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Bluff Creek Revisited

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The Bluff Creek complex is one of the least well understood archaeological complexes of the Middle Ceramic Period. Work on Bluff Creek began with a small excavation in the Dow Mandeville site (14HP1) conducted by students from Kansas University (Munsell 1961). Later, a student Wichita State University, Ron Gould, wrote a Master's thesis (Gould 1975) based in part on a survey that located a number of related sites and in part on his analysis of material salvaged from a county road that cut across site 14HP5. His survey showed a fairly dense cluster of Bluff Creek sites near Anthony and a thinner scatter downstream, between Bluff City and Caldwell. Unfortunately, Gould did not specify the extent of his survey coverage, and we do not know whether other sites might lie upstream or downstream. In 1969 and 1988, two KATP digs investigated two Bluff Creek villages, uncovering remains of houses and other features (Berger 2003; Huhnke 2000; Witty 1969).

Early in the spring of 2004, Tod Bevitt and Scott Brosowske discovered archaeological material eroding in a roadside ditch at site 14HP5 in Harper County (Figure 1). They notified Bob Hoard, the State Archaeologist, who brought the issue to the attention of the Kansas Antiquities Commission. State law gives the commission responsibility for preserving archaeological sites on state, county and municipal land, but unfortunately it makes no provisions for the costs associated with salvaging threatened sites. The commission decided to sponsor a volunteer project, with the participation of professional archaeologists, avocational archaeologists, and students. Eventually, Bill Bischoff, the Dean of Fairmount College at

Wichita State University provided partial funding for a field school, so WSU became the lead institution for the project.

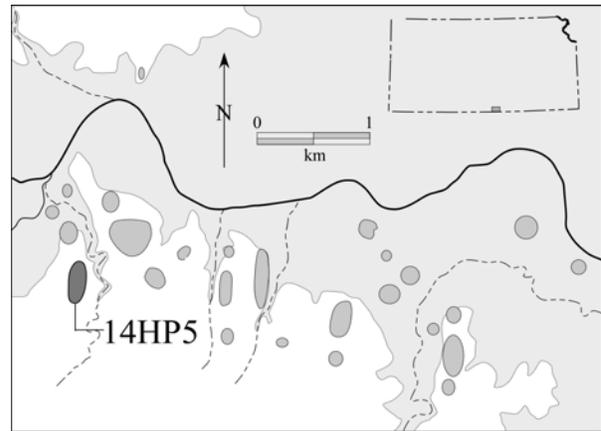


Figure 1. Location of site 14HP5 and related sites

The salvage work was accomplished in late May with the active cooperation of a number of institutions. Keith Custer, the superintendent of public schools in Anthony, allowed the field crew to camp on the elementary school grounds, and John McClure of the Harper County highway department provided use of their machine shed for water screening. Jerry Keene, editor of the *Anthony Republican* gave valuable publicity to the project while not disclosing the exact location of the site, and Wynona Mandeville, the landowner, allowed our crew to map the portion of the site that lay in her pasture.

Don Blakeslee was in charge of the field school, but other professionals provided valuable service. They include Bob Hoard, Martin Stein, and Jennifer Epperson of the

Kansas State Historical Society, and Lauren Ritterbush of Kansas State University. Students who participated, some for credit and some as volunteers, include Alan Albers (WSU), Marcia Meier (WSU), Norm Conley (WSU), Sarah Meitl (KSU), Audrey Ricke (WSU), MacKenzie Stout (WSU), Sydney Stout (WSU), and Brent Weeks (WSU). Avocational archaeologists who spent time at the site include Don Henkle, Melanie Naden, and Gayla Corley.

In the field, Martin Stein used the historical society's total station to prepare a contour map of the site, and Bob Hoard made a controlled surface collection of the west ditch of the county road. That collection was made necessary by the large number of features found in the eastern ditch where the first investigation were made. A total of fifteen features were located there, and the week allotted to the fieldwork allowed for the excavation of only thirteen of them.

The field crew first cleared the vegetation from the spots where archaeological material was visible, and then recorded the profile of the ditch slope and the surface extent of the individual features. Then, taking advantage of the roadside ditch, they cross-sectioned the features and removed the remaining fill up to the edge of the right-of-way. All of the fill from the features (about 4.5 tons) was waterscreened, with samples from each feature reserved for flotation.

About half of the waterscreening was done in the field and the rest was finished at the home of Brent Weeks of Wichita. Flotation was done by students from the field school at Wichita State University. The collection from the site has been washed and cataloged, and the flotation samples are being sorted. Bob Hoard paid for two radiocarbon dates from his budget, and the samples were

analyzed at the Illinois State Geological Survey.

The results of the work indicate a sizeable site on a ridgetop on the south side of Bluff Creek. The contour map (Figure 2) includes only about two-thirds of the site, as the field on the west side of the road contained a crop of mature wheat. A few cultural items were visible on the surface of the pasture but were left in place, as per the landowner's request. Their distribution gives an indication of the size of the site, as does the distribution of the surface material seen in the ditch on the west side of the road. The landowner reported that the site did not extend very far into the (large) field on the west side of the road.

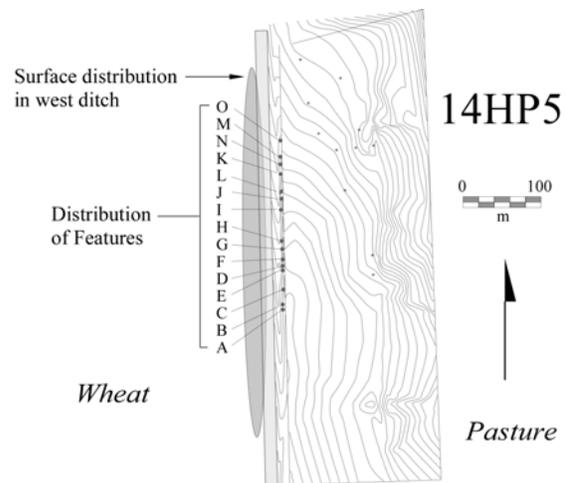


Figure 2. Map of 2004 investigations at 14HP5

Site 14HP5 was first investigated in 1967 and 1968, when the county road was improved. At that time, a crew from the Kansas State Historical Society that included Tom Witty, F. A. Calabrese, Jim Marshall, and Tom Barr excavated a series of features exposed in the road and the ditches. They found 27 features, including shallow basins, trash-filled pits and a few burials. Our work located portions of two of their excavation

units along with fifteen new features. Hoard's collection from the ditch on the west side of the road suggests that an equal number of features lie there as well, and the total record is of a dense concentration of cultural features.

We excavated portions of thirteen features, of which two were wide, shallow pits, one was a trench, and the rest were trash-filled storage pits. Of the two shallow pits, one appears to have been a shallow basin, while the other may have been the edge of a house floor. The trench appears to have been about a meter wide and a meter deep, and the contents consisted primarily of partially disarticulated bison bones at the very bottom of the trench. This is the second site at which a trench has been found, but the function of the trenches remains obscure. In both sites, the trenches lie inside the site, not at the perimeter as one would expect of a fortification moat.

The trash-filled storage pits were all approximately a meter deep, but the ways in which they were cut by the roadside ditch left varying proportions of them intact. The best preserved, Feature F (Figure 3) is a bell-shaped cache pit that was filled with wood ash and a variety of cultural items. Two other features appear to have been lined with clay, and one of them, Feature E, contains waterlain laminated silt layers above some of the cultural fill and below the rest. This feature was apparently left open for a long enough period to produce at least seven layers of silt. Since an open pit in a village that had no artificial light would have been a safety hazard, the fact that the pit was left open for a considerable time might suggest that the village had been abandoned for a season.

Analysis of the collection from the site is just beginning, but there is enough information to suggest that the Bluff Creek

complex differs dramatically from Middle Ceramic complexes found further north in Kansas. One of the ways that it differs is in the density of cultural material in the caches, especially in the density of the pottery. An average of only 38 sherds per pit was found in our excavations, a number that includes even the smallest of sherds. While the fact that the roadside ditch had destroyed portions of all of the features means that the number should be at least doubled to estimate the number that were present originally, the numbers are still low compared with those from Upper Republican and Solomon River phase sites.

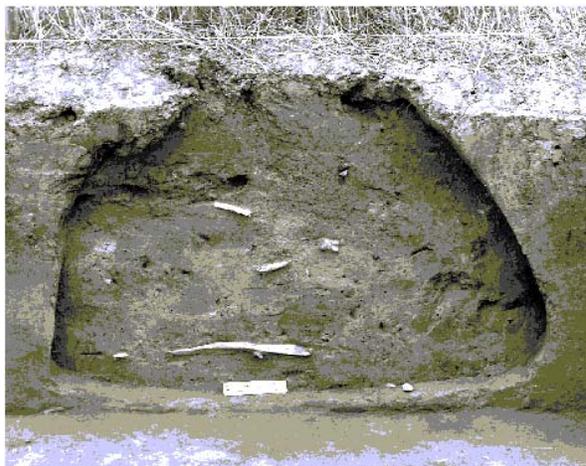


Figure 3. Cross section of Feature 5, a bell-shaped trash-filled cache pit

Not only is the number of sherds relatively low, but the number of stone flakes is very high. At Waconda Lake, the three largest site collections have sherd:chipped stone ratios of from 3:1 to 1:1, while at 14HP5, the ratio is 1:10. This is a remarkable difference that can be explained only in part by the low numbers of sherds. The other factor contributing to the inflated ratio is a very high density of flakes generated by having the complete knapping sequence performed on site. A local collector showed us two large chert nodules that she had found in the ditch, and our excavations uncovered many decortication flakes.

