.38 cm in maximum dimension) secondary flake with calcium carbonate on its ventral surface came from a depth of about 45 cm below the ground surface (bgs), putting it at or close to the interface of the rocky gray sediments and the subsurface brown silts.

Cultural materials from 178N 195E consisted of debitage and three bifaces. Because of the slope, level 1 covered only the northern third of the unit.

Table 1. Cultural Material Recovered from 178N 195E.

Depth below top of mound (cm)	Debitage (count)	Other (count)	Total mass (g)	Comments
0–10*	3	0	14.1	1 large flake (13.4 g)
10–20	7	0	13.3	1 large flake (11.2 g)
20–30	20	0	14.8	1 large shatter (8.9 g)
30–40	44	3	82.2	2 bifaces (36.2, 20.7 g)
				1 biface fragment (6.5 g)
40–50	29	0	75.4	4 large flakes (10.0, 4.7, 16.9, 27.7 g)
50–60	10	0	8.5	1 larger flake (6.3 g)
Totals 0–60	113	3	208.3	

*Level 1 was incomplete due to sloping surface.

Figure 12. Cache of hafted (FN 14) and unhafted bifaces (FN 13) in level 4 of 178N 195E, roughly 15–20 cm bgs.

Fewer than eight flakes were collected from levels 1 and 2, perhaps in part due to the smaller volume of excavated sediments and because the surface sediments may have been deposited in historic times. Greater quantities came from the lower levels (Table 1). Most were small to very small pieces of debitage (e.g., retouch flakes) with maximum dimensions less than 2 cm, recovered by dry screening through ¼-inch mesh. Some of the debitage from all units was less than ¼ inch in maximum dimension; more microdebitage may have been caught by finer mesh. Nearly all the debitage was of a local white to light gray opaque chert.

The most noteworthy finds in this unit were a cache of two complete bifaces and the basal portion of a third, discovered nearby (see Figure 7 for location). The complete bifaces (FN 13 and 14) were encountered roughly 15–20 cm bgs in gray sediments with rocks immediately above and below, evidently intact (Figure 12). They lay parallel and inclined, with tips angled up and generally pointing west. Apparently they were not hafted, as indicated by their position among the rocks. Their close association and alignment suggest purposeful placement together near the outer edge of the stone and earth feature, possibly as an offering or burial good. The authors infer that these were intentionally interred together after mound construction began but before its present form was attained. The basal fragment of a broken stemmed point (FN 12)

Figure 13. Bifaces uncovered in level 4 of 178N 195 E.

was found at the same depth approximately 20 cm to the east. It also was in the rocky fill, immediately above a rock. Interestingly, these specimens were not directly associated with a burial and were sandwiched between rocks with relatively thin layers of gray sediments buffering their positions.

The bifaces from 178N 195E (Figure 13), unique among the artifacts retrieved during the small-scale excavation, appear to have been locally made. Although not identifiable to specific type of Permian Flint Hills chert, the raw material resembles Three Mile, Schroyer, or Florence chert, all of which are available nearby and widely used in this region. The authors' subjective opinion is that FN 13 and 14 were fashioned from a distinctive variant of Three Mile, which outcrops nearby on several ridges on the divide between Wildcat Creek and the Kansas River valley, and may have been obtained from 14RY656 immediately west of the Knob. The stone is a fairly uniform white to light gray opaque chert, while FN 12 includes a slightly more translucent and darker gray chert (Table 2). FN 14 is subtly lighter in color and displays a slight gloss compared to the other specimens. Although it has been flaked, a remnant of the inner layer of very white cortex is present on one surface (Figure 14, center), and adjacent to that is a very small area of strong brown semi-translucent chert. Much of the debitage found throughout the mound is similar to the cherts from which the complete bifaces were formed, especially the lighter chert of FN 14 (Figure 15). The more variable gray chert from which FN 12 was made grades between lighter and darker hues. Ritterbush speculates that this is more like the apparently preferred semi-translucent gray chert, commonly recognized in local archeological assemblages. The

Table 2. Chert Type and Color of Bifaces (FN 12, 13, 14) Uncovered in 178N 195E.

Artifact number	Chert type	Obverse color 1	Obverse color 2	Reverse color 1	Reverse color 2
FN 12	Permian	5YR6/1	5YR7/1	5YR6/1	5YR7–8/1
biface basal fragment		gray	light gray	gray	light gray to white
FN 13	Permian	2.5Y7–8/0	NA	2.5Y8/0	NA
complete biface		light gray to white		white	
FN 14	Permian	2.5Y8/0	NA	2.5Y7–8/0	5YR8/1
complete stemmed biface		white		light gray to white	white

Figure 14. Obverse view of bifaces from level 4 of 178N 195E.

lighter colored, opaque chert from which FN 13 and 14 were made exists in area artifact collections and at certain chert sources, including 14RY656, but the authors' impression is that this material may be more brittle and less frequently selected for daily use tools. These subjective observations elicit the inference that certain people chose the lighter colored chert for different purposes. Could that purpose have been to fashion funerary objects or offerings that would not need to be made of the (less brittle?) material preferred for frequently used tools? These speculations require formal testing. Another observation, perhaps related to the above, is that FN 13 and 14 have sharp edges, lacking macroscopic use-wear, as if the tools were crafted solely for interment.

The 14RY652 bifaces cannot be easily classified according to archeological types (Figures 13 and 14). FN 13, the largest (123.35 mm long), is lanceolate, defined as length greater than three times

Figure 15. Bifaces from 178N 195E and ventral surfaces of a sample of debitage from 181N 196E.

(3.75 in this case) the width, with the greatest width just below the mid-point of the blade. This artifact is complete and lacks a formal hafting element. One lateral edge is straight to convex, while the other is strongly convex. It has a small straight base, formed by a natural fracture. The finely flaked surfaces display variable flake scars, many of which are oblique. FN 14 is shorter (85.02 mm) and more ovate with a length-width ratio of 2.74. It has a short contracting stem with one gently sloping shoulder, another more defined shoulder, and a straight flaked base. The lateral edges are convex. Both complete bifaces are thin and finely made with a maximum thickness slightly less than 10 mm (Table 3). FN 12 consists of the basal fragment of a stemmed point or knife. It is narrow with a shallowly rounded and slightly more defined shoulder and straight base. The stem is square to contracting.

Unfortunately, these artifacts are not diagnostic as chronological markers. They provide clues to past mortuary behavior and feature integrity. Their presence suggests that interment of burial goods or offerings was practiced by the mound builders or later visitors. Tools, such as projectile points or knives, are relatively common in regional tumuli. Their location near the outer edge, as occurred at 14RY652, has not been reported previously, probably due in part to lack of controlled and documented excavations. This location and their interment in the rocky fill, and because they were not directly associated with a burial, imply that they were placed during construction or were added, possibly during reuse or additions to the mound. FN 13 and 14 appear to have been intentionally laid together as unhafted tools, made from light, opaque Flint Hills chert like that of most of the debitage from the fill. It is unclear whether FN 12 and the debitage scattered throughout the fill were purposely or incidentally incorporated, although the relative lack of artifacts on the surface of the Knob surrounding 14RY652 suggests that flintknapping may have occurred atop the mound during construction rather than nearby. Placement of the paired bifaces in the outer portion, not directly associated with a burial, demonstrates that cultural material can be expected outside the central area and as individual caches.

Table 3. Measurements of Bifaces from 178N 195E.

Artifact number	Length (mm)	Max width (mm)	Max thickness (mm)	Blade base width (mm)	Stem length (mm)	Max stem width (mm)	Min stem width (mm)	Mass (g)
FN 12 biface basal fragment	(37.98)	21.06	7.71	20.01	20.68	15.67	13.15	(6.5)
FN 13 complete biface	123.35	32.90	9.37	NA	NA	NA	NA	36.2
FN 14 complete stemmed biface	85.02	31.04	9.61	28.5	20.25	22.75	13.77	20.7

Cumming (1958:52) alludes to this at Sweat Bee Mound in nearby Pottawatomie County. Important to addressing one of the current project's research questions, the biface cache indicates that this portion of 14RY652 has not been disturbed since prehistoric times.

179N 196E

179N 196E was located immediately northeast of the southernmost unit described above. Its northern edge overlapped a small part of the central depression. The surface was only slightly lower (4–8 cm) than the highest point. Levels 2 and 3 contained little dirt between the numerous stones, some of which were as broad as 40 cm (Figure 16). The density of stone made excavation and associated documentation slow and tedious. In the time available only the upper three levels were excavated, reaching 30 cm bgs. At that level stone continued to dominate the matrix.

Figure 16. Base of the upper level of 179N 196E, showing the density of limestone below the mound surface.

Table 4. Cultural Material from 179N 196E.

Depth below top of mound (cm)	Debitage (count)	Other (count)	Total mass (g)	Comments
0–10	0	1	0.9	1 wire
10–20	6	1	5.3	1 wire (1.5 g)
20–30	7	0	3.6	
Totals 0–60	13	2	9.8	

This unit yielded significantly fewer artifacts than the others, likely because the excavation never breached the dense rocky fill. Among the few items recovered were 13 small pieces of debitage and 2 pieces of wire (Table 4). The former were largely white opaque chert, material similar to that of the other chipped stone artifacts. Several specimens were white with remnants of fine banding. The wire is believed to be related to historic activity along the unit's northern edge. One piece, found about 20 cm bgs, suggests that a portion of the mound was displaced and later filled or that dislocated materials were thrown or lost atop it in historic times. In situ rocks in the remainder of the unit show that most of the stones and earth have not been disturbed since construction.

It is unfortunate that time constraints did not allow full excavation of this unit. Its near-central location, the dense rock cap, and tantalizing clues in the rocks and sediments near the base of the unit immediately to the southwest (see 179N 195E above) make it intriguing. The crew did not penetrate the rock layer to determine if human or cultural remains lie intact below this section or to test the hypothesis of pre-construction excavation (perhaps for a burial chamber) into the subsurface deposits. It is evident that looters would have had an equally difficult time digging through the rock layer, which may explain why historic damage was limited to a relatively small area north of 179N 196E.

180N 195E

This unit was selected for excavation in part to test the extent of post-construction disturbance (Figure 7). Its surface sloped down from west to east into the shallow depression being investigated. In the northeast corner the surface of the depression was 16 cm deep, measured from the highest point of the mound. A relatively large rock was partially

Figure 17. Base of level 2 of 180N 195E. Feature 1 fill is evident in the eastern half of the unit.

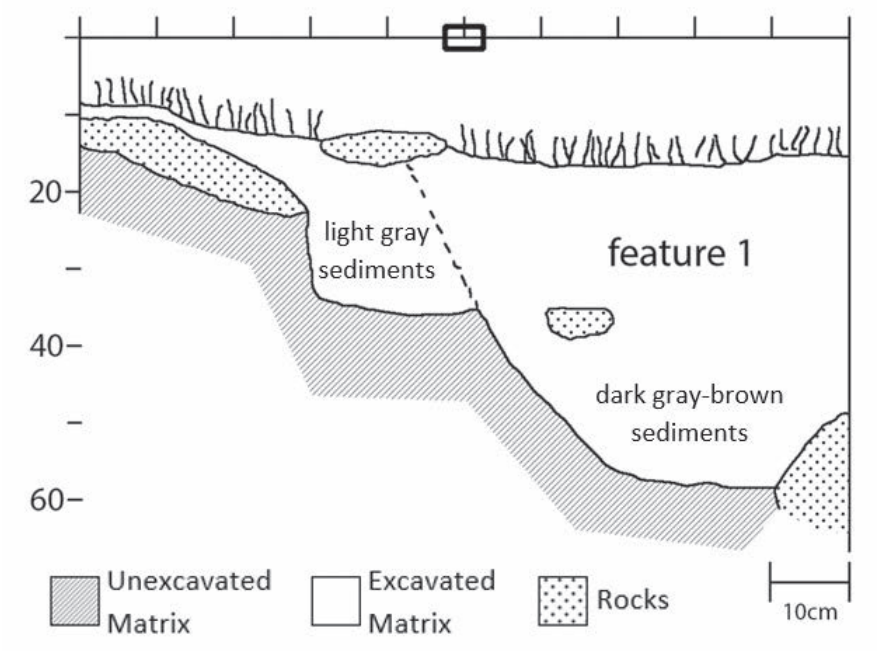

Figure 18. North wall profile of 180N 195E, showing cross section of Feature 1.

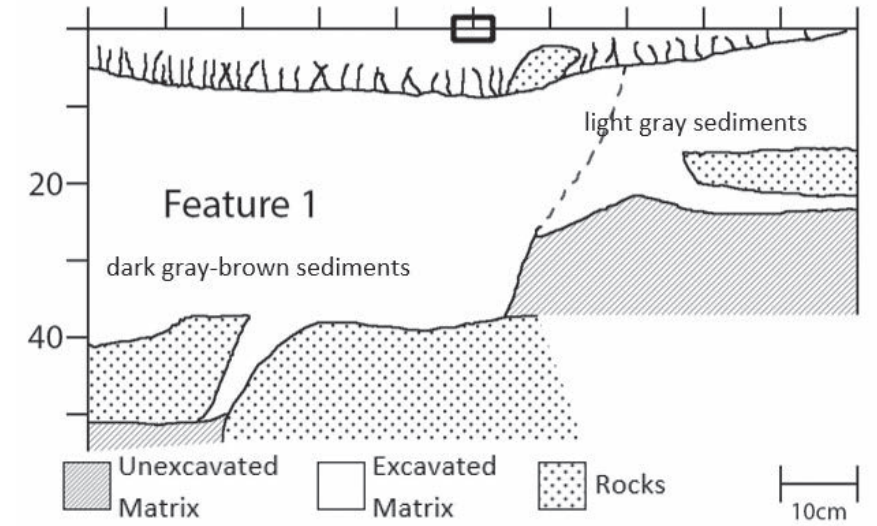

Figure 19. East wall profile of 180N 195 E, showing a cross section of Feature 1.

exposed on the surface within the southern portion, appearing to form part of the depression's southern edge (Figure 17). The surface of the western half of the unit sloped gently upward out of the depression to a height along the western edge of 6 cm below the highest elevation. Only the upper 24 cm of the westernmost portion of 180N 195E was excavated to help define the western limit of the damaged area, which was labeled Feature 1.

The significant finding in this unit was evidence of post-construction activity. A slightly darker brownish gray, more loosely packed, and generally less rocky dirt defined Feature 1 (Figures 17–19). This defined the remnants of a pit dug through the rocky fill, well after the site was abandoned. The presence of wire in the fill and the history of curious people digging into mounds suggest that the pit likely dates to the late nineteenth or early twentieth century. Feature 1 was excavated to a depth of 65 cm below the highest point of about 40–45 cm bgs (Figures 18 and 19), which seems to be the total depth of the post-construction disturbance, based in part on a large stone exposed on the level floor (Figures 19 and 20). Time constraints did not allow

Figure 20. Plan view of 180N 195E at 65 cm below the highest point of the mound.

deeper exploration, which would have shown what underlies Feature 1 and the adjacent part of the unit. Although rocks were not numerous in the feature fill compared to the intact materials, several rocks were uncovered within the pit.

Most artifacts from 180N 195E are small pieces of debitage, although a couple of larger pieces were found in addition to the two lengths of wire (Table 5). Few cultural materials were recovered from levels 1 and 2 (at the base of which Feature 1 was defined) in large part because only a small portion of the unit fell within level 1 and more so for level 2. Debitage was collected from the rocky deposits outside Feature 1, as well as from the mixed pit fill. With depth the quantity of artifacts decreased in the rocky deposits but increased in the feature. This may relate to debitage in excavated fill washing or falling into the pit after it was abandoned. As in 179N 196E, immediately southeast of 180N 195E, two lengths of wire were unearthed. One, measuring 20 cm long and bent at about 90 degrees at midpoint, was found oriented vertically

Table 5. Cultural Material Recovered from 180N 195E.

Depth below top of mound (cm)	Debitage (count)	Other (count)	Total mass (g)	Comments
0–10	0	1	0.9	1 wire
0–10*	2	0	0.8	
10–20	6	0	2.0	
20–30	13	0	8.4	
20–30 Feature 1	1	1	1.4	1 wire (0.8 g)
30–40	6	0	3.6	1 large shatter (9.2 g)
30–40 Feature 1	7	0	4.9	
40–50**	1	1	23.9	1 large flake (20.8 g) 1 wire (3.1 g)
40–50 Feature 1	14	0	7.0	
50–60 Feature 1	3		0.4	
Totals 0–60	53	2	52.4	

*Level 1 was incomplete due to sloping surface.
**Level not fully excavated.

in the level 5 pit deposits, while the other was in level 3. The sediments outside Feature 1 appeared similar to the materials in the rest of the mound but likely included back dirt from what is interpreted as a "pothunter" hole. The relic seekers probably left the wire, possibly as much as a century ago.

Discoveries in 180N 198E confirm that the prehistoric structure was disturbed well after its construction by the digging of a pit near its center. Combined with finds in nearby units and surface indications, these argue that the extent of interference was limited to an area roughly estimated at 1.5–2 m in diameter (Figure 7) and at least 65 cm below the present surface.

181N 196E

This unit was at the approximate crest of the mound, northeast of 180N 195E. Its surface sloped up gently from east to west, with elevations along the northern and eastern edges ranging 0–2 cm below the high point. Its lowest surface elevation was in the southwest corner, diagonally adjacent to 180N 195E and the excavated portion of Feature 1, at a depth of 16 cm below the crest. Because of elevation differences, level 1 (40–30 cm) did not include the extreme southwestern corner of the unit (Figure 21). Rocky fill was exposed in levels 1–3 but not in its southwestern portion (Figures 22 and 23). The sediments in this corner were similar to the dark brownish gray silt that filled Feature 1, thought to be disturbed through post-construction digging, as revealed in the diagonally adjacent unit 180N 195E discussed above. Some of the earth and stone in the upper levels may be backdirt and discarded materials from the earlier disturbance (Feature 1). These materials may have raised the height of the

Figure 21. Base of level 1 of 181N 196E.

Figure 22. Base of level 2 of 181N 196E. Rocky mound fill was exposed in all but the southwest portion of the unit.

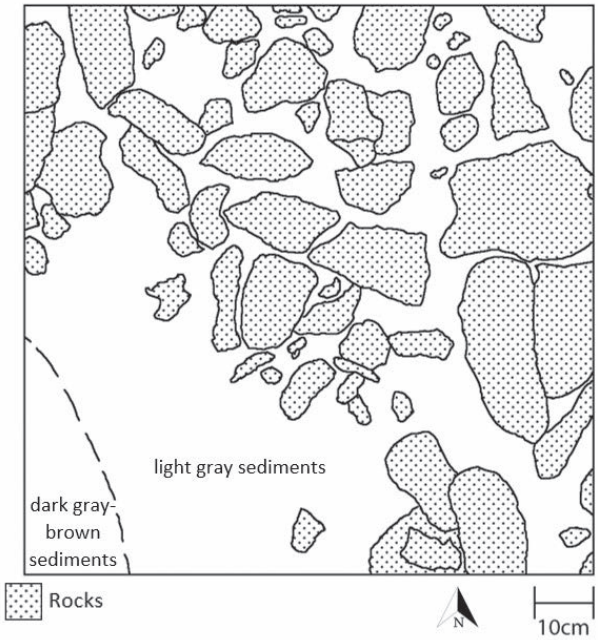

Figure 23. Plan map of level 2 of 181N 196E. Feature 1, an intrusive pit, was exposed in the southwest corner of the unit.

Table 6. Cultural Material Recovered from 181N 196E.

Depth below top of mound (cm)	Debitage (count)	Other (count)	Total mass (g)	Comments
0–10*	19	0	7.1	1 broken blade (1.7 g; 3.16 cm)
10–20	76	3	256.7	6 larger flakes (9.5, 8.7, 4.7, 46.7, 23.5, 107.5 g) 1 blade (18.5 g; 6.69 cm) 3 bone pieces (0.2, 0.5, 0.3 g)
20–30	53	2	126.1	1 tested piece (93.9 g) 1 large flake (9.6 g) 2 bone pieces (0.9, 0.1 g) 7 human bone fragments are not included.
Totals 0–30	148	5	389.9	

*Level 1 was incomplete due to sloping surface.

Figure 24. Three small pieces of unidentified calcined bone, recovered from level 2 of 181N 196E.

mound in this area above its original constructed surface. Only the first three levels were excavated to a maximum depth of 30 cm below the upper surface. Excavation was halted when part of a human tibia was encountered.

Most artifacts from excavated units were collected from the upper three levels of 181N 196E (Table 6). Scattered throughout the fill, they were more concentrated in the two lower levels. Level 1 did not cover the southwestern corner of the unit. Debitage (flakes, blades, and tested pieces) varied in size from less than 2 cm to 9 cm in maximum dimension. As elsewhere, much of the debitage was white chert, comparable to that from which the complete stemmed biface from 178N 195E was made. Some slightly grayer chert, like the stone of the 178N 185E complete biface without a hafting element, and lightly banded chert were represented, too. A large broken secondary flake was found 13 cm bgs, its two pieces immediately adjacent to one another. In addition to these cultural materials, bone fragments were uncovered.

Small fragments of unidentifiable burned bone and a fragmentary human tibia were discovered in the rocky fill. Three small (1–2 cm long) fragments of unidentifiable calcined bone (Figure 24) were recovered from the sediments among the stones of level 3 at a depth of 10–20 cm bgs. Two of the calcined bones have transverse marks along one edge; the cause, whether natural or cultural, of these and marks on other bones is unknown. Various hypotheses about the bones can be proposed. They may represent cremated human remains, defleshed skeletal parts, or accidentally burned animal bones, bone tools, or ornaments. All of these have been documented in other regional reports (Eyman 1966; Phenice 1969). Without further analysis and information about the species (human or animal), elements, and natural or cultural modifications, little more can be deduced from these remains.

A more significant find in 181N 196E is fragmentary bone uncovered beneath a rock near the bottom of level 3, approximately 27 cm bgs, in the south-central portion of the unit (Figures 7 and 25). Removal of the rock revealed seven fragments, measuring 55–104 mm along their longest axes, and associated scraps (Figures 26 and 27). Forensic anthropologist and KSU Professor Emeritus Michael Finnegan visited the site during unearthing of the bone and identified these as part of the midshaft of a left human tibia. The highly fragmented bone was light in color but not calcined and lacked checking indicative of heating. Instead, it appeared weathered, potentially from exposure on or near the ground surface. This observation, the lack of direct association with other human remains, and placement among rocks and sediments within 30 cm of the modern mound surface may indicate secondary deposition as part of the debris from the adjacent pit (Feature 1). No matter how or why placed here, the identification of this bone as human confirmed the mound's association with human remains, addressing one of the primary research questions. Immediately after field analysis, the bone was reinterred in the spot where it was found, and excavation at the site was discontinued.

182N 195E

182N 195E was located at the north end of the alternating line of excavation units. Its surface

Figure 25. Base of level 3 in 181N 196E. Part of Feature 1 is exposed in the southwest corner of the unit. Circled area yielded bone fragments at about 27 cm bgs. A fragmentary human tibia was uncovered directly beneath the rock in this outlined area.

Figure 26. Human tibia fragments uncovered beneath a stone in 181N 196E at about 27 cm bgs. Two overlying fragments, shown in Figure 27, had been removed.

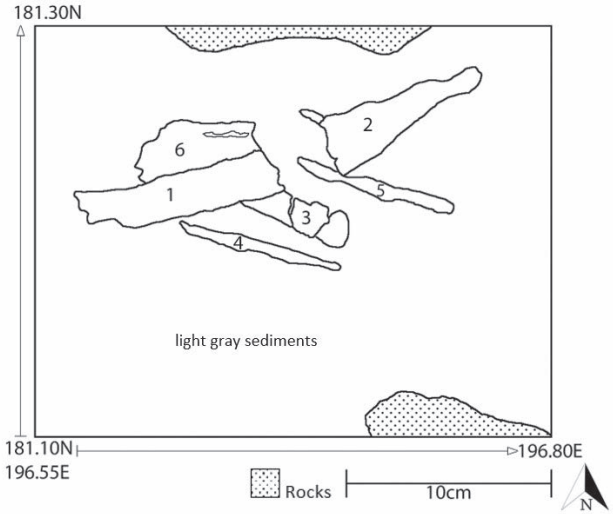

Figure 27. Sketch of all fragments of the human tibia uncovered in 181N 196E.

sloped gently from the maximum elevation of 40 cm in the southeast corner to 35 and 32 cm below the crest in the northeast and northwest, respectively. This square was excavated through level 6, approximately 60 cm below the uppermost surface. As in other units, the undisturbed fill consisted of limestone blocks, with sediments filling the voids among them. The size and density of the stones increased below the upper 20 cm. The rock layer was breached at 35–45 cm bgs, exposing an intact brown silt (Figures 28 and 29), comparable to that below the rocky fill in 178N 195E at the south end of the line of excavation units. This loess is a natural deposit and distinctly different from the mound fill sediments.

Artifacts were concentrated in levels 2 and 3, 10–30 cm below the mound's crest. The amount of cultural material became increasingly sparse after level 3 (Table 7). Most specimens are small pieces of debitage, largely white to light gray in color with some variability. Although all units contained natural limestone and occasionally small chunks of unaltered chert, level 2 also yielded three fragments of exotic stone. One is a tabular piece of black stone with a white quartz vein. A second very small piece of the quartzitic portion of this rock and a small Dakota sandstone chuck were recovered. These natural materials are not native to this immediate area. Dakota sandstone outcrops in the Smoky Hills to the west. The provenance of the other stone

Figure 28. Base of level 5 in 182N 195E.

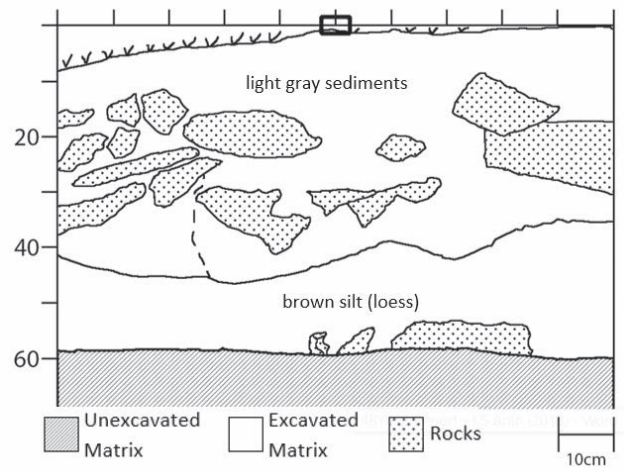

Figure 29. East wall profile of 182N 195E.

is unknown, but possibly the Dissected Till Plains immediately northeast of the Flint Hills. Other natural items noted among the debris from levels 3 and 4 are small pieces of fire-reddened limestone and pinkish chert chips. No evidence of fire occurred in the unit, so it is inferred that these materials were exposed to fire before they were buried. Whether that fire was natural or cultural, such as associated with a cremation, is unknown.

Summary of Findings

14RY652 is a low stone and earth mound, situated near the center of a flat-topped bluff, referred to as the Knob, on the divide between the Wildcat Creek and Kansas River valleys. Another site (14RY653), believed to be a more extensively disturbed mound, is located nearby at the northern end of the Knob. The primary goals of this research were to determine if 14RY652 was a humanly constructed, rather than natural, feature and, if manmade, whether it was a prehistoric burial structure. A related goal was to determine how extensively it had been damaged since its construction. Archeological excavation was necessary to address these questions. Permission to carry out the investigation was granted by the UBS Preservation Board. Prior to initiating test excavations, an EDM was used to collect topographic data on 14RY652, 14RY653, and the surrounding surface of the Knob (Figure 8). A grid was laid over the feature, and the surface of every unit was photographed. The surfaces of those targeted for excavation also were drawn in plan view. The images were used to construct a map of rocks exposed at the surface (Figure 7). These procedures served to document the site and its surroundings in preparation for excavation of a sample of five 1 by 1-m units, alternately aligned along a 2-m-wide north-south transect (Figures 7–9). Excavations were conducted in 10-cm levels, measured from the maximum height of the mound near its center. Plan maps showing every rock were drawn at the end of each level. Artifacts larger than about 2 cm in maximum dimension were mapped in place, and the sediments from among the rocks were screened through ¼-inch hardware cloth.

Table 7. Cultural Material Recovered from 182N 195E.

Depth below top of mound (cm)	Debitage (count)	Other (count)	Total mass (g)	Comments
0–10	12	0	11.6	
10–20	26	2	61.0	1 larger flake (6.0 g) 1 tested piece (39.7 g) 2 non-local stones (3.1, 1.0 g)
20–30	24	0	31.4	1 larger flake (5.2 g)
30–40	4	0	4.1	
40–50	3	0	1.6	
50–60	2	0	0.1	
Totals 0–60	71	2	100.9	

Excavation of units from the southern portion of the mound to the north across its central section confirmed that 14RY652 was artificially constructed. The feature fill was generally densely pack rock with gray sediments among them. No doubt the rock was collected from nearby natural bedrock exposures on the top and upper edge of the Knob. The limestone blocks in the fill do not exhibit quarry or shaping marks and are of sizes easily moved by an individual. There is no obvious evidence of quarry areas on or around the Knob. Judging from the limited excavations, the rock was not laid in any recognizable pattern, and the sediments surround-

ing the stones may have accumulated naturally after construction.

In the time available the crew was able to penetrate the rocky fill in the southernmost and northernmost units and uncover the underlying brown loess, which was distinctly different in color and texture from the gray sediments among the rocks. It held few rocks or other inclusions (Figures 11 and 29). Sub-mound deposits were not reached in the units more central to the overall feature; therefore, the investigators could not discern whether the mound builders had dug into this subsoil. A hint that this may have been the case is the presence of loose, darker gray sediments below the lowest rocks in the northeast corner of 178N 195E, the southernmost excavated unit (Figures 10 and 11). The interpretation that this was the edge of a subsurface pit demands testing, such as exploration of adjacent unit 179N 196E. A related hypothesis is that the naturally accumulated loess was a key attribute that attracted prehistoric peoples to this spot. Over much of the Knob, bedrock is either exposed at the surface or only shallowly buried. The loess beneath the mound suggests that a natural depression or pocket in the bedrock, filled with wind-blown silt, could have been ideal for a group looking for an upland surface into which to inter its dead.

Although the natural depression atop the Knob is obscured by the cairn built over it, a smaller surface depression is evident in the mound. Located near the central portion of 14RY652, Feature 1 is about 30 cm deep. This is thought to be a looters' pit, dug by curious individuals probably in the late nineteenth or early twentieth century when this pastime was common in the region. The test units were laid out such that 180N 195E covered the western part of this depression, while smaller portions were included in two adjacent units. Differences in the matrix, evident especially in 180N 195E, indicated that this surface hollow was underlain by a pit that extended about 60 cm below the highest portion of the mound (Figures 18–19). Two pieces of wire came from this and an adjacent unit, demonstrating that disturbance occurred in the Historic period. When this pit was dug, the fill, possibly containing human or cultural remains, likely was tossed aside, including atop the mound. Thus, some upper level matrix of adjacent units (e.g., 179N 196E and 181N 196E) may be redeposited materials, originating from the post-construction pit. This may be the case for some sediments and rocks in the upper two levels of 179N 196E, which yielded only a piece of historic wire in each. Some of the rocks and artifacts, burned bone fragments, and tibia fragment in the upper levels of 181N 196E also may have been displaced from the looter's pit.

Figure 30. Sample of debitage recovered from level 2 of 181N 196E. This level yielded the greatest amount and largest pieces of debitage.

Prehistoric cultural materials were recovered from all units but were limited in quantity, hardly surprising as the excavations explored only a small portion of the mound and often not the full depth of the fill. The most common artifacts, albeit not large in mass, were chipped stone flakes and shatter of varying sizes, with the majority being small; more than 75 percent of the debitage was less than 3 cm in maximum length (Figure 30). Many of these small flakes resulted from final shaping or retouching of chipped stone tools. The only tools discovered were two complete bifaces and the basal fragment of another. The complete bifaces were finely made of local white to light gray chert and apparently were never hafted or used. One did not have a hafting element, while the other had a short contracting stem (Figures 13 and 14). These were found aligned next to each other on top of rocks and earth,

as if intentionally placed together before being covered with more rock (Figure 12). Interestingly, they were uncovered in an undisturbed outer portion of the mound and were not directly associated with a burial or other feature. The base of a narrow stemmed biface was found nearby (Figures 13 and 14). Unfortunately, none of these tools are clearly diagnostic.

A primary goal of this project was to determine if 14RY652 was a burial feature. Its location on a prominent bluff and general form initially pointed to this identification, as both attributes apply to similar sites that previously had been dug into, often with minimal reporting. This investigation was undertaken to test this hypothesis, which would be verified by archeological evidence of a human burial clearly associated with the mound. For ethical reasons the advance plan was to accept any human bone as plausible proof that the feature was built or used as a mortuary site and to halt excavations at that point, even if other research questions remained unanswered. One mid-shaft segment of a left human tibia was unearthed at a depth of 27 cm bgs of 181N 196E near the center of the mound beneath a rock in the upper deposits (Figure 26). Also from this general area were five small unidentifiable bone fragments. Two were blackened, and three white and calcined, as if burned (Figure 24). Only small debitage was recovered in this unit. Excavation was stopped as soon as the largest fragmentary bone was identified as human, although it does not appear to represent a formal burial. The presence of a weathered long bone fragment, as well as other small pieces of unidentifiable bone and debitage, among the rocks and earth of the upper 30 cm directly adjacent to the intrusive pit raises the possibility that these were secondary remains, originating deeper in the mound. They may have been displaced by relic hunters who discarded the bone and debitage on the surface next to their exploratory pit.

No definitive burials and relatively few artifacts (several pieces of wire, three bifaces, and debitage) were uncovered during the test excavations at 14RY652; however, less than 2 m^3 of the fill was investigated. Only two of five units (178N 195E and 182N 195E) reached natural subsurface deposits. Two of the other units (181N 196E and 179N 196E) were excavated to a depth of 30 cm bgs but were halted due to finding human bone and time constraints. The final and central unit (180N 195E) included Feature 1, the looter's pit. The full depth was reached, although this could not be confirmed by excavating below the pit floor and removing the surrounding matrix. As a result, much more remains to be discovered about the construction and use of this site.