At more northerly sites, the chert debitage makes clear that initial reduction of nodules was performed at the quarries prior to bringing blanks and preforms back to the habitation sites. At 14HP5 and at other Bluff Creek sites (Bevitt, personal communication), the evidence available suggests that not only did the inhabitants carry whole nodules from the southern Flint Hills (a distance of over 60 miles) but that once they got home, they heat treated the complete nodules prior to flaking them. The evidence supporting this statement is a large number of potlid flakes that have a thick layer of cortex on their dorsal surface—flakes that were produced when nodules were heated too quickly (Figure 4).

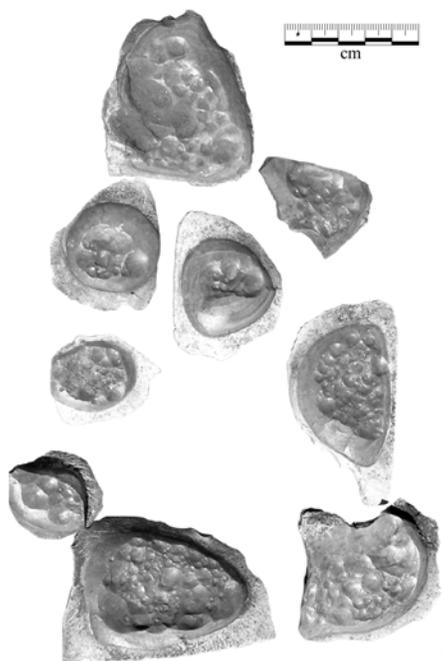


Figure 4. Potlid flakes with thick cortex, evidence for heat treatment of whole nodules

This pattern of lithic acquisition appears to be unique. Most prehistoric peoples who were at a distance from the nearest lithic source created blanks or preforms at the source in order to be able to carry more usable

objects back to their homes. In the case of 14HP5, the bedrock quarries from which they were obtaining stone lie 65 miles to the east of the site. The nodules and potlid flakes at the site exhibit a thick cortical layer useless for making tools, yet whole nodules were clearly transported to the site without prior reduction. Once there, the heat treatment of the complete nodules, rather than heat treatment of blanks or preforms, does make sense, given the nature of the stone that they were exploiting. It is Florence A chert, which occurs in nodules in which the most silicified areas are just below the cortex. By heat treating the whole nodules to improve flaking quality from the outset, the inhabitants of the site were improving the flaking quality of the stone before beginning reduction, which should have enabled them to use the stone more efficiently than if they created blanks first and then heat treated them.

That the people who created the site were concerned about using their stone efficiently makes sense, given the effort to which they went in order to obtain it. Yet the main effort consisted in carrying the nodules back to their homes from the source, and it would have been far more efficient in terms of labor to reduce the stone to blanks at the quarry before setting out for home. The total pattern suggests that they had a very good reason for doing what they did, and observations by Bevitt and Brosowske suggest that the same pattern of lithic acquisition is found at all Bluff Creek complex sites (Bevitt, personal communication).

The only hypothesis I have been able to generate that explains the pattern is that the quarries of Florence A chert lay within the territory of a hostile group. The only sites of the correct time period that lie in the area of the Florence A quarries are those of the very-poorly understood Uncas complex. Uncas complex sites are clearly related to sites of the

Central Plains tradition, far to the north, while Bluff Creek sites are just as clearly related to sites far to the south and west in Kansas, Oklahoma and Texas. Not many Uncas complex sites have been recorded, which might make them seem to be less than formidable foes, but the sites of record may be misleading. I have been shown Uncas complex pottery from as far north as Derby, Kansas, which indicates that the area occupied is far larger than site records would imply. Furthermore, the geomorphology of the region is such that the majority of sites may be deeply buried in sediments along the creeks that feed into the Arkansas River. In Wichita, where urban expansion occasionally uncovers sites in such locations, there is one site that dates to A.D. 1000 that was buried more than three meters below the surface, while a Great Bend aspect site that probably dates to after A.D. 1500 was 1.3 meters below the surface.

Clearly, the data needed to test the hypothesis is not available at the present time. Much more work needs to be done in both Bluff Creek sites and in Uncas complex sites. Perhaps, also, someone can generate another hypothesis to explain what is a unique lithic acquisition pattern.

While the tool assemblage from 14HP5 is typical of Middle Ceramic sites elsewhere in Kansas, the pottery and bone tools suggest that this site is more closely related to sites in Oklahoma that are classified as belonging to the Custer and Washita phases or more inclusively to the Redbed Plains variant of western Oklahoma (Drass 1999). The pottery is cord-roughened, mostly undecorated, and (contra Gould's original analysis) it includes a considerable number of bone-tempered vessels. The bone tools include a type made from a bison scapula and with a diagonal cutting edge, a type found in Oklahoma and

Texas sites but not common in Kansas outside of Bluff Creek.

The faunal remains from the site, in contrast with many other Kansas sites that date to the Middle Ceramic, are dominated by bison. Preliminary casual observation of the collection made in May shows that this is the case, and Gould's analysis of the 1967-68 collection showed that bison comprised 75 percent of the MNI (minimum number of individuals) of all mammalian species. Turtles are the second most common faunal element in the site, with all others (seven bird and seven mammal) species rare. Fish bones and mussel shells are also not present in the numbers found in sites farther north.

Not only do bison bones dominate the assemblage, diamond-shaped alternately beveled knives are common. In both of these traits, the Bluff Creek assemblage at 14HP5 looks like those from the Plains Border variant or Wilmore complex of southwestern Kansas (Bevitt 1999a, 1999b). The dates for the site (ISGS-5643 and 5644), identical at 820 ± 70 B.P., are far earlier than Central Plains tradition habitation sites that contain large numbers of bison, and bison hunting seems to have become important farther north during the 14th century (Blakeslee et al. 2001).

Work on the collections from the site will continue. Marcia Meier, a graduate student at WSU, intends to make a restudy of the Bluff Creek complex the topic of her Master's thesis. She will use the collections from 14HP5, including the 1967-68 collections, as the foundation of the study and hopes to use the collections of avocational archaeologists to help fill out the record.

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*A Note on an Isolated Middle Ceramic Pot
from Harvey County, Kansas*

Mark A. Latham

During the summer and fall of 2002 Burns & McDonnell conducted archeological investigations for the City of Wichita's Water Equus Beds Recharge Project along the Little Arkansas River. During these investigations a Middle Ceramic pot was found eroding from a T-1 terrace remnant of the river about 6

kilometers upstream from Halstead, Kansas. Orval E. "Dan" Shinn, the investigator who found the vessel and some small fragments of burned earth in July 2002, named the find the One Pot Site (14HV110). Deep shovel testing of the terrace and cutting profile windows in the cutbank found no other artifacts or

indication of cultural debris was found in association with the pot. The evidence suggest the landform the pot was associated was destroyed. The following description of the pot and setting is essentially a research note detailing specifics about the pot.

The area where the pottery and burned earth were found in July 2002, is about three to five 5 meters further east than the current cutbank profile due to erosion of the cutbank. The horizons in this profile are thinner than others found in the cutbank to the north, evidence that the terrace slopes to the south and west.

The isolated pot has many of the characteristics of Smoky Hill phase ceramics (Figure 1). It is a medium-sized globular jar, commonly found within Middle Ceramic variants, with a capacity to hold 1 to 1.5 gallons. The rim is 2.5 cm tall with a 15° outward flare and ranges in thickness from 6 to 6.5 mm. The vessel orifice was 14 cm at the mouth and 12 cm at the neck. The decoration zone is along the exterior lip edge, which is a series of finger-pinched nodes about 8 mm apart. The handles are opposing, attached to the rim lip and shoulder, and measure 28-mm wide and about 10-cm thick.

Very few Middle Ceramic sites have been recorded along the lower Little Arkansas River valley to date (Latham 2001). About 4.5 kilometers upstream from the One Pot site is another Middle Ceramic site (14HV401), from which a partially reconstructed vessel has been collected. Attempts to get access to analyze the rim of this vessel were unsuccessful, but the notes I took on the while grad-student at Wichita State suggest a similar style of vessel decoration, including the zone used and techniques. The main difference in the vessels is the presence of handles on the pot from the One Pot site. Both of these sites had few artifacts

(14HV401) to none (14HV110) associated with a nearly complete vessel.

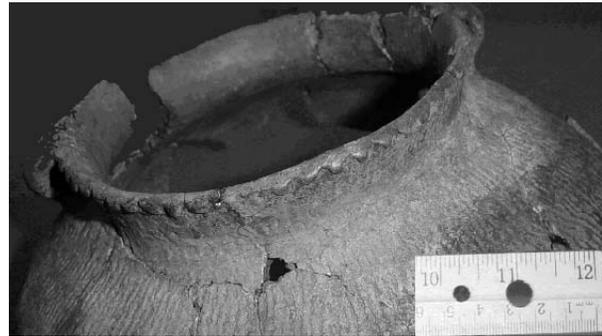


Figure 1. Lip and Surface Treatment of Middle Ceramic Pot



Figure 2. Overhead of Middle Ceramic Pot Orifice, 14HV110

The two sites have several similarities:

- Same style of vessel form
- Temper
- Exterior treatment
- Zone of decoration
- Decoration technique/style

The two sites have few differences:

- Handles
- No artifacts at 14HV110 while very few at 14HV401

The vessel characteristics are more similar to the Central Plains tradition, most specifically the Smoky Hill phase, than it is to

the Southern Plains village tradition. The One Pot site is geographically situated between these two traditions.

Six Obsidian Artifacts from the Kansas High Plains

Janice McLean

University of Kansas

Thanks to several decades of intensive characterization research, unique geochemical signatures are available for nearly every extant obsidian source in the Americas. Non-destructive and cost-effective analytical techniques ensure that the geologic origins of obsidian artifacts can be economically identified and independently verified. As a result, obsidian has become a key proxy for investigating prehistoric patterning in social interaction, exchange, and land use through time and across space (Glascock 2002).

Since 1988, a number of obsidian source identifications from a variety of archaeological contexts in Kansas have been published (Bevitt 1999; Hawley 2000; Hawley and Hughes 1999; Hughes 1995; Hughes and Lees 1991; Logan 2000; Logan et al. 2001; Roper 2000). This article contributes six new High Plains obsidian source identifications to the Kansas data set. The identifications are based on interpretation of non-destructive energy dispersive x-ray fluorescence (edxf) data generated by Dr. Richard Hughes (2004) using analytical methods outlined elsewhere in detail (Hughes 1988, 1994).

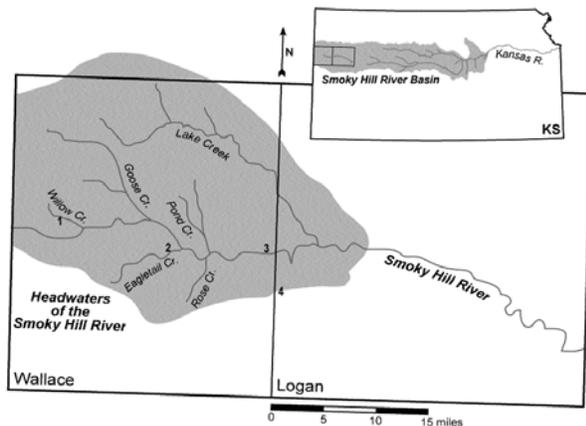


Figure 1. Map of the Smoky Basin study area showing the location of sites mentioned in the text

In 1988, Baugh and Nelson (1988:87) identified a total lack of data on obsidian source use in Kansas as a major obstacle to understanding spatial and temporal patterning in prehistoric economic systems on the Plains.

The analyzed sample consisted of nine artifacts from four sites located in the headwaters of the Smoky Hill River basin (Figure 1): six obsidian artifacts (Table 1), plus three that were determined to be made of a non-obsidian parent material (14LO1/3000, 14LO1/3482, and 14LO1/3483) (Hughes 2004:3).¹ Of the six obsidian artifacts described in Table 1 and illustrated in Figure 2, five are derived from sources located in the Jemez volcanic field in northern New Mexico, including three specimens from Cerro del Medio (a.k.a. Valles Grande Rhyolite) and two from Obsidian Ridge (a.k.a. Cerro Toledo Rhyolite) (Hughes 2004). Cerro del Medio obsidian occurs in surface assemblages from 14WC6 and 14WC39, while Obsidian Ridge obsidian occurs in isolation at 14WC1. Both Cerro del Medio and Obsidian Ridge

obsidians co-occur at 14LO1 in the surface collection from the extensive upland area designated Area 9 in Bowman's site report (1960). The final obsidian artifact was also found at 14LO1 during the testing of Area 4 (Bowman 1960; McLean 1996). It is manufactured from obsidian obtained from

Wild Horse Canyon in the Mineral Mountain Range in Beaver County, Utah (Hughes 2004; International Association for Obsidian Studies 2001).

Table 1. Obsidian artifacts documented in this study. The specimens from 14LO1/14LO401 are curated at the University of Kansas Museum of Anthropology. The remaining three specimens are from the private collection of Jerome S. Bussen of Wallace, Kansas

Site No. & Name	Artifact Number & Description	Context	Time Period / Date Range	Obsidian Source	References
14LO1/ 14LO401: Coal-Oil Canyon	2442: Flake	FWDC Campsite No. 14 (JPB-118). Multicomponent: Area 9. Surface find loosely associated with hearths in plowed upland field south of the canyon rim.	Unknown Prehistoric (Dismal River?)	Cerro del Medio, New Mexico	Bowman 1960, 1996; Hughes 2004; McLean 1996; Roper 1996
14WC6 / 14WC402: Theis Bluff	0098: Distolateral endscraper	Surface collection containing rocker-stamped Hopewellian pottery, calcite-tempered Keith Complex ware, Other Plains Woodland, Dismal River plainware, and several unclassified Protohistoric (Ute?) sherds with fingernail indented corrugations.	Protohistoric (Dismal River?)	Cerro del Medio, New Mexico	Bussen 1963; Hughes 2004; KSHS Site File records
14WC39	0010: Flake	Lithic scatter (n=13), possibly single component. No diagnostics present in the Bussen collection.	Unknown Prehistoric (Dismal River?)	Cerro del Medio, New Mexico	Hughes 2004; KSHS Site File records
14LO1/ 14LO401: Coal-Oil Canyon	2445: Flake	FWDC Campsite No. 14 (JPB-118). Multicomponent: Area 9. Surface find loosely associated with hearths in plowed upland field south of the canyon rim.	Unknown Prehistoric (Late Archaic?)	Obsidian Ridge, New Mexico	Bowman 1960, 1996; Hughes 2004; McLean 1996; Roper 1996
14WC1 / 14WC409: Koons / Uranium Bluff	0039: Biface Fragment	Multicomponent: Paleoindian, Archaic, Late Prehistoric projectile point types. No ceramics have ever been recovered from this site.	Unknown Prehistoric (Late Archaic?)	Obsidian Ridge, New Mexico	KSHS Site File records; Hughes 2004

14LO1/ 14LO401: Coal-Oil Canyon	3420: Arrowpoint midsection (missing tip and blade tangs)– the type is unidentified, but well within the Large Triangular Notched / Scallorn size range	Multicomponent: recovered during Area 4 testing (Bowman 1960). Ceramics types recovered from Area 4 include Keith Complex, Unclassified Plains Woodland, and Upper Republican wares. The 284 projectile points recovered from Area 4 are a wildly diverse lot morphologically, but all are arrowpoints. Area 4 itself consists of a stone semi-circle on a knoll below the canyon rim. The partial ring, clearly visible on Bowman's accurate base map (1960: Figure 1; McLean 1996) is suggestive of a constructed space, and the extremely high density of artifacts recovered within it during the testing phase documents redundant use throughout the Ceramic Period.	Protohistoric (Dismal River or Ute-Comanche?)	Wild Horse Canyon, Utah	Bowman 1960, 1996; Hughes 2004; McLean 1996; Roper 1996
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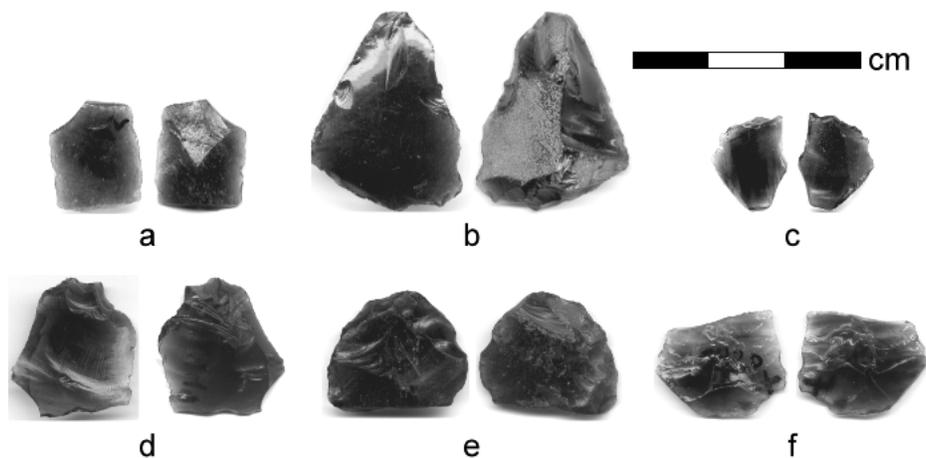


Figure 2. Images of obsidian artifacts documented in this study: a) Cerro del Medio, NM (14LO1/#2442), b) Cerro del Medio, NM (14WC402/0098), c) Cerro del Medio, NM (14WC39/0010), d) Obsidian Ridge, NM (14LO1/#2445), e) Obsidian Ridge, NM (14WC1/JPB-020/0039), and f) Obsidian Ridge, NM (14LO1/#3420)

Jemez Obsidian Use in the Smoky Basin

Given that the Dismal River Complex (A.D. 1675-1725), commonly identified as Protohistoric Apache, is the only High Plains

archaeological taxon recognized in the Kansas Historic Preservation Plan (Brown 1987), it would perhaps be reasonable to assume that all five Jemez obsidian samples are associated

with the well-documented Dismal River/Puebloan refugee occupation of the area (Brown 1987; Butler 1997; Gunnerson 1987; Wedel 1959). Unfortunately, although obsidian appears in a number of Dismal River sites, none of it has been source analyzed (Hughes and Roper 1999:80). This lack of information regarding Dismal River obsidian use is a major obstacle to interpretation of patterning in the Smoky Basin data set.