Based on what is known about other regional mounds, the authors suspect that 14RY652 was built during the Woodland period, but this has not been confirmed. Also unknown are construction details, specifically whether one or more pits were dug into the loess before construction and whether one or more burial chambers exist below or within the rocky fill. Many other questions arise. Was the mound erected and used during a single period of activity or over time and by more than one group of people? As in the southern portion of the feature where three bifaces were found, were other objects, presumably funerary goods or offerings, placed with or after burials were interred? The majority of earlier explorations were not carried out by trained archeologists and were poorly documented, so they did not address these questions in a systematic manner. As a result, much remains to be learned. However, legal and ethical issues limit opportunities to gain new insights.

DISCUSSION

The 14RY652 investigation was constrained by the amount of time available for excavation, ethical concerns, and the UBS statute. Despite these limitations, findings align with many of those derived from other mounds in north-central and northeastern Kansas. Construction materials (stone and earth) and form (low circular to oval dome-shaped) are characteristics shared by many of these tumuli and 14RY652. The burned and unburned bone, lithic tools, and debitage found at 14RY652 generally overlap with those reported from similar sites, although the artifacts and human bone from other mounds are more varied (Eyman 1966; Phenice 1969; Schultz and Spaulding 1948). Archeologists have estimated the age of those, primarily based on diagnostic artifacts, as associated with the Woodland period (Eyman 1966). Kauffman (2013) obtained a sample of AMS dates that confirm this attribution but fall within a more specific range

between roughly 350 B.C. and A.D. 375. In some instances artifacts diagnostic of the subsequent Late Prehistoric and early Historic periods also have been acquired. From this it is inferred that some tumuli may have been built or reused by CPt or later peoples approximately 900–600 or 200 years ago, respectively (Eyman 1966; Phenice 1969:72–73, 76). An earlier Archaic affiliation has been suggested for two comparable mounds in north-central Kansas, but that has not been substantiated. Unfortunately, the age of 14RY652 could not be estimated. Given the preponderance of Woodland period remains at similar sites, it is believed that people living during that time built this burial monument, but this or competing hypotheses cannot be confirmed at this time.

Determining when this feature was built and used is essential to situating the human behavior represented by these remains in the trajectory of time and cultural developments in this region and for comparative analyses. Unfortunately, few formal tools were recovered, and the biface forms are non-diagnostic. In some very general ways the narrow-stemmed fragment and possibly the complete stemmed biface are reminiscent of certain Archaic point or knife styles. However, stemmed points were made at many different times, so without more clues, the authors are unwilling to estimate age based on these few artifacts. Radiocarbon dating may provide another means of assessing age, but the only organic material encountered was bone. The confirmed human skeletal material was immediately reburied and is unavailable for further analysis. Several small unidentifiable bone fragments were collected; however, all are burned, so they are problematic for radiometric dating due to the reduction or total destruction of carbon in collagen and inorganic structural carbonate of bone (Chatters et al. 2017:594-595).

Other questions are unanswered. Several relate to form and construction. The investigation confirmed that the basic structure was composed of locally available natural limestone blocks. These stones were not formally quarried, nor were they stacked in any formal pattern, at least not in the explored portions. However, was this the case throughout the mound? Only two complete and three partial 1 by 1-m units were excavated, and the rocky fill was not penetrated in two units closest to its central portion. It was not clear from the two units in which the loess substratum was reached whether the builders dug into the natural sediments in this part of the Knob. However, rocks and gray sediment, typical of the main part of the fill, were found in the lowest level and extreme northeastern corner of the southernmost unit, 178N 195E. Did the mound builders dig a pit into the underlying naturally deposited loess? Furthermore, did they select the Knob as a burial site because of their ability to dig into what appears to be a pocket of loess on the otherwise bedrock-defined surface of this distinctive bluff? More extensive excavations could test Eyman's (1966) classification of mound construction forms and determine whether burial chambers or pits in the subsurface loess or a stone-lined chamber are present.

The crew uncovered one identified human bone and a few other small unidentifiable fragments. Based on what is known from similar features in the region, the authors assume that the human bone was placed here as part of mortuary activities; however, this has not been directly tested. Presuming this was a burial mound, more questions are raised: Was 14RY652 used for more than one burial and at more than one time? How many and what form of burials were present? If human, the small blackened and calcined bone fragments suggest burial of cremated remains. Residents of north-central and northeastern Kansas during the Woodland period sometimes cremated their dead, as indicated by archeological evidence (Logan 1990; Phenice 1969; Thies 1991). Other burial forms and practices also are reported, oftentimes in the same mound. Is that the case at 14RY652? Why was cremation practiced for some, but primary or other secondary forms of burial chosen for others? Additional investigations may uncover more extensive skeletal remains and contextual data, which is lacking for most other excavated mounds, to help address these questions. With modern osteological techniques, much could be gained from a more complete and properly documented set of remains. Likewise, specialized analyses, such as stable isotope analyses and possibly even extraction and analysis of ancient DNA, may reveal dietary and genetic information about the past inhabitants (Conner 2001; Kauffman 2013). Bioarcheological studies hold much promise for gaining greater understanding of past human diet,

health, biological relationships, community organization, and other cultural patterns.

Clues to mortuary and cultural practices of people associated with mounds can be derived from artifacts and their contexts. The complete unused bifaces found in 178N 195E apparently were cached at the outer edge of the mortuary feature while it was being built, which may or may not have occurred as a single event, and not in direct association with a burial. The making and placing of unhafted chipped stone tools in the rock fill during construction or remodeling may be interpreted as a general offering. The meaning of the debitage at 14RY652 is less clear. The crew found debitage on the surface and in the upper levels. Although some artifacts may have been displaced from disturbed lower deposits, near-surface finds may be expected if flintknapping was conducted on top of the mound during or soon after construction. This may be related to on-site production of chipped stone tool offerings, such as the bifaces. Another possible explanation is the scattering of debitage over the mound during or after construction for ceremonial, ritualistic, or other reasons, bestowing symbolic meaning to the debitage or the action. The debitage in or atop the rocky fill could have been part of the earth borrowed for construction, providing clues to the origin of the dirt and reflecting incidental inclusion. This assumes that the sediments among the rocks were placed there purposefully as part of the construction process, but the initial impression is that this likely was not the case. The inter-stone sediments do not include a rich array of cultural materials, as may be expected if collected from a previous campsite or other activity area. It seems doubtful that the dirt was dug up from nearby due to the lack of a visible borrow, the limited or shallow sedimentary deposits, and the scarcity of lithic debris on and around the Knob. The sediments are unlike the submound loess. Instead, the authors believe that the dirt among the stones built up through natural processes over the centuries (e.g., aeolian deposition, growth and decay of organic matter atop and within the crevices of the stone cairn, and rodent activities). These hypotheses require additional study at this and other sites.

Many other questions persist about this prehistoric feature and the activities, values, and beliefs associated with it, as well as the broader cultural behavior of those who built this and other regional burial mounds. 14RY652 holds much potential for researchers and American Indian descendants to learn about the past. However, this will be possible only if the site holds integrity. As discussed earlier, this site had been disturbed after construction in historic times, as demonstrated by the pit dug near its center. While this ruined the integrity of that portion of the mound, more appears intact. Many similar features in north-central and northeastern Kansas have been obliterated in historic and recent times, while others appear to have been damaged at least on the surface. In many cases this is marked by a central depression not unlike that at 14RY652. In other instances, such as nearby 14RY653 (Figure 5), the original structure is less distinct, with displaced rocks outlining a generally circular area, and probably more extensively harmed. Frequently, especially in the late nineteenth and early twentieth centuries, disturbances were caused by curious individuals, who usually had no archeological training, as documented in various sources (Griffing 1904; O'Brien 2006, Parker 1885; Schultz and Spaulding 1948:306; Wedel 1959:203). While such interference often is assumed to have destroyed site integrity, current investigation of 14RY652 indicates that portions of this feature and its contents continue intact. For example, limited excavations and surface observations suggest that only 10–15 percent of this mound was injured by post-construction digging (Hanschu 2019). The visible damage is limited to the central depression and possibly the upper surface of surrounding parts, while none was recognized in other portions of the mound. Furthermore, the finding of purposely placed complete bifaces near the edge of 14RY652 and within the rocky fill intimates that cultural materials may be found beyond the center or directly with burials. This provides insights into past human activities here, but also information that is useful when considering research avenues and preservation or protective measures for similar features or sites. Most mounds in this region appear despoiled, but the 14RY652 investigation demonstrates that even those likely have at least partial integrity and still may hold valuable clues about the groups who built them. Thus, they serve as repositories of data pertaining to the past, as well as sacred reminders for American Indians.

Kansas' UBS statute promotes protection of archeological sites holding human burials. The law supports ethical consideration of the physical remains and potentially sacred objects of past people, as well as the values and beliefs of possible descendants. On the other hand, it often limits research that may provide understanding of the people and societies that once inhabited this region. Protecting burial mounds, especially from accidental or wanton destruction, is extremely important out of concern for the beliefs and values of American Indians, past and present. Preservation protects valuable data that may inform future research. However, knowledge about those buried within and their associates cannot be gained if controlled archeological investigations are never allowed. The process through which the study of 14RY652 was initiated and carried out may serve as an example of why and how a prehistoric burial site may be investigated. In this case the inquiry was limited to a narrow range of research questions, which unfortunately limited the extent of excavations and consequently the amount and kinds of data that were collected and interpretations that could be made. Thus, little information about past lifeways, beliefs, values, and potential relationships with historic or modern populations was garnered. Many questions about 14RY652 may never be answered, especially without further investigations at this and comparable features. Excavation of sites, paired with careful record keeping and analysis, produces and preserves information about those and the people associated with them, thus securing their place in the diverse cultural history of our world.

AFTERWORD

Upon conclusion of fieldwork, the excavated units were lined with landscape fabric and backfilled with the limestone blocks and screened sediments from the corresponding units. The human tibia fragments were reburied where they were found before backfilling. All collected materials were transported to the KSU Archaeology Lab for analysis and will be reburied in the backfilled units after they have been described, photographed, and analyzed. KSU's Archaeology Lab within the Department of Sociology, Anthropology, and Social Work curates the project field forms, notes, maps, and photographs.

On January 12, 2017, the UBS preservation board met in Manhattan at Hoard's request to discuss protection of 14RY652 and, by association, 14RY653. Attending the meeting were five board members: the chair, a representative of the Sac and Fox Nation of Missouri, a physical anthropologist, a historian, and one member of the public. At the time of the meeting, two board positions were vacant: representatives of the Kickapoo Tribe in Kansas and the Prairie Band Potawatomi Nation. The board secretary, the Iowa Tribe of Kansas and Nebraska representative, and the other public member were not in attendance but presented comments and proxy votes to the chair. Also in attendance were one of the landowners, two landowners of an adjacent land parcel, a member of the public, the authors of this report, and the co-director of the 14RY652 investigation. Ultimately, the board agreed that 14RY652 deserved protection under the UBS statute, and 14RY653, located at the north end of the Knob, was included in the protection plan. The board voted to protect an area extending 50 ft from the center of each feature in addition to a 100-ft-wide corridor between them. Development can occur outside these boundaries. Given the extent of the protected zone relative to the size of the Knob, much of this landform likely will be preserved. This is significant as it provides some geographical context for understanding the placement of these mounds and how past peoples valued the landscape in which they lived. More specific plans about the future of the sites (e.g., whether they and the buffer area will be fenced or marked with a plaque) are at the discretion of the landowners or future developer, provided that the features and protective zone are left undisturbed as required by the UBS statute.

ACKNOWLEDGMENTS

Many individuals made invaluable contributions to this project, which would not have been possible without the cooperation of landowners Rod Harms and Stephanie Rolley; they show respect for the early people who made this spot part of their physical and cultural landscape. They graciously allowed access to their land for survey, mapping, student training, and excavation. They also mowed the mounds and surrounding areas, aiding greatly with mapping, excavation, and related activities.

The UBS Preservation Board granted permission relative to the UBS statute to conduct limited excavations, following the research design developed by Ritterbush and Logan. State Archeologist and UBS chair, Robert Hoard, convened the board and was present at and aided with excavation and field recording. Forensic anthropologist and KSU Professor Emeritus Michael Finnegan visited the site on short notice to provide osteological analysis of uncovered skeletal remains. KSU Professor of Soil Classification and Mineralogy Mickey Ransom volunteered his expertise in general field identification of buried sediments. KSU photographer and manager of Photographic Services for the Division of Communications and Marketing Tom Theis photographed the artifacts. The authors are grateful to all of these individuals for facilitating the investigation.

Most of the fieldwork was accomplished as part of the 2016 KAFS offered by KSU. The Department of Sociology, Anthropology, and Social Work and its Anthropology Program provided partial support for the project, specifically for its faculty and student tuition monies. Ritterbush and Logan served as co-directors for KAFS and the analyses that followed. Jakob Hanschu completed much of the lab work and report writing in collaboration with them. KSU anthropology students who participated in the 2016 KAFS were Jordan Casey, Mariah Davis, Eric Gudenkauf, Jakob Hanschu, Alicia Hoffman, Joshua Hoffman, Samuel Kempf, Emma Kohlman, Benjamin McCarthy, Chase Oswald, Susan Schmidt, and Melissa Wible. KSU undergraduate student Samuel Kempf prepared the surface plan map, based on field photographs, and digitized selected plan drawings and profiles. All the individuals and entities listed above played important roles in the assessment of 14RY652 and are appreciated for their support, assistance, and devotion of funding and time.

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A KICKAPOO HORSE RACE NORTH OF FORT LEAVENWORTH, KANSAS, IN 1833

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Horses have long been an important part of Native American culture. This includes horse racing. However, relatively little has been written about the details of that topic. What follows is an analysis of a first-person account of a Kickapoo horse race in 1833.

After horses were reintroduced to the Americas by the Spaniards in the sixteenth century and became firmly established across the Great Plains, horse racing, often associated with heavy gambling, became a common activity among various tribes. This was especially true on the plains and prairies. Nevertheless, in historic sources not much is written about American Indian horse racing. Even when noted, most descriptions lack detail and consist of only a sentence or two. The following 1833 account of a Kickapoo horse race in what became Kansas Territory is exceptionally detailed.

The author's interest in Native American horse racing was reinvigorated by a recent article by William B. Butler (2018) in *Southwestern Lore*, the journal of the Colorado Archaeological Society. During the course of archeological research about the Kickapoo, which focused on the tribe's settlement on its first reservation in what eventually became Kansas (Feagins 2004, 2005, 2017a, 2017b, 2017c), a relatively detailed description of such a race came to light (Irving 1955). It now merited a closer look. First, however, the problems with obtaining historical and especially archeological information on horse racing should be acknowledged.

For at least three reasons Native American horse racing is rarely mentioned in archeological literature. First, at this early date indigenous horse races were often spur-of-the-moment (pardon the pun) affairs, run on an informal, unprepared/unmodified, expedient track. In many cases the track may have been used only once or a few times, so one would expect very little, if any, archeological evidence on the landscape that would identify its special use. Second, much of the riders' personal equipment and the horse gear was perishable; particularly most leather and cloth would not survive environmental rigors. Items made of metal (iron, copper, brass, silver, German silver, etc.) would be exceptions. However, third, it would be extremely difficult to prove that any identifiable garments or tack actually were used during a horse race. One would not expect a native rider to wear any clothing exclusively for racing, likewise tack. Horses were an integral part of the Kickapoo lifestyle. Well before the reservation period, Indians were heavily dependent on horses for hunting, carrying heavy goods, and general transportation, and later as an aid in farming activities. While horses also furnished entertainment, the main problem with proposing horse racing interpretations is the lack of corroborating features. Even when horse-related paraphernalia is discovered archeologically, it is difficult to associate with racing, as horses were commonly used in so many other ways. Unless there is strong support from the historical record, attempted archeological proofs are mere speculations.

Furthermore, archeologists have not been able to affirm horse racing interpretations from evidence remaining in the soil. In Butler's (2018:33) search for horse racing information in the cultural resource database for Colorado, he found only one mention of an archeological site (5GF351) where an "Indian race track" occurred. This use of the site, located on a flat natural terrace containing a plowed field, was identified by an unnamed local landowner in 1978. As Butler pointed out, a linear race track up to half a mile long could have been located almost anywhere in the field. Apparently, this locally identified use of

the site has not been substantiated archeologically. With the soil disturbance by farming, that confirmation might be impossible to obtain.

THE KICKAPOO COME TO KANSAS

The overall history of the Kickapoo tribe is quite complex. As that is not the main focus of this short article, only a brief summary of two Kickapoo bands is presented. The bands, along with some associated Potawatomi, moved from Missouri to the first Kickapoo reservation in Kansas in 1833. The size of this reservation was reduced in 1854 to form the second reservation. That in turn was diminished in 1862 (Stull 1984:79).

The Kickapoo and many other tribes were pushed south and westward by the Iroquois confederation. By the late 1700s and early 1800s most of the tribes southwest of the Upper Great Lakes, including the Kickapoo and Potawatomi, were strong trading partners, and most were cooperative militarily with the British. A state of war developed against the fledgling United States, but by 1815 England and its Indian allies had lost the War of 1812. Although much strife still existed in the region, the stage was set for additional American settlers to come into the Indiana and Illinois country. The tribes were pushed westward. In 1819 some Kickapoo bands settled on a reservation along the Osage River drainage in Missouri Territory (Gibson 1963:80). Other Kickapoo bands remained in Illinois, including one led by Kenekuk, the Kickapoo prophet. His group had not warred against the Americans but practiced considerable passive resistance. Of course, the people had no desire to be forced out of their homeland, and their leader was very skilled in the art of delay (Gibson 1963:89). "Kenekuk, a master of diplomacy . . . knew how to tell whites what they wanted to hear . . . " (Cave 2006:235). Not until the close of the Black Hawk war in 1832 was Kenekuk forced to sign the Treaty of Castor Hill, which provided for a Kickapoo reservation in northeast Kansas on the west bank of the Missouri River.

In January 1833 Kenekuk's band of approximately 400 followers, including more than 100 Potawatomi converts to his nativist/Christian teachings, moved to their new land (Figure 1) (Herring 1988:92). This peaceful, hardworking, farming community had adopted many of the trappings of civilization and Christianity, as long as they could be fitted around the core beliefs of Kenekuk's teachings (Cave 2006:228–229). He kept a relatively tight rein on his followers. Alcohol consumption was prohibited.

Another non-agricultural Kickapoo band, led by Kishko, soon arrived from Missouri and initially settled about 1.5 km away from Kenekuk's village. In 1839 the remaining part of this band, now led by Pashishi (Herring 1988:84; Nielsen 1975:36), moved about 32 km from Kenekuk's village. The two bands did not get along, and the U.S. government had a hard time working with the latter group. Portions of the Kishko/Pashishi band wandered back and forth off the reservation, and eventually almost all of them migrated into what became Oklahoma Territory and then down to the Texas-Mexico border. Some of their descendants probably are among those still living in a village just south of the Mexico border (Latorre and Latorre 1976).

With a new treaty signed on May 18, 1854 (Berry 1972:1215), the remaining Kickapoo were forced to relinquish 80 percent of their first reservation, including the area of this study, near Fort Leavenworth and the Missouri River. This part of the Kansas reservation was occupied by the Kickapoo for only 22 years from 1833 to 1855.

Figure 1. Location of Kenekuk's village in northeastern Kansas, 1833–1855 (modified from Herring 1988:92).

AMERICAN INDIAN HORSE RACING LORE

From the first time two Native Americans wanted to know which one had the fastest mount, horse racing became and remains an important pastime. However, little is known about the early races.

The historical literature contains many instances in which an author simply says something like the "Indians raced horses." But the literature is almost silent about the specifics of Indian horse racing, and little else is provided about the races, tracks, wagers, and participants (Butler 2018:29).

> Brief mention of early Indian horse racing sometimes is found in old newspapers, rancher stories, Indian agency records, soldiers' letters, and fur trade accounts. Only on rare occasions are more extensive narrations presented on the topic, but collectively all these sources add to what is known. Horse racing was common.

Early Indian horse races were the "wheel and run" type of start (Butler 2018). The race tracks were in a straight line—no oval tracks. The horses and riders lined up facing away from the finish line. When the starting signal was given, riders would wheel their horses around and head straight for the finish line. Riders usually rode bareback.

Often these horse races were accompanied by heavy gambling and drinking. The betting stakes might run quite high. "Bets included everything and anything: money, finished skins, guns, knives, and even wives and favorite ponies" (Butler 2018:34). In some cases there was much imbibing of liquor, with a few husbands betting their wives on the outcome. Butler (2018:32) related a story of two husbands, after losing their bets, being beaten by their wives.

A KICKAPOO HORSE RACE IN 1833

On his way to visit the Pawnee in 1833, John Treat Irving, Jr. (1955) recorded his stop at Fort Leavenworth and the nearby, newly established Kickapoo Reservation. He intended to duplicate a somewhat similar journey on the plains made the year before by his famous author uncle Washington Irving (1956). John Irving and a party of men took advantage of a layover at the fort to visit the Kickapoo. They traveled four or five miles over the roughly dissected, tree-covered bluffs along the Missouri River valley before spotting the village, located in a side valley drained by Salt Creek and its tributaries. The inhabitants lived in bark-covered structures among the trees adjacent to small prairies. The description of the horse race that follows is in Irving's (1955:40–41) own words.

> As we stood upon the bluff, a small party of inhabitants from the village moved towards a tree growing alone in the prairie, about a quarter of a mile from the town, and collected together beneath its shade. Presently, two young Indians made their appearance, mounted on horseback. Suspecting that there was to be a race of some description, we left the bluff, dashed through the brook at the bottom of the hill, and in a few moments were under the tree where the group had assembled. They received us in their usual calm manner. . . .
>
> By the time we reached the spot, the preparations were finished. A little, hard headed, old Indian was appointed umpire, and the two riders were at their posts. They were both young men, dressed in hunting shirts and cloth leggings. Their horses were not of the class, that might strictly be denominated racers. One was black, the other cream colored. The black one had fierce little eyes glittering like fire, beneath a long shaggy forelock, which reached nearly to his nose. The eyes of the other were water coloured [British spelling], and had a sneaking slyness about them—an air which seemed to insinuate that their owner "knew a thing or two." Both horses were round bodied, bull necked, and the thick legs of both were garnished with fetlocks of matted hair, extending from the knee joint down to the hoof, and trailing on the ground as they walked. There was not much show of spirit about them. They appeared but little ambitious of distinguishing themselves in the coming contest, and if their own inclinations had been consulted, it is probable would have declined it altogether. Not so their riders; they sat as eager as grey hounds in the leash. Their eyes were intently fixed upon the umpire, who seemed to take the matter with wonderful coolness. At last he gave the signal—there was a hard, quick thumping of heels, against the ribs of the horses—the next moment they had vanished from their posts. There was a

great clattering over the hard course—their bounds were short but rapid. At last the legs grew invisible, and the bodies looked like two balls, moving through the air. The riders whooped and screamed, and the band of lookers-on shouted as loud as either.

The little cream coloured pony was working wonderfully hard, but the black was gaining ground. There was a tree at some distance which they were to pass around, and return to the starting place. They reached it—the black taking the lead by a length—his legs were invisible as he turned, but the cream coloured pony pushed him hard. They now approached the goal. "Two to one on the black!" shouted one of the whites. "Lay it on, old boy, or you're beaten!" halloed another.

Both riders exerted themselves to the utmost. They flew over the ground like lightning. The black still kept the lead, but both horses seemed to be eaten up with fury, at being driven at such a rate. They rushed snorting in—the crowd shouted, and opened a passage for them—they dashed through, running nearly a hundred yards beyond the mark, before they could check their speed. The black pony had won, but he appeared too angry to enjoy his victory. I looked at the other. *There* he stood—*there* was that self-satisfied, water colored eye, which said, "I may have been beaten, but still I know a thing or two."

When the Race was finished, we rode on and entered the town.

DISCUSSION

This detailed first-person account stands as one of the better descriptions of an Indian horse race. No comment was made about any wheel-and-run start. The race track was linear, a there-and-back course where the riders circled around a lone tree before heading back to the starting point.

There was no remark about the use of strong beverages, which might confirm that Kenekuk's followers were known to strictly avoid the use of alcohol. That probably was not the case with gambling, although Irving makes no observation of it except among the whites after the race was underway.

As expected, the riders did not wear any special clothing for the race. Their hunting shirts and cloth leggings likely were typical riding attire. While no observation was made of foot wear, at the start of the race, ". . . there was a hard, quick thumping of heels, against the ribs of the horses. . . ." Obviously the riders wore no spurs. Even though Irving reported much whooping and screaming by the riders, he made no mention of whips, quirts, or switches. Had they been employed, it seems logical that he would have noted that fact.

Despite the detailed description of the race itself, nothing is revealed about the horse equipment. Were there saddles, blankets, or leather pads? Most likely contestants rode bareback, as often was done during Indian horse races. Were there leather and metal bridles, rope halters, or perhaps ropes tied around the horses' lower jaws to form bridles? The tack used would determine the potential of any parts eventually winding up in the archeological record. As previously stated, perishable horse tack or fragments probably would not leave any readily identifiable soil record.

Over the years how many horse-related artifacts have been found by collectors and avocational archeologists at Kickapoo sites in the area? There is no way to answer that question. Of course, records of the work conducted by professionals and collections curated in institutions are available for study. In addition, serious avocational archeologists might have left notes and collections. Unfortunately, many relic hunters have failed to keep individual site collections separated or to record individual site locations. Also their collections sometimes are discarded, sold to multiple buyers, or dispersed to descendants. As decades pass, the information that could have been gleaned is greatly diminished. Without documentation and artifacts, much is lost to science and history—information that can never be regained.

HORSE-RELATED ARTIFACTS FROM KENEKUK'S VILLAGE, 1833–1855: THE CANTRELL COLLECTION

Kenekuk's village consisted of bark-covered houses, separated by 4 to 6-acre fields. This layout of slightly dispersed houses or small farmsteads was described by Reverend Jerome C. Berryman (1902), the Methodist missionary to the Kickapoo from 1833 to 1841. The limited surface archeology conducted in the area to date seems to support such a non-nucleated village arrangement.

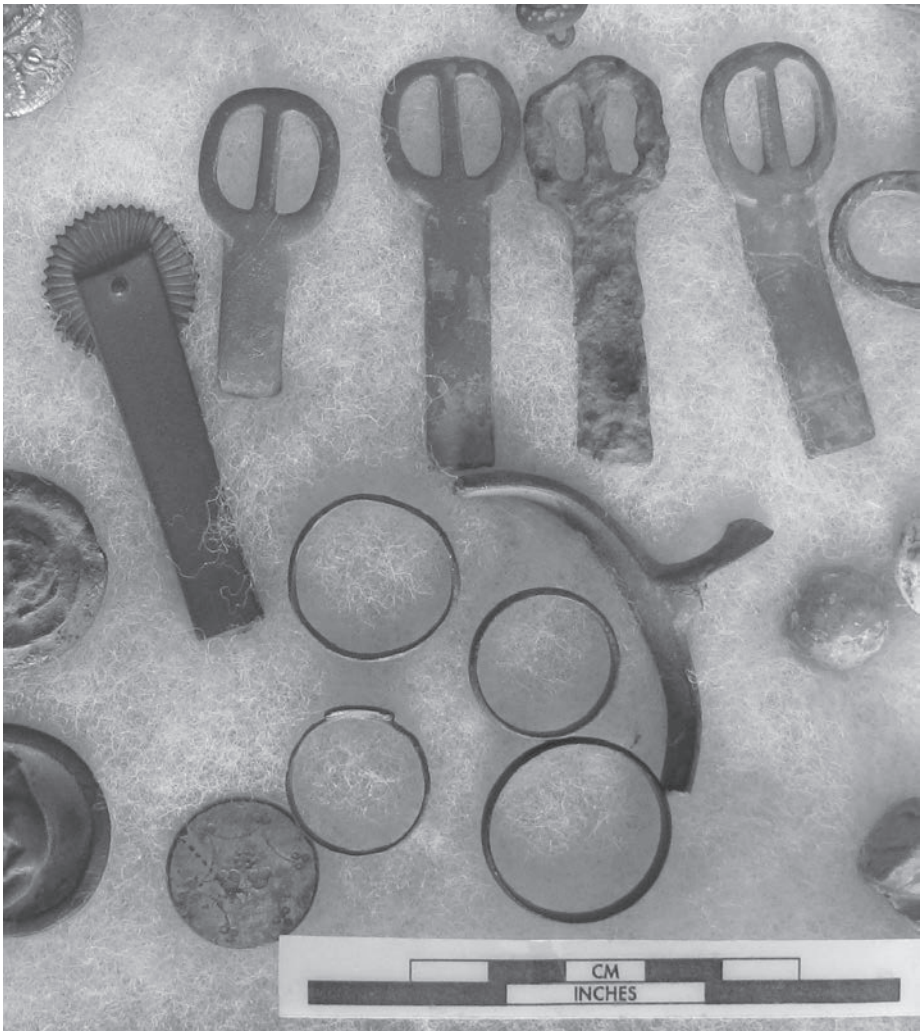

Figure 2. Spur fragments from the early Kickapoo Reservation in Kansas, 1833–1855 (Cantrell collection).

A few village farmsteads have been found by local resident Raymond Cantrell, and some of these were described along with their artifacts by Feagins (2017a, 2017b, 2017c). Other relatively small Kickapoo-affiliated collections are located at various institutions, namely the Kansas Historical Society (Feagins 2004, 2005), the St. Joseph Museum (Feagins 2005), and the University of Kansas.

Although the Cantrell collection of Kickapoo artifacts is fairly extensive, there are few surviving specimens that relate to equine culture. It contains no horse-related objects except fragments of spurs, a possible stirrup fragment, and a few buckles (Raymond Cantrell personal communication, August 8, 2018).

Spurs were manufactured for only one use: to encourage a horse to obey the wishes of its rider (forward, faster, turn). However, at times Native Americans devised other uses for Euroamerican trade items quite different from the original intended uses (Feagins 2017c:3; Nassaney 2015:91,105). The spurs found by Cantrell probably were obtained from soldiers at nearby Fort Leavenworth. They were all fragmented (Figures 2 and 3). Were they broken when functioning for their intended purpose? Were they deliberately broken or disassembled by the Kickapoo to supply metal pieces for other uses? Did farming activities take a toll on these artifacts? Regardless of the answers, the percentage of horse-related gear preserved at this Kickapoo village site is surprisingly low. Of course, that may simply reflect the Kickapoo's use of highly perishable horse tack that would not survive well after long periods in the soil.

Figure 3. Additional spur fragments from the early Kickapoo Reservation in Kansas, 1833–1855 (Cantrell collection).

SUMMARY

John Treat Irving, Jr.'s 1833 account of a Kickapoo horse race is a far more detailed description than that given for most early Indian horse races. Irving especially conveys the excitement of the race, and he describes the horses in detail. Historians and anthropologists/archeologists might long for more details about other aspects of this event and the horse equipment used, yet the reader learns much about the nature of Kickapoo horse racing during this time period.

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THE THOMAS JOHNSON/HENRY WILLIAMS HOMESTEAD: A RURAL COMPONENT OF THE NINETEENTH-CENTURY SETTLEMENT OF NICODEMUS, KANSAS

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The town of Nicodemus in Graham County, Kansas, was settled by emancipated slaves beginning in 1877. Despite significant impediments to progress, the community survived and, for a time, thrived. Later immigrants established farmsteads in the surrounding area. In 2006 and 2007 Washburn University, the Kansas Historical Society, the Kansas Anthropological Association, and the Howard University Nicodemus Archaeological Field School conducted archeological survey and excavations at the Thomas Johnson/Henry Williams farmstead (14GH102). These efforts document some of the details of late nineteenth-century pioneers in a demanding landscape.

HISTORICAL BACKGROUND: NICODEMUS, KANSAS AND THE THOMAS JOHNSON/ HENRY WILLIAMS FAMILIES

The Thomas Johnson/Henry Williams farmstead (14GH102) is part of a larger event—the establishment and rise of a settlement known as Nicodemus. While the town of Nicodemus barely exists today, at one point it was the nexus of a rural community comprised not only of the town but a number of farmsteads in Nicodemus Township and surrounding areas. For a more in-depth historical background, refer to Wood (2007) and Wood et al. (2018).

Establishment of Nicodemus and the Early Settlement Years (1877–1890)

At the end of the Reconstruction Period, the departure of federal troops from the South brought rising levels of violence, discrimination, and economic marginalization for many blacks, who sought to establish new lives in other parts of the county. Government land was available for homesteading, and Kansas was an attractive destination for many African Americans due to the reputation Kansans had garnered as "free state" activists, especially in regard to the rights of blacks (Hinger 2016; Leiker 2002:214).

In the spring of 1876, white land speculator W. R. Hill and African American businessman W. H. Smith joined forces to develop two town sites in Graham County, Kansas, one for black settlers (Nicodemus) and the other for whites (Hill City). Smith and Hill soon convinced six other black freedmen living in Kansas to join their enterprise, and they formed the Nicodemus Town Company in spring 1877 (Hamilton 1991:6).

By summer Hill was pitching the project to the congregation of an African American Baptist church near Lexington, Kentucky, offering the opportunity of settlement in the Solomon River Valley of Kansas. He described the area as being blessed with rich soil, plentiful water, stone for building, timber for fuel, a mild climate, and a herd of wild horses waiting to be tamed to the plow. In truth, Hill's claims were greatly exaggerated. As of 1877, Graham County was unorganized and relatively unsettled, largely because the region was not particularly conducive to agriculture. Annual rainfall was less than 30 inches, and no timber was available for building or fuel except for a few stands of softwood along the rivers or streams. Transportation was a problem, as no railroads or stage lines served the area, and the nearest towns were more than a day's ride away (Hickman 1913).