That said, at minimum, the three Cerro del Medio specimens in this Smoky Basin sample are tentatively assigned Dismal River cultural affiliations based on archaeological evidence. Of the three Smoky Basin sites with Cerro del Medio obsidian, only Theis Bluff (14WC6/14WC402) has also produced Dismal River Lovitt Plain pottery (Bussen 1963).² Despite an abundant inventory of Early and Middle Ceramic wares (Bowman 1960, 1996), there is no indigenous Dismal River pottery at Coal-Oil Canyon (14LO1/14LO401) (Roper 1996). However, excavation in Area 7 at Coal-Oil Canyon did produce a partial Ocate Micaceous vessel of Puebloan manufacture that occurs as tradeware in Dismal River contexts (Roper 1996). The final Cerro del Medio specimen was found at 14WC39, a small lithic scatter with no associated temporal diagnostics. In addition to the obsidian, the 14WC39 assemblage includes several Colorado lithic material types, e.g., Dawson Arkose silicified wood and Flattop chert, that are reportedly absent from the Scott County Pueblo tool assemblage (Butler 1997: Table 2), but are likely to be represented in the unidentified lithic material class. Nevertheless, the presence of Cerro del Medio obsidian at all three sites, two of which have pottery wares unequivocally associated with the Dismal River complex, suggests the Cerro del Medio obsidian use links all three artifacts to the brief Dismal River occupation of the Smoky Basin. A sourcing study involving the Scott

County Pueblo obsidian is clearly needed to determine the specific New Mexico obsidian sources utilized by the occupants of that site (Butler 1997), as well as at other Dismal River sites in the High Plains.

The Obsidian Ridge artifacts from Coal-Oil Canyon and 14WC1 have more ambiguous cultural affiliations. Aside from the two obsidian flakes and Ocate Micaceous partial vessel, the only additional evidence at Coal-Oil Canyon for interaction with New Mexico consists of a small endscraper (Figure 3a) made of Narbona Pass chert from the Chuska Mountains of northwestern New Mexico (Cameron 2001). Identification of this exotic lithic material is based on visual overlap with comparative specimens in the KU Museum of Anthropology Lithic Comparative Collection and responses to ultraviolet light concordant with both comparative controls and published descriptions (Banks 1990; Cameron 2001; Hofman et al. 1991). Narbona Pass chert, also known as Chuska Chert, Paleo Pink, or Washington Pass Chalcedony, has previously been identified in the Plains only at Cedar Creek, a Folsom locality in western Oklahoma (Banks 1990; Hofman 1990:20). There is only one other example of Narbona Pass chert in my entire Smoky Basin chipped stone artifact sample (n=3550+ artifacts from 104 sites): a Late Archaic corner-notched dart point from 14WC1 (JPB-020/0013, Figure 3b). The point type compares favorably both to Ellis/reworked Marcos points from the High Plains (Ballenger 1999), which in turn compare favorably to Tularosa Corner-Notched points from the Southwest (Justice 2002:216-226). The distribution of Tularosa Corner-Notched (100 B.C. to A.D. 700) points includes the Narbona Pass chert source area (Justice 2002:225), and overlaps the temporal and spatial distributions of Ellis/Marcos points. Ellis/Marcos points are quite common in the Smoky Basin where they

are typically made of lithic materials like Alibates chert, Smoky Hill silicified chalk (Niobrara jasper), Dawson Arkose silicified wood, and Flattop chalcedony. Alibates source use dominates the Ellis/Marcos assemblage from Goff Creek in the Oklahoma Panhandle, but Ballenger reports that at least one Ellis point was manufactured from unsourced obsidian (1999:Table 4-14, Spec. #432). In sum, it seems unlikely that the co-occurrence of Obsidian Ridge and Narbona Pass chert at the same two sites in the Smoky Basin is mere coincidence.

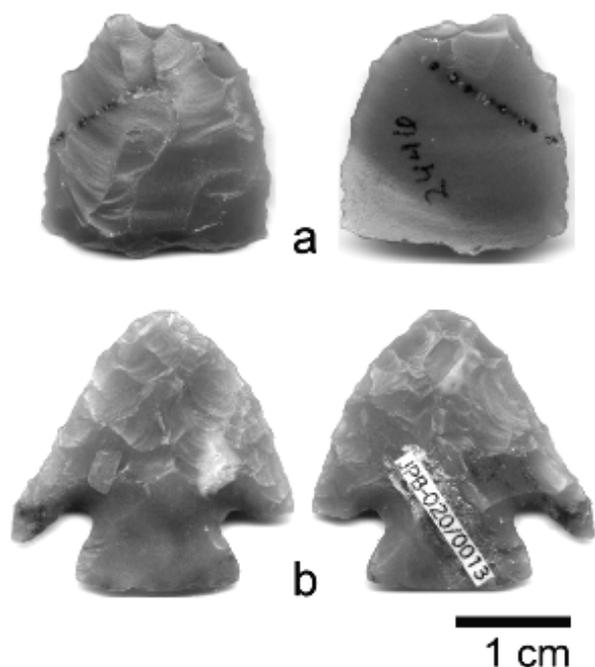


Figure 3. Images of Narbona Pass chert artifacts from the Smoky Basin: a) endscraper from 14LO1/14LO401 Area 9 (#2446), b) Late Archaic Ellis point from 14WC1 (JPB-020/0013)

Even if the Late Archaic Narbona Pass-Obsidian Ridge association is impossible to prove, Obsidian Ridge dominates Middle Ceramic Antelope Creek Phase (93.9%) and Odessa Phase (80%) assemblages in the Texas and Oklahoma Panhandle region

(Brosowske 2004). This raises an alternative possibility, namely that the Obsidian Ridge specimens might be associated with a Middle Ceramic occupation in the Smoky Basin. On the other hand, Obsidian Ridge dominance in the Panhandle sample might simply be the result of sampling error, with numerical dominance of Obsidian Ridge dependent on a few isolated reduction events. Once again, source identifications for the Scott County Pueblo obsidian are needed to evaluate possible diachronic trends in Smoky Basin obsidian source use. Additional source determinations on the Arkansas City obsidian specimens from well-dated pit contexts (Hawley 2000:243, Table 2) would also help test the hypothesis that Cerro del Medio obsidian becomes more prevalent in Kansas during the late Protohistoric period.

Wild Horse Canyon Obsidian Use in the Great Plains

The final obsidian specimen (Figure 2f) in the Smoky Basin sample is a bifacial arrowpoint midsection fragment obtained during the Area 4 testing phase at 14LO1 (Bowman 1960; McLean 1996). The specimen is made from the Wild Horse Canyon, Utah obsidian source (Hughes 2004). This obsidian type is sometimes identified in the literature as Mineral Mountain Range, Negro Mag, Negro Mag Wash, Ranch Canyon, Schoo Mine, School Mine (misspelling), or Wildhorse Canyon (Northwest Research Obsidian Studies Laboratory 2004). The artifact type itself associates the source identification with the Middle or Late Ceramic periods. Although too fragmentary to be classified to a specific arrowpoint type, it is bifacially pressure flaked and extremely thin, ranging from 1.5-2.2 mm. The blade width is within the range of Scallorn dart points, but the specimen is far too thin to fit comfortably within that type cluster. Snap fractures removed the tip and one proximal blade tang, but flake scars indicate that the

other tang and the base were flaked off. Differential breakage is inconsistent with simple loss during use or manufacture, and may reflect some combination of post-depositional damage or even deliberate defacement. Other artifacts recovered from Area 4 include an anomalously large collection (n=284) of highly variable arrowpoints plus a wide range of Early-Middle ceramic pottery types (Bowman 1960). Area 4 itself is a stratified midden deposit located inside what was mapped as a partial stone ring composed of large mortar-bed boulders derived from Ogallala Formation outcrops in the canyon (Bowman 1960, Figure 1; McLean 1996:8). Fieldwork is needed to determine if any intact deposits remain within the Area 4 stone perimeter.

To date, I have located only three other occurrences of Wild Horse Canyon, Utah obsidian in the Plains. In Kansas, one additional instance of this material type has been identified at the Montana Creek East (14JW46) site at Lovewell Reservoir in Jewell County (Hughes 2004). This site is one of a cluster currently undergoing evaluation for inclusion on the National Register of Historic Places (Lauren Ritterbush, personal communication 2004). The second specimen is from Devil's Tower in northeastern Wyoming. Shoshonean bison hunters allegedly conveyed the specimen to that location sometime between A.D. 1500-1816 (Molyneaux 2002:146-147). The final occurrence consists of Mineral Mountain Range flakes associated with the Graham-Applegate rancheria, an Austin Phase (A.D. 700-1250) house site located in central Texas (TBH Web Team 2001). The basis for the Graham-Applegate source identification is unclear, and should be considered tentative pending full publication.

At present, there is simply too little distributional or contextual evidence available

to interpret the presence of Wild Horse Canyon, Utah obsidian source use in the Plains. Given the source location in southwestern Utah, and the distribution of Intermountain tradition ceramics in Eastern Colorado (Ellwood 2002), a post-A.D. 1500 Numic (Shoshone or even Ute) connection seems the most viable explanation for the presence of this material at 14LO1. The Smoky Basin headwaters locality is well within the hypothesized secondary utilization range for Intermountain bison hunters (Eighmy 1994:236-237).