An initial group of 30 colonists, recruited from Topeka's large African American community, arrived at the Nicodemus Colony in July 1877. Approximately 350 people from the Lexington area paid the five-dollar fee and signed up for the September migration to Kansas. Winter was only a few months away, and very few had sufficient capital to see them through the cold season. However, these concerns were overshadowed by the desire to build a future for themselves and their children in a land where they believed people were judged by the quality of their character and not by the color of their skin. Traveling on trains, in wagons, and sometimes on foot, they arrived in Nicodemus on September 17, 1877. The barren landscape surrounding Nicodemus was a stark contrast to the wooded hill country of Kentucky. Fifty of the most disillusioned returned to eastern Kansas the following day, while those who remained set about preparing for the coming winter. Before long the settlers had established themselves on 70 farms, scattered across the landscape (Schwendemann 1968:14).

The settlers' most immediate need was housing, and dugouts were the only realistic options for shelter in the area. Faced with a lack of timber, transportation, and money, the early settlers had few alternatives to digging in before winter. Using hand tools, an opening was carved into the slope of a hill or stream bank and then covered with a roof of poles, brush, and enough dirt to keep out the rain. A fireplace built into the earthen walls served for heating and cooking. The front wall and entrance were constructed with whatever materials were available: scrap lumber, stone, or sod. A window that provided light and ventilation was included if glass could be obtained (Gibbs 1879). The floor and walls were made of packed earth that sometimes was plastered with a clay-like mixture of water and a yellow mineral native to the area (Carter 2006), known as "magnesia" (Wood 2007:107). Local limestone was ground and packed into the floor to control both insects and dirt. At the Nicodemus town site, where the ground was level, shallow excavations were made, and modified dugouts with walls of sod or stone were erected.

In addition to shelter, there was an immediate need for potable water. That first September the town had no wells, and any water taken from the Solomon River or a nearby creek was of questionable quality. Therefore, natural springs were extremely important to the early colonists and often determined the location of a home site. Thomas Johnson, for example, established his dugout homestead in a creek bank about 2 miles northeast of Nicodemus near a natural spring that furnished a reliable water supply for at least 50 years (Sayers 2006). The 1885 Kansas census enumeration sheets indicate that Thomas Johnson's water source was spring water, and the Johnson spring was still flowing in 2006 and 2007 when archeological investigations were conducted at the site. The natural springs in the area were essential to the success of the original homesteaders, and water from them was shared communally in times of drought (Alvin Bates 2006).

As soon as basic shelters were constructed, colonists began breaking ground for gardens and crops. The first colonists, lacking horses and implements, used only hand implements. Whole families–men, women and children–participated in the grueling task of breaking the prairie by hand. The arrival of several horse and oxen teams and implements in

the spring and summer of 1878 greatly accelerated the plowing process. In spite of this labor, the first crops failed, but determined farm families continued to turn and cultivate the soil. In spring 1879 the average farm had seven acres or more in cultivation (Gibbs 1879).

The fledgling colony experienced severe shortages of food and other supplies, and the attrition rate was extremely high during the first two years. By all accounts more than 600 black settlers arrived in the Nicodemus Colony between summer 1877 and winter 1879. Yet, the federal census, taken in the summer of 1880, listed only 316 occupants of Nicodemus Township, and 58 of those were white. The combined number of blacks in the entire county totaled only 452 (U.S. Census Bureau 1880).

Beginning in the mid-1870s, African Americans began a mass migration from the upper South into Kansas. This movement began as a trickle and peaked with the massive "Exoduster" migration of 1879–1880. Although the town of Nicodemus did grow somewhat during the Exoduster period, the initial settlement of the town generally is considered a precursor to this movement. Indeed, African Americans who had settled in Nicodemus in 1877 feared that their all-black community would attract destitute Exodusters.

Nicodemus experienced steady growth and prosperity throughout the first half of the 1880s. The expected arrival of the railroad and the financial success of farmers in the area brought an influx of capital and businessmen to the community. By 1886 the town was booming (Wood et al. 2018:232). Although Nicodemus had been established as an all-black town, some white merchants moved in to take advantage of business opportunities. The white business community worked hand in hand with black leaders to promote the town and various civic projects. For a moment in time Nicodemus exemplified a measure of racial integration (O'Brien 1996).

A tradition of community celebration developed in the Nicodemus Colony, reminiscent of annual "colored people's fairs" in which the Kentucky freedmen had participated during slavery (Angela Bates 2006). At Nicodemus the annual "Emancipation Day" festival, commemorating the abolition of slavery in England and the West Indies, was first held in 1878. People came from across the region to take part in the three days of festivities early in August. The festival included political speeches, music, dancing, food, and a carnival like atmosphere. "Emancipation Day" immediately became, and remains, an important touchstone that fostered stability and social cohesion within the community (Belleau 1943:29–30).

Unfortunately, Nicodemus's golden age was short lived. In 1887 the railroad failed to fulfill its promises and bypassed Nicodemus. The railroad town of Bogue was established a few miles to the southwest, pulling the economic base from Nicodemus. The impact was devastating for the business community. A brief attempt was made by the newspaper and some business leaders to stabilize the situation, but little could be done. One by one businesses relocated to Bogue or left the area altogether. Many dismantled or moved their newly erected buildings, which accelerated the town's physical decline. Nicodemus slowly returned to its roots and became the social and religious center of a close-knit rural community.

A Farming Community (1890–1910)

Although the population of the town of Nicodemus dwindled to only a few dozen souls, many African American families stayed in the area, settling on farms in the surrounding township (Fraser 1986:53, 57). Between 1880 and 1910, around 300 people consistently lived in Nicodemus Township. This settlement pattern created a dispersed community, with small farmhouses located relatively far apart. Many farmers grew some potatoes, and women planted vegetable gardens, raised fowl, milked cows. and churned butter.

Living on their fledgling farms, these families faced harsh conditions as they struggled with the unpredictable environment of western Kansas. A series of droughts, fires, and insect plagues besieged the area from the late 1880s until the mid-1890s. A prairie fire swept through the area in 1887, destroying many crops, houses, and barns (Craig 1915). The fire was swiftly followed by a drought that resulted in complete crop failures in 1889 and 1890. Serious drought conditions continued through the mid-1890s (National Park Service 2003:66). In addition, prices for crops and farm products fell during this period. Even when crops were successful, profits were lean.

In the late 1880s and early 1890s, many farmers gave up and sold their properties. Land companies and Eastern banks acquired large blocks of land from desperate farm families. Others attempted to hold onto their farms by borrowing money, but this tactic was rarely successful. Many farmers, who could not meet their loan payments, defaulted, and banks foreclosed (Fraser 1986:53, 57). For those who chose to stay, it took many years for them to get their land back (Craig 1915). Between 1885 and 1900 land ownership rates in Nicodemus Township plummeted from 96 percent to 54 percent. In this same time period the number of farms in the township fell from 70 to 48.

After the difficult times of the 1890s, crop yields began to improve in the early 1900s. Modern farming methods were adopted by many local farmers and educational opportunities, sponsored by the Kansas State Agricultural College and the Western Kansas Industrial Training School, offered new opportunities for Nicodemus farmers. In addition, the Western Kansas Industrial Training School began to rent and loan farm equipment to farmers who did not own their own machinery (National Park Service 2003:67). As farmers took advantage of the new techniques, improved technologies, and generally positive conditions, crop production increased. After 1916 people broke more ground, and crop yields were high (Wood 2006).

History of the Thomas Johnson/Henry Williams Families and Ownership of the Farmstead

The 2006 and 2007 archeological investigations were held on land originally homesteaded by Thomas Johnson (T7S R21W, NE ¼ of SW ¼ of Section 23) in 1878. He filed his claim in 1885 and finally received the patent for his 160 acres on June 14, 1887, as did Henry Johnson and Charles Williams (U.S. Department of Interior 2017). Along with his other claims to several adjacent plots (T7S R21W, NE & NW ¼ of SE ¼ of Section 23 and T7S R21W, SE ¼ of SE ¼ of section 23), Johnson's properties formed an L-shaped tract in Section 23. His land was bounded by the properties of his sons, daughters, and son-in-law (McDaniel 1950:126–128).

When Thomas Johnson first came to Kansas from Kentucky, he brought his large extended family, including his wife Zerina, his son Henry, and his daughters Emma and Ella (U.S. Census Bureau 1880). In all 13 people made up the Johnson/Williams families in 1880. While the extended family probably migrated as a group, they are listed as five distinct households in the census records. The Historic American Buildings Survey (HABS) township map shows a dugout and a sod house on the properties owned by the Johnson and Williams families. Whether they lived together or in distinct households is unclear.

Two of the five Johnson/Williams households in 1880 were headed by females. Thomas Johnson's daughter Ella (Ellen) Johnson, age 21, is listed as a farmer living alone. She received the patent for her property on September 28, 1889 (U.S. Department of Interior 2017). Mary Johnson is listed as a farmer and the head of household, living with her adult son Joseph and his two daughters. In 1880 Mary was a 52-year-old widow with severe rheumatism, while Joseph appears in the agricultural census as working 160 acres of land. Yet, she still may have been considered the head of her household. As was the case with many homesteading families, women in the Johnson and Williams families may have filed land claims so that the extended family would have more resources with which to make a living.

In 1885 Thomas Johnson, Henry Johnson, Joseph Johnson, and Charles Williams each worked 160 acres (Kansas State Census 1885). Joseph Johnson and Thomas Johnson most probably built houses and barns on their lands. Joseph's and Thomas' properties were each estimated to be worth $1,000, while Charles Williams' and Henry Johnson's properties were valued at $500 and $200, respectively. According to Kansas census records, the family owned $85-worth of machinery, four milk cows, nine head of cattle, two pigs, and one horse. Like other farmers in the area, the Johnson and Williams families grew mostly corn and wheat, although some sorghum and hay for feed were cultivated as well. Each farm also had at least half an acre planted in potatoes; Thomas Johnson had one acre. Collectively they produced 600 pounds of butter.

A. G. Tallman, publisher of the *Western Cyclone*, visited the Thomas Johnson farm in 1886. In his newspaper article Tallman (1886) suggested that the extended family operated as a common unit, sharing equipment, pooling labor, and diversifying crops among the various farms.

A visit to the farm of Thos. Johnson is enough to encourage the homesick farmer of any state. He and his children, all with families, own a tract of land of a thousand acres about one fourth of which is under cultivation. He has about 60 fine hogs and the whole family owns a large herd of cattle and several fine horses. They have recently bought a twine binder and are in the midst of harvest. When you make a visit to Mr. J's farm do not forget to look at Mrs. Johnson's chickens and ducks.

> There is a substantial difference between Tallman's glowing account of the Johnson farm and the Kansas census information gathered only a year earlier (Kansas State Census 1885). Census takers recorded far fewer head of livestock and far less land under cultivation than Tallman suggested. In an attempt to promote the community to outsiders, Tallman may have overestimated the tally of Johnson's herds and crops. Alternatively, the family may have under-reported the extent of their agricultural endeavors to census takers to avoid taxes or other penalties. Whichever is the case, as a group the Johnson and Williams families appear to have been doing well by the mid-1880s.

Thomas Johnson was considered the patriarch of the extended family. In terms of productive activities, however, it is clear that Thomas' son Henry made a significant contribution to the maintenance of the extended family group. In 1885 Henry Johnson out-produced all of his relatives. He planted more than 37 acres of corn and wheat, while each of his relatives had fewer than 16 acres planted in these crops. Henry Johnson also owned the only two horses, four of the nine head of cattle, and two of the four milk cows listed in the Kansas census records. At this time Henry's wife Mary was a young mother with a six-year-old child, and she produced 100 pounds of butter. Her mother-in-law Zerina produced around 300 pounds, and her sister-in-law Emma Williams produced 200 pounds (Kansas State Census 1885). While Henry Johnson seemed to be producing the most, Joseph Johnson owned a barn, and Henry Williams had invested in expensive farm machinery. These facts suggest that the family was working as a group rather than as individual farmers.

Henry Johnson and his wife Mary lived in their own household in 1885. In this same year Joseph Johnson and his two young children moved into the house of their uncle Thomas and Aunt Zerina Johnson. Joseph's mother (also Mary) had been in poor health, and she may have passed away sometime between 1880 and 1885. Perhaps Zerina took over the responsibility of watching Joseph's daughters, Lizzie and Clarinda. In 1885 Ella Johnson, the daughter of Thomas Johnson, was no longer listed in the census; however, her name did appear as the owner of three pieces of property in Section 23, which were claimed in 1886 (McDaniel 1950:126). Ella (Ellen) may have married and changed her name around this time, so she is difficult to track.

Oral history suggests that Thomas Johnson lived on his property in a dugout near an unnamed tributary of Spring Creek, which was an important feature of the homestead. The flowing stream provided much needed fresh water for livestock and could be used for various household needs and food. Nicodemus descendant Harold Switzer (2006) remembers catching catfish and perch from the creek. The family's drinking water came from a natural spring that was situated along the bank of the creek. The main branch of Spring Creek also played a vital role in the spiritual life of the community. Thomas Johnson was not only a farmer and a Civil War veteran, but also a deacon in the Baptist Church. When he moved to Nicodemus, he organized a congregation and held revival services in his dugout. Spring Creek, which lies just west of the town of Nicodemus, became an ideal location for baptism ceremonies.

The difficult environmental and economic times of the 1890s took a heavy toll on the Johnson and Williams families. According to Lula Craig (1915), the family also experienced setbacks in the late 1880s, when Joseph Johnson lost his barn, feed, and many of his animals to an 1887 grass fire. By 1895 only Charles Williams, his wife Emma (Johnson) Williams, and their four children remained in Nicodemus Township. Henry Williams continued to work his 160 acres, although the value of both his land and his machinery were greatly reduced. Planting 50 acres of corn, Henry now had seven horses, four milk cows, three head of cattle, and two hogs. Emma produced about 300 pounds of butter (Kansas State Census 1895).

Although times were difficult, in 1899 Charles Williams was able to purchase a large piece of

property in the neighboring section 22 (McDaniel 1950:126). Soon after the transfer of land, however, Charles died, leaving his wife Emma (age 47), sons Henry (age 22), Charlie (age 18), and Neil (age 13), and daughter Maggie (age 2). Henry took over as the head of household for a short time, but he soon married and by 1905 lived in a separate household with his wife Cora and daughter Vernis. By 1905 Charlie also was married and living in a separate household with his wife. Emma Williams, the widow, maintained her own household, raising her son Neil and daughter Maggie (Kansas State Census 1905). Charles Williams' properties were divided among Emma (320 acres), Henry (160 acres), and Charlie (160 acres) (Ogle and Company 1906).

A 1906 map of Nicodemus Township clearly shows the boundaries of Emma's 320 acres, even indicating the location of her residence (Ogle and Company 1906). A second building was located on her property, but it is not clear if this was a house or some other type of structure. The properties of Charles Williams and Henry Williams are not shown. The original plot of land homesteaded by Thomas Johnson is depicted on this map, but at this time the ownership is listed as Midway Land Company.

In 1889 Thomas and Zerina Johnson sold their land for $1,800. At the time of the sale, they held an outstanding mortgage of $600 at a rate of 11 percent. A complicated series of transfers ensued. Although the names on the deeds differ, they seem to be corporate transfers of ownership, many by agents of Midway Land Company. Then in 1906 Henry Williams purchased his grandfather's original claim.

In sum the Thomas Johnson claim was occupied by the family from 1879 until 1889, when Johnson sold the land. The land was held by absentee owners between 1889 and 1906. Johnson's original claim may have been leased by the land company to other farmers, or it may have gone fallow.

ARCHEOLOGICAL INVESTIGATION OF 14GH102, 2006

In 2003 Sherda Williams, then superintendent of the Nicodemus National Historic Site, and Angela Bates, director of the Nicodemus Historical Society, began compiling information to locate and evaluate sites related to the Town of Nicodemus with potential for having archeological material related to the early settlement period. An important source of information was a HABS report on properties associated with the Nicodemus settlement (Figure 1) (Historic American Buildings Survey 1983; see also Burden et al. 2011 and Kendrick 1986). This survey includes oral history interviews with residents and the preparation of maps of several properties, including the Thomas Johnson/Henry Williams farmstead (Williams 2008).

In April 2006 Williams and Bates were joined by Dr. Margaret Wood of Washburn University and Steve DeVore of the Midwest Archeological Center (MWAC) of the National Park Service to evaluate 10 sites with good archeological potential. Methods included pedestrian survey and surface inspection, augmented by an informal metal detector survey (Wood 2007:59, 62). The Thomas Johnson/Henry Williams Farm Site (14GH102) was recognized as having substantial research potential, and the 1983 HABS survey proved instrumental in determining the potential for this site (Figure 2). A geophysical survey conducted by DeVore and Jay Sturdevant, also of MWAC, revealed anomalies for archeological testing (DeVore 2006, 2007; Figure 3).

Geophysical Survey

DeVore established the southwest corner of the geophysical survey grid at a location south and west of the westernmost depression, which was reportedly a storage dugout. Wooden stakes were placed at 10-m intervals along the first 60 m of a 100-m tape, oriented to magnetic north. The grid was extended 65 m east to encompass the likely storage and residential dugouts, as well as a relatively level area north of the suspected residential dugout. The corners of the geophysical survey areas and grid unit corners were surveyed with a Trimble GeoExplorer

Figure 1. (opposite page top) Site plan of the Henry Williams farm, Graham County, Kansas, drawn by Ruth K. Parr. Courtesy of the Historic American Buildings Survey 1983. Archeological excavations reported here focused on the dugout-sod house and cellar (left center). Surface collections were conducted near the granary and barn ruins (center) and near the 1921 frame house. The informant(s) and the source(s) of dates for the structures are unknown.

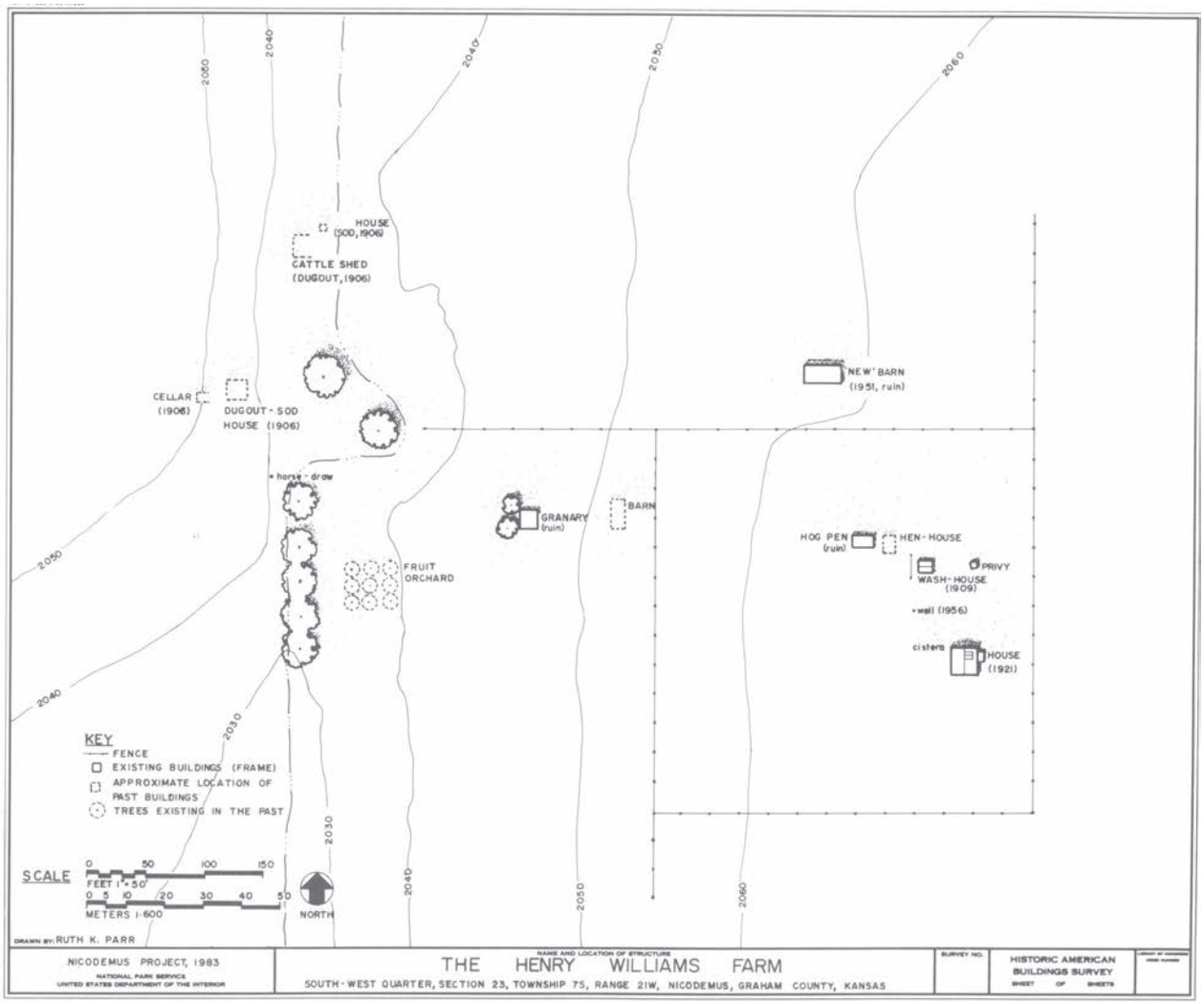


Figure 2. North and west sides of Henry Williams house at 14GH102. Views of this structure also are shown in Fraser (1986:63) and at https://loc.gov/pictures/item/ks0137/.

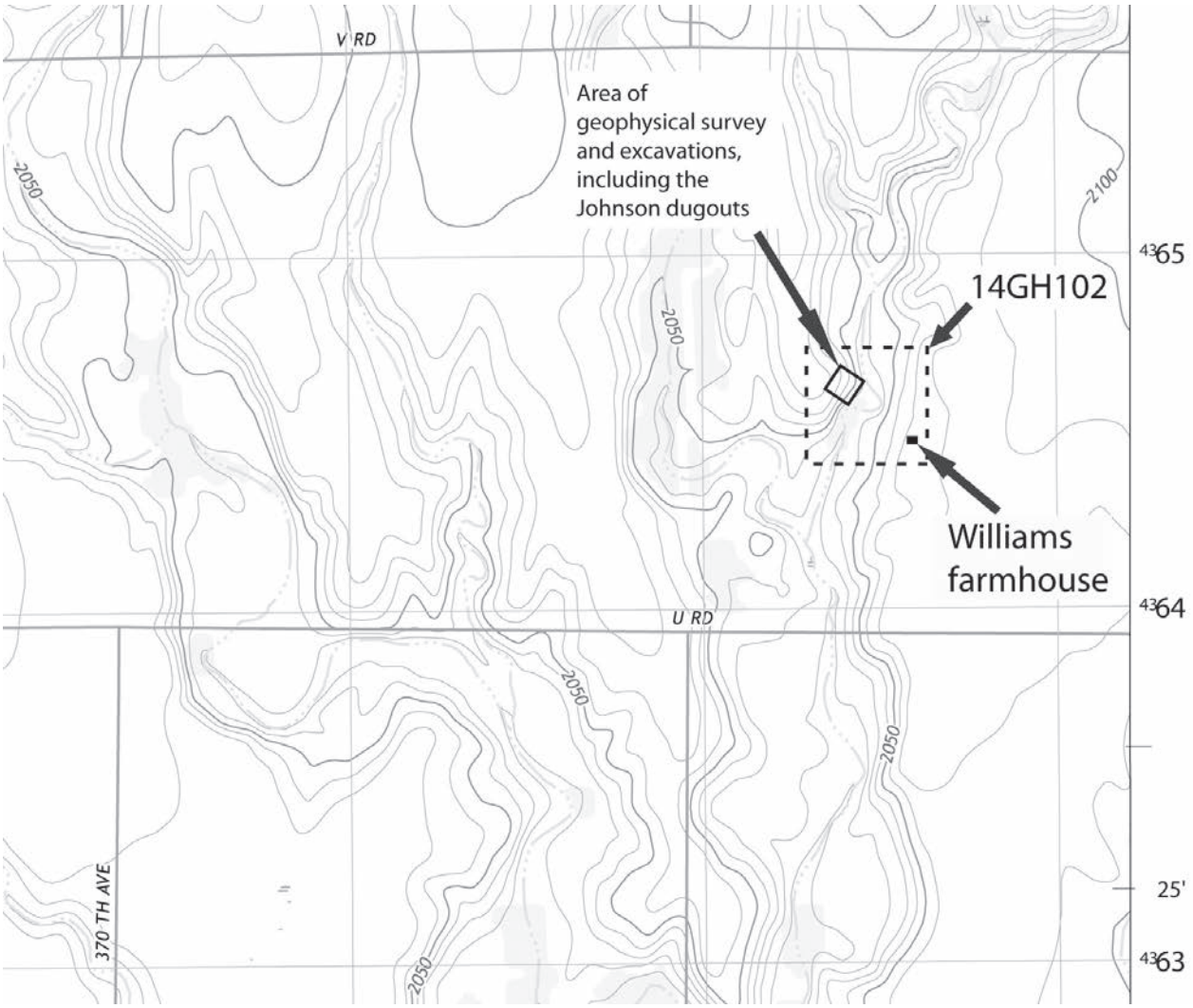


Figure 3. Area of geophysical survey and excavations.

3 global positioning system and corrected using GPS Pathfinder Office software, providing differentially corrected Universal Transverse Mercator (UTM) coordinates for the geophysical grid. Three complete 20 by 20-meter grid units (1,200 m^2) were surveyed. Two adjacent grids included the presumed storage dugout and the area west of it and a relatively level area to the northwest (Figure 4). The geophysical survey consisted of a magnetic survey with the fluxgate gradiometer and a resistance survey with a resistance meter and twin probe array.

The magnetic data contained numerous dipole and monopole magnetic anomalies spread across the southwest portion of the survey area near the depressions, identified as dugouts. These anomalies were interpreted as a sheet midden associated with the dugouts (Figure 5). A dense concentration of anomalies in the westernmost depression was presumed to be a dugout high on the slope. At a further distance from the depressions, there were few magnetic anomalies that did not appear to be associated with architectural features. In addition, occupation debris on the ground surface, including downed barbed wire fence, a mass of barbed wire, and a metal box, as well as the cut bank of the creek were represented by linear anomaly clusters.

The resistance data presented two relatively high anomalies near the dugout depression at the base of the slope. One was directly associated with the depression and was separated from the second

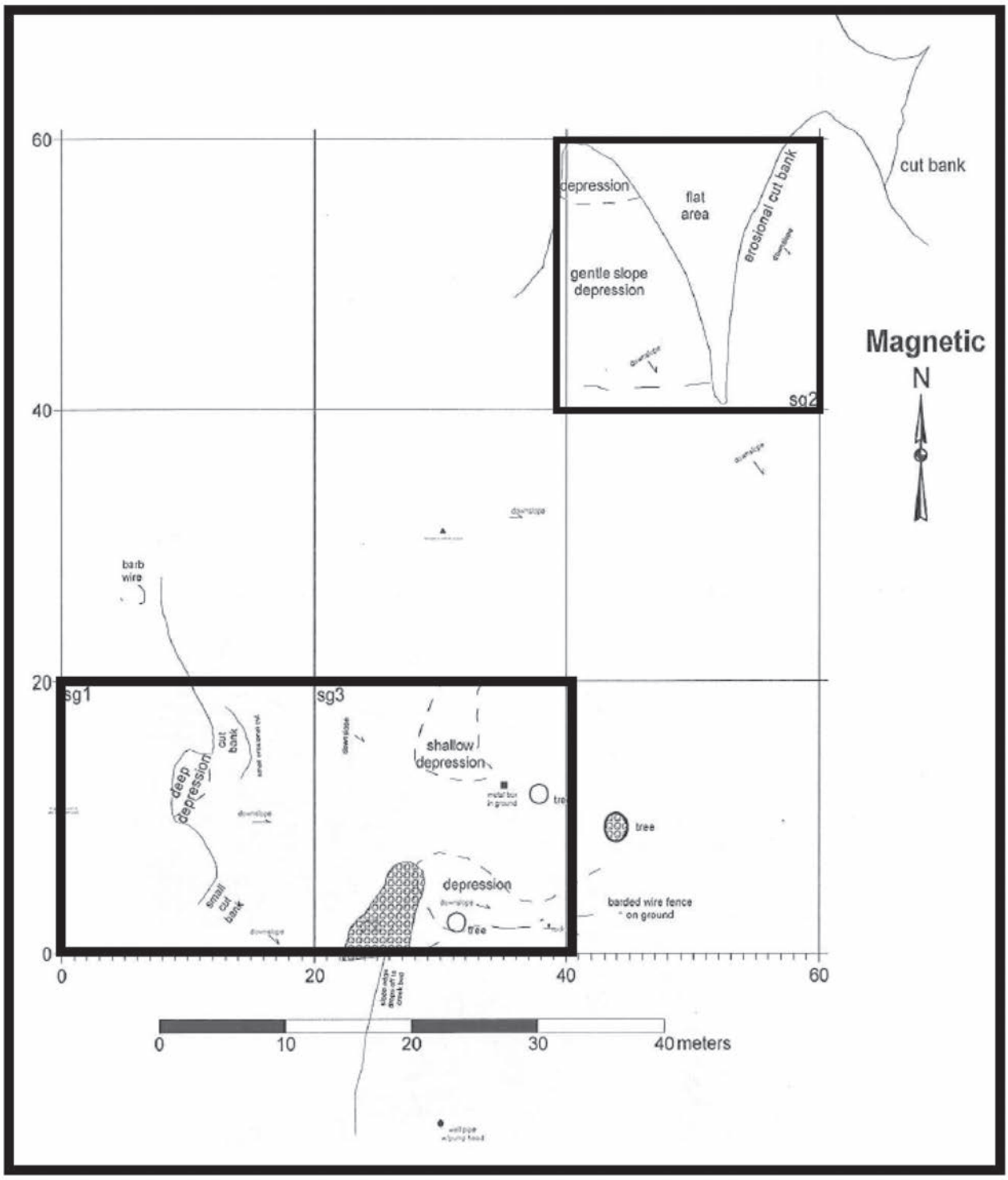


Figure 4. Sketch map and geophysical survey grids at 14GH102 (DeVore 2007). Data was collected from the outlined areas.

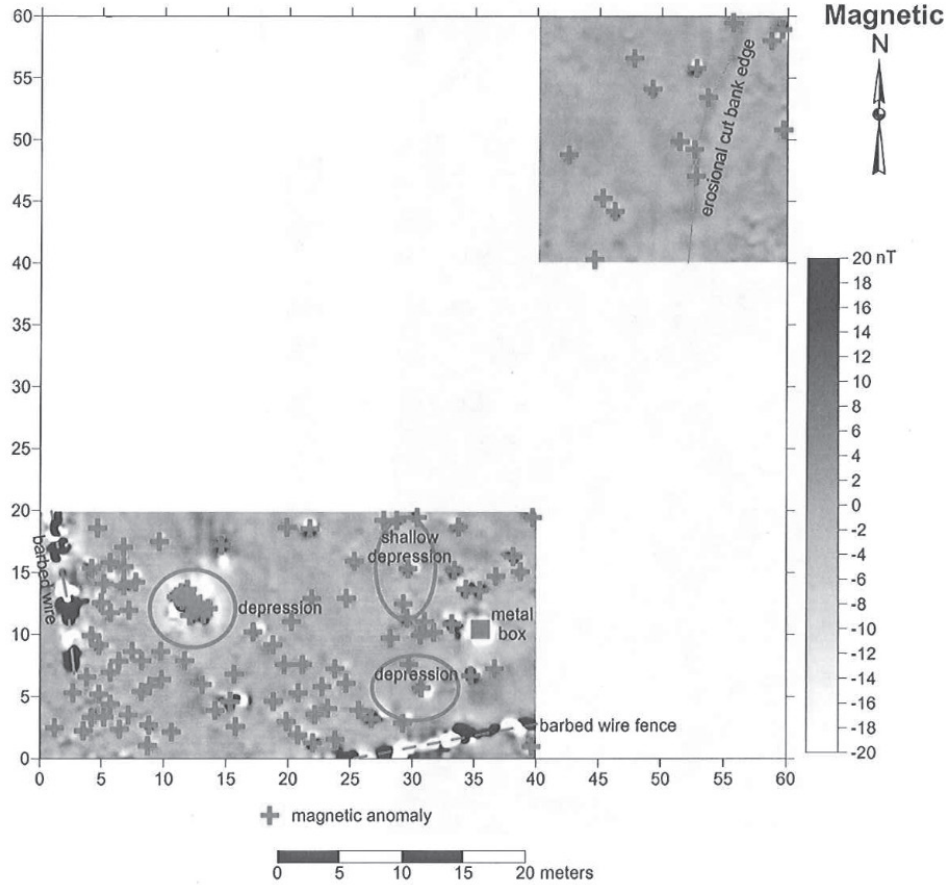


Figure 5. Interpretative map of magnetic gradient data from 14GH102 (DeVore 2007).

anomalous area by a very low linear resistance anomaly. A high resistance anomaly in the northeast portion of the survey grid appeared to represent soil moisture factors related to the topography in this area.

Excavations Overview

Investigators excavated portions of 14GH102 in the summers of 2006 and 2007. In 2006 Dr. Wood led a Washburn University field school. This work focused on two depressions that were indicated as a dugout residential structure and a dugout cellar in the 1983 HABS documentation of the site.

In 2007 the Kansas Historical Society (KSHS) and the Kansas Anthropological Association (KAA), traditional sponsors of the Kansas Archeology Training Program field school (KATP), partnered with the Washburn University Archaeological Field School and the Howard University Nicodemus Archaeological Field School (Wulfkuhle 2007). KSHS hired Dr. Flordeliz T. Bugarin of Howard University to direct work at the site. From June 2 through 15, volunteers enlarged the excavated areas of the two features initially investigated in 2006 and examined two other areas, based on the results of the geophysical and metal detector surveys (Bugarin 2007).

Both the 2006 and 2007 excavation crews used the grid system initially laid out by DeVore during his geophysical survey. Table 1 lists all units excavated during both field seasons, sorted by feature and followed by non-feature areas. Grid coordinates indicate the southwest corner of each unit. All units were 1 m^2. Figures 6–8 show the locations of the archeological investigations at 14GH102.

Excavations, 2006

The Washburn University Archaeological Field School conducted excavations at the site from May 15 to June 2, 2006. Under Wood's supervision, field school students excavated 19, 1 m^2 test units and identified 2 structural features: a cellar (Feature

Table 1. Units excavated in 2006 and 2007 at 14GH102.

	Coordinates	Season	Extent of excavation
Feature 1 (cellar)	N510 E513	2007	
Feature 1 (cellar)	N511 E510	2007	
Feature 1 (cellar)	N511 E512	2007	
Feature 1 (cellar)	N511 E513	2007	
Feature 1 (cellar)	N511 E514	2007	
Feature 1 (cellar)	N512 E511	2007	
Feature 1 (cellar)	N512 E512	2007	
Feature 1 (cellar)	N512 E513	2006	Partially excavated to exposed surface of feature
Feature 1 (cellar)	N512 E513	2007	
Feature 1 (cellar)	N513 E507	2006	Fully excavated to subsoil
Feature 1 (cellar)	N513 E509	2006	Fully excavated to subsoil
Feature 1 (cellar)	N513 E510	2006	Partially excavated to expose surface of feature
Feature 1 (cellar)	N513 E511	2006	Partially excavated to expose surface of feature
Feature 1 (cellar)	N513 E512	2006	Fully excavated
Feature 1 (cellar)	N513 E512	2007	
Feature 1 (cellar)	N513 E513	2006	Fully excavated
Feature 2 (house)	N512 E529	2007	Fill excavated to sterile
Feature 2 (house)	N513 E527	2007	
Feature 2 (house)	N513 E529	2007	
Feature 2 (house)	N515 E528	2007	
Feature 2 (house)	N515 E530	2007	
Feature 2 (house)	N515 E532	2007	
Feature 2 (house)	N516 E531	2007	
Feature 2 (house)	N517 E528	2007	
Feature 2 (house)	N517 E532	2007	
Feature 2 (house)	N518 E530	2006	N-S trench, interior deposits, fully excavated to floor of structure
Feature 2 (house)	N519 E530	2006	N-S trench, interior deposits, fully excavated to floor of structure
Feature 2 (house)	N519 E532	2007	
Feature 2 (house)	N520 E529	2006	E-W trench, exterior deposits, fully excavated
Feature 2 (house)	N520 E530	2006	N-S trench and E-W trench intersection, interior deposits located in the southern portion of unit, limestone wall ran through center of unit, exterior deposits ran across northern edge of unit
Feature 2 (house)	N520 E530	2007	
Feature 2 (house)	N520 E531	2006	E-W trench, partially excavated to top of limestone wall
Feature 2 (house)	N520 E532	2006	E-W trench, partially excavated to top of limestone wall
Feature 2 (house)	N520 E533	2007	
Feature 2 (house)	N520 E535	2007	
Feature 2 (house)	N520 E537	2007	
Feature 2 (house)	N521 E530	2006	Stepped builder's trench, exterior deposits, fully excavated
Feature 2 (house)	N521 E531	2006	Stepped builder's trench, exterior deposits, fully excavated
Feature 2 (house)	N522 E530	2006	N-S trench, exterior deposits, fully excavated
Feature 3	N541 E530	2007	
Feature 3	N542 E529	2007	
Feature 3	N543 E530	2007	
Feature 3 (F1077)	N544 E525	2007	

continued

Table 1. continued

	Coordinates	Season	Extent of excavation
Feature 3	N544 E527	2007	
Feature 3	N544 E529	2007	
Feature 3	N545 E528	2007	
Feature 3	N545 E530	2007	
Feature 3	N549 E 530	2007	
Area 1	N550 E560	2007	
Area 1	N551 E563	2007	
Area 1	N552 E560	2007	
Area 1	N552 E562	2007	
Area 1	N558 E560	2007	
Area 1	N558 E562	2007	
Area 1	N559 E561	2007	
Area 1	N559 E563	2007	
Non feature	N507 E500	2006	Fully excavated to subsoil
Non feature	N515 E500	2006	Fully excavated to subsoil
Non feature	N503 E499	2006	Fully excavated to subsoil

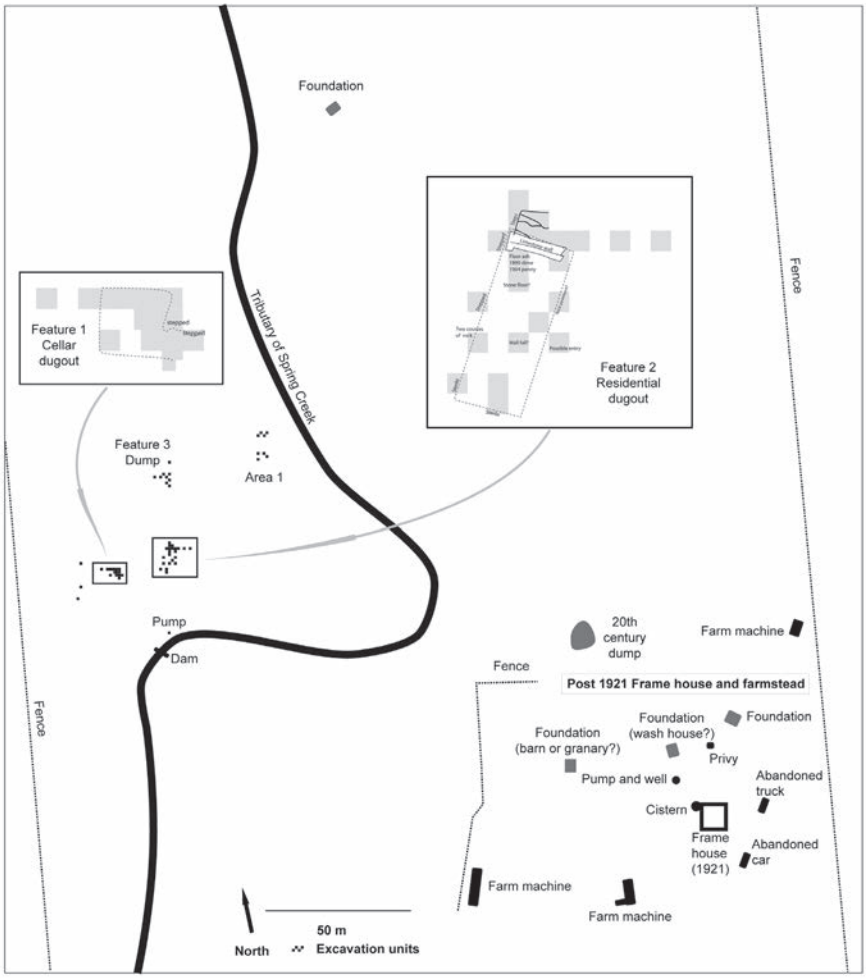


Figure 6. General site area including areas excavated in 2006 and 2007, as well as natural features and extant features associated with the post-1921 occupation of the site.

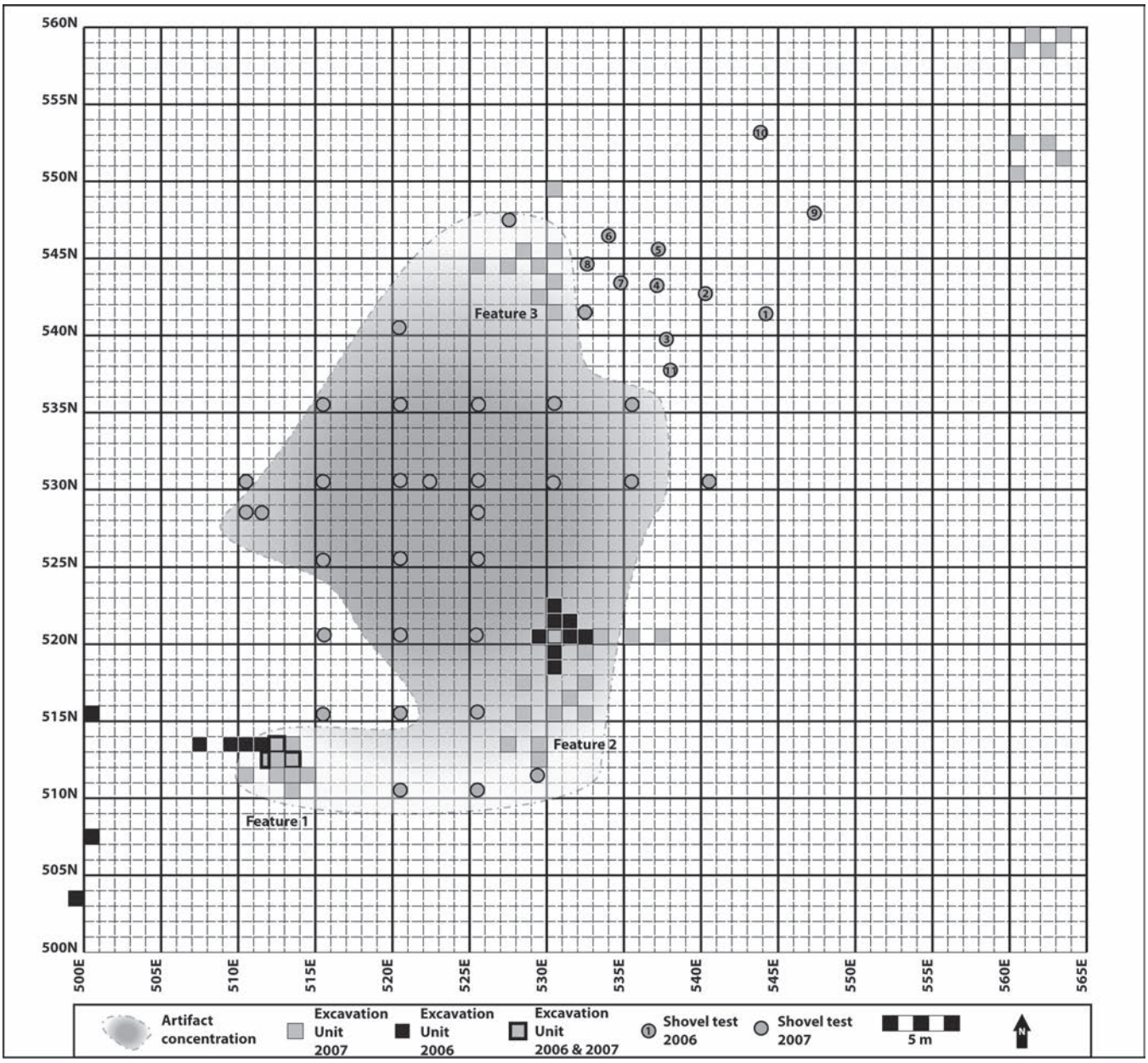


Figure 7. Grid used for excavations, excavation units, Features 1 and 2, shovel tests, and area of concentrated artifacts based on excavation. The grid encompassed the geophysical survey grid but extended 5 m farther east to include a level area that may have been the location of an early dugout cattle shed and an early dugout house, according to the HABS documentation of the site (see Figure 1).

1) and a semi-subterranean dugout/sod domestic structure (Feature 2) (Figure 9).

Excavation of Feature 1, Cellar, 2006

In 2006 the Washburn University crew excavated seven units in Feature 1. Two test units were excavated to the floor level of the feature to determine a possible use-life period and abandonment date for the feature and to verify the function of the structure. Four other units were excavated to locate the edges of the structure, as evidenced by the dark feature fill at depths below the light-colored substratum. This process revealed the northeast and northwest corners of the structure and the entry-

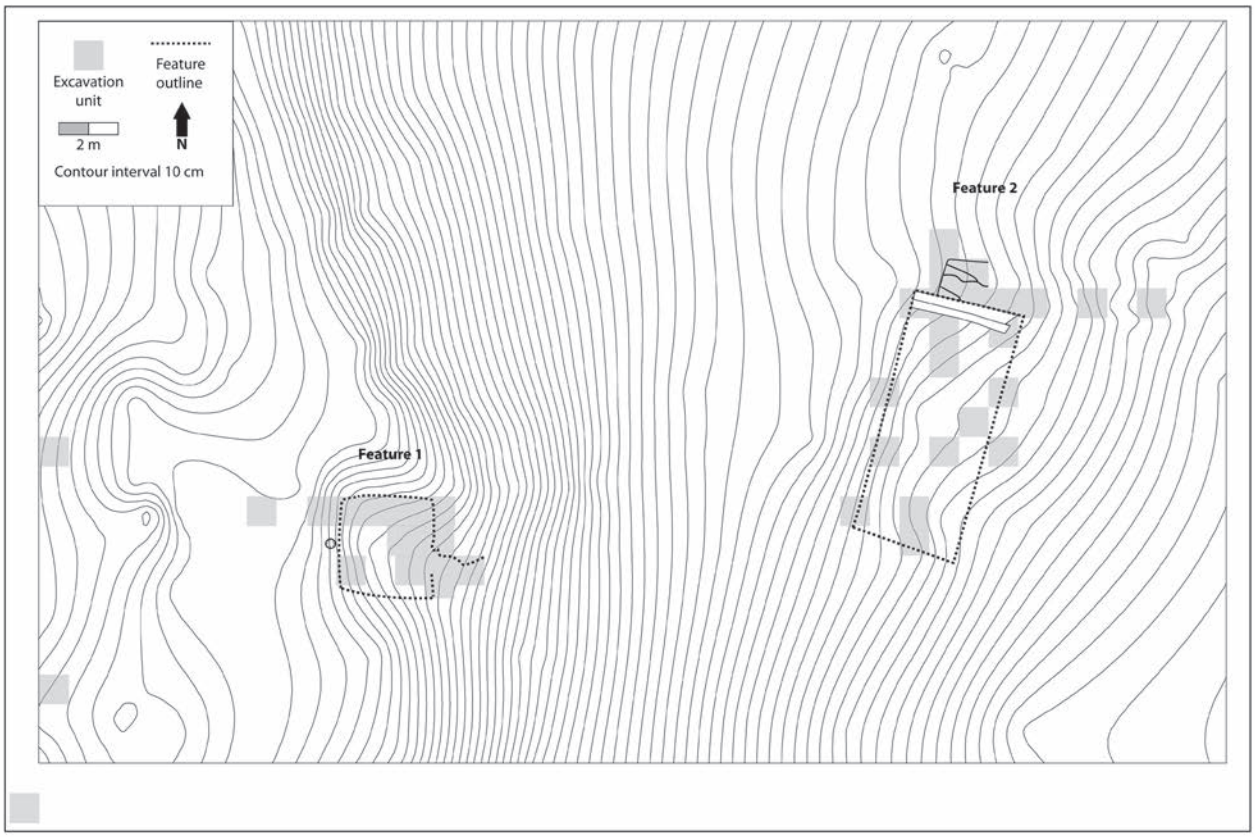


Figure 8. Contour map showing the locations of Features 1 and 2, as determined by excavation of 1-m^2 units in 2006 and 2007.

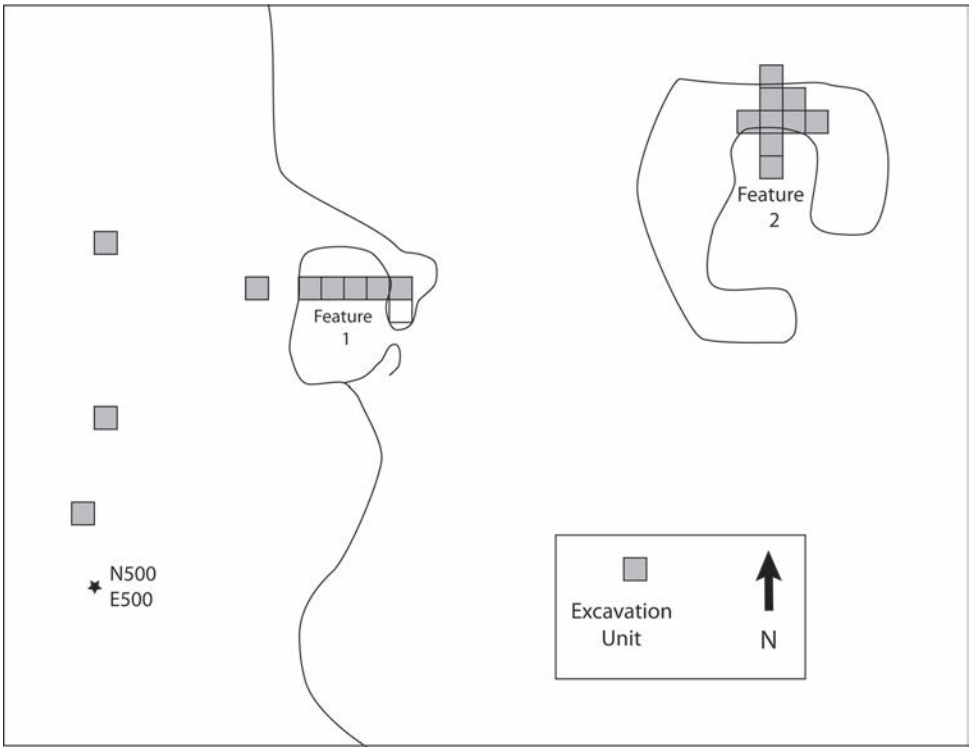


Figure 9. Detail of units excavated in 2006 in relation to Features 1 and 2.

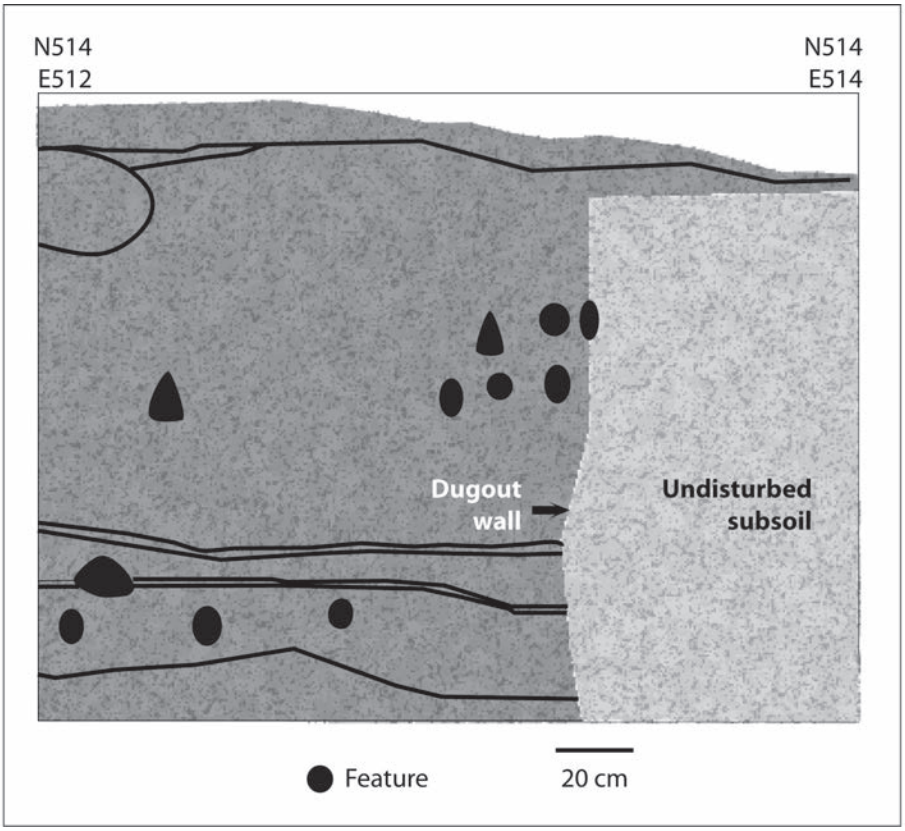


Figure 10. Feature boundaries delineated by darker fill and further by presence of artifacts.

way. A final unit was placed west of the Feature 1 depression and excavated to 30 cm, encountering only undisturbed soil.

When the structure was built, it was excavated into the native light yellow-brown silt that characterizes the region. In contrast, after abandonment darker gray-brown organic-rich topsoil, the A horizon, washed into the void created by the structure. These descriptions are consistent with Pendy-Uly soil complex (Soil Survey Staff 2017), which has grayish brown or dark grayish brown surface and subsurface layers, underlain by a very pale brown calcareous silt loam substratum. Excavators used this contrast in sediment colors as one means of determining the structure boundaries.

Ten holes ran horizontally into the north wall at various depths in units N513 E512 and N513 E513. Most were round or ovate and ranged in maximum width from 2.5 to 14 cm; the more typical maximum dimension ranged from 5 to 10 cm (Figure 10). These may have been insets for shelf supports. They were recognized by having darker fill than the undisturbed sediment. They were not excavated but did not appear to contain wood.

Excavation of Feature 2, Domestic Structure, 2006

The domestic structure was located to the east of and downhill from the cellar. Feature 2 was evident as a depression of approximately 6 by 9 m. A string of north-south-oriented units excavated across this feature identified a plaster-faced limestone wall, the base of which is 1 m below the surface (Figure 11). On the exterior side of the wall is a trench and stairs cut from the intact subsoil on the northeast side of the structure (Figure 12).

Excavations in the interior of the structure produced a thin ashy layer containing artifacts that included table ceramics, decorative glass, buttons, sewing implements, kitchen utensils, and other domestic items. This is the floor of the structure, which also captured visible concentrations of charcoal and ash and small artifacts while in use (Figure 13).

The construction date of this feature is not certain. The 1983 HABS site plan (see Figure 1) shows Features 1 and 2 as "past buildings" as of 1906. Feature 2 may be the original structure built on

Figure 11. North wall of Feature 2 made of limestone blocks and covered with plaster.

the site by Thomas Johnson around 1880. Thomas' grandson Henry Williams acquired the property in 1906 and may have lived in the dugout/sod house until the frame house was completed in 1921. Four coins in the ashy artifact-rich level with dates of 1890, 1900, and 1904 suggest an abandonment date sometime after 1904.

ARCHEOLOGICAL INVESTIGATION OF 14GH102, 2007

The 2007 excavations continued the 2006 work on Features 1 and 2. The project also included pedestrian and shovel test surveys and identified a midden, Feature 3, 20 m north of Feature 2.

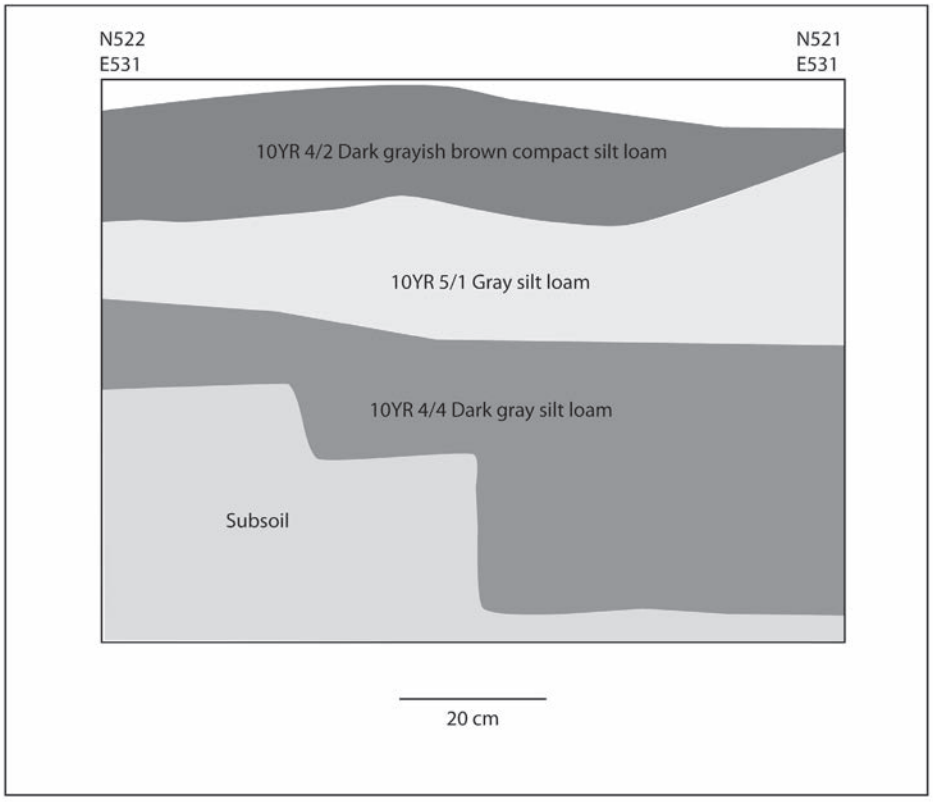


Figure 12. Profile of test unit N521 E530 showing carved steps, marked here as subsoil.

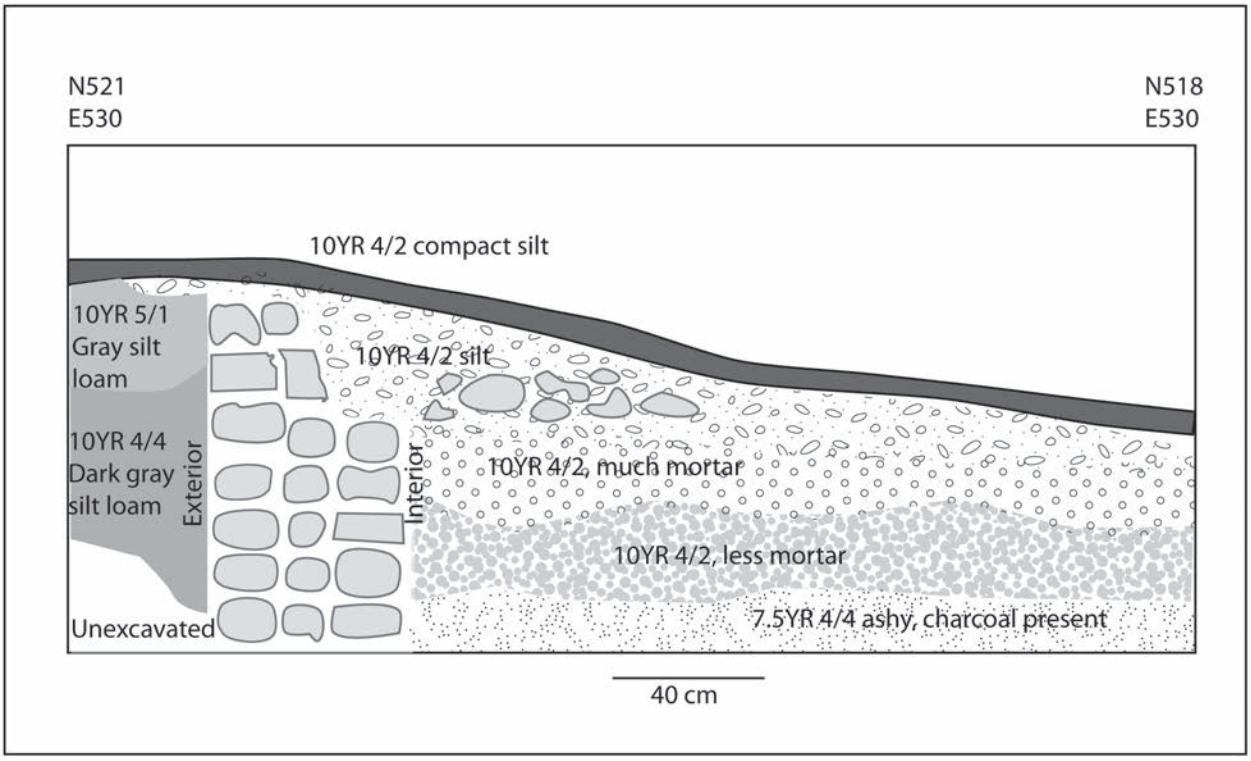


Figure 13. East profile of Feature 2. Profile shows interior layers to right of limestone wall and exterior layers to left of wall.

Pedestrian Survey, 2007

While excavation units for the 2007 field season were being established, KAA volunteers conducted a pedestrian survey of the site. Starting at the east side, the volunteers walked on 5-m north-south transects, watching the ground for artifacts and features (Figure 14). Artifacts were flagged when located. Small artifacts were collected, with flags left for later mapping; large artifacts were left in place. Recording artifact location was done using the total station or, when necessary, based on approximate grid coordinates. Many of the located artifacts were large (an abandoned car, farm machinery) or part of the landscape (foundations, fence posts, water pumps) and are, or probably are, early-to-mid-twentieth-century objects and thus not discussed further here.

Shovel Test Survey, 2007

Thirty shovel tests were excavated, generally at 5-m intervals in the vicinities of Features 1 and 2, although some deviated from that pattern. Figure 7 shows the locations of shovel tests and uses data on artifact density, which is low, to show the pattern of distribution at the site. Recovered artifacts, in no cases more than 10 in a shovel test, consisted of charcoal or small pieces of glass or metal. None is diagnostic. While artifacts were recovered, no features were discovered.

Excavations, 2007

Excavation of Feature 1, 2007

The 2007 excavations focused on further defining the Feature 1 boundaries. The 2006 Washburn University crew had located the north wall, so the 2007 excavation consisted of units south of the wall to locate the remaining walls and sample the contents of the structure. This strategy exposed all four walls and the frame and hardware of a door at the dugout entrance, which were recovered in association with the south wall that faces down slope (see Figure 8).

Figure 14. Pedestrian survey in progress.

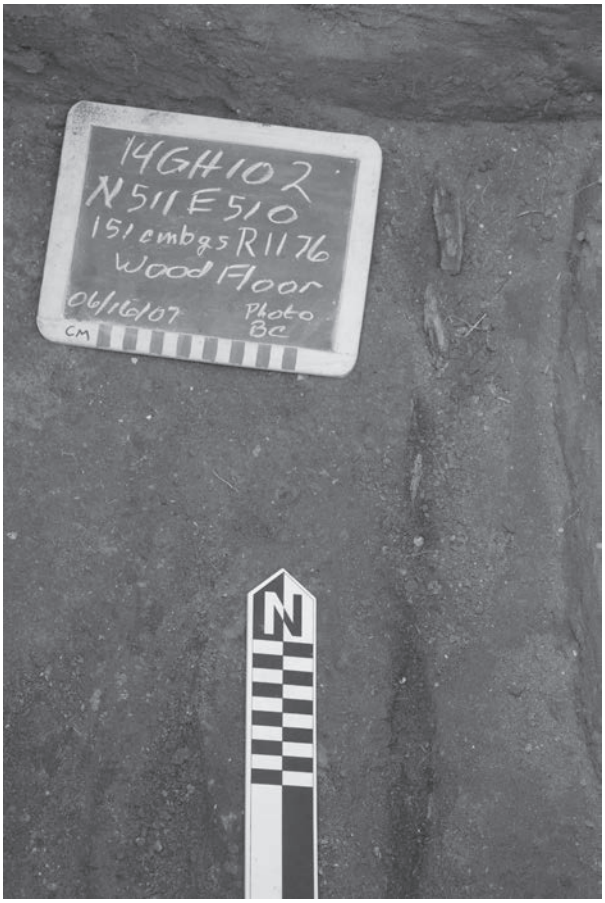


Figure 15. Evidence of wood floor in the 150–160 cmbs level in N511 E510.

In the southeast corner, unit N511 E510, excavators encountered a wood floor at about 155 cmbs (Figure 15), and more boards were recovered in N511 E513 (Figure 16). The wood was covered with plastic wrap and left in place. The depth of the floor, as indicated by the boards, was not high enough for taller people to stand comfortably, so the roof supports may have been farther west of the wall in the steep natural slope. A vertical wooden piece at 55 cmbs in the south wall of N511 E513 may be a piece of roof fall, as it is high in the profile.

Recovered artifacts included glass canning jars and non-human skeletal remains. On the floor of N512 E512 at 100 cmbs the base of a treadle sewing machine was uncovered (Figure 17). In N511 E512 artifacts by weight increased in the 70–80 level and stayed high to 110 cmbs.

The southeast corner of the dugout also served as the entrance. A red cedar post positioned vertically with a door hinge attached was good evidence of the entryway (Figure 18). South of the post and hinge was undisturbed sediment characteristic of the area, indicating that the post and hinge and the area immediately north was excavated in the past and subsequently refilled by slumping walls and other natural processes.

Discussion of Feature 1

In a 1942 interview Henry Williams states that there were three dugouts on the Johnson/Williams prop-

Figure 16. Evidence of wood floor in the 70–80 cmbs level of N511 E513.

Figure 17. Sewing machine base exposed at 90 cmbs in N512 E512.

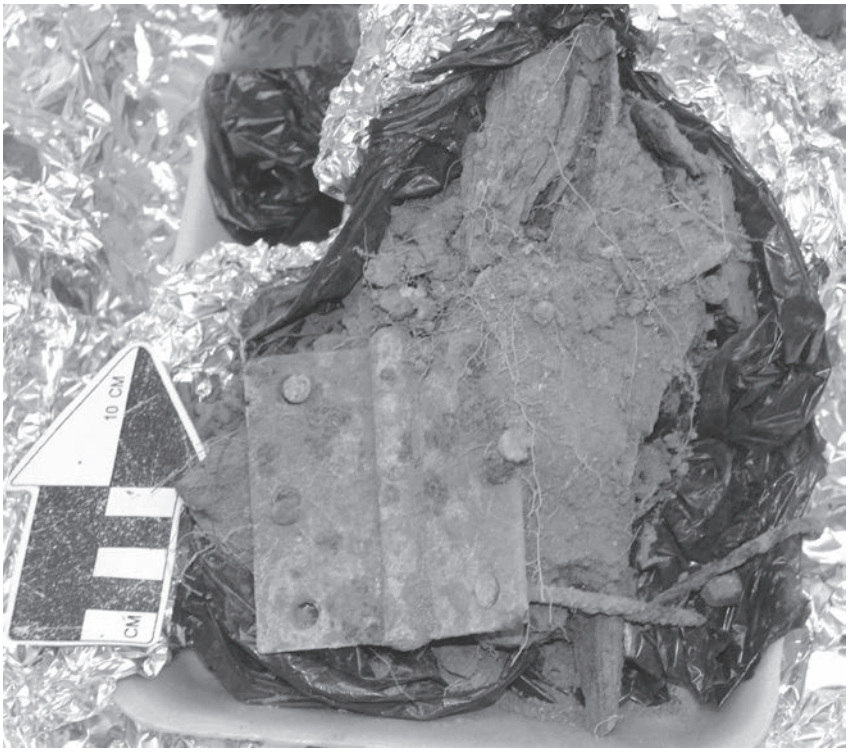


Figure 18. Hinge attached to post fragment.