Conclusion

Looking beyond obsidian, multiple lines of evidence hint at a convergence of prehistoric trade routes in the headwaters of the Smoky Hill River basin. While geochemical data inspires a certain level of confidence often lacking with macroscopic sourcing projects, obsidian is relatively rare in Kansas, and geochemical sourcing is expensive. Although extremely interesting, obsidian is also just a single resource: no matter how many samples are sourced, obsidian data can only inform us about one dimension of Plains trade. We need to complement obsidian research with data on the frequency and distributions of other lithic material types, particularly Alibates, Smoky Hill Silicified Chalk, Edwards chert, Phosphoria chert, Trout Creek jasper, Hartville Uplift chert, Dawson Arkose silicified wood from the Palmer Divide in Eastern Colorado, Reed Springs chert from the Ozarks, Permian and Pennsylvanian Cherts from eastern Kansas, and Narbona Pass chert. All of these lithic materials are represented in Smoky Basin collections, and most are highly distinctive. Forthcoming data on the distributions of each of these non-obsidian materials should enhance our understanding of prehistoric trade routes and landscape use in the Kansas High Plains.

Acknowledgments

The Carlisle Smith Fund at the University of Kansas Museum of Anthropology (KUMA) generously funded the source identifications reported in this study. Permission to submit the samples was granted by Jeannette Blackmar, KUMA Collections Manager, and Jerome S. Bussen of Wallace, Kansas. Dr. Richard Hughes performed the analysis and expedited its completion to facilitate use of these source identifications in my forthcoming M.A. thesis. Jesse Ballenger, Tim Baugh, Doug Boyd, Jack Hofman, Chris Lintz, Brad Logan, and Lauren Ritterbush contributed helpful information concerning the distribution of obsidian and Narbona Pass chert in the Southern and Central Plains. Finally, Robert Conard produced the artifact images used in Figures 2 and 3.

Notes

¹ Prior to geochemical analysis, this colorless, transparent, glassy lithic material was tentatively identified as obsidian based on its excellent conchoidal fracture. All three flakes, found during the Area 7 investigations at Coal-Oil Canyon (Bowman 1960, 1997), were apparently derived from one or more small pebbles of quartz crystal based on the abraded cortical surfaces represented on each specimen. This material is not unlike “Apache Tears” obsidian (marekanite) in size or quality (Shackley 2001). Another recent High Plains obsidian distribution study also reports unintentional submission of two non-obsidian artifacts subsequently identified as high quality smoky quartz (Brosowske 2004:22). Additional artifacts made of both high quality quartz crystal and smoky quartz have been recently identified at several other sites in the Smoky Basin headwaters, most notably at 14LO1, 14WC1 and 14WC8 (Bowman 1960; KSHS Site Files).

² There are also at least three different Woodland pottery wares represented in the

Theis Bluff surface collection, plus a few sherds from a single unidentified Protohistoric vessel. Those sherds exhibit a fingernail-indented surface treatment that bears close resemblance to a Ute vessels illustrated in Ellwood (2002:72-73, Figures 96 and 100).

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*Preliminary Results of the 2004
Kansas Archeology Training Program at 14MP407*

C. Tod Bevitt

Introduction and Background

The 2004 Kansas Archeology Training Program (KATP) conducted a 16 day field school in June during which portions of a Smoky Hill earthlodge and several areas outside of this and other houses were investigated. The KATP has twice before visited the Lindsborg vicinity, in 1992 and 1993, with work at the Sharp's Creek site (14MP408), a late sixteenth-early seventeenth century protohistoric Wichita village located in the uplands to the south and west of the site of this year's fieldwork at 14MP407.

The site was recorded by KAA member Harold Reed in 1971. This original record has recently been added to by KAA member Richard Stauffer who also has a collection from the site. Stauffer and another local collector also contributed valuable information regarding likely features each had witnessed in an adjacent wheatfield in the past. The site has long been known to local collectors and has been subject to occasional excavation over the years resulting in one very noticeable crater in Mound 1 and a trench excavation in Mound 2. That excavation yielded a collection of materials that the owner was gracious enough to show and even lend a portion of for analysis. That data will provide important additional information on the house that became the focus of the KATP.

The area of the site investigated this year lies in pasture. Though not in native grass, it is apparent that the site was not subject to long term cultivation or deep plowing as the cultural deposits are quite shallow and were still relatively intact. Three low mounds are

readily visible along the crown of the ridge upon which the site is situated. These mounds represent the locations of collapsed earthlodges. An adjacent wheatfield contains another portion of the site, and a third ridge to the west has yet another cultural component on it though in that instance the materials represent the later protohistoric Wichita occupation in the area. These areas are identified by artifact scatters in the cultivated fields. As mentioned above, local collectors noted dark stains in the wheatfield years ago in the vicinity of the present-day artifact scatter suggesting the presence of pits or other cultural features in the area. Daub was also collected from the area suggesting the presence of a structure in addition to the scatter of smaller features.

This site provided an opportunity to study an archeological site via remote sensing. Archaeo-Physics, LLC out of Minneapolis, MN was contacted to conduct a shallow subsurface geophysical survey of portions of the pasture and adjacent wheatfield to help identify potential cultural features in the vicinity of the house mounds and visible artifact scatter respectively. This work was highly valuable in placing units outside of the Mound 2 structure that became the focus of our investigations and also provides an excellent reference for any future investigations that might take place at the site.

The geophysical investigation included both electrical resistance and magnetic field gradient surveys. A total of 8100 square meters were investigated in two separate areas of the site. In the pasture area, 6300 square meters were surveyed by both methods

(Figure 1). Due to rain during the latter portion of the survey period, an area of the site located in an adjacent wheatfield was

subjected only to the magnetic survey (Figure 2). A total of 1800 square meters was surveyed in the wheatfield.

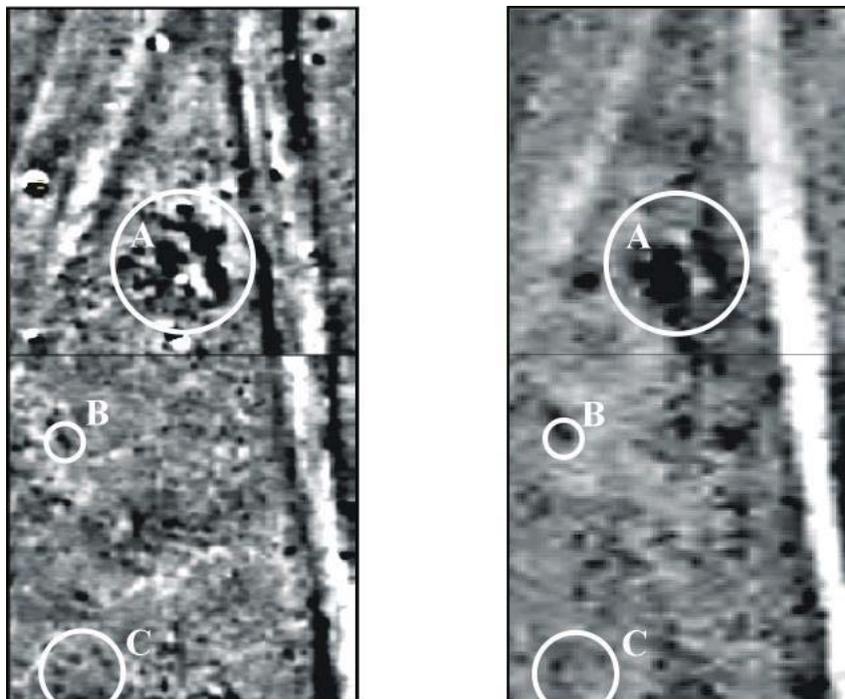


Figure 1. Results of the magnetic field gradient survey (left) and electrical resistance survey (right) on a portion of the pasture area of 14MP407. Highlighted areas: A) Mound 2/House 2, B) Feature 51 basin, C) Oval group of anomalies including Feature 55 basin/Feature 63 post

Results from the survey yielded important additional information about a number of anomalies that appeared to be of cultural origin as well as shedding additional light on the three visible mounds in the pasture. Based on the survey, it was apparent that Mound 1 and Mound 2 had similar magnetic signatures suggesting that structures in both locations had likely burned. Mound 3 on the other hand had a very different magnetic signature, one that was not nearly as chaotic and strong as that seen in the first two instances. Based on this information, it is suggested that the structure associated with Mound 3 did not burn and that anomalies clustered in that area may well represent internal features such as pits, basins, posts,

etc. A number of anomalies outside the vicinity of the mounds were identified as having a high potential for being cultural features.

High potential features had consistent strong correlations between the magnetic and resistance data. Ground truthing, via coring, of these anomalies confirmed the presence of cultural features in every instance. Typically the core revealed a darker, organically enriched soil disturbance containing occasional flecks of charcoal and burned earth. In one instance a chert flake and a burned corn kernel were present in a soil core extracted from a pit feature. Other anomalies were cored that had either a magnetic

signature or an electrical resistance signature with little correlation between the two. Cultural features were identified in approximately half of these instances and when identified as such were generally recognized to be more subtle in appearance (lighter disturbed fill, fewer instances of charcoal and burned earth). The results of the ground truthing provided a number of known cultural features that could be investigated during the KATP.