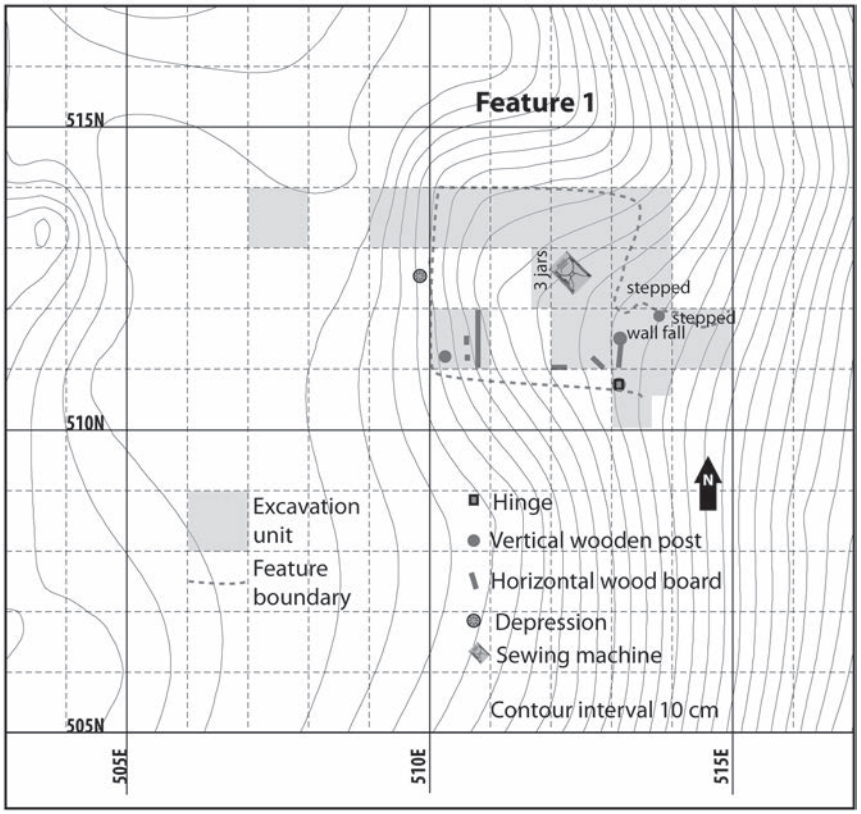


Figure 19. Detail of Feature 1.

erty and that these were built before the frame house (Belleau 1943:15). Archeological investigations were conducted in part to test this assertion. Feature 1 is cut into a steep slope and has an entrance and front elevation facing east-southeast. Excavation of Feature 1 confirmed that it was a dugout (Figure 19). Sediment from the dugout excavation was piled from the southeast to the southwest corner. The structure generally was square, the walls were approximately 11 ft (3.35 m), providing an area of 121 ft^2 (11.22 m^2). Vertical posts and an attached door hinge at the southeast corner indicated the entrance. Two other vertical posts likely served as wall or roof supports. Boards lying horizontally above the excavated surface were floor boards. One board 35 cm above these might be a roof fall remnant and, if so, suggests partial infilling of the structure before the roof collapsed.

A central unit in the structure recovered a wide range of materials including canning jars, ceramic tableware sherds, and the complete base of a treadle sewing machine. Six peach pits of varying sizes were found in the occupation levels of the feature, leading Wood (2007:115) to question if the peaches were grown locally or imported from a neighboring state. It appears that this dugout was used as a dump after it served its original purpose. Also recovered were wooden planks that may have been used as shelves. Several holes extending horizontally into the north wall of the feature may have served as supports for shelves (Figure 20).

A small depression just outside of the west wall has potential to be the remains of a vent or smokestack. This is consistent with the possibility that Feature 1 served as a smokehouse. Unfortunately, there was insufficient time to excavate in this area to better understand this depressed area.

Excavation of Feature 2, House, 2007

Excavations in 2007 focused on determining the size of Feature 2 and defining the east (front) wall. This work revealed a distinct line of plaster on the interior of both the west and north walls. Units along the south and east walls revealed lines of light tan sediment, running both horizontally and vertically. The nature and spacing of this sediment strongly suggested blocks of sod that were laid up to face the front and sides of the structure. In Figures 21 and 22

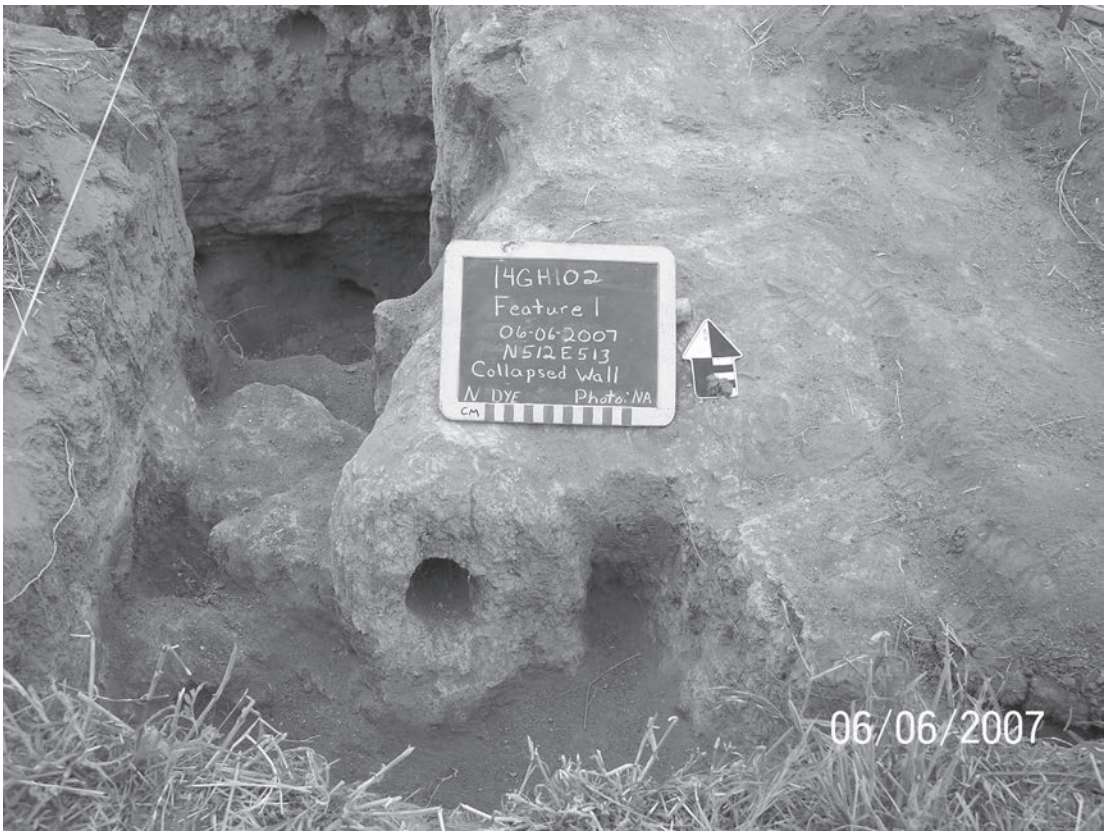


Figure 20. Horizontal holes in 30–40 cmbs level of N512 E513 in Feature 1.

Figure 21. North wall profile, 0–60 cmbs, of N515 E532 in Feature 2.

Figure 22. West wall profile, 0–60 cmbs, of N515 E532 in Feature 2.

diagonal streaks suggest a sod wall that has fallen into the structure's interior. When these are found in excavations in the structure interior, the end of the diagonal line is higher toward the wall, indicating that the wall fell in from the direction of the wall when it was in place. Profiles with evidence of sod blocks tended to be in units near the front and sides of the dugout, not near the rear wall, which was cut into the side of the slope. Thus, the structure was sodded up on three sides, with the wall on the north end being constructed of stone blocks topped with sod blocks.

The structure was rectangular, approximately 25.2 by 10.9 ft (7.7 by 3.3 m), and had an interior area of 274.7 ft^2 (25.4 m^2). The floor generally appeared at about 50 cmbs, indicating both the inward collapse of the sod walls and erosion from the slope to the northwest. Building debris—window glass, mortar, plaster, tarpaper—was recovered from the structure's interior. The plaster/mortar often underlay the sod block remnants, indicating that the sod walls were plastered (Figure 23). Tarpaper often was associated with the floor.

In 2006 excavators identified steps outside of the substantial stone wall that was the north wall of the feature (see Figures 12 and 13). During the 2007 excavations stepping also was exposed outside of the structure in several other units to the north, west, and south, although not as clearly as those leading to the plaster-faced stone wall. These probably were builder's trenches.

Stone, mortar, and plaster were noted in the three excavation units (N515 E528, N515 E530, and N515 E532) that spanned the structure, roughly along the N515 line. The disproportionately high amount of building material may represent a plastered sod, stone, and mortar wall that fell toward the south but, when standing, separated rooms in the structure. Two courses of mortared limestone were in the west wall. Possibly this is the south wall of the original structure to which another room was added later.

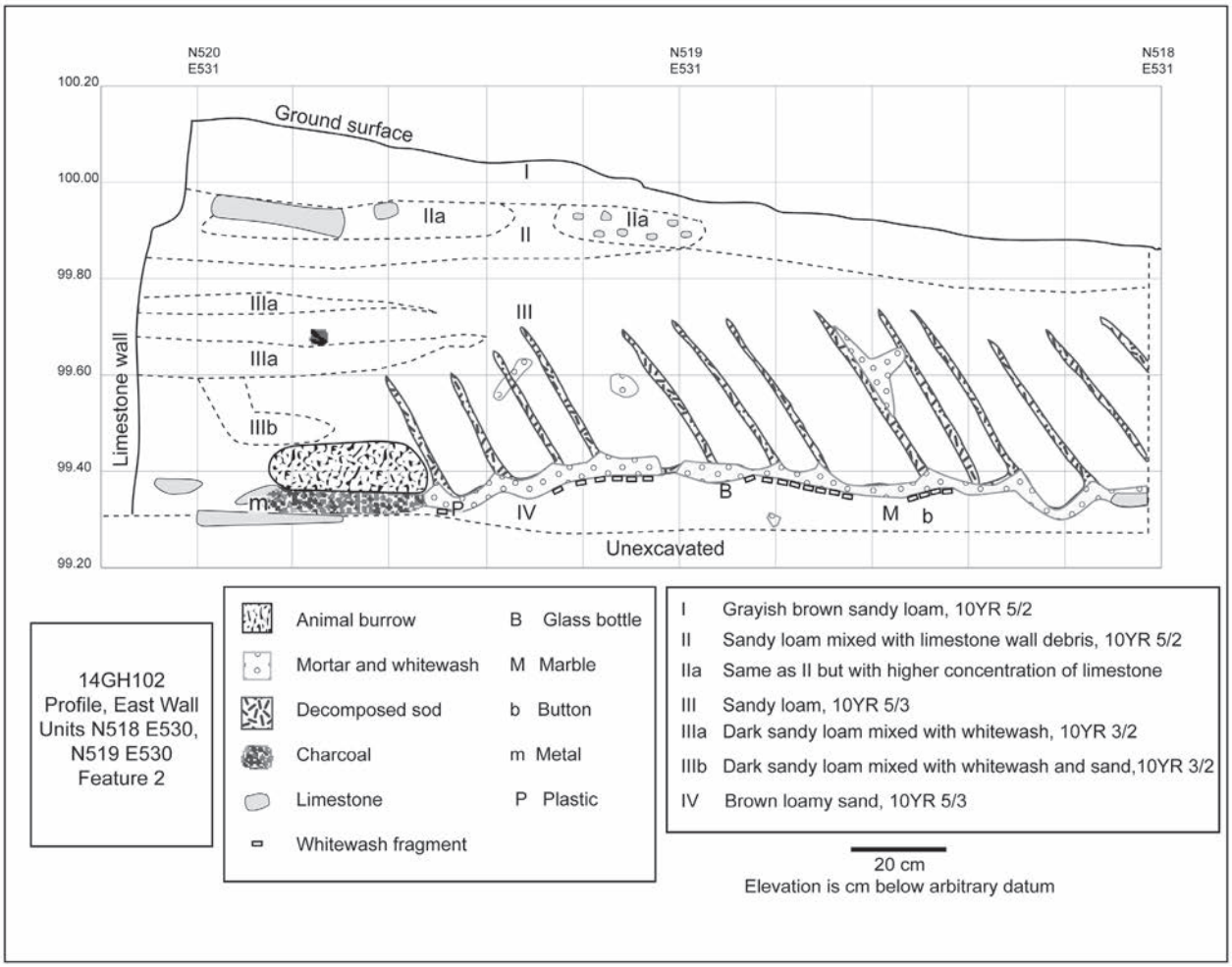


Figure 23. East wall of units N518 E530 and N519 E530 showing fallen wall of plastered whitewashed sod blocks. Possibly these are sod blocks that were laid on top of the short rock wall to the north that then fell in to the south.

Discussion of Feature 2

Clear evidence of both stone and sod walls and a floor dug into the substratum confirmed the oral history, which indicated that this was a structure. However, it may not have been the first structure on the property. The HABS documentation (see Figure 1) indicated a sod house and a dugout cattle shed about 40 m north and 15 m east of Feature 2, which may have been the original homestead of Thomas Johnson. On the other hand, the surface survey and geophysical survey did not detect these structures. Perhaps both were outside of the area of those investigations.

Feature 2 is not as well described as a dugout. While some excavation took place to establish the floor and edges of the structure, it was dug in deeply to the north but less so to the south (Figure 24). Instead of having walls that primarily were excavated, the walls were predominantly either of laid stone or sod (Figure 25). This suggests that the structure was intended for a longer occupation, and it likely was occupied until the frame house to the west was completed in 1921. It is more of a hybrid dugout/sod house with similarities to the Tuss-Lacey house, no longer standing in Nicodemus proper, which was an above-ground sod house with one elevation made of limestone (Figure 26) (Hamilton 1986:8, Figure I-7).

This structure—a house—may have had two rooms. Rock at the ends of an east-west line, running at approximately 515 north with substantial amounts of mortar and plaster, and sod in the middle unit suggests either a dividing wall in the house or that the original house was built and then an addi-

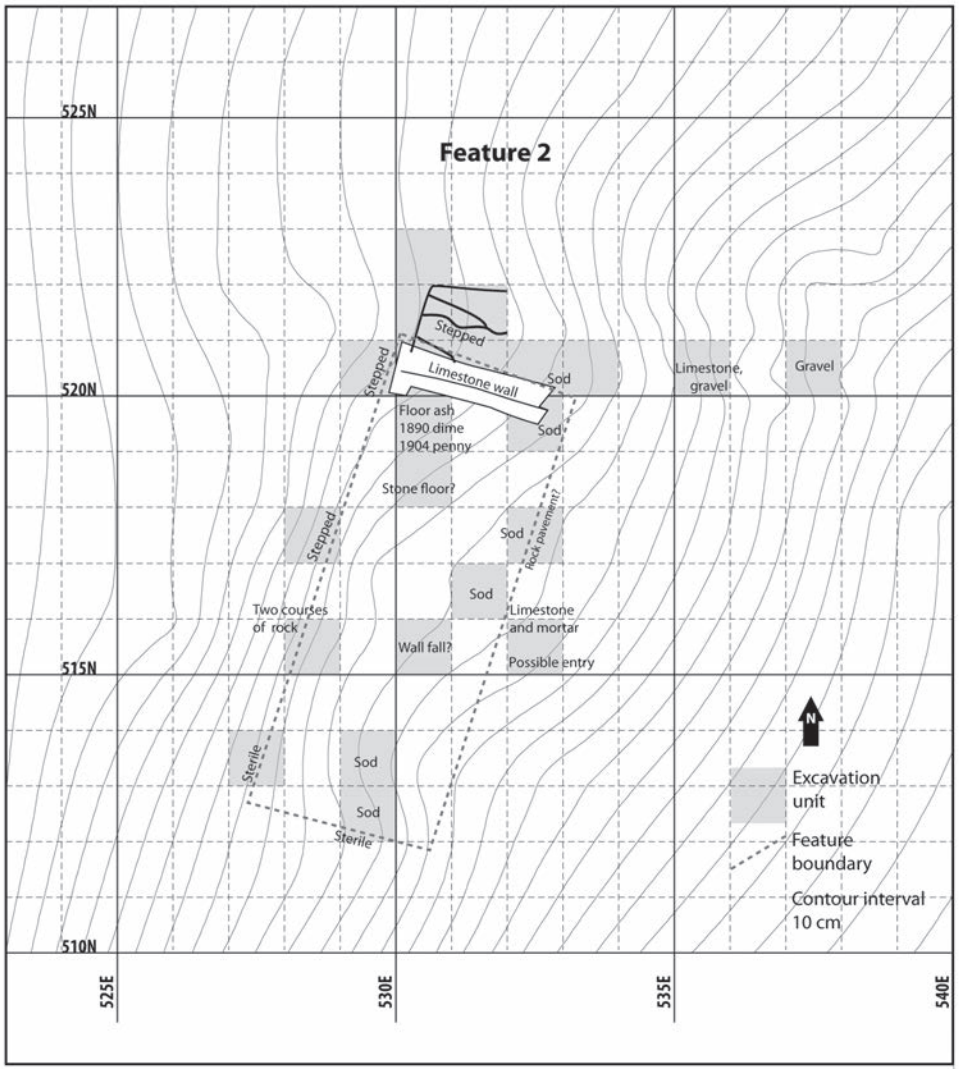


Figure 24. Feature 2 boundary, as established by excavation units, overlain on 10-cm-interval contour map.

tion added. Still, this house was small, just short of 275 ft^2. This is little by today's standards, but the 1862 Homestead Act, which stipulated the minimum requirements for the homesteading benefit, recommended a building of 12 by 14 ft or 168 ft^2. Granted, this probably is a minimum requirement, but it makes the point that Feature 2 was not small by the standards of the day. The north side of the structure, if it were built first, is about the size of a structure recommended by the Homestead Act and may have been built first to comply with that act. Also along the east side of the N515 line is evidence of an area dug in, possibly to serve as the threshold. This, then, would be an east-facing entrance.

Artifacts from Feature 2 are consistent with domestic structures and include window glass, toys, a small stamped metal cherub, and clothing parts, but also farm equipment.

Excavation of Feature 3 (F1077), 2007

The area that became Feature 3 initially was investigated because it is a level area that interrupts the natural slope of the land, 20 m north of Feature 2. It seemed possible that this was another dugout. Ten excavation units were placed on this level area. Deposits were shallow, and contrasting soil types indicated that no structures were present. Artifact density was high. Recovered objects include fragments of small and large glass containers, metal fragments and a can, domestic artifacts, most notably whiteware sherds, and an ash pit. This evidence suggests that Feature 3 was a domestic trash dump.

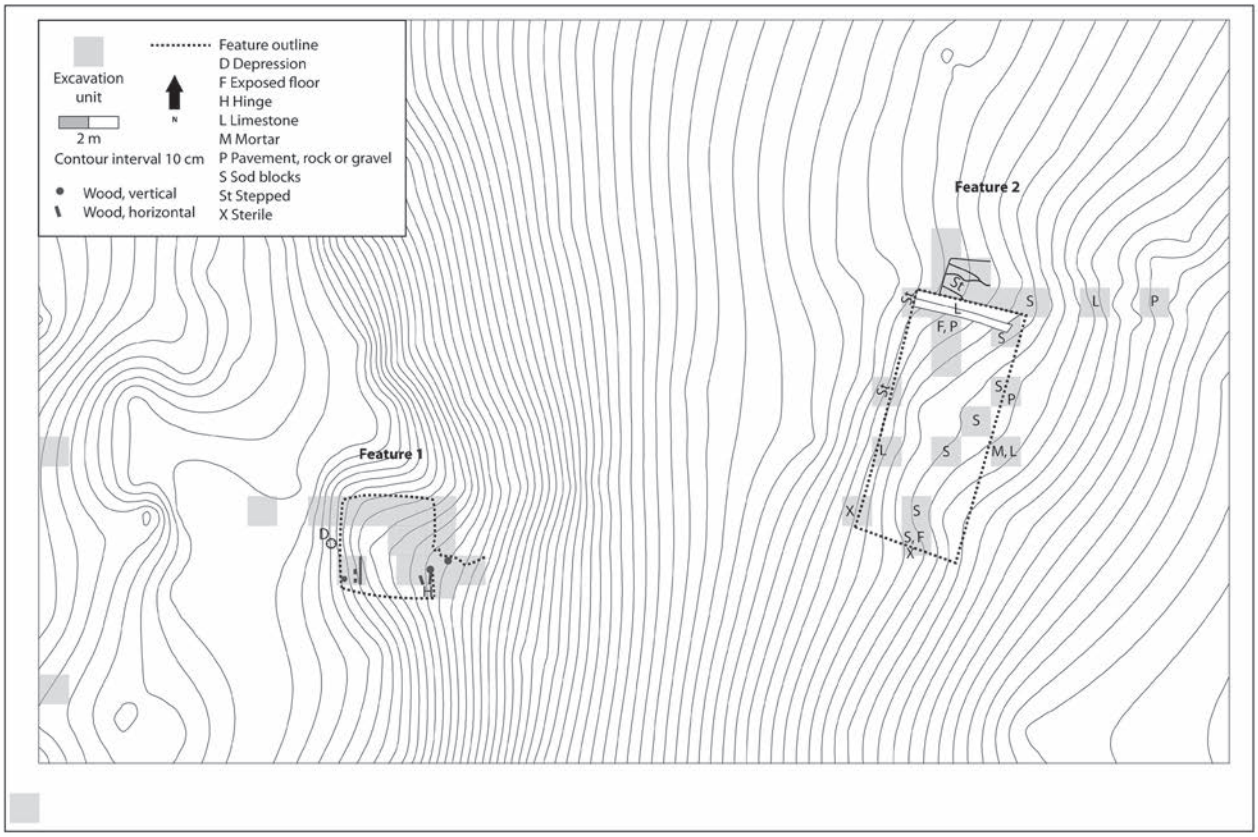


Figure 25. Structural elements exposed during excavation of Features 1 and 2.

Figure 26. Tuss-Lacey house.

Excavation of Area 1, 2007

Area 1 was of interest because a metal detector survey indicated a high density of metal artifacts. Workers opened eight excavation units and took them to depths between 10 and 20 cm. Small amounts of metal artifacts were recovered. The area was abandoned to focus on the two dugout features.

ARTIFACT PROCESSING

Washburn University archeology students processed the artifacts excavated in 2006. They were organized by Field Specimen Numbers (FS) that identify each individual context on the site. Within each FS, artifacts were separated by material type and placed into bags identified with the site name and number, excavation unit number, feature number (if appropriate), level/layer, excavator, and date. Identification tags with the same information were inserted into each bag.

Washburn University's catalog used a functional artifact classification system that included the major categories of Group, Class, and Function. Artifacts were further discriminated using descriptive classes, including material, body part, ware/type, color, decoration, shape, closure, finish, thickness, length, width, diameter, weight, condition, mends, maker's marks, TPQ (terminus post quem or date after which an artifact must have been deposited), and median date. Ceramic and glass artifacts were assigned vessel numbers to facilitate vessel-based analysis. This information is stored in a Microsoft Access database.

Artifacts from the 2007 field season were cleaned and cataloged by KSHS staff and KAA volunteers while field investigations were in progress. All flotation samples taken in both the 2006 and 2007 field seasons were processed in the field, concurrent with the 2007 excavation. Cleaning and cataloging were completed at KSHS by KSHS staff and KAA volunteers after fieldwork was completed. The artifacts were sent to Howard University for analysis by Bugarin and her students. In 2016 KSHS retrieved the artifact collection to complete this report.

ARTIFACT ANALYSIS

All artifacts discussed here were recovered during the 2006 or 2007 excavations and surveys at 14GH102. For analysis they were grouped into four categories: building, domestic, work, and other.

Building-related Material

The building group contains those categories related to the structure or foundation aspects of any type of building. Within the building group are five functional categories: construction material, hardware fasteners, miscellaneous hardware, utilities, and window glass. Construction material comprises such things as brick, mortar, plaster, shingles, tile, or cement. Hardware fasteners are nails, screws, nuts, bolts, rivets, staples, washers, and other fasteners. Miscellaneous hardware encompasses fencing, ladders, traps, buckets, wire, chains, springs, rings, strap metal, and scrap metal, a class created for unidentifiable fragments of metal. Utilities consist of artifacts with either an electrical, lighting, heating, or plumbing function. Window glass includes all crown, cylinder, plate, cast, or drawn window glass. The combined categories of the building group contain 2,260 artifacts.

Construction Material

The 770 artifacts that fall within this category (Table 2) were sorted into 7 different functions: door, flooring, foundation or structural, structural, wall, framing, and roofing. Within these are such materials as mesh screen, wood, brick, cement, concrete, mortar, plaster, paint chip, tin, and tarpaper. Wall is the largest functional category with 230 (29.9 percent) fragments of mortar, plaster, and paint chips. The artifacts from the door category consist wholly of mesh screen (n = 45, 5.8 percent). These artifacts could represent a screen door or have accidentally entered the artifact collection from a mesh screen used for screening of soil.

Most of the construction material artifacts were recovered from Feature 1 (n = 414, 53.8 percent). Feature 2 had 333 (43.2 percent), and Feature 3 had 23 (3 percent).

Rock

Rock, almost exclusively limestone, was counted and weighed for all excavation units. Some exposures of natural limestone occur at the site. However, more importantly, limestone was used in building Feature 2 for the north wall of the structure and pos-

Table 2. Construction material functional category, artifact identification, and count by feature.

Provenience	Functional category	Artifact	Count
Feature 1	Door	Screen	43
Feature 2	Door	Screen	1
Feature 3	Door	Screen	1
Subtotal			45
Feature 1	Flooring	Wood	30
Feature 2	Flooring	Wood	8
Subtotal			38
Feature 1	Foundation or structural	Brick	4
Feature 2	Foundation or structural	Brick	1
Feature 3	Foundation or structural	Brick	5
Feature 1	Foundation or structural	Cement, concrete, or mortar	6
Feature 2	Foundation or structural	Cement, concrete, or mortar	85
Feature 3	Foundation or structural	Cement, concrete, or mortar	16
Feature 1	Foundation or structural	Stone	5
Feature 2	Foundation or structural	Stone	8
Subtotal			130
Feature 1	Structural	Wood	96
Feature 2	Structural	Wood	3
Subtotal			99
Feature 2	Wall	Mortar	33
Feature 1	Wall	Plaster	81
Feature 2	Wall	Plaster	115
Feature 3	Wall	Paint chip	1
Subtotal			230
Feature 1	Framing	Wood	71
Feature 2	Framing	Wood	1
Subtotal			72
Feature 1	Roofing	Tin	3
Feature 1	Roofing	Tarpaper	75
Feature 2	Roofing	Tarpaper	78
Subtotal			156
Total for construction material			770

sibly for a footing along the west wall, as well as an east-west-running dividing wall. More limestone is in the accessioned collection for Feature 2 than Features 1 and 3, and the rock particles tend to be larger. Also, the amount of limestone recorded from Feature 3, which is not structural, is similar to that of Feature 1, suggesting that they share a similar, naturally occurring density of limestone, whereas the greater amount of limestone in Feature 2 results from its structural use.

Window Glass

Feature 2 yielded the majority (n = 403, 63.1 percent) of 639 window glass fragments, while lesser amounts were recovered from Feature 1 (n = 44, 6.9 percent) and Feature 3 (n = 192, 30.1 percent). This

is similar to Wood's (2007:105) findings, indicating that Feature 1 likely had fewer windows than did Feature 2.

Utility

In the utility category there were 126 artifacts (Table 3). The majority (n = 116, 92.1 percent) are representative of lighting-related artifacts: lamp chimney glass, lamp air vent fragments, lamp burner fragments, and a lantern shade with a bail. Artifacts in the electrical category include wiring, electrical hardware, and a zinc battery core. Two plumbing artifacts were recovered: a pump spout and a pump cover. Most of the utility category artifacts (n = 89, 70.6 percent) were recovered from Feature 2, while only eight (6.3 percent) came from Feature 1.

Hardware Fastener

This category comprises 544 artifacts (Table 4), including bolts, tacks, fasteners, grommets, nails, nuts, cotter pins, rivets, screws, staples, and washers. Nails are the largest group (n = 426, 78.3 percent), divided into wire nails (n = 341, 80 percent), cut nails (n = 82, 19.3 percent), and possibly wrought nails (n = 3, .7 percent). Wrought and cut nails generally are considered older than wire nails.

Like Wood's (2007:105) findings that cut nails were few and only recovered from Feature 2, few cut or wrought nails were found in Feature 2 in 2007. However, the 2006 and 2007 collections differ at Feature 1: no cut or wrought nails were found in 2006, but 79 (all cut nails) were found in 2007. Overall, Feature 2 yielded 353 hardware fasteners, while Feature 1 had 122, and Feature 3 had 60, supporting Wood's (2007:105) statement that more construction resources and maintenance went into Feature 2 than Feature 1.

Hardware Miscellaneous

In the hardware miscellaneous category are 201 artifacts (Table 5). They are represented by barbed wire (n = 4), small unidentifiable scraps of ferrous metal (n = 136, 67.7 percent), wire (n = 58, 28.9 percent), one spring mouse trap, and one fragment of strap metal. The artifacts were somewhat evenly distributed between Features 1 (n = 88, 43.7 percent) and Feature 2 (n = 92, 46.3 percent). Only 20 artifacts (10 percent) were recovered from Feature 3.

Table 3. Utility functional category, artifact identification, and count by feature.

Provenience	Functional category	Artifact	Count
Feature 2	Electrical	Zinc carbon battery core	1
Feature 2	Electrical	Hardware	4
Feature 2	Electrical	Wiring	3
Subtotal			8
Feature 1	Lighting	Lamp chimney glass	5
Feature 1	Lighting	Lamp burner	3
Feature 2	Lighting	Lamp chimney glass	80
Feature 3	Lighting	Lantern chimney glass	1
Feature 3	Lighting	Lantern shade and bail	1
Feature 3	Lighting	Lamp air vent	5
Feature 3	Lighting	Lamp chimney glass	21
Subtotal			116
Feature 2	Plumbing	Pump spout	1
Feature 3	Plumbing	Pump cover	1
Subtotal			2
Total for utility			126

Table 4. Hardware fastener functional category and count by feature.

Provenience	Functional category	Count
Feature 1	Bolt	1
Feature 2	Bolt	11
Subtotal		12
Feature 1	Fasteners (tack)	2
Feature 2	Fasteners (tack)	7
Feature 2	Fasteners	6
Subtotal		15
Feature 2	Grommet	7
Feature 3	Grommet	3
Subtotal		10
Feature 1	Nail (cut)	79
Feature 2	Nail (cut)	3
Feature 1	Nail (wire)	25
Feature 2	Nail (wire)	257
Feature 3	Nail (wire)	59
Feature 3	Nail (wrought)	3
Subtotal		426
Feature 2	Nut	6
Feature 2	Cotter pin	2
Feature 1	Rivet	3
Feature 2	Rivet	3
Subtotal		6
Feature 1	Screw	7
Feature 2	Screw	6
Subtotal		13
Feature 2	Spacer	1
Feature 1	Staple (fence)	4
Feature 2	Staple (fence)	40
Feature 3	Staple (fence)	1
Feature 2	Staple (box)	1
Feature 3	Staple (box & paper)	3
Subtotal		49
Feature 1	Washer	1
Feature 2	Washer	3
Subtotal		4
Total for hardware fastener		544

Table 5. Hardware miscellaneous functional category, artifact identification, and count by feature.

Provenience	Functional category	Artifact	Count
Feature 1	Fence	Barbed wire	1
Feature 2	Fence	Barbed wire	2
Feature 3	Fence	Barbed wire	1
Subtotal			4
Feature 1	Miscellaneous	Scrap metal	61
Feature 2	Miscellaneous	Scrap metal	62
Feature 3	Miscellaneous	Scrap metal	13
Feature 1	Miscellaneous	Wire	26
Feature 2	Miscellaneous	Wire	27
Feature 3	Miscellaneous	Wire	5
Feature 2	Miscellaneous	Mouse trap	1
Feature 2	Miscellaneous	Strap metal	1
Feature 3	Miscellaneous	Spring	1
Total for hardware miscellaneous			201

One strand of barbed wire from Feature 1 was identified as patented by A. J. Upham on July 2, 1878 (U.S. Government Commissioner of Patents 1878:296). Two strands of barbed wire from Feature 2 are most like that patented in 1876 by J. F. Glidden of DeKalb, Illinois (U.S. Patent and Trademark Office 1896:1412). All three strands may represent trash dumping episodes, as they would have had little use in construction of a structure.

Far more building group artifacts were recovered from Feature 2 (n = 1270, 56.2 percent) than from Feature 1 (n = 676, 29.9 percent). This may reflect more care in construction of Feature 2, as Wood (2007:105) suggested, but it also could indicate that more trash was deposited in the dugout after its use as habitation and storage had ceased. Some building group artifacts in Feature 1 resulted from its construction, but, as with Feature 2, others may represent trash dumping episodes.

Domestic

The domestic group contains those categories related to domestic or household activities. Eleven functional categories comprise this group: clothing, communication, container, cookware, flatware, furniture and appliance, organic, personal, recreation, toiletry, and table and utilitarian wares.

Table 6. Furniture and appliance category, artifact identification, and count by feature.

Provenience	Functional category	Artifact	Count
Feature 3	Structural or furnishings	Wood	1
Feature 2	Structural or furnishings	Strap hinge	4
Feature 2		Doorknob	1
Subtotal			6
Feature 2	Furniture	Caster	2
Feature 2	Furniture	Wood fragments & decorative trim	5
Feature 2	Furniture	Glass top	1
Feature 2	Furniture	Mirror	2
Subtotal			10
Feature 1	Minor appliance	Clock gear	1
Feature 1	Minor appliance	Clock gear	1
Non-feature finds	Minor appliance	Clock gear	1
Feature 1	Minor appliance	Sad iron	1
Subtotal			4
Feature 2	Major appliance	Stove	1
Feature 2	Window treatment	Shade attachment	1
Total for furniture and appliance			22

Clothing includes clothing, footwear, accessories, and clothing fasteners. Communication can be printed, audio, or audiovisual artifacts. Containers encompass such items as bottles, jugs, jars, cans, tubes, packaging, barrels, and closure artifacts. Cookware involves objects used in cooking, baking, or meat processing. Flatware covers flatware, cutlery, and utensils. The furniture and appliance category includes furniture, appliances, cleaning appliances, furnishings, structural items, and window treatments. The organic functional category takes in all faunal and floral items. The personal functional category contains such items as jewelry, coins, umbrellas, handbags, billfolds, eye glasses, sewing-related items, smoking artifacts, luggage, and office supplies. The recreation functional category incorporates musical instruments, sports equipment, and toys. Toiletries include grooming aides, cosmetics, hair care articles, and dressing accessories. Table and utilitarian wares is another large functional category; it that encompasses table setting dishes, serving dishes, beverage glasses, crocks, churns, basins, and chamber pots.