During excavation, special soil samples were collected. From several of these features including posts and basins, the profile of the Mound 2 fill, the floor of the structure associated with Mound 2, and an area isolated from cultural features that shows a relatively undisturbed soil profile. Additional research involving these soil samples is currently being conducted and will help identify some of the variables that allowed for the identification of the anomalies at this site.

Research Objectives

From the outset of this year's KATP, several questions came to the forefront and helped to guide the investigation of the site. One key aspect of the investigation was the recovery of plant remains that would help provide insight into a portion of the inhabitants diet and their reliance on horticulture and wild plants. Much of the past work on the Smoky Hill phase occurred prior to the time when flotation was a commonly used procedure in excavations. With this in mind, systematic flotation samples were collected from all units excavated more than 20 centimeters below the ground surface. In doing so, samples were collected from inside the house fill and floor zones as well as some samples from outside the house. Cultural features including postmolds, and any pits or basins encountered were subject to flotation of at least half of the fill. Occasionally additional flotation samples were taken from

features and portions of the house floor. Taken together this information will help us gain a better understanding of this aspect of the subsistence practices carried on at this site and maybe allow inferences for this activity elsewhere in the Smoky Hill phase.

Another question related to the material assemblage that would come from the excavation was how aspects such as ceramics and lithic raw material utilization compared with other areas such as sites in the Salina locality or those in the Minneapolis locality. Would the artifacts recovered from 14MP407 indicate that the site was distinct to a degree from the expressions of Smoky Hill culture seen in those and other areas or could it be confidently grouped with a cluster of sites from one of the previously investigated areas.

Finally, with regard to the site itself, what could we learn about the internal organization of the site? In order to answer this we would need to open enough area to investigate not only a potential structure, but adjacent areas as well. Areas outside of structures have been excluded from previous investigations at Smoky Hill phase sites, hence a potentially large part of the daily activities of the site's inhabitants had yet to be studied.

Fieldwork and Preliminary Results

A total of 71 1x1 meter units were opened across the site. Fifty-eight of these were opened in and around Mound 2 (Figure 2A and Figure 3). These units exposed a significant portion of a structure (House 2). Perimeter posts and interior posts and features (primarily basins) were identified as the floor of the structure was encountered. While most of the west half of the structure was exposed, only portions of the east side were investigated thoroughly (Figure 3). Areas of the house that remained unopened include most of the southeast quadrant of the structure and much of the north and northeast wall

areas. No evidence of an entryway was found though with portions of two walls only briefly investigated this is hardly surprising. Approximately six to eight units were located outside of the house area. These units were clustered outside of the south-central portion of the house. A single shallow basin was identified in this area in addition to a sparse scatter of lithic debris and ceramics. While only a small sample, this work does provide some evidence of activities being carried on outside the house.



Figure 2. Results of the magnetic field gradient survey in the wheatfield portion of 14MP407. Note dark circular areas in lower portion along right side. Several of these anomalies were cored and identified as cultural features

From our work, it is apparent that the structure only partially burned. Some of it

burned quite heavily in the northwest portion as indicated by several large interior posts burning completely to the base of the post as well as several large concentrations of daub and scattered burned roof debris across the north and west portions of the structure. Other posts in the structure showed no evidence of burning.

Four large interior posts were identified and are roughly equidistant from the large central hearth. The two posts on the north side each had an associated smaller post located on the north side of the corresponding large post, perhaps secondary supports or braces for this side of the structure. The northwest central support showed an interesting sequence of posts. One large post showed no signs of burning while three others immediately adjacent to it (two small and one large) were heavily burned. Based on this, it seems apparent that this large post was removed at some point, perhaps because it was beginning to fail, and was replaced by another large post that burned along with other nearby posts when the structure was abandoned.

Within the limits of the house seven small features were identified as shallow basins. For the most part these features were nearly devoid of artifacts. One exception was Feature 77 in the southwest portion of the house. Here a digging stick tip, several endscrapers, fragments of one or more scapula tools, and other debris was found within or near this large shallow basin. Two basins located nearest the hearth were circular in plan view and had conical cross-sections. It is unknown what, if any, special purpose these unique features may have had. Interestingly no deeper storage pits were identified in the house. In many other excavated Smoky Hill houses, interior features include and are often dominated by cylindrical pits. Deeper storage pits are

present at the site as several were identified in areas outside houses during coring of some of the geophysical anomalies in both the pasture and wheatfield. This knowledge makes the

lack of similar features in the house an interesting contrast, though it is possible that unexcavated portions of the house may yet reveal deeper storage facilities.

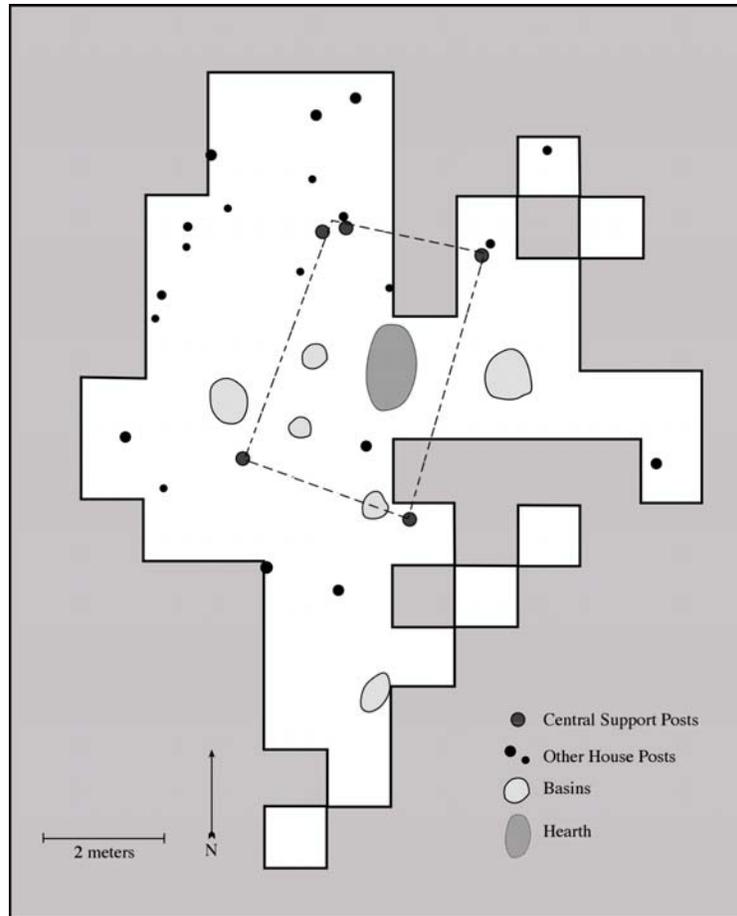


Figure 3. House 2 excavation area showing distribution of features within the excavation block

Artifact distributions on the house floor show some interesting patterning. A relatively dense band of cultural material including large portions of as many as four ceramic vessels was identified inside the west wall of the structure continuing into the northwest corner and around to least a portion of the area adjacent to the north wall. Numerous modified and retouched flakes were scattered across the area as well as occasional other tools and preforms. A cluster of charred corn and cob fragments was located along the short segment of the north wall near the northwest

corner. The dense scatter of debris was consistently the same general width wherever it was encountered, extending approximately one meter within the identified perimeter posts of the house. In contrast, very little material was collected from the house floor from within the perimeter of the large central support posts in the area nearest the hearth suggesting this area was kept clean, possibly due to its undoubtedly heavier daily traffic and use by the inhabitants of the house. The debris zone conversely suggests little if any traffic in the immediate area, perhaps due to

the presence of household furniture (racks for storage, bedding, etc.) in at least this portion of the structure. No similarly dense debris zone was encountered along the south wall of the structure.

The ceramic assemblage consists primarily of cordmarked sand (or grit) and grog tempered ceramics. At least two forms of vessels are present in the collection, a neck-less jar or bowl with a narrow opening commonly called “coconut jars” and the more common globular jar. Decoration is rare but is present in several instances, so far exclusively as oblique tool impressions in the lip. As mentioned earlier, several large complexes of sherds were recovered and likely represent three or four reconstructible vessels or vessel sections. Work on refitting these clusters of ceramics is currently being conducted.

Lithics include limited quantities of flake debris, particularly larger flakes. Most of the debitage is small, representing the later stages of lithic reduction to create tools as well as the resharpening of tools. Chert from the Flint Hills is by far the most common raw material in the chipped stone assemblage. Smoky Hill jasper from northwest Kansas is also present in limited quantities. One unexpected find consisted of an endscraper made of Flattop chalcedony (White River group silicates), the closest source of which is in northeast Colorado.

Faunal remains were limited and typically were found in poor condition. Species recognized during the excavation include bison, deer, small mammals and rodents, bird, and shellfish. Most of the recognizable bison came from elements useful for bone tools such as the scapula and tibia.

Floral remains identified during fieldwork include both beans and corn. Both cultigens were identified in numerous

instances throughout the house excavation. The systematic flotation samples taken throughout the excavation will provide more detail into this aspect of the remains from the site.

Approximately ten meters southwest of the Mound 2 excavation, a 2 x 2 meter area was opened to investigate an oblong anomaly identified through the geophysical survey (Figure 2C). It was hoped that at least material could be recovered to date this feature that was located close to House. The feature (Feature 51) turned out to be a shallow oval basin that unfortunately contained almost no cultural material and was somewhat difficult to define.

Another area of the site was investigated during the first week of the dig. Located approximately 15-20 meters northeast of Mound 1, a scatter of units investigated a group of 7-8 small anomalies that created an oval pattern in the geophysical data approximately five meters long and four meters wide (Figure 2B). A total of six 1 x 1 meter units were scattered in this vicinity with hopes of identifying one or more of the anomalies in order to determine whether they were of cultural or natural origin. Excavation revealed a small shallow basin (Feature 55) and an associated post (Feature 63) along what would be the northwest arc of the oval cluster of anomalies. In reviewing the geophysical data, it was determined that this area corresponded to a slightly larger anomaly in the group. It appears that the basin is what is visible in the data (primarily the resistance data) and its larger signature masks in part the postmold that may very well be representative of the smaller anomalies creating the oval. Based on this, the oval is thought to represent a cultural feature, a structure of some sort, such as an arbor where some as yet undetermined activities were conducted outside of the nearby dwellings.

As work on those units was completed, three additional units were opened a short distance to the southwest, closer to Mound 1, to investigate another geophysical anomaly. This particular anomaly appeared as a large irregular feature that continued outside of the grid established for the geophysical survey. Excavators uncovered the margins of an irregular basin that carried across parts of the three units. Very little material was collected from the feature. Its irregular form, large size, and proximity to Mound 1 make it a strong candidate for a borrow area associated with the Mound 1 structure. Typically the shallow depressions of these borrows would then be filled in with the waste of daily life. In this case however, it appears that the borrow was not used as a trash receptacle.

Conclusions

Revisiting the previously stated research objectives in the light of this preliminary review of the fieldwork provides some tentative conclusions.

While the bulk of the flotation remains to be analyzed, the recovery of numerous specimens of two cultivated crops (beans and corn) as well as several examples of digging implements suggest a strong reliance on horticulture at the site. Additional study will provide more data and help complete the picture of the inhabitants reliance on cultivated as well as gathered wild plant remains. In all, 176 separate sample numbers were assigned to soil flotation samples. Approximately 1/4 of these samples consisted of multiple bags for flot from a single provenience such as basin features, large posts, and general house floor samples.

Radiocarbon dates are pending and will be obtained from charred plant remains collected from the house. Two samples (one bean and another maize) from the floor zone of the structure, as well as a sizeable

sample of wood charcoal from one of the heavily burned interior posts, will hopefully successfully pin down a date for the occupation of House 2.

A large quantity of pottery was recovered and will be useful in identifying the number and types of vessels present in the house. Several reconstructible vessels or vessel segments will provide good information on vessel form and size. A varied and sizeable collection of lithic tools was also found. From this assemblage and the flake debris a picture of lithic raw material use and tool manufacture and maintenance activities will come to light. In both instances, comparisons can then be made with data from excavations in the Minneapolis and Salina vicinities.

Regarding internal site organization, the excavation was only partly successful in exploring this topic. A structure was identified and investigated in part. A small area outside of this particular structure was able to be opened allowing the identification of a shallow basin and light scatter of cultural material along the exterior of the south house wall. Other units investigated and successfully identified additional external features. The possible identification of a post structure unlike the typical Smoky Hill phase house with an associated basin provided a slight glimpse into the potential for research of ancillary activity areas outside the habitations at this site. Due to time limitations investigation of known features in the wheatfield was regrettably not possible. Additional excavations at the site would go far in helping to explore this aspect of the research goals. In the end however, the 2004 KATP was a success in many ways and current analysis holds much promise for helping to better understand the past inhabitants of this site and the place of the Smoky Hill phase in the local cultural sequence.

***Kansas Archaeological Field School Investigations
at the Caenen Site (14LV1083), Stranger Creek Valley,
Northeastern Kansas***

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Kansas State University

Introduction

From June 7 through July 3, 2004, the Kansas Archaeological Field School (KAFS) conducted excavations at Caenen (14LV1083), a multicomponent site in Stranger Creek Valley, Leavenworth County, Kansas. The purpose of the investigation was to evaluate it and the Paul site (14LV1043) for National Register of Historic Places eligibility. The project succeeds a similar one that focused on the Evans and Scott sites in the same locality (Figure 1) and had demonstrated that it was occupied periodically from at least 5400 BP and probably as early as 8000 BP (Logan 2004). Because Stranger Creek drains a major woodland-prairie ecotone on the edge of the Central Plains and Eastern Woodlands culture areas, these sites may provide significant insight into adaptations to environmental change and cultural relations in a “frontier” (Logan 1985, 1988, 1990). Preliminary survey and test excavations at Caenen during the KAFS-2003 indicated the site likely contained two components the uppermost of which included remains of a house of the Pomona variant (Logan 2003, 2004). The immediate goal of the KAFS-2004 was to excavate as much of the house as possible since its remains were shallow and therefore vulnerable to future plowing and flood scouring. The project also entailed survey and evaluation of Paul, which similarly contains surface (Pomona) and buried components.

The goal at Caenen was to recover data for comparison to those from the Scott house,

another Late Prehistoric (ca. AD 900-1500) habitation less than 400m distant (Figure 1). Unlike Caenen, Scott was affiliated with the Steed-Kisker phase (Logan 2001, 2002, 2003, 2004). The proximity of houses assigned to different archaeological cultures of the same period offered the opportunity to address questions about cultural relations in a frontier setting. Within the limits of radiometric dating, can we determine if the houses were occupied contemporaneously? Were the house occupants in contact and, if so, what was the nature of that contact and how is it reflected? For example, do the structural remains show similarities that might indicate the exchange of ideas about house construction? Do ceramic attributes show the exchange of technological or ideological information? Are the lithic assemblages comparable with regard to style, function, and the relative frequencies of raw material types? Can any contrasts or similarities between the two house sites provide the basis for interpretation of other Late Prehistoric house sites in northeastern Kansas? Here some of these questions are addressed and preliminary interpretations offered.

Preliminary Investigations

The role of Scott DeMaranville, a local avocational archaeologist, in the discovery of the Caenen site and its exploration during the KAFS-2003 are described in last year’s volume of *CAK* (Logan 2003). At that time the site was surveyed systematically, selected surface artifacts and its perimeter were mapped, and three test units were excavated

(Logan 2004). Two of the test units yielded a considerable amount of daub suggesting they were probably within a collapsed and burned structure. A third unit yielded significantly less daub, suggesting it lay beyond it. In order to determine where best to excavate the block that might expose the house, a remote sensing survey was conducted the week prior to the field school by Dr. Steven Gao, Department of Geology, Kansas State University. Dr. Gao, a geophysicist whose expertise includes the application of remote sensing techniques, and his graduate students devoted most of one day to laying out a grid over an area 13x10m that included the three test units dug the previous year. The grid was not centered over the test units, rather the two that had yielded the most material were located within one meter of its western edge, beyond which the ground sloped significantly

within a few meters. Three techniques were applied during the survey: relative conductivity, proton magnetometry, and ground penetrating radar. The last was ineffective in identifying cultural features, though the back-filled test units of 2003 were quite discernible. There is an interesting correlation between the area of greatest daub mass and that of the highest positive values (8-15 ppm) of relative conductivity. Beyond that neither that technique or the magnetometry picked up meaningful anomalies within the block area. Remote sensing would probably have been more helpful if the Caenen house occupants had made a substantial structure with an internal hearth and intramural storage pits, like that at the nearby Scott house (Logan 2001, 2002, 2003, 2004).