The combined categories of the domestic group contain more than 14,689 artifacts. Some artifacts were not counted because of their fragmented state.

Furniture and Appliance

Twenty-two artifacts in the furniture and appliance category were recovered (Table 6). Two clock gears and a complete sad iron (Figure 27; (http://www.kansasmemory.org/item/442153) were found in Feature 1. Another clock gear was not associated with any features at the site. Feature 3 had a single structural artifact, a finished piece of wood. All other furniture and appliances items were recovered from Feature 2. They include a strap hinge, a doorknob, a window shade attachment, a fragment of a cast iron stove, a mirror fragment, a caster from a furniture leg, a fragment of thick plate glass that may have served as a desk or table topper, and wooden furniture fragments with decorative trim.

Figure 27. Sad iron salvaged from Feature 1, Unit N512 E512.

Table 7. Container functional category, artifact identification, and count by feature.

Provenience	Functional category	Artifact	Count
Feature 1	Bottle	Beverage	10
Feature 2	Bottle	Beverage	76
Feature 3	Bottle	Beverage	33
Non-feature finds	Bottle	Beverage	34
Feature 2	Bottle	Toiletry	17
Feature 2	Bottle	Condiment	2
Feature 1	Bottle	Medicinal	3
Feature 2	Bottle	Medicinal	5
Feature 1	Bottle	Unknown type	67
Feature 2	Bottle	Unknown type	340
Feature 3	Bottle	Unknown type	265
Non-feature finds	Bottle	Unknown type	34
Subtotal			886
Feature 1	Jar	Canning	2
Feature 2	Jar	Canning	25
Feature 3	Jar	Canning	7
Non-feature finds	Jar	Canning	2
Feature 1	Jar	Condiment	2
Feature 3	Jar	Medicinal	2
Feature 1	Jar	Unknown type	9
Feature 2	Jar	Unknown type	30
Feature 3	Jar	Unknown type	26
Non-feature finds	Jar	Unknown type	4
Subtotal			109
Feature 2	Can	Baking	1
Feature 3	Can	Baking	11
Non-feature finds	Can	Baking	1
Feature 3	Can	Beverage	1
Feature 2	Can	Chemical	2
Feature 3	Can	Chemical	1
Feature 3	Can	Meat	6
Feature 3	Can	Tobacco	1
Feature 3	Can	Toiletry	1
Feature 1	Can	Unknown type	14
Feature 2	Can	Unknown type	103
Feature 3	Can	Unknown type	300
Non-feature finds	Can	Unknown type	11
Subtotal			453
Feature 2	Closures	Cap, liner	9
Feature 3	Closures	Lid, liner	8
Non-feature finds	Closures	Liner	1
Subtotal	Closures		18
Non-feature finds	Packaging	Plastic wrapping	239
Total for container			1,705

Container

The container category encompasses 1,705 complete and fragmentary bottles, jars, cans, closures and packaging (Table 7), making this the second largest category in the domestic group, only surpassed by organic items. Materials in the container category include glass (n = 992, 58.2 percent), metal (n = 472, 27.7 percent), plastic (n = 240, 14.1 percent), and cork (n = 1, <.1 percent). Most of the artifacts were in or near Feature 3 (n = 660) and Feature 2 (n = 610). Feature 1 had the fewest container artifacts (n = 109), while 326 artifacts were recovered from non-feature finds across the site.

The majority of the container assemblage (n = 1,317) is highly fragmentary and beyond identification except at a basic level, such as bottle or jar. For example, all artifacts categorized as belonging in the packaging functional category are fragments of plastic containers collected from non-feature finds. However, 26 of the tin cans could be further identified: one is a shaker-type lid for talcum powder, one is a tobacco can lid with hinge, three are paint can fragments, six fragments likely held meat of some type, one body and seam came from an evaporated milk can, and 13 are cans containing baking-related products. Most of the baking cans appear to be spice cans, but two fragments are from baking powder cans. One of these has an advertisement on the lid that states, "Calumet Baking Powder/1 lb/ Absolutely Pure," while the other retains only the word "Baking" on the lid. The Calumet Baking Powder Company of Chicago, Illinois, began manufacturing baking powder in 1889 and continued to do so until it was purchased by General Foods in the 1980s (Made In Chicago Museum 2017). A single hole-in-top can is present in the collection. Initially handmade and later mechanized, hole-in-top cans have a hole in the top of the can through which the contents were pushed; the cap was then soldered to the can prior to boiling (Utah Division of State History 2013). After boiling, the small steam hole was soldered. This technology was used through the nineteenth century until the sanitary can became commonplace in the late 1890s.

One artifact in the closures functional category is a cork, still within the mouth of a wine or liquor bottle. Other artifacts are a single modern plastic screw-on lid, eight fragments of canning jar screw

Figure 28. Base of Mentholatum jar from Feature 3, Unit N544 E529.

Figure 29. Base of H. J. Heinz Company condiment bottle from Feature 1, Unit N512 E511.

Figure 30. H. J. Heinz Company condiment bottle from Feature 1, Unit N512 E511.

bands, and three canning jar lid liners. One of these liners has the lettering "Boyd's Gen." If complete, the liner would have read "Boyd's Genuine Porcelain Lined Cap." The liner was patented first in 1869 and continued to be manufactured, using either the exact or similar wording, by numerous companies until the 1950s (Lockhart et al. 2014). Finally, five crown-type bottle caps were collected, which date to post-1894 (Lindsey 2017).

Two jars were identified as being medicinal or pharmaceutical: a brown glass base sherd and a complete milk glass Mentholatum jar (Figure 28; http://www.kansasmemory.org/item/446939/page/2). Mentholatum, an ointment "which had the properties of relieving pain, easing itch, curing cold and soothing insect bites," was developed in Wichita, Kansas, in 1889 and is still manufactured today (Mentholatum Company of Canada 2017). Two other complete jars were identified as containing condiments, specifically mustard. One had the lettering "H. J. Heinz Co." (Figures 29 and 30; http://www.kansasmemory.org/item/439904/page/3 and http://www.kansasmemory.org/item/439904/page/2). This particular labeling has been in use since 1888 (Toulouse 1971:236).

Thirty-six complete or fragmentary canning jar artifacts were collected from 14GH102. Several have partial manufacturing labeling. One complete clear jar had enough labeling to identify it as a "Kerr Self Sealing Wide Mouth Mason." Additionally, the bottom of the jar is embossed "Sand Springs Okla Aug 31, 1915" (Figures 31 and 32; http://www.kansasmemory.org/item/446937/page/1 and http://www.kansasmemory.org/item/446937/page/2). The Kerr Glass Manufacturing Co., of Portland, Oregon,

Figure 31. Kerr Self Sealing Wide Mouth Mason jar from N512 E511 in Feature 1.

Figure 32. Kerr Self Sealing Wide Mouth Mason jar base from N512 E511 in Feature 1.

began its association with canning or fruit jars as a "jobber," selling fruit jars manufactured by others for the company, in 1904. Later the company began to manufacture its own fruit or canning jars. Kerr had glass manufacturing plants at Altoona, Kansas, from 1909 to 1912 and Sand Springs, Oklahoma, from 1912 to 1946 (Toulouse 1971:306–307).

Eight of the bottles and bottle sherds were identified as being medicinal or pharmaceutical, based on bottle finish, bottle shape, and presence of panels. Three were further identified as patent medicine bottles and one as a bitters bottle. One of the panels had the wording "S F Baker," indicating that it was manufactured for either S F Baker and Son or S F Baker and Company of Keokuk, Iowa. This company manufactured patent medicine, pills, liniments, conditional powders, proprietary medicines, extracts, and spices from 1871 to post-1931 (Fike 1987:51). Seventeen bottle sherds were classified as toiletry bottles, two of which were further categorized as perfume bottles. All 17 sherds were recovered from Feature 2 in nine different units.

Only two bottle sherds were identified as having been used to hold a condiment, such as ketchup, and both were from the same unit in Feature 2. Beverage bottles (n = 153) are the largest category of identifiable bottles in the collection. These include bottles that once held beer, wine, liquor, soda pop, and milk. One of the beer bottle sherds from Feature 2 has the lettering "Leisy Peoria, Illinois Brewing Company" (Figure 33; http://www.kansasmemory.org /item/446936/page/1). The Leisy Brewing Company opened in 1894 and closed in 1920 (Old Breweries 2013). A base of a beer bottle was embossed with "30th 189," perhaps a partial date from the 1890s.

The base of a clear liquor bottle from Feature 1 has a bottle maker's mark of "I G CO" and represents the Ihmsen Glass Co., of Pittsburgh, Pennsylvania (Toulouse 1971:261). Two of the soda pop bottles contain labeling information. One is a partial clear Orange Crush bottle with the labeling "Orange – Crush Co Bottle 6 FL. OZ Patd July 2-, 1920." Orange Crush soda was first developed in 1916 and is still made in 2017 (Grace 2006:15). Another partial soda pop bottle has the following information embossed on its side and base: "Coca Cola, Trademark Registered, in U.S. Patent Office, Min. Contents 6 FL. OZS, Sioux City Iowa" (Figure 34). The Chesterman Company of Sioux City, Iowa, a beverage and food service company, added Coca Cola to its production in 1904 (Chesterman Company 2017). The company still manufactures the product in 2017. In 1916 the Coca-Cola Company and the Root Glass Company agreed to manufacture the distinctive Coca-Cola bottle and at this time also began embossing the city that was

Figure 33. Leisy Brewing Company bottle from N520 E533 in Feature 2.

Figure 34. Base of Coca-Cola bottle showing the name city that was placing the bottle order collected as a non-feature find.

placing the glass order; in this case, Sioux City, Iowa (Ryan 2015).

Table and Utilitarian Wares

Whether laying the table for dinner, pouring syrup on breakfast pancakes, or drying a coffee cup with a dish towel, the men, women, and children who

Table 8. Table and utilitarian wares functional category, artifact identification, and count by feature.

Provenience	Functional category	Artifact	Count
Feature 2	Beverage glass	Tumbler	7
Feature 2	Beverage glass	Tumbler	2
Feature 3	Beverage glass	Stemware	1
Subtotal			10
Feature 1	Table setting	Plate, cup	122
Feature 2	Table setting	Plate, bowl, saucer, cup	76
Feature 3	Table setting	Plate, bowl, saucer, cup	7
Non-feature finds	Table setting	Plate	10
Subtotal			215
Feature 1	Serving	Bowl, dish, pitcher	18
Feature 2	Serving	Bowl, dish, platter	34
Feature 3	Serving	Bowl, dish, platter, shaker	31
Non-feature finds	Serving	Bowl, dish, pitcher	13
Subtotal			96
Feature 1	Table setting or serving	Unknown type	12
Feature 2	Table setting or serving	Unknown type	8
Non-feature finds	Table setting or serving	Unknown type	1
Subtotal			21
Feature 1	Utilitarian	Crock	2
Feature 2	Utilitarian	Crock	10
Feature 3	Utilitarian	Crock	65
Non-feature finds	Utilitarian	Crock	1
Feature 2	Utilitarian	Vase	6
Feature 2	Utilitarian	Flower pot	2
Subtotal			86
Total for tableware			428

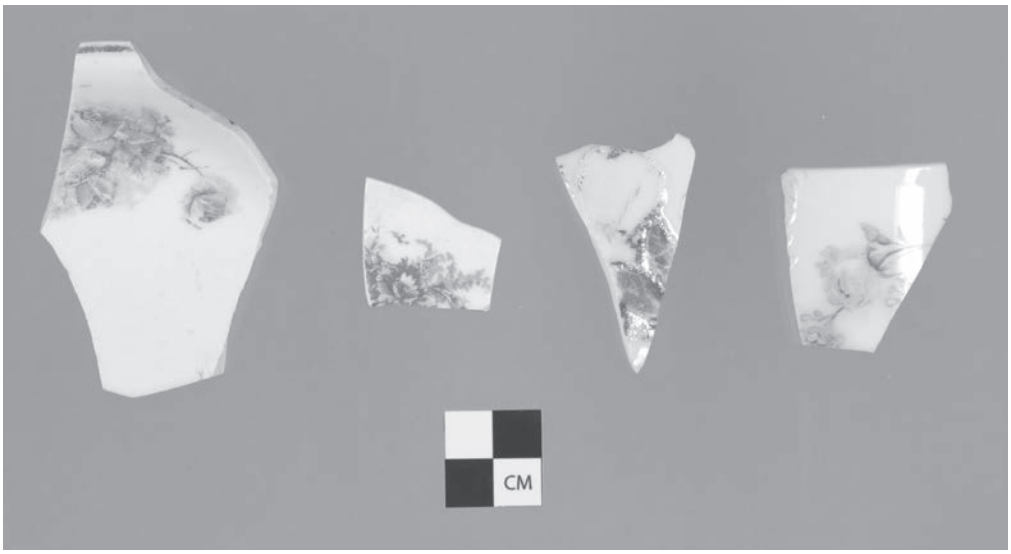


Figure 35. Four remnants of decorated dishes from 14GH102.

Figure 36. Two whiteware coffee cups, refitted by volunteers.

lived at 14GH102 had daily interaction with artifacts from the tableware and utilitarian wares category. The majority of these (n = 215; Table 8) are from the table setting functional category: fragments of plates (Figure 35; http://www.kansasmemory.org/item/439708), cups (Figure 36; http://www.kansasmemory.org/item/440470), bowls, and saucers. Ninety-six artifacts are from the serving functional category that includes serving bowls, serving dishes, pitchers, a platter, and a shaker. Twenty-one other items are too small to determine whether they belong in the tableware or serving functional category. Ten fragments from the beverage glass functional category, mostly tumbler fragments but also one piece of stemware, were found at the site. Finally, in the utilitarian functional category are 78 pieces of crockery, 6 vase fragments, and 2 flowerpot sherds.

Features 1 and 2 were nearly identical in their distribution of table and utilitarian wares category artifacts (Table 8). The former had 154 items, and the latter had 145 items. Unexpectedly, Feature 1

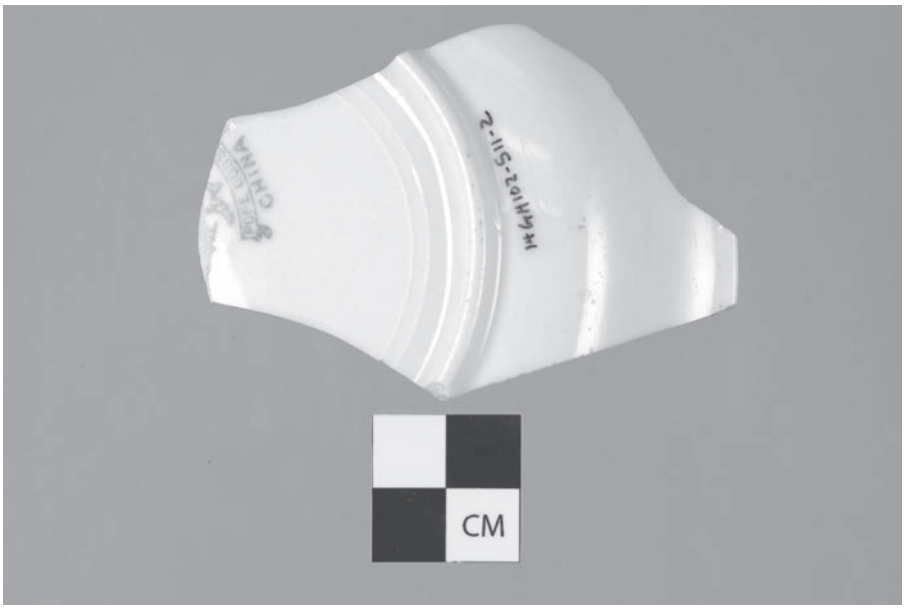


Figure 37. Pope-Gosser China Company soup bowl from N512 E529 in Feature 2.

had more artifacts from the table setting and serving functional category (n = 152) than did Feature 2 (n = 110). Feature 3's table and utilitarian wares are comprised mostly of crockery fragments (n = 65, 62.5 percent), while the non-feature finds are a small mix of 24 table setting and serving dishes and a single crockery sherd.

Most of the table and utilitarian wares artifacts are ceramic (n = 241, 58.9 percent). Other materials include earthenware (n = 85, 20.8 percent), glass (n = 55, 13.5 percent), lesser amounts of agateware and redware, and one ferrous artifact. Most are plain whiteware and plain porcelain (n = 122, 29.8 percent), with white glaze on both sides. Other decorative techniques include cut and pressed glass (n = 18); molded (n = 42); transferware, including two flow blue designs (n = 21); hand painted (n = 10); and mottled agateware (n = 11).

Three items merit further discussion. A soup bowl fragment from Feature 2 bore the partial marker's mark of the Pope-Gosser China Company of Coshocton, Ohio (Johnson-Humrickhouse Museum 2017). Use of this maker's mark (Figure 37; http://www.kansasmemory.org/item/439708/page/7) ran from 1903 until 1908. Another sherd from Feature 2 retains the partial word "arranted" (warranted). "Warranted" was first used on American and English pottery company names in the 1890s (Kovel's Antiques, Inc. 2017).

A nearly complete agateware pitcher was collected from 14GH102 during a survey of non-feature areas. The pitcher is decorated with mottled cobalt blue and white enamel (Figure 38; http://www.kansasmemory.org/item/440126). Agateware

Figure 38. Agateware pitcher collected during pedestrian survey at 14GH102.

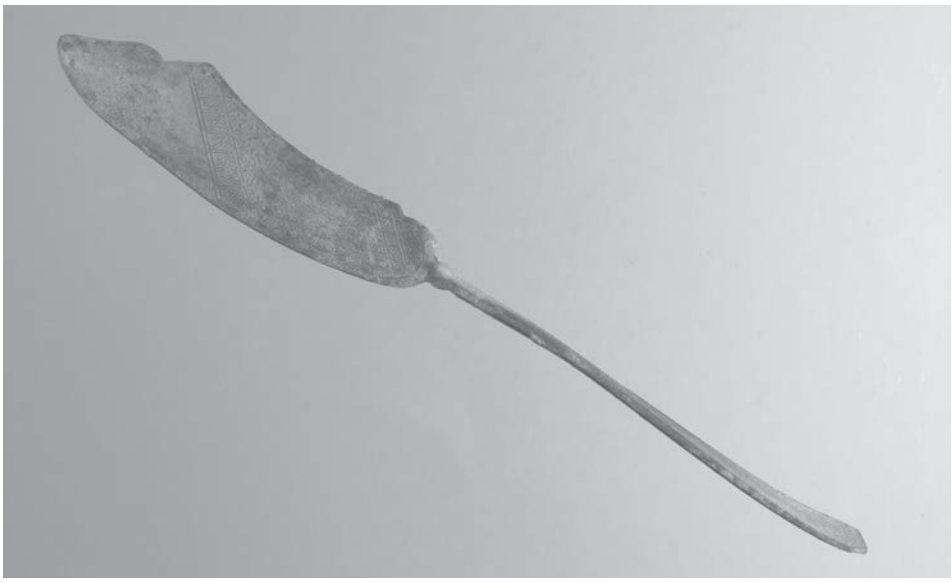


Figure 39. Master butter knife excavated in N515 E532 in Feature 2.

is sometimes called enamelware or graniteware. In America production began in the 1870s and continued until the 1930s (Lantz 1972:107). After its life as a pitcher, this piece served as a target, being hit by bullets at least seven times.

Flatware

The five flatware category artifacts are one butcher knife blade, two utensil handles, a spoon, and a complete master butter knife. The butcher knife blade was found on the surface of the site, and all others were recovered from Feature 2.

Master butter knives have a saber shape with a sharp pointed end but a dull edge. They are used to serve, rather than spread. Both sides of the blade and handle of this specimen have a pattern similar to Art Deco (Figure 39; http://www.kansasmemory.org/item/442311). The spoon, as noted by Wood (2007), bears a maker's mark "Nevada Smith" on the handle. Nevada Smith was a trade name for non-silver alloy, manufactured by the Daniel and Arter Globe Company of Birmingham, England. The firm operated from the late nineteenth century until 1920 (SilverCollection.it 2017; Sterling Flatware Fashions and Facts 2017).

Cookware

One artifact in the cookware category was recovered from the surface of the site outside Features 1 and 2 during the 2007 excavations: a complete cast iron dutch oven. A dutch oven also can be called a kettle, bake kettle, camp oven, bake oven, or bakepan (Franklin 1991).

The large crack down one side and nearly across the bottom may have resulted in its discard. The top and bottom diameters, along with the depth, indicate that the dutch oven would have held 8 quarts of liquid or 9–12 pounds of meat (Smith 2017). Stamped on the bottom are the word "Puritan" and the number "10." The logo matches that used by Griswold Manufacturing Company of Erie, Pennsylvania, for the Puritan store brand. This line was produced from the 1920s through the 1930s for Sears, Roebuck and Company (The Cast Iron Collector 2017). However, the bottom does not bear a four-digit pattern number, which Griswold Manufacturing Company typically placed there.

By-product

In the byproduct category 452 artifacts were recovered (Table 9). They include cinders, clinkers, burned stone, coal, charcoal, and one lead sprue. The majority (n = 194, 42.9 percent) of this material was collected from Feature 2, followed closely by Feature 3 (n = 170, 37.6 percent). Most of these may appear in the archeological record as the result of dumping episodes that occurred after the cleaning of a cooking or heating stove.

Fuel is represented by coal, coal byproducts (cinders and clinkers), and wood charcoal. The distribu-

Table 9. Byproduct functional category, artifact identification, and count by feature.

Provenience	Functional category	Artifact	Count
Feature 1	Fuel	Cinders, clinkers, & burned stone	13
Feature 2	Fuel	Cinders, clinkers, & burned	61
Feature 3	Fuel	Cinders, clinkers, & burned	110
Non-feature finds	Fuel	Cinders, clinkers, & burned	18
Subtotal			202
Feature 1	Fuel	Coal	22
Feature 2	Fuel	Coal	123
Feature 3	Fuel	Coal	39
Non-feature finds	Fuel	Coal	32
Subtotal			216
Feature 1	Fuel	Charcoal	2
Feature 2	Fuel	Charcoal	9
Feature 3	Fuel	Charcoal	21
Non-feature finds	Fuel	Charcoal	1
Subtotal			33
Feature 2	Lead	Sprue	1
Total for byproduct			452

tion of these artifact classes varies by feature and feature functions. Wood charcoal is uncommon, represented by only 17.5 g throughout the site, while 1461.8 g of coal and coal byproducts were recovered. While wood charcoal is more fragile than coal, cinders, and clinkers, the magnitude of the difference in mass of coal versus wood as fuel indicates how important coal was to the site occupants.

The lack of evidence of large amounts of fuel in Feature 1 is important. During the 2007 field season excavators speculated that Feature 1 had served as a smokehouse. Some even claimed that they detected the smell of smoked meat. A smokehouse would include a means of containing burning fuel and venting exhaust, so the recovery of some fuel or fuel byproducts is a reasonable expectation. In the 2006 season a possible vent at the back of the feature was noted but not explored. However, a small amount of coal was concentrated on the east side and doorway of the feature, so evidence does not support the notion of a stove and vent along the west wall. In 2007 workers discussed the possibility of racks for hanging meat, based on horizontal holes in the walls of the feature that may have served as shelf supports (see Figure 20). There is little evidence of fuel being used in Feature 1.

While wood charcoal is scarce in Feature 2, more than a kilogram of coal, cinders, and clinkers occurred in and near the feature. Unit 520N 537E produced most of the fuel-related material: 870.3 g. This unit, situated on a slightly more level area on the slope northeast of the structure, was an ash dump. Also, about 70 g of fuel material was in and near the stepped area north and outside of Feature 2. Inside the feature fuel-related material was concentrated along the east wall and at the likely location of the entrance but sufficiently distributed that it does not indicate the placement a stove.

A fluted metal stove flue collar (558-1) was recovered from the floor and wall in the south end of Feature 2, substantiating the expectation that a stove was used for heating and cooking. A small fragment of metal (63-360), likely from a stove, also was found just outside Feature 2.

Feature 3 had significantly more fuel-related material than Feature 1, especially coal and coal byproducts. Wood charcoal in this dump could have resulted from burning trash; the coal and byproducts may have been stove ash dumps.

Organic

Faunal Remains

Methods

Faunal remains were sorted and identified using the comparative faunal collections, located at the KSHS. All specimens were identified to the most specific taxonomic level possible. Evidence of modifications, color, weight, portion, and number of fragments of each specimen also were noted. Modifications include anything that changed the specimen's structure outside of the natural process of decay, such as burning, polish, staining, gnawing, and cut marks. The minimum number of species was determined by counting the number of identified bone and tooth fragments.

Condition

Faunal remains recovered from the site are generally well preserved. Most specimens exhibit only minor erosion, flaking, and exfoliation. Few specimens show damage from soil conditions or weathering. Most long bones are broken, typically at the articular ends. This may result from butchering or gnawing by canids.

Analysis

Of 3,376 bone fragments recovered, only 35.84 percent (n = 1,210) were identifiable to the nearest taxon class (amphibian, bird, mammal, and reptile). The low success rate of identification was due to the highly fragmented nature of the bones that lack any identifying markers. Of the identified faunal remains mammals make up 56.53 percent (n = 684), reptiles make up 1.57 percent (n = 19), birds make up 1.57 percent (n = 19), and amphibians make up 40.25 percent (n = 487).

Modifications are present on 6.61 percent (n = 223) of the faunal assemblage: burning on 4.35 percent (n = 147), gnawing on 1.87 percent (n = 63), cut marks on 0.21 percent (n = 7), polish on 0.06 percent (n = 2), and staining on 0.06 percent (n = 2). Percentages by faunal class are based on count, so, for example, amphibians making up 40 percent of the fauna by count does not mean that they were a significant source of meat. On the other hand, element count by class provides a general picture of the kinds of animals, wild and domestic, that were used for food.

Faunal remains tended to cluster around Features 1 and 2. Feature 1 contained 78.02 percent (n = 2,634) of the faunal remains, while Feature 2 yielded 15.88 percent (n = 526). Feature 3, directly north of Feature 2, produced 6.25 percent (n = 211). The fourth excavation area, which was northeast of Feature 2, had only 0.06 percent (n = 2) of the faunal remains. All excavation areas contained burned bone, but Feature 2 contained the largest amount with 94.56 percent (n = 139).

Small mammals

The largest portion of the identified faunal assemblage at 54.79 percent (n = 663) consists of small mammals, including mice, rats, rabbits, and squirrels. Rabbit remains are most numerous with 29.75 percent (n = 360), and the majority (n = 351, 29.01 percent) were associated with Feature 1. Squirrel remains, recovered mainly around Feature 1, make up 3.31 percent (n = 40). Small rodents, such as rats and mice, make up 21.74 percent (n = 263) of the identified faunal remains and were concentrated around Feature 1 with 3.22 percent (n = 39).

Small mammals, with rabbit remains constituting nearly 30 percent of the assemblage, probably were a meaningful addition to the diet. This is substantiated by a 1984 interview with current landowner Veryl Switzer (1984), in which he stated that on winter weekends he and others hunted rabbit, both jackrabbit and cottontail, bringing home 10–15 percent of the family's meat. Switzer's hunts took place when he was a boy, long after the abandonment of the dugouts, but the story indicates a tradition of rabbit hunting providing a substantial amount of meat.

Large mammals

Large mammals, including deer, coyote, and pig, make up a surprisingly small amount of the identified faunal collection with 1.74 percent (n = 21). Deer comprise 1.16 percent (n = 14), and all specimens came from Feature 3. Coyote make up 0.25 percent (n = 3), all bones being associated with Feature 1. The pig remains make up 0.41 percent (n = 5), with 0.25 percent (n = 3) found at Feature 2 and 0.08 percent (n = 1) at Feature 1.

The paucity of evidence for large mammals is puzzling. The Kansas agricultural censuses show that there were not only milk cows at the Johnson and Williams family holdings, but also small herds of cattle (Kansas State Census 1885; Kansas State Census 1895). Two pigs are noted in each census. Cattle and pigs may have been butchered elsewhere, possibly even in town, or perhaps the livestock was being raised for market and not for local consumption. It is not surprising to find deer in the assemblage, which, like rabbits, would be actively sought out and taken when available, as they are today. Deer may have been dressed on site.

Scavenging dogs and coyotes certainly had an impact on the presence of animal bones at the site. Larger bones from domesticated ungulates and chickens, as well as those from domesticated or wild ducks and turkeys, would have had higher

value to canids than the bones of amphibians, reptiles, or small rodents. Bones from food waste are not clearly reflected in Feature 3, but there may have been multiple dumps on the farmstead.

Birds

Bird remains make up another small portion (n = 19, 1.57 percent) of the assemblage. Only 0.74 percent (n = 9) were identified to the species level, including chicken, duck, prairie chicken, and turkey. Six elements (.49 percent) are chicken. The chickens were found primarily in Feature 3 (n = 3; .25 percent). One specimen (.08 percent) each of duck, turkey, and prairie chicken were found at Feature 1. Unidentified bird bones make up .83 percent (n = 10) of the identified faunal remains and were primarily found at Feature 2 with .50 percent (n = 6).

Eggshell was counted and weighed. A large amount of eggshell was collected from the site, totaling 1,051 specimens. Feature 1 contained 60.42 percent (n = 635), Feature 2 contained 35.68 percent (n = 375), and Feature 3 contained 3.90 percent (n = 41) of the eggshell remains.

Amphibians

Faunal remains identified as amphibians make up 40.33 percent (n = 488) of all animal remains, and almost all (n = 487, 40.25 percent) were found at Feature 1. Only one specimen (.08 percent) was found at Feature 2. The amphibian remains likely do not represent food waste. They may be the remains of a child's gathering of frogs or salamanders or may represent a natural aggregation of amphibians that perished. Some species of frogs and salamanders aggregate (Amphibiaweb 2018; Oklahoma Department of Wildlife Conservation 2018). This could have happened after the period of occupation.

Reptiles

Reptiles, namely turtle and snake, comprise 1.65 percent (n = 20) of the faunal remains. The turtle remains, accounting for 1.49 percent (n = 18), were located at Feature 2. The snake remains, which make up 0.17 percent (n = 2), were found at Feature 1.

While both turtles and snakes are edible, it is not clear that they were used as food. If they were, the small amounts do not indicate a significant portion of the diet.

Unidentified small animals

Unidentified small animal remains are the largest portion (n = 1,649, 48.84 percent) of the faunal assemblage. Feature 1 yielded the majority, with 42.77 percent (n = 1,444). The remains are not identifiable to a specific taxon because they are either too fragmented or because they did not match any specimens in the KSHS comparative collection. However, they are complete enough to categorize them as small animal.

Unidentified large animals

Unidentified large animal remains make up 5.75 percent (n = 194) of the faunal collection. Most were from Feature 2, with 5.69 percent (n = 192). The remains are complete enough to determine the general size (large or small) of the animal but too fragmented to make adequate class identification.

Floral Remains

Local plant use is documented. Fly (1986:74) lists American pokeweed (*Phytolacca Americana*), wild tomatoes (possibly ground cherries or wild husk tomatoes, *Artemisia ludoviciana*), and wild berries, chokecherries, plums, and currants. Medicinal plants include fever weed (possibly *Eryngium* sp.), horehound, wild sage (probably white sage, *Artemisia ludoviciana*), gourd tea, and snakeroot (a variety of species are referred to as snakeroot).

During the 2007 KATP field school, KAA volunteer Evelyn Reed compiled a list of flora that she noted growing at 14GH102 (Table 10). She stated that her list was not comprehensive because she undoubtedly missed some plants and not all area vegetation was in evidence during the 16-day project. In addition, Reed pointed out that some flora on her list might not have been present when the farmstead was occupied and that it would be difficult to learn whether the settlers recognized the possible uses of the plants. Still, her data reflects the general plant biota of the site and identifies several useful species. Her sources of information were Bare (1979), Haddock (2005), Kindscher (1987, 1992), and Stevens (1961).

Clothing

One of the categories within the domestic artifact group is clothing fasteners (n = 65). The 14GH102

Table 10. Plant list for 14GH102, June 2–17, 2007, compiled by Evelyn Reed.

Common name	Scientific name	Comments
Bindweed	*Convolvulus ararvensis*	
Buffalo grass	*Buchloe dactylaoides*	
Clammy ground cherry	*Physalis heterophylla* Nees	Green fruits are poisonous. Ripe fruits are edible & were used widely for food by Great Plains Indians. Roots can be used to dress wounds & make tea taken for headaches & stomach ailments.
Cutleaf ironplant	*Machaeranthera pinnatifida* (Hook.) Shinners	
Downy brome/cheat grass	*Bromus tectorum* L.	
Field mint/wild mint	*Mentha aarvensis* L.	Foliage steeped in water or chewed has many medicinal uses, including treatment of headache & stomach & heart ailments. Leaves serve as beverage flavoring, deodorant/deordorizer, & hair oil ingredient.
Four o'clock	*Mirabilis nyctaginea*	
Indian blanket flower	*Gaillardia pulchella*	Kiowa Indians believed that flowers brought good luck.
June grass	*Koeleria macrantha*	
Purple poppy mallow	*Callirhoe involucrata*	Edible root & leaves have many medicinal uses, including internal & external treatments for head colds & body aches & pains.
Marijuana	*Cannabis sativa* L.	Leaves & flowers are used as medicine & intoxicant. Fibers in stems used in making cordage & rope. Seeds contain a drying oil used in soap, paints, varnishes, & illuminants.
Musk thistle	*Carduus nutans* L.	Noxious weed. Dried flowers serve as rennet to curdle milk. Pith of stem is edible when boiled.
Narrow leaf milkweed	*Asclepias stenophylla*	Lakota Indians used root to stimulate appetites of children.
Plains/prairie larkspur	*Delphinium virescens*	All parts are poisonous. Some species are folk remedy for lice.
Prickly pear cactus	*Opuntia macrorhiza*	Fruits & pads are edible raw or cooked after spines are removed.
Russian thistle	*Salsola kali* L.	Invasive weed.
Western salsify/goat's beard	*Tragopogon dubius*	Roots are edible. Milky latex can be chewed as gum.
Scarlet globe mallow	*Sphaeralcea coccinea*	Roots are edible. Indians chewed parts to make healing salve for sores & skin diseases. Plant finely ground & steeped to make tea to reduce swelling, make bad-tasting medicines more palatable, & strengthen voices. Pulverized plant was used with chokecherry gum for postpartum hemorrhage.
Sensitive catclaw briar	*Schrankia nuttallii*	
Silver-leaf scurf-pea	*Pediomelum argophyllum/ Psoralea argophylla*	Plant is toxic but seldom consumed by livestock. Indians used it to treat fevers & fed roots to tired horses.
Slender green thread	*Thelesperma magapotamicum*	Indians made tea-like beverage from it. Flowers yield rust-colored dye; roots produce yellowish-orange dye.
Venus' looking glass	*Triodanis perfoliate* L.	
Slender Venus' looking glass	*Triodanis leptocarpa*	
Wavy leaf thistle	*Cirsium undulatum*	Roots, seeds, & other parts of plant were minor food source & made into medicinal eye wash for people & livestock.

Table 11. Buttons.

Specimen	Feature	Unit	Depth	Size (ligne)	Description
Shell buttons, n = 18.					
40-461	2	N519 E530	Level 10	20	Cuprous turret shank; white
40-462	2	N519 E530	Level 10	20	4-hole sew-through; white; fragment
40-463	2	N519 E530	Level 10	20	2-hole sew-through; white
40-464	2	N519 E530	Level 10	12	4-hole sew-through; white
40-465	2	N519 E530	Level 10	22	2-hole sew-through; white
114-467	2	N518 E530	Layer E	22	4-hole sew-through; white
123-468	2	N518 E530	Layer E	45	4-hole sew-through; white; recessed circle around holes
125-469	2	N518 E530	Layer E	18	4-hole sew-through; white
407-1	2	N516 E531	0–10 cmbs	16	2-hole sew-through; white
461-2	2	N512 E529	10–20 cmbs	20	4-whole sew-through; white
464-14	2	N515 E530	40–50 cmbs	18	2-hole dish; white
464-15	2	N515 E530	40–50 cmbs	20	2-hole sew-through, white
464-16	2	N515 E530	40–50 cmbs	18	2-hole sew-through; white
468-1	2	N517 E532	30–40 cmbs?	16	4-hole sew-through; white
513-1	2	N516 E531	40–50 cmbs	24	4-hole sew-through; white
513-51	2	N516 E531	40–50 cmbs heavy fraction	22	Sew-through; white; fragment
513-52	2	N516 E531	40–50 cmbs heavy fraction	20	2-hole sew-through; white
536-10	2	N516 E531	50–60 cmbs heavy fraction	22	Sew-through; white; fragment
Glass/china/glass-like ceramic buttons, n = 17.					
40-127	2	N519 E530	Level 10	20	4-hole dish; white; fragment
40-458	2	N519 E530	Level 10	18	2-hole dish; white
40-459	2	N519 E530	Level 10	16	Whistler; tan
40-460	2	N519 E530	Level 10	18	4-hole dish; white
40-475	2	N519 E530	Level 10	16	Stud; white
107-218	2	N518 E530	Layer E	28	4-hole dish; white; fragment
108-228	2 17? 19?	N521 E531	Level 5 40-50 cmbs	12	3-hole dish; black/blue
112-231	2	N518 E530	Layer E	24	4-hole dish; white
112-232	2	N518 E530	Layer E	24	4-hole dish; white
112-233	2	N518 E530	Layer E	18	4-hole dish; white
112-234	2	N518 E530	Layer E	24	dish; white; frag
121-247	2	N518 E530	Layer E	28	4-hole dish; white
135-251	2	N518 E530	Layer E	24	4-hole dish; white
169-257	2 18?	N520 E531	Level 1 0-20 cmbs	18	4-hole dish; white
464-12	2	N515 E530	40–50 cmbs	24	4-hole dish; white

continued

Table 11. continued

Specimen	Feature	Unit	Depth	Size (ligne)	Description
561-25	2	N515 E532	50–60 cmbs? heavy fraction	24	4-hole dish; white/orange
561-26	2	N515 E532	50–60 cmbs? heavy fraction	20	2-hole convex; white/blue Rubber buttons, n = 2.
40-476	2	N519 E530	Level 10	30	Wedge shank; black; "I.R.C. Co. 1851 Goodyear"-India Rubber Comb Co.
513-50	2	N516 E531	40–50 cmbs heavy fraction	22	4-hole sew-through; black
Metal (ferrous, cuprous, brass, metal) buttons, n = 11.					
1-266	?	N570 E500	0-20 cm	22	Ferrous; shank
45-335	2	N513 E513	Layer K	22	Ferrous; shank
47-336	2	N513 E513	Layer K	22	Ferrous; shank
107-404	2	N518 E530	Layer E	22	Ferrous
112-391	2	N518 E530	Layer E	20	Metal; shank
395-42	2	N520 E537	20–30 cmbs	16	Shiny ferrous; front
395-58	2	N520 E537	20–30 cmbs?	?	Ferrous; loop?; back or snap
464-17	2	N515 E530	40–50 cmbs	22	Ferrous; shank; rays w/stars
468-5	2	N517 E532	30–40 cmbs?	18	Ferrous; front
492-1	2				
	18?	N520 E530	?	22	Cuprous/cotton; shank; weave pattern
561-24	2	N515 E532	50–60 cmbs?	?	Ferrous; fragment
Plastic/celluloid buttons, n = 4.					
112-478	2	N518 E530	Layer E	28	Shank; black; 6 molded lines
464-13	2	N515 E530	40–50 cmbs	28	Shank; black; 6 molded lines
513-53	2	N516 E531	40–50 cmbs	—	Oval; sew-through; black; fragment
522-2	2	?	?	28	4-hole sew-through; tan

Notes on proveniences:

F19 = deep soils, post-1907 (Levels 4 and above)

Layer E = brown ashy soil with charcoal at bottom of excavation (over floor) in interior of F2 (Wood 2007:93)

Level 10 = deepest strata of dark gray silty loam on exterior of F2 (80-90 cm); sterile? (Wood 2007:96)

Layer K = thin layer of yellow sandy soil with limestone chunks; only identified for F1? (Wood 2007:86)

artifact collection contains 52 buttons (Table 11) of shell (n = 18; 35 percent), glass (n = 17; 33 percent), metal (n = 11; 21 percent), rubber (n = 2; 4 percent), and plastic/celluloid (522–2; n = 4, 8 percent). Forty-nine are complete enough to determine their size and probable use. Those of a size for shirts, dresses, underwear, and children's clothing (ligne 12-20; 1/3–1/2 inch) number 25 (48 percent) and are shell (n = 12), glass (n = 9), and metal (n = 4). Those of a size for trousers, vests, jackets, and coats (ligne 22-30; 9/16–3/4 inch) number 23 (44 percent) and are glass (n = 8), metal (n = 5), shell (n = 5), rubber (n = 2), and plastic/celluloid (n = 4). One (2 percent) very large (ligne 45; 1 1/8 inch) button is shell (Figure 40; http://www.kansasmemory.org/item/442135/page/1) and was probably a coat button.

Most buttons are plain, 4-hole (n = 20) and 2-hole (n = 9) sew-through; five of these are dish or recessed type. Eleven have shank attachments. Shell and glass buttons are predominately white (n = 32) with a few black (n = 5). Four glass but-

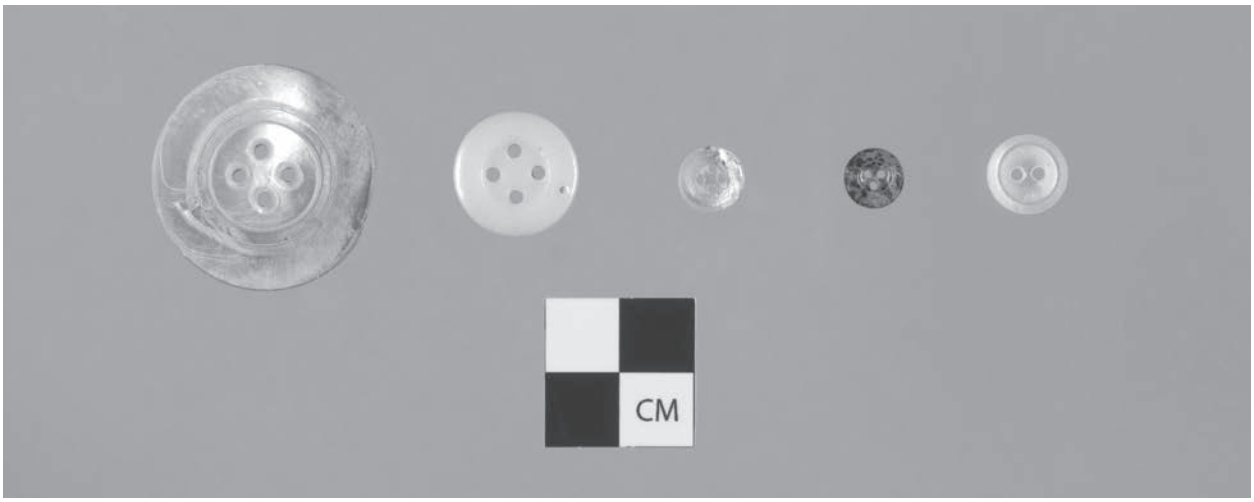
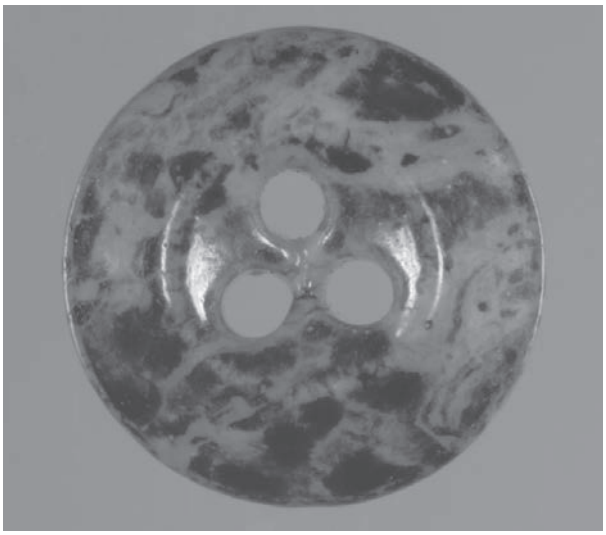


Figure 40. Selection of shell and glass buttons. Large shell button is on the left.

tons display some color: one is a tan barrel-shaped "whistler;" the second is a small 3-hole sew-through button, mottled blue and black (Figure 41; http://www.kansasmemory.org/item/442135/page/3-4); the third is white with orange border; and the fourth is white with a dark blue edge. One distinctive button described by Wood (2007:108) of molded black glass with cross-hatched design and loop attachment, is no longer in the collection.

A few of the metal, rubber, and plastic buttons have identifying marks. Two non-ferrous metal buttons are decorated with rays and stars. Two plastic buttons have six mold lines (Figure 42; http://www.kansasmemory.org/item/442123), and a wedge shank rubber button is labeled "I.R. C. CO. 1851 Goodyear" (Figure 43) The Indian Rubber Comb Company of New York City made hard rubber buttons in the1880s and 1890s, using Nelson Goodyear's patent of 1851 (McGuinn and Bazelon 1988:59; http://www.kansasmemory.org/item/442123).

All except one metal button were associated with Feature 2. Of the 51 in Feature 2, 8 came from the upper 40 cm, while 41 came from below 40 cm. Two were from undetermined depths. Five of the Feature 2 buttons were recovered from the heavy fraction of the flotation samples. Wood (2007:108) suggested that the concentration of buttons on the floor of the domestic structure might indicate that



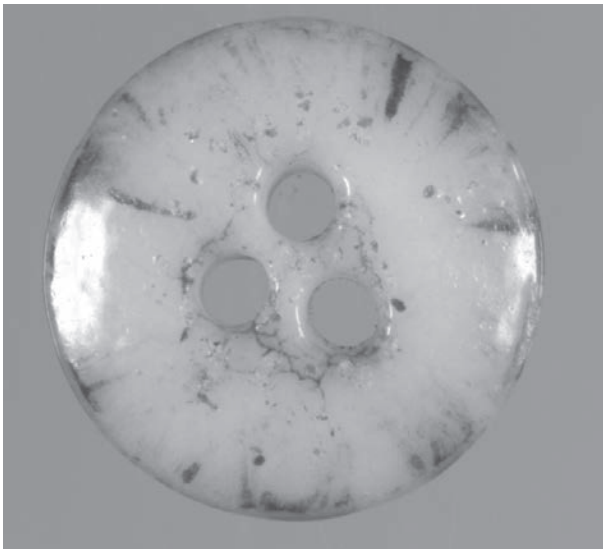


Figure 41. (opposite) Obverse and reverse of small 3-hole glass button.

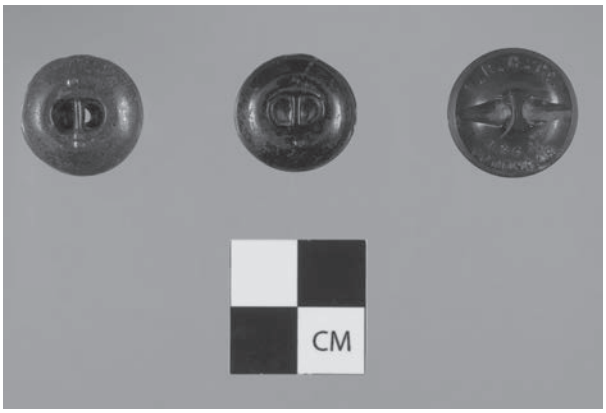


Figure 42. Plastic buttons with mold lines.

Figure 43. Goodyear wedge shank button.

the women of the household took in laundry and mending.

Of 13 other clothing fasteners (Table 12), 8 are related to overalls (Figure 44; http://www.kansasmemory.org/item/442128). Two are marked "Lee Brand." Lee Mercantile Company was founded in 1889 in Salina, Kansas, by Henry David Lee. The company began to sew overalls and jackets in 1912 (Lee 2017). Another is embossed with "FITZ." Fitz overalls were produced by Burnham, Munger & Root garment company in Kansas City, starting in 1906 (*Atchison Daily Globe*, 19 February 1953:1). A third is too eroded to make out more than "THE/ J H . . .".

Other metal fasteners are three snaps, a hook and eye, a buckle, and a garter slide. One of the snaps is still attached to a small leather flap.

Table 12. Clothing fasteners.

Provenience	Artifact	Size (ligne)	Material	Count
N507E500	Button	22	Metal	1
Feature 2	Button	12	Shell	1
Feature 2	Button	12	Glass	1
Feature 2	Button	16	Shell	2
Feature 2	Button	16	Glass	1
Feature 2	Stud	16	Glass	1
Feature 2	Button	16	Metal	2
Feature 2	Button	18	Shell	3
Feature 2	Button	18	Glass	4
Feature 2	Button	18	Metal	1
Feature 2	Button	20	Shell	6
Feature 2	Button	20	Glass	2
Feature 2	Button	20	Metal	1
Feature 2	Button	22	Shell	4
Feature 2	Button	22	Metal	4
Feature 2	Button	22	Rubber	1
Feature 2	Button	24	Shell	1
Feature 2	Button	24	Glass	6
Feature 2	Button	28	Glass	2
Feature 2	Button	28	Rubber	2
Feature 2	Button	28	Plastic/ celluloid	1
Feature 2	Button	30	Rubber	1
Feature 2	Button	45	Shell	1
Feature 2	Button	Fragmentary	Metal	2
Feature 2	Button	Fragmentary	Rubber	1
Subtotal				52
Feature 1	Snap		Metal	1
Feature 2	Overall		Metal	3
Feature 2	Hook & eye		Metal	1
Feature 2	Snap		Metal	1
Feature 2	Buckle		Metal	1
Feature 3	Garter slide		Metal	1
Feature 3	Overall		Metal	3
Feature 3	Snap		Metal	1
Unknown	Overall		Metal	1
Subtotal				13
Total for clothing fastener				65

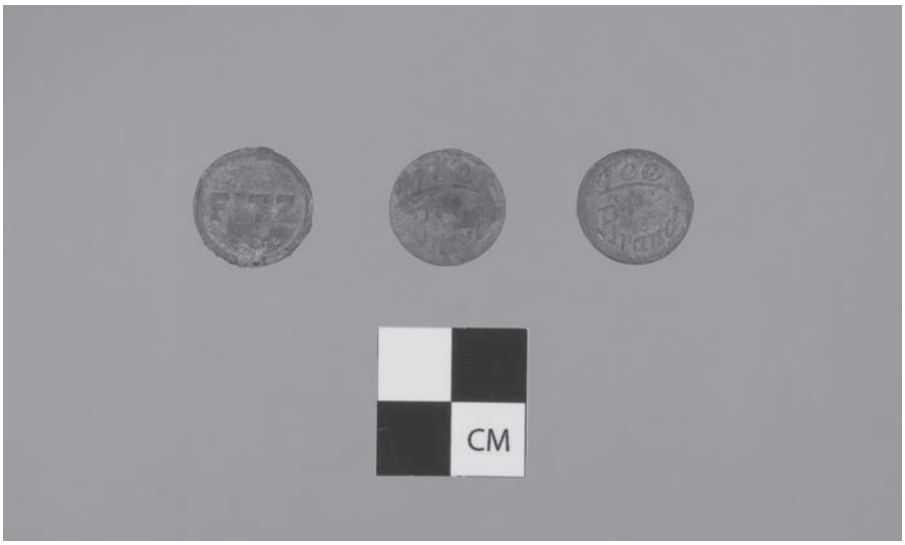


Figure 44. Overall-related clothing fasteners.

Table 13. Footwear.

Provenience	Level (cmbs)	Artifact	Material	Count
N519E538	80–90	Grommets	Metal	1
Feature 1	92	Upper w/grommets	Leather/metal	1
Feature 1	100	Leather scrap w/grommets	Leather/metal	1
Feature 1	100	Grommet	Metal	1
Feature 1	100	Leather scraps	Leather	1
Feature 1	101	Partial sole	Leather	1
Feature 1	101	Partial sole & back w/nail	Leather/metal	1
Feature 1	92	Large sole & back	Leather	1
Feature 1	90–100 heavy fraction	Grommets w/leather	Leather/metal	1
Feature 2	10–20	Leather scraps	Leather	1
Feature 2	20–30 heavy fraction	Tiny grommet	Metal	1
Feature 2	20–30 heavy fraction	Grommets	Metal	3
Feature 2	10–20	Leather scrap	Leather	1
Feature 2	30–40	Leather scrap	Leather	1
Feature 2	30–40	Heel w/nails	Leather/metal	1
Feature 2	30–40	Heel w/nails	Leather/metal	1
Feature 2	40–50	Leather scraps	Leather	1
Feature 2	40–50	Leather scraps	Leather	1
Feature 3 N544 E529	20–30 heavy fraction	Button	Metal	1
Total				21

The other category of domestic group, clothing-related artifacts is footwear (n = 21) (Table 13). Much of the collection consists of small leather scraps, some with grommets, but recognizable parts include an upper, three soles, and two heels with nails. The leather is uniformly black and in poor condition.

Most of the fragments probably represent shoes or boots, although it is difficult to distinguish the form or even guess if the footwear belonged to a man or woman. Based on small size and elevated height, both heels appear to be from women's shoes. One partial sole, a partial sole and back, a complete sole and back, and an upper have been attributed to men's footwear, judging from style and size. The complete sole, which may be a right foot, measures about 28.5 cm (11.25 in) long and 9.5 cm (3.75 in) wide, roughly equivalent to a modern men's size 11.5 narrow.

All except two items (grommets and a button) came out of Features 1 and 2. Those specimens from Feature 1 came from lower levels, 80–101 cm. Feature 2 specimens were from depths of 10–50 cm. The small metal shoe button was recovered from the heavy fraction of 20–30 cm in Feature 3.

Personal

Ninety-three artifacts are classified as personal items (Table 14). The majority were recovered from Feature 2: jewelry, a hat pin (Figure 45; http://www.kansasmemory.org/item/442116), coins, an eyeglasses lens, luggage parts, pencils, chalk, sewing pins and safety pins, and smoking pipe fragments (Figure 46; http://www.kansasmemory.org/item/442096).

Most of the artifacts from Feature 1 are related to sewing. In addition to a needle, a pin, and a safety pin, a complete base to a treadle sewing machine (Figure 47 and 48; http://www.kansasmemory.org/item/310299) and remains of a metal drawer were unearthed. The sewing machine was manufactured by the Singer Manufacturing Company of New York and has a patent date of April 15, 1879. The patent information states, "The object of our invention is to design a side frame for a sewing-machine graceful in appearance and symmetrical in the arrangement of its parts" (U. S. Patent Office, Patent No. D011156).

Wood (2007:108–110) suggested that Feature 2's clothing fasteners and sewing-related artifacts might represent items either mislaid when the women residents took in laundry and mending as a source of income or abandoned after the final occupation. The assemblage (Tables 12 and 14) neither supports nor disproves these suggestions; however, the majority (n = 97, 82.2 percent) of sewing-related artifacts was salvaged from Feature 2. Feature 1 yielded a smaller number (n = 14) of such artifacts in proximity to one another. The needle and pins were excavated from N512 E511 and N511 E512, while the

Table 14. Personal functional category, artifact identification, and count by feature.

Provenience	Functional Category	Artifact	Count
Feature 2	Jewelry	Bead	9
Feature 2	Jewelry	Pendant	1
Feature 2	Jewelry	Pin/brooch	4
Feature 2	Jewelry	Ring	1
Feature 2	Jewelry	Fragment	1
Subtotal			16
Feature 2	Coin	Penny, dime	4
Feature 2	Eyeglasses	Lens	1
Feature 2	Luggage	Decorative plate	2
Feature 1	Office supply	Pencil, paper clips	3
Feature 2	Office supply	Pencil, chalk	7
Non-feature finds	Office supply	Pencil	1
Subtotal			11
Feature 1	Sewing	Needle, pin, safety pin	10
Feature 2	Sewing	Pin, safety pin	39
Feature 1	Sewing	Treadle sewing machine	4
Subtotal			53
Feature 2	Smoking	Pipe fragments	5
Feature 3	Pocketknife	Blade	1
Total for personal			93

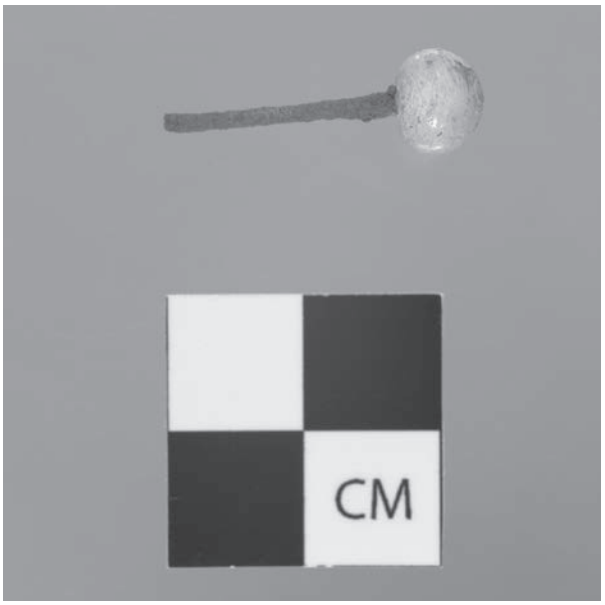


Figure 45. Hat pin fragment recovered from N515 E530 in Feature 2.

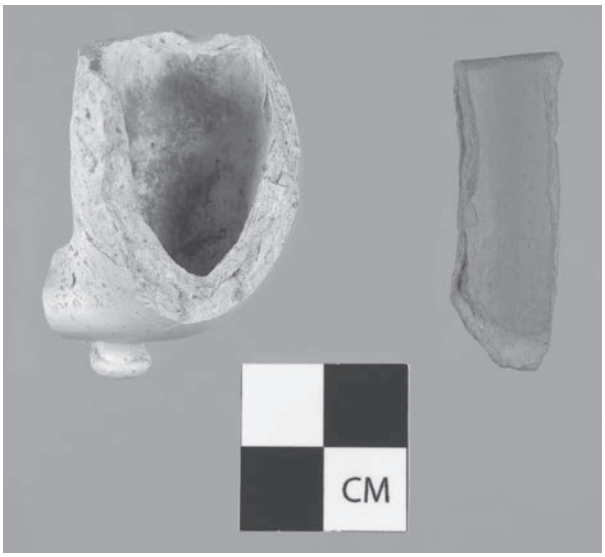


Figure 46. White clay pipe fragment with pipe rest and fragment of a Pamplin pipe, both from Feature 2 during the 2006 excavations.

Figure 47. Singer sewing machine base and treadle from N512 E512 in Feature 1.

Figure 48. Patent date of April 15, 1879, on the Singer sewing machine from N512 E512 in Feature 1.

sewing machine base and drawer fragments came from N512 E512.

In addition to sewing-related items, Feature 1 yielded a pencil and two paper clips. A single pencil was recovered from non-feature finds. A knife blade was found in N544 E529 of Feature 3 in the 10–20 cm bgs level. It probably came from a folding pocketknife, as evidenced by the groove near the dorsal side, used as a grip to open it.

Toiletry

Thirteen toiletry category artifacts were recovered from Feature 2. All of them are hair care products:

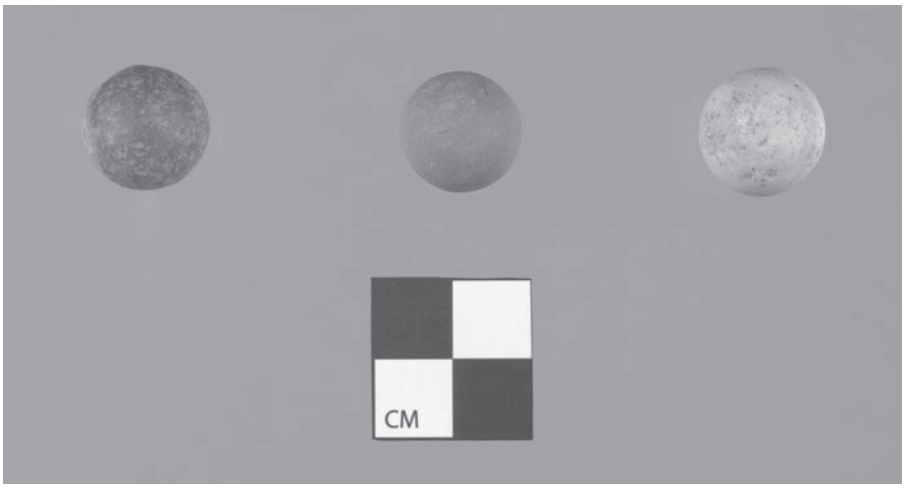


Figure 49. Common "commie" marbles from 14GH102.

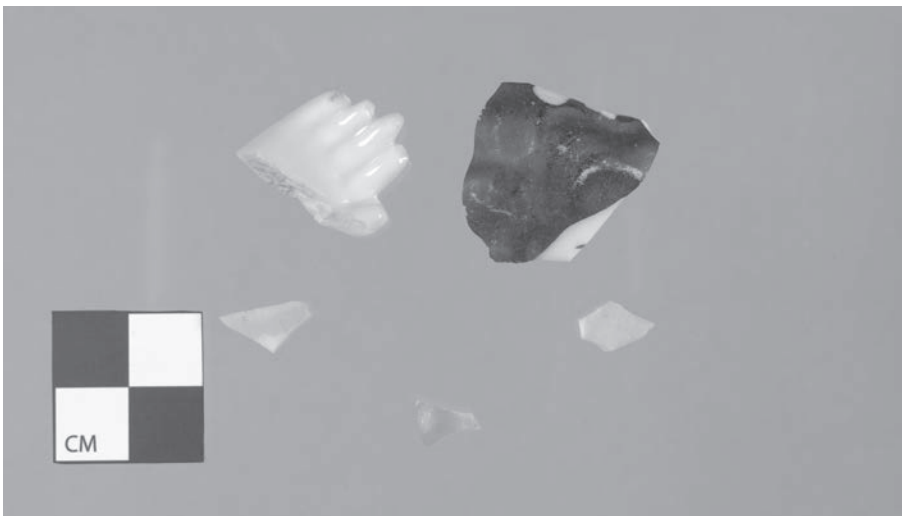


Figure 50. China doll hair and face, cheeks, and hand fragments from 14GH102.

comb fragments, a hair clip, and hair pins. Two comb teeth may have been parts of combs used to pull back and hold a woman's hair, as they are decorated in a tortoise shell pattern.

Recreation

Evidence of children at 14GH102 is embodied in the 13 whole or partial toys. Five of these are marbles, seven are fragments of china dolls, and one is a complete toy plate. All are characteristic of the time of occupation and were recovered in two concentrations within the boundaries of Feature 2. Two marbles and eight china doll fragments came from the northwest corner of the dugout, three marbles and a doll fragment were along the middle of the west wall, and the toy plate was nearby but just outside of the structure in the area presumed to be the entry. These artifacts help to confirm Feature 2 as a house and set it apart functionally from Feature 1.

Four marbles of the kind called "commies" for "common" are clay (Figure 49; http://www.kansasmemory.org/item/442404), and a fifth is glass. There are seven china doll fragments: four cheeks, a hand, a boot and partial leg, and a hair and face section (Figure 50; http://www.kansasmemory.org/item/442327). A complete white toy dish also was recovered.

One of the more interesting and personal artifacts is a small stamped-brass cherub (Figure 51). This, too, was found inside the entry of Feature 2. The small piece may have been intended to be a toy but also could have functioned as an ornament. Like the

Figure 51. Brass cherub from interior of Feature 2.

artifacts that clearly are toys, it is a small example of domestic life.

Communication

Only one item belonging to the communication functional category was recovered: a color photograph of three people posed in front of a car. The photograph is badly deteriorated due to exposure to weather for several years. It was found on the surface during 2007 shovel testing outside Features 1 and 2.

Work

The work group encompasses categories related to work: tools, harness hardware, automobile parts, and firearms and ammunition. Tools are holding, shaping, and fastening tools. Harness hardware consists of riding tack, harness hardware, and buggy hardware. Automobile parts include those from automobile engine, body, and suspension systems. Firearms and ammunition are limited to ammunition only. The combined categories of the work group contain 174 artifacts.

Tools

Excavations recovered six artifacts that represent tools: two pulleys, three wrench head fragments, and a whetstone fragment. All objects were from Feature 1 except two wrench head fragments from Feature 2. All of them are nondescript and common to period homes and farmsteads.

Harness hardware

Table 15 lists the 10 artifacts of harness hardware found at 14GH102. A bracket fragment was recovered from just outside of Feature 2 on the slope leading away from the northwest corner. It is a curved, cylindrical bracket with a rounded terminal head that served as an eyelet. Wood fills the cylinder; a fragment remains, so the bracket may have been used to fasten a wooden dowel to a larger object. It is recorded as a buggy bracket, which may have been used to hold an awning, but it also may have been used for a variety of other purposes.

Automobile Parts

While automobile parts were recovered from the site, they are not relevant to the focus of excavation, which is the period of the occupation and use of the dugout structures, Features 1 and 2. Three

Table 15. Harness hardware.

Provenience code	Specimen number	Feature	Description
507	1	1	Harness roller buckle
40	471	2	Leather harness fragment
94	384	2	Harness ring
160	445	2	Harness buckle
332	1	2	Rein strap with rivet
504	7	2	Harness roller buckle
513	67	2	Whiffletree end strap
513	68	2	Bit fragment
305	1	Surface	Harness tree with oval ring & wire from re-use
319	1	Shovel test 17	Horseshoe

automobile-related artifacts were recovered from Feature 1: a rubber gasket, a license plate, and an inflation valve cap. These represent trash dumped into Feature 1 after it was abandoned.

Two automobiles—a 1957 Plymouth Belvedere wagon and a mid-1950s Ford pickup truck—were abandoned immediately southeast and northeast, respectively, of the 1921 frame farmhouse (see Figure 6).

Firearms and Ammunition

Methods

Consulting the comparative collections and charts available at KSHS, firearm and ammunition specimens were sorted and identified by function, type, portion, and decoration. Functions were determined by their associations with a shotgun or rifled firearm. Types were established by diameter sizes and visible markings. Types include caliber of the round, size of shot, and type of knife. Portion is what piece of the specimen is available, e.g., shot, bullet, brass, wad, and blade.

Analysis

Of 155 pieces of firearms and ammunition (Table 16), there were 10 pieces of .22 ammunition, 6 pieces of 12 gauge ammunition, 1 bullet from a rifle or pistol of unknown caliber, and 138 pieces of shotgun shot. The following distinguishing marks were noted. A .22 headstamp with "H" impressed in the brass is produced by Winchester from the 1870s to present. A .22 headstamp with "Super" over "X" impressed in the brass is produced by Winchester from 1875 to present (Huegel 2012, 2015). The unidentifiable bullet has a diameter of .3655 inches at the base of the mushroom. The weight of 9.5 grams makes it an approximate 147-grain bullet with a caliber closest to a .357- or .38-caliber pistol round.

Distribution

Of the four major areas (Feature 1, Feature 2, Feature 3, and the area northeast of Feature 3), Feature 2 had the largest density of locatable artifacts. Feature 1 contained 3 out of the 156 pieces of ammunition: 1 piece of .22 ammunition, 1 piece of 12 gauge shotgun ammunition, and 1 bullet of unknown caliber. Feature 2, located directly east of Feature 1 and south of Feature 3, yielded 9 pieces: 4 pieces of .22 ammo, 4 pieces of 12 gauge shotgun ammo, and 1 size 2 shotgun shot. Feature 3, located directly north of Feature 2, had a knife blade, which is categorized functionally along with firearms. The area northeast of Feature 3, contained 2 of 156 pieces of ammunition: 1 piece of .22 ammo and 1 piece of 12 gauge shotgun ammo. The remaining 137 out of the 156 pieces of ammunition is size 4 shotgun shot with unknown provenience.

Other

The other group contains those categories that do not readily fit into the other three groups. The two categories within this group are prehistoric and unidentified. Prehistoric encompasses tools, debitage, ceramics, pipes, decoration, and prehistoric construction material. Unidentified consists of objects that could not be identified. The combined categories of the other group contain at least 16 items, as not all of the unidentified artifacts were counted.

Prehistoric

Sixteen prehistoric artifacts recovered from 14GH102 consist of stone tool manufacturing debris, referred to as debitage (Table 17). One specimen was modified or used briefly, as evidenced by removal of material along a sharp lateral edge, but the other pieces are waste. Nine are made of local Smoky Hill silicified chalk, which outcrops in Graham, Trego, Gove, and Norton counties (Stein 2005) and was the predominate prehistoric source for tool stone in northwestern Kansas. The source materials of the remaining debitage are not readily identifiable but probably originated in Ogallala formation gravels common in the region and a secondary source for prehistoric flintknappers. Debitage was concentrated in the southwest portion of the site, although one piece of shatter was recovered from Feature 3, and occurred at depths from 10 to 100 cmbs. This does not necessarily represent centuries of continuous occupation but more likely resulted from mixing or displacement of these artifacts by natural agents, such as burrowing animals, or by the historic period residents as they built their dugouts.

Other material—burned earth and hematite – might be attributed to prehistoric site occupants, but this is not certain. Hematite was used prehistorically as a pigment but also occurs naturally in

Table 16. Ammunition.

Provenience code	Specimen number	N, E, depth, feature	Count	Weight grams)	Material	Function	Type	Portion	Decoration
0	3		135	3.7	Cuprous	Shotgun shell	4 shot	Shot	
15	284	N520 E529	1	1.7	Cuprous	Shotgun shell	12 gauge	Case	"NEW CLUB N.12 U.M.C CO."
40	329	N519 E530	1	1.7	Cuprous	Shotgun shell	12 gauge	Case	"NEW CLUB N.12 U.M.C CO."
112	389	N518 E530	1	.7	Cuprous	Bullet	.22 long	Case	"H"
318	1	RST15	1	.6	Cuprous	Bullet	.22 long	Case	"F"
318	2	RST15	1	.6	Cuprous	Bullet	.22 long	Case	"F"
318	3	RST15	1	.6	Cuprous	Bullet	.22 long	Case	"F"
318	4	RST15	1	.6	Cuprous	Bullet	.22 long	Case	"Super" over "X"
359	1	N517 E532							
		0–10 cm bgs	1	4.1	Cuprous	Shotgun shell	12 gauge	Case & wad	"Winches Nublac No 12"
362	3	N559 E561							
		22–0 cm bgs	1	.6	Cuprous	Cartridge	.22 long	Case	"HP"
389	2	N551 E563							
		10–15 cm bgs	1	2.7	Cuprous	Shotgun shell	12 gauge	Case	
436	29	N512 E512							
		90–100 cm bgs	1	9.5	Cuprous	Bullet		Bullet	
461	5	N512 E529							
		10–20 cm bgs	1	2.5	Cuprous	Bullet	.22 long	Bullet	
464	61	N515 E530							
		40–50 cm bgs	1	2.3	Cuprous	Cartridge & bullet	.22 long	Complete	"H"
513	64	N516 E531							
		40–50 cm bgs	1	.5	Cuprous	Cartridge	.22 short	Case	"P"
513	63	N516 E531							
		40–50 cm bgs	1	.4	Cuprous	Shotgun shell	2 shot	Shot	
548	16	N511 E513							
		70–80 cm bgs	1	5	Cuprous	Shotgun shell	12 gauge	Case &	"NE UB 12" (NEW CLUB N.12 U.M.C CO.)
549	13	N511 E514							
		60–70 cm bgs	1	.8	Cuprous	Cartridge	.22 long	Complete	"H"
561	22	N515 E532							
		50–60 cm bgs	1	2.7	Cuprous	Shotgun shell	12 gauge	Case & wad	

"UMC Co New H"(NEW CLUB N.12 U.M.C CO.)

the region. Burned earth is indicative of hearths and burned structures, as well as other human and natural actions, and could have been created prehistorically or recently. Hematite and burned earth quantities and provenience also are presented in Table 17.

The location of site 14GH102 near a spring makes it more desirable than the surrounding uplands as a location for a prehistoric habitation or activity area. Most prehistoric sites in western Kansas are concentrated near major drainages. For example, of the nine prehistoric sites located within five miles

Table 17. Prehistoric artifacts, hematite, and burned earth.

Catalog number	Count	Weight (grams)	Artifact class	Raw material type	Provenience
2-564*	1	0.2	Flake fragment	Not recorded	N515 E500, level 2
8-559	2	1.1	Modified flake fragment	Smoky Hill silicified chalk	N515 E500, level 4
49-553	1	6.0	Shatter	Smoky Hill silicified chalk	N513 E513, 56 cmbs (estimated), F1
339-7	1	0.4	Flake fragment	Smoky Hill silicified chalk	N511 E510, 40-50 cmbs, F1
341-8	1	0.1	Burned earth	Clay	N512 E512, 40–50 cmbs, F1
344-5	1	6.8	Flake fragment	Smoky Hill silicified chalk	N520 E533, 10-20 cmbs, F2
395-54	1	0.2	Hematite	Hematite	N520 E537, 20–30 cmbs, F2
395-55	1	0.1	Flake fragment	Smoky Hill silicified chalk	N520 E537, 20-30 cmbs, F2
395-56	1	0.1	Burned earth	Clay	N520 E537, 20–30 cmbs, F2
395-57	1	1.3	Burned earth	Clay	N520 E537, 20–30 cmbs, F2
412-29	6	0.4	Hematite	Hematite	N544 E529, 20–30 cmbs, F3
412*	1	0.4	Shatter	Not recorded	N544 E529, 20–30 cmbs, F3
418-18	2	3.1	Shatter	Ogallala gravel	N511 E512, 70–80 cmbs, F1
436-24	1	0.1	Hematite	Hematite	N512 E512, 90–100 cmbs, F1
491-9	1	0.1	Shatter	Ogallala gravel	N512 E512, 50–60 cmbs, F1
518-4	1	0.4	Flake fragment	Smoky Hill silicified chalk	STP N520 E520, 0–164 cmbs
547-21	1	0.2	Flake fragment	Smoky Hill silicified chalk	N511 E513, 60–70 cmbs, F1
572-3	1	2.1	Flake fragment	Smoky Hill silicified chalk	STP N520, E515 0—120 cmbs
579-23	1	0.2	Shatter	Ogallala gravel	N511 E512, 90-100 cmbs, F1

*Artifact cannot be located.

of 14GH102, eight are along the South Fork of the Solomon River. The other, 14GH419, is an upland site that appears to have been an acquisition area for Smoky Hill silicified chalk. Therefore, the prehistoric component is not typical of the region and demonstrates the importance of fresh water for both prehistoric and historic-period occupations.

Unidentified

Artifacts placed in the unidentified category are unrecognizable as to their function. They can be described only by their material and location. Many of these unidentified artifacts were not counted during cataloging, so their occurrences are simply marked in a unit or location.

CONCLUSIONS

The town site of Nicodemus has received significant attention and appropriately so, given that it has been occupied continuously since settlement and remains the focus of annual summer Homecoming celebrations where town descendants from around the country come back to visit (Kansas Historical Society 2017). Site 14GH102, the Johnson/Williams farmstead, deepens knowledge of the initial town settlement. While the town was the center of commerce, the agrarian homesteads were the centers of production, raising food not only for the homesteading family, but also for the merchants in town. This was especially important in the absence of a rail line connecting the community with the rest of the nation. The urban/rural dichotomy may not have been as significant in the late-nineteenth century as it is in the twenty-first century, but one might expect a shift in emphasis in material culture between the two forms of settlement, reflecting greater emphasis on harvesting, butchering, and food storage.

Archeological investigations at the Johnson/Williams farmstead shed light on the less well-known component of Nicodemus—the agricultural homesteaders. Like many of the initial structures in town, such as school, churches, and shops, the first structures built by the agrarian homesteaders of the region were dugouts. At 14GH102 Feature 1 is confirmed as a dugout used for storage. Feature 2, the

house, is better described as a dugout/sod house, as its east and south walls were sod and its north wall was masonry. Quibbling about the description is not useful; elements of dugout construction were used in Feature 2 and reflect the nature of initial homesteading shelter construction in the region. The addition of the stone wall and extensive use of sod result from Johnson's practical use of the landscape and available resources.

While dugouts and sod houses are considered temporary structures, evidence indicates that those built at the Johnson/Williams farmstead were intended to last for a more substantial period. The house (Feature 2) had a stone wall, and remnants of tarpaper and plastered walls are visible throughout the structure. With initial settlement in 1878 and the frame house not built until 1921, one or more of the three reported dugouts on the property might have served as residences for more than 40 years. Henry Williams (1905–1951) was born in a dugout (Belleau 1943:4).

The emphasis on storage at 14GH102 is clear in the construction of a substantial dugout (Feature 1, the cellar), used initially for food storage and possibly meat curing, although evidence for the latter was weak. The structure itself was evidence enough, but the identification was bolstered by the presence of several canning jars. A significant investment in flooring, an area of 121 ft^2 (11.22 m^2) of floor space, plus evidence of shelving, indicated a substantial pantry that reflected the hopes for and achievement of prosperity for the settler families.

Feature 2, the house, encompassed almost 275 ft^2. This was not a large dwelling, but it was larger than excavated residential dugouts in other parts of Kansas and in South Dakota (Powell 2013:7–8, 17; 2014). It also was substantial, with a robust stone wall, two or possibly three courses deep, supporting the north wall. More coursed rock in the center of the house suggested a separate building stage or a wall separating two rooms.

While interviews, newspaper articles, and census records provide evidence of cattle, horses, pigs, chickens, and ducks, little evidence of such livestock was recovered. Dryland farming of corn was important. Use of wild plants included poke salad and dock for greens and horehound and snakeroot for medicine, the later also harvested and dried for sale (Fly 1986:74), but these do not appear in the archeological record. Further shovel test survey and possibly more extensive excavation of Feature 3, the refuse pile, have potential to provide more information on animal butchering and domestic use.

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BOOK REVIEWS

Frontier Forts of Iowa: Indians, Traders, and Soldiers, 1682–1862. WILLIAM E. WHITTAKER (editor). University of Iowa Press, Iowa City, 2009. 267 pp., 69 figures, 15 color plates, contributors, references cited, and index. $29.95 (paper). ISBN 978-1-58729-831-8. *Reviewed by* Jim D. Feagins, St. Joseph Museum.

Forts seem to stir the imagination of both children and adults, and the topic stimulates many people, including archeologists and historians, to learn more about the subject. Practically nothing is known about early Indian fortifications. The forts of Iowa were established by traders, Indians, Euroamerican settlers, and the military usually for fear of or defense from Native Americans. However, sometimes they served to protect trade and trade goods, keep order among various tribes, or prevent settlers from intruding on reservations or stealing tribal resources. For the United States government, forts, along with treaties, were a means to take control of or manage territory.

Chapters 2 and 4 provide a broader perspective or background of the region and the Native Americans residing there. The tribes that Whittaker (p. 4) lists in 1825 are Ho-Chunk (Winnebago), Ihanktonwan Dakota, Iowa, Pawnee, Santee Dakota, Meskwaki (Fox), Missouria, Omaha, Sauk (Sac), and Otoe. Tribal boundaries were quite fluid and changed over time. This information is quite important for readers' understanding of the geographic and historic context of the forts.

Frontier Forts of Iowa: Indians, Traders, and Soldiers, 1682–1862 identifies or describes in varying degrees at least 56 forts within or adjacent to what is now Iowa. Undoubtedly many readers would consider this a surprisingly large number. But what exactly qualifies as a fort? Most people probably think of structures, surrounded by a wooden wall—a stockade or palisade. Depending on the landscape and the degree of threat, numerous forts were open but heavily defended by troops and weaponry. Others were simply blockhouses or various other structures that offered places of refuge. They may have employed manmade earthworks or simply exploited natural topography that was easier to defend, for example, above steep hills or bluffs or bordered by bodies of water, especially streams. Forts evolved through time to serve different purposes, affecting the locations, physical layouts, and demographics of those who used them.

This volume focuses on summarizing what is known about the history and archeology of each fort. The amount of detail is extremely variable. For some considerable historical records exist and extensive archeological investigation has been conducted. For a few almost nothing has been reported in the historical records. In other cases the archeological deposits have been negatively impacted by subsequent land use after site abandonment. However, occasionally the archeological record is quite intact. This is where carefully planned and controlled archeological research shines new light on what happened there.

The book's 16 chapters are written by 13 authors: Gayle F. Carlson, Jeffrey T. Carr, Lance M. Foster, Kathryn E. M. Gourley, Marshall B. McKusick, Cindy L. Nagel, David J. Nolan, Cynthia L. Peterson, Leah D. Rogers, Regna Jo Schantz, Christopher M. Schoen, Vicki I. Twinde-Javner, and William E. Whittaker. Each author is extremely knowledgeable about a particular fort's history and/or archeology, so each chapter focuses on a specific fort or group of forts.

As one might expect, the forts were not distributed at random across the state. Most were established along the Mississippi, Missouri, Des Moines, and Little Sioux rivers (p. 55), while lesser numbers were spread out on the Cedar, Iowa, and Turkey rivers, and a few were located near the western portion of the state's northern border. More recent forts and several others in the northwestern part of the state (p. 194) were built relatively late, as a result of the 1854–1862 Dakota unrest. The majority of the forts discussed are not generally well-known. Some of the better documented in the Iowa vicinity are Mines of Spain (1788–1810), Fort Madison (1808–1813), Fort Crawford (1816–1831), the second Fort Crawford (1829–1856), Fort Armstrong (1816–1836), Fort Atkinson, Nebraska (1820–1827), Fort Atkinson, Iowa (1840–1849), and Fort Des Moines No. 2 (1843–1846).

The last chapter discusses sites that are open to the public. Unfortunately, relatively few are on the list. This reviewer has visited only one of those: Fort Atkinson, located across the Missouri River in Nebraska. Its history is well documented, and its archeological deposits are adequately preserved and researched, which has enabled careful reconstructions and interpretations to provide a worthwhile educational experience.

Many forts played a significant role as strategic military outposts, thus helping to open the west to white settlement. From the viewpoint of the United States government, they helped maintain order, as eastern tribes were forced westward onto reservations. At the same time they disrupted American Indian lifeways. While the volume lacks a summary chapter, it does a fine job of synthesizing the topic overall.

Frontier Forts of Iowa: Indians, Traders, and Soldiers, 1682–1862 is part of the Bur Oak Book series by the University of Iowa Press. It may be ordered online at orders@press.uchicago.edu or by calling 800-621-2736. Alternatively, it can be borrowed from a local library or through its connection with an interlibrary loan system, such as WorldCat.

Musket Ball and Small Shot Identification: A Guide. DANIEL M. SIVILICH (foreword by David Gerald Orr, introduction by Douglas D. Scott, and appendix by Henry M. Miller). University of Oklahoma Press, Norman, 2016. 190 + xxxi pp., 209 figures (almost all in color), 4 maps, 10 tables, 4 appendices, references, and index. $35.00 (softcover). ISBN 978-0-8061-5158-8. *Reviewed by* Jim D. Feagins, St. Joseph Museum.

Musket Ball and Small Shot Identification: A Guide is one of those books that this reviewer wishes had been available 20 years sooner, when he analyzed burial goods relating to NAGPRA compliance and enhancement studies for the Kansas Historical Society and conducted a survey of the Civil War battle site at Lone Jack, Missouri, and the subsequent artifact analysis. This volume would have saved a lot of time spent searching multiple references and potentially enriched what was said about some of the lead weaponry examined.

Most archeological literature that deals with musket and smaller balls, usually spherical and made of lead, simply describes the diameter and mass and in some cases speculates on who fired it, what kind of weapon was used, what it hit, and why it came to rest at a particular location. With the development of new equipment and modern techniques of battlefield analysis, archeologists are able to increase the number of questions asked and even expect to obtain some of the answers. Sivillich and some of his associates with the Battlefield Restoration and Archaeological Volunteer Organization (BRAVO) have conducted more than 30 years of observational investigations with musket balls and small shot from a variety of sites on several continents. Importantly, he has coupled this research with controlled experimental archeology.

Sivilich discusses a range of topics in 10 chapters: 1) The Gun and Early Projectiles, 2) The Basic Musket Ball, 3) What Did It Hit?, 4) Musket Balls with Fabric Impressions, 5) Musket Balls Altered to Improve Lethality, 6) Canister Shot, 7) Chewed Musket Balls, 8) "Pewter" Musket Balls, 9) Musket Balls Altered for Nonlethal Use, and 10) Small Shot . . . Not Just for the Birds.

During battle or other use, fired musket balls often encountered a variety of materials: soils of different types with various degrees of moisture, rocks, flesh, bone, metal, trees, etc. This guide shows ways that soldiers modified musket balls to make them more lethal, probably at the expense of accuracy. Smooth-bore muskets had a limited range of accuracy anyway. Also illustrated are many examples of musket balls that were modified to produce gaming pieces, such as dice, etc. Obviously soldiers had spare time on their hands.

Sivilich clearly explains how canister shot can be distinguished from projectiles fired by smaller firearms. During the Revolutionary War lead was in limited supply because England did not sell musket balls and other shot to the Continental forces. It was not uncommon for pewter, principally a tin-lead alloy, to be melted down and combined with lead, extending the supply for making projectiles. A variety of sources, including cups, tankards, plates, buttons, etc., often were donated to the cause of liberty or confiscated from British Loyalists. Using the diameter of a musket ball and its mass, Sivilich provides a formula for incorporating the densities of lead and tin to determine the amounts of added pewter. After the War of 1812, lead supplies became more reliable in the United States.

In a number of publications, photographs appear of supposed human dental impressions in musket balls and later types of lead bullets. They usually are accompanied by stories of soldiers "biting the bullet" during field amputations. However, Sivilich (Chapter 7) and Henry Miller (Appendix B) prove that probably not even most of those dents were made by humans. The muscles and leverage of the human jaw make it impossible to leave deep tooth incisions on something the size of an average musket ball. Animal dentition is somewhat like fingerprints. Comparison of tooth patterns with a variety of animals (swine, deer, rodents, and many others) indicates that many of the tooth marks, especially the deep ones, were made by swine during the many decades after a battle. Growing up on a farm, this reviewer has heard adult hogs crunching through dense beef bones, presumably to get at the marrow, and occasionally limestone gravels that they inadvertently picked up while rooting in the soil for acorns or other food. Humans could not begin to masticate some of the things that hogs chew. Archeologists and battle enthusiasts must take a second look at teeth indentations on musket balls.

Manufacturing imprints, loading marks, and unloading marks often remain on musket balls. Ramrod scars on a variety of musket balls are well illustrated. In addition, the distinctive signs left by the extractive screw and extractor worms on pulled musket balls are shown.

Fabric impressions on a musket ball usually came from the greased cloth patch that was rammed down the musket barrel with the ball. Sometimes much force was exerted by the ramrod; the explosion also could push thread fibers into the lead. The patch served to reduce windage, that is, to make a tight fit between the ball and barrel and keep air from escaping around the ball when the musket was fired. It helped keep a smaller, loose-fitting ball from rolling out the end of the barrel if the musket was tipped downward. While a patch might increase the accuracy and range of a ball, it took longer to load. In the heat of a battle, when loading time was of critical importance and individual targets were often obscured by smoke-filled air, patching a ball became less important. Especially during an enemy charge, the goal was "to get as much lead out" as quickly as possible. One cannot rule out the possibility that a textile imprint on a ball did not come from an object that the ball hit. While more exciting, as the author explains with various scenarios, it would be a less likely occurrence.

Sivilich makes no mention of how to record the attributes of cloth impressions on a ball. However, those characteristics should be documented in a standard manner for comparison with other researchers. For example, British patches were standard issue during the Revolutionary War, while the Continentals used whatever cloth scraps happened to be available. If archeologists list the thread-counts for the warp and the weft, the twist types (s- or z-twist) where possible to observe, and the weave pattern, the standard patch question and perhaps others possibly could be answered. These are bits of information that textile researchers commonly record. If the publication is ever revised, perhaps that issue could be addressed further.

This volume is an excellent source of information. Sivilich and the University of Oklahoma Press are to be commended. Douglas Scott (p. xxx), one of the leading authorities on battlefield archeology, states, "*Musket Ball and Small Shot Identification: A Guide* is a milestone in the study of firearms projectiles." This reviewer heartily echoes that statement and recommends the book. This well-written volume with several hundred color illustrations, large format (8.5 by 10.75 inches), and slick paper will prove an easy reference to use. Anyone interested in investigating early historic small arms projectiles would do well to procure a copy, which can be obtained by calling 800-627-7377, visiting oupress@ou.edu, or searching other online vendors.

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MAGINNESS	CHANCE	8670 BIGELOW RD	WESTMORELAND	KS	66549-9731
MAJOR	DEBRA	1506 TAMERISK DR	JUNCTION CITY	KS	66441-3373
MALLOUF	ROBERT J	5 SIERRA VISTA RD	ALPINE	TX	79830-1012
MASTERS	JUDY	10583 W 181ST ST	BURLINGAME	KS	66413-8672
MAXWELL	MARY ELLEN & DONALD RAY	25094 160TH CT	LEAVENWORTH	KS	66048-8369
MCCALL	RANDY	21 WINONA AVE	LAWRENCE	KS	66046-4849
MCCHESNEY	KAROL	2220 FIR RD	MUNDEN	KS	66959-0098
MCCHESNEY	MARC	7905 NW 150 ST	OKLAHOMA CITY	OK	73142-9783
MCCLEAN & ROBERT CONARD	JANICE	1034 WELLINGTON RD	LAWRENCE	KS	66049-3029
MCCLENAHAN	JULIE	1298 N 550 RD	BALDWIN CITY	KS	66006-7254
MCGILL	LLOYD T & JUNE	1403 TELFORD DR	LIBERTY	MO	64068-1269
MCKINNEY	SHARON	3451 SW BRIARWOOD LN	TOPEKA	KS	66611-1832
MCLEAN & ROBERT CONARD	JANICE	1034 WELLINGTON RD	LAWRENCE	KS	66049-3029
MCMILLON	DAVID & PEGGY	36 NW 48 RD	GREAT BEND	KS	67530-9087
MELTON	BETTY & DON	815 N INDEPENDENCE AVE	BELOIT	KS	67420-1639
MIDWEST ARCH CNTR	FED BLDG RM 474	100 CENTENNIAL MALL N	LINCOLN	NE	68508-3859
MINER & ROBERT AIKEN	ANN	1835 HARVEY AVE	COLBY	KS	67701-1551
MISSOURI ARCH SOC	MSU	901 S NATIONAL AVE	SPRINGFIELD	MO	65897-0027
MOORE	CAROL	13435 MILITARY TRAIL RD PO BOX 187	ST GEORGE	KS	66535-0187
MOORE	MARGARET	221 N CAMPBELL AVE	BELOIT	KS	67420-2427
MORRISON	JAMES	8526 SOUTHPOINT DR	RICHMOND	MO	64085-8606
MOSIER	JOSEPH	1904 TULIP TER	MANHATTAN	KS	66502-4958
MULDER	CLEVE	721 UNIVERSITY PL	SALINA	KS	67401-2574
MUNKRES	JAMES	118 S BERRY RD	NORMAN	OK	73069-5411
MURPHY	LAURA	333 SW QUINTON AVE	TOPEKA	KS	66606-1179
MURPHY	MITCH	DECEASED			
MURRAY	KENT & GLENNA	29146 NE 1830 RD	GARNETT	KS	66032-8344
NADEN	MELANIE	4272 EAGLE LAKE CT	BEL AIRE	KS	67220-1719
NANCE	ZACHARY	217 MILL ST	HARTFORD	KS	66854-9418
NICHOLAS	JOE, ADAM & ZACK	10344 CHEROKEE LN	LEAWOOD	KS	66206-2511
NICKEL	CHRISTINE	3638 COUNTRY CLUB PL	WICHITA	KS	67208-3036
NIOCE	MARVIN & BECKY	4023 SW DRURY LN	TOPEKA	KS	66604-2414
O'BRIEN	DR PATRICIA J	501 HOUSTON ST #3	MANHATTAN	KS	66503-6293
OETTING	AUSTIN	558 N FOUNTAIN ST	WICHITA	KS	67208-3952
O'HARA	LINDA	2523 US 24 HWY	BELOIT	KS	67420-3024
OLIVA	BONITA	3095 F RD	WOODSTON	KS	67675-9004
OLNEY	BRAD	8936 CEDAR LN	PRAIRIE VILLAGE	KS	66207-2218
OLSON	BILL & BETH	203 W COLUMBUS ST	LINDSBORG	KS	67456-1527
OLSON & JO GRUBER	GREG	609 W MAIN ST	BELOIT	KS	67420-3012
OSAGE NATION HPO	DR. ANDREA HUNTER	627 GRANDVIEW AVE	PAWHUSKA	OK	74056-4141
O'TOOLE	JOHN	854 LINWOOD AVE APT 4	ST PAUL	MN	55105-3375
OVERMYER	NANCY	PO BOX 1213	TOPEKA	KS	66601-1213
PAYNE	LANDON	14833 SW OHIO ST RD	AUGUSTA	KS	67010-8441
PEARSON	GAIL	501 N WESTERN AVE	BELOIT	KS	67420-1849
PEARSON	GENEVA	710 N MILL ST	BELOIT	KS	67420-2352
PEARSON	PATTIE	8753 S KELLLIANN WAY	MANHATTAN	KS	66502-8906
PITTSBURG STATE UNIV	AXE LIBRARY	1701 S BROADWAY	PITTSBURG	KS	66762-5856
PLUNK	LINDSAY	3959 N DYSART AVE	SPRINGFIELD	MO	65803-4850
POLSON	DAVID	15890 GARDNER PL	GARDNER	KS	66030-9669
POWELL & TIM MEADE	GINA	4025 HOLMES ST	KANSAS CITY	MO	64110-1125
RACK	KIM, JAKE & MASON	5113 KINGSMILL RD	LAWRENCE	KS	66047-1897
REED	EVELYN	PO BOX 1068	NEWTON	KS	67114-1068
REED	MARGIE	2635 DEBORAH DR	SALINA	KS	67401-3567
REED	TERRY, TYTUS & TAYTUM	403 S CORONADO AVE	LINDSBORG	KS	67456-2736
REXROAD	VIRGINIA	3712 ALDERSGATE APT B	HUTCHINSON	KS	67502-2367
RIGGS	JOE & LAVEDA	214 E GRAND ST	LACYGNE	KS	66040-0127
ROBERTS	JAMES	1036 ARROWHEAD RIDGE	INDEPENDENCE	MO	64056-1179
ROBERTS	PAUL	PO BOX 201	DENTON	KS	66017-0201
ROECKERS	HENRY	106 PARK PLAZA N	GARNETT	KS	66032-2303
ROECKERS	RICHARD & SHIRLEY	224 E 2ND AVE	GARNETT	KS	66032-1204
ROWLINSON	DANIEL & JIMMETTE	2911 SW WHITNEY LN	TOPEKA	KS	66614-4814
ROWLISON	DON	RT 1 BOX 57M	STUDLEY	KS	67759-9326
ROYCE	CLARE H	8837 LONG BEACH CIR	ATLANTA	GA	30350-2208
RUDKIN	JANN & TOM	15000 BLACKBERRY HILL RD	LOS GATOS	CA	95030-7504
RUDKIN	NANCY	5820 NE SHAFFER RD	TOPEKA	KS	66617-2811
RUSSELL-IVERSON & WILLIS IVERSON JR	NATASHA	4300 PIN OAK RD	HUTCHINSON	KS	67502-4620
RYAN	SHANNON	2715 PONDEROSA DR	LAWRENCE	KS	66046-5157
SAGE	SHARON	9130 SW 97TH ST	AUBURN	KS	66402-9610
SALLEE	KENT	109 E GORDON PO BOX 592	INMAN	KS	67546-0592
SALTERS	STACY	2300 SW 34TH ST	TOPEKA	KS	66611-1817

SANTY	MICHAEL	1017 CONGRESS ST APT 4	EMPORIA	KS	66801-2881
SAPP	WILLIAM	520 SE HACKAMORE DR	LEE'S SUMMIT	MO	64082-8221
SCHMIDT	JANIE & REX	14026 U ST	WILMORE	KS	67155-5437
SHERIDAN	ALAN	656 OLD HWY 40	WILSON	KS	67490-8777
SHERRADEN	KEN				
SHIVELY	BARON	823 N ELM ST	MCPHERSON	KS	67460-2813
SICHTER	JIM	10809 W 123RD ST	OVERLAND PARK	KS	66213-1957
SMITH	KARL & JANICE	PO BOX 39	FREELAND	WA	98249-0039
SMITH	SUZANNE	8392 LOWER MCDOWELL RD	ALTA VISTA	KS	66834-9293
SNYDER-TORR	KATHY	3317 L RD	BELOIT	KS	67420-3090
SPILLER	JACK & GAYNELL	1601 WATSON ST	EMPORIA	KS	66801-5211
ST HISTORICAL SOC OF WI	LIB ACQUISITIONS SEC	816 STATE ST	MADISON	WI	53706-1417
STEIN	MARTIN	4399 OGAN MESA LOOP	LAS CRUCES	NM	88011-8373
STIPPICH	JULIE A	1556 N DELLROSE ST	WICHITA	KS	67208-2219
STITES	DEAN & VALORIE	405 W BUFFALO ST	GIRARD	KS	66743-1407
STRANGE	STAN	1485 PRAIRIE DR	COLBY	KS	67701-9303
STRICKLER	BRENDA				
STROBEL	PETER	8816 NORWOOD DR	LEAWOOD	KS	66206-1626
STROM	BYRON	632 E DOUGLAS AVE	DES MOINES	IA	50313-4567
STUBBS	MICHAEL	PO BOX 5040	SANTA BARBARA	CA	93150-9789
SUDBURY	BRYON	PO BOX 2282	PONCA CITY	OK	74602-2282
SULLIVAN	MELONIE	1720 PRESTWICK CIR	LAWRENCE	KS	66047-2086
SWANEK	ED	12779 HEADWATERS RD	HARVEYVIILLE	KS	66431-9319
TARNAS	ALEXANDER	1454 FIRTH ST	PITTSBURGH	PA	15212-3704
TAYLOR	DOUGLAS	308 N BIRCH ST	HILLSBORO	KS	67063-1135
TESKE	JEANNIE	2017 N 65TH TER	KANSAS CITY	KS	66106-5333
THIES	RANDY	DECEASED			
THOMPSON	ROBERT & FREDA	817 COLLEGE ST	ATCHISON	KS	66002-3057
THURMOND	J PETER	RT 1 BOX 62B	CHEYENNE	OK	73628-9729
TITUS	REV MARY AL	700 MONTEREY PL APT 506	HUTCHINSON	KS	67502-2248
TREMBLAY	LELAND	316 N MIDDLE ST	HILL CITY	KS	67642-1740
TUCKER	VITA	7015 W 133RD ST	BURLINGAME	KS	66413-8778
UNIV OF KANSAS	WATSON LIB RETRIEVAL SERV DEPT SERL	1425 JAYHAWK BLVD R 210S	LAWRENCE	KS	66045-7594
UNIV OF OKLA	BIZZELL MEMORIAL LIBRARIES SERIALS DEPT	RM 442 401 W BROOKS ST	NORMAN	OK	73019-0528
VEHIK	DR SUSAN	2622 S PICKARD AVE	NORMAN	OK	73072-6922
VOGT	NATISE	524 MEADOWLARK LN	NEWTON	KS	67114-8676
VOGT	SARAH	2601 ROSEWOOD AVE	NORTH NEWTON	KS	67117-1712
WALKER	DANNY	1687 COUGHLIN ST	LARAMIE	WY	82072-2321
WALLACE	DENISE	1418 S CEDAR AVE	INDEPENDENCE	MO	64052-2139
WALLEN	ROSE MARIE & MIKE	116 E MILL ST	LINDSBORG	KS	67456-2815
WEBB-KISSINGER	COLTI	12464 BENSON ST	OVERLAND PARK	KS	66213-4725
WEDEL	DALE	2675 MONROE ST	LARAMIE	WY	82070-6551
WEIMER	MICHAEL	8200 NW 268TH ST	GOWER	MO	64454-8471
WERDER	DOLORES & FRANK	16645 KING RD	VALLEY FALLS	KS	66088-5046
WERNER	NORBERT	2302 POST AVE	DODGE CITY	KS	67801-2556
WESTON	TIM	6425 SW 6TH AVE	TOPEKA	KS	66615-1099
WIECHERT	ALLEN & SANDRA	813 HIGHLAND DR	LAWRENCE	KS	66044-2431
WILDGEN	MIKE	801 LOUISIANA ST	LAWRENCE	KS	66044-2649
WILLIAMS	BARRY & HEDY	1720 N CENTER VALLEY RD	SANDPOINT	ID	83864-7154
WING	EUGENE	9751 PINE KNOLL RD	MOBILE	AL	36608-9239
WITTY	THOMAS	5910 S 91ST ST	LINCOLN	NE	68526-9542
WORKMAN	FRANK	304 MERCURY ST	SILVER LAKE	KS	66539-9607
WULFKUHLE	VIRGINIA A	840 N 1500 RD	LAWRENCE	KS	66049-9195
YARMER	ROBERT E	506 W FIFTH PO BOX 158	ELLINWOOD	KS	67526-0158
YOUNG	A L	PO BOX 467	BELOIT	KS	67420-0467
ZANE	KRISTEN	10218 BRIAR DR	SHAWNEE MISSION	KS	66207-3418

Notes