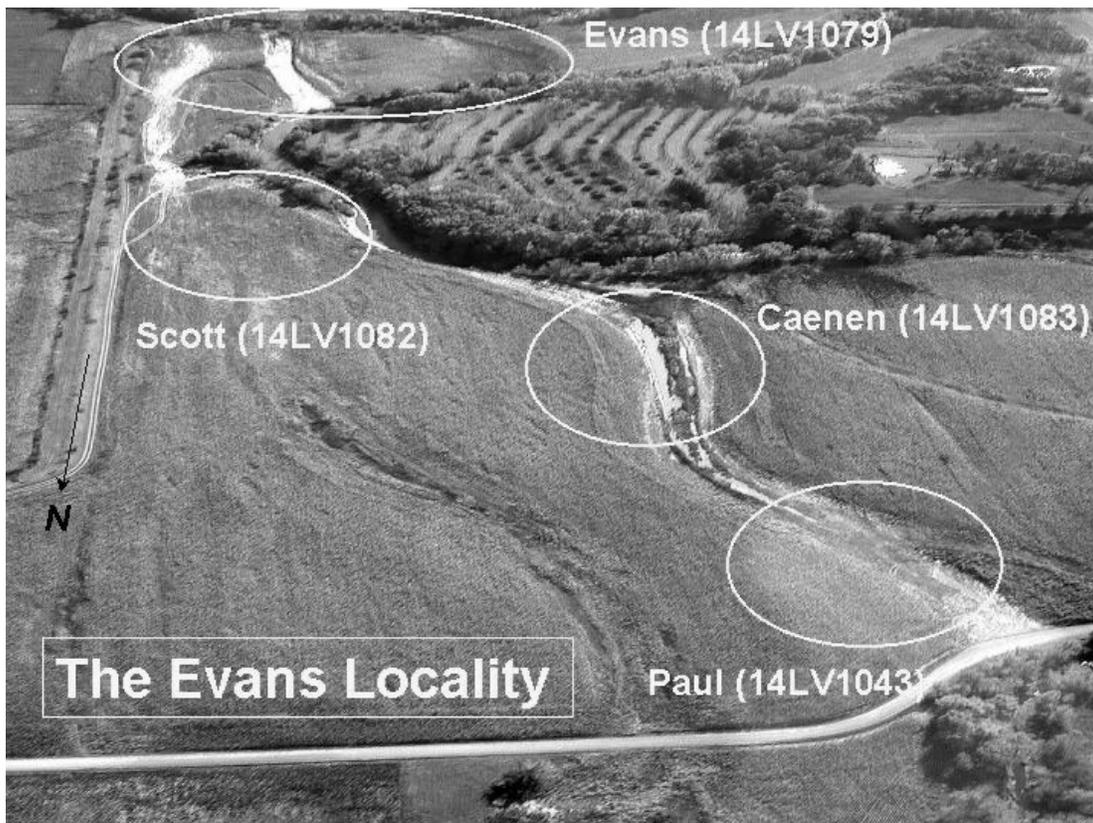


Figure 1. Aerial photograph of the Evans locality and sites mentioned in the text. Note the wash from Little Stranger Creek (lower right) to Stranger Creek that has cut through Caenen and Paul

The Caenen House

The block excavation at Caenen, including two of the 2003 test units, exposed an area of 32m² to a depth of 20 to 30cm (Figure 2). Fill from the block was waterscreened through 1/8" mesh hardware cloth and 5gl samples of fill from the southwestern corner of each 1m² unit were collected for flotation. The former process

yielded the cultural material shown in Table 1. Artifacts with any dimension ≥ 2.5 cm were piece-plotted. Of the 192 artifacts plotted, 168 are pottery, nine are chipped stone debris, two are arrow points, and the balance are chunks of ferrous oxide, a few pieces of conspicuously large daub, and a single piece (mass=12.1gm) of charcoal.

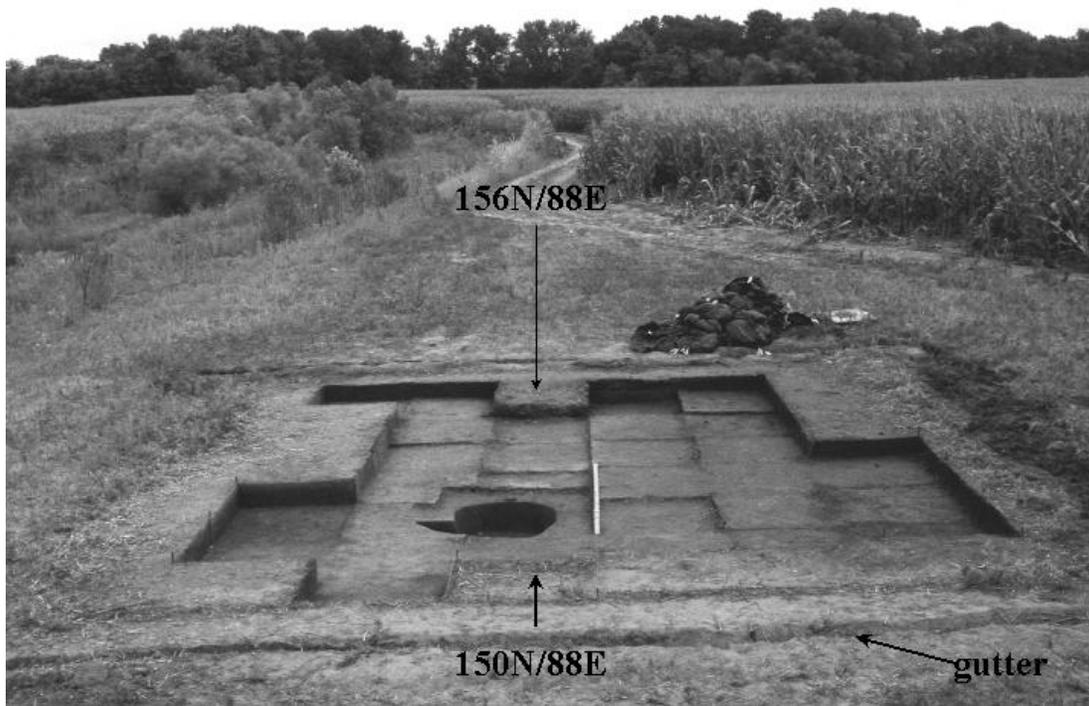


Figure 2. Final block excavation of the Caenen house. The backfilled test units of the KAFS-2003 investigation are indicated. The feature in the lower part of the block proved to be natural. Note the nearly daub-free gutter around the block referred to in the text

Figure 3 shows the relative density of daub across the block (note: the daub from the KAFS-2003 test units included in the figure was recovered by dry-screening fill through 1/4" mesh cloth). We assume that the area of greatest daub concentration corresponds to the structure from which it derived when its walls

collapsed inward. Units dug on eastern periphery of the block clearly were at or beyond the edge of daub concentration. Peripheral profiles on the north, west, and south sides of the block, however, exposed a continuous line of daub that suggests the edges of the structure may have extended

beyond it in those directions. That it does not extend thence more than a meter is suggested by the near absence of daub from a shallow (5-10cm) gutter shoveled around the edge of

tent over the excavation in order to facilitate drainage away from it. Therefore, we suggest that the Caenen house covered an area ca. 6m wide (east-west) and 8m long (north-south).

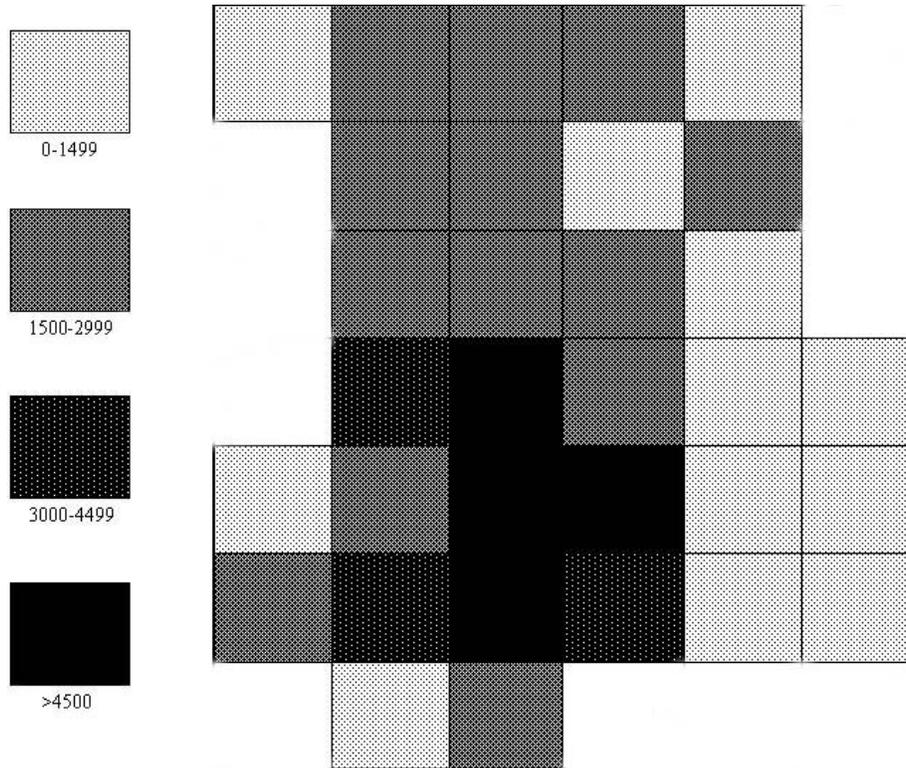


Figure 3. Map showing relative density of daub (gms) from the Caenen block (units are $1m^2$)

More than 500 pottery sherds were recovered. Based on the attributes (rim height and form, surface treatment, thickness, mouth diameter) of the 22 rim sherds in the assemblage, the number of vessels represented may be as few as three. All sherds are compatible in every respect with Pomona ware. Temper is not always identifiable but when so is grog. Nine (87.5gms) sherds with smoothed exterior surfaces appear to be from a single vessel, the rim of which is not present. The balance exhibits overall cordmarking. Several fragments from the center of the block refit to form much of the mouth and upper portion of

a large vessel (Figure 4). Three units that contained sherds from this pot yielded 229 sherds, or 44% of the total recovered (and 1,307.5 gm or 57% of the total mass). While its lower portion has not been identified, the vessel was probably a globular jar, the typical form of Pomona pots. The rim is relatively high (2.5cm), straight, and a maximum of 6mm thick; the mouth diameter was 18cm and the body a maximum of 9mm thick; the surface was cordmarked in a rather haphazard manner. A third vessel, represented by refitted rim sherd, was a cordmarked “seed” bowl with a mouth diameter of 16cm and a maximum wall thickness of 10mm.



Figure 4. Rim and body sherds of a Pomona pot in situ. The vertically oriented sherd to the right of the arrow/scale is in a krotovina. Note their shallow depth and that others are horizontal with interior surfaces up, which with the paucity of sherds on the surface suggests flooding or some other natural disturbance removed some of the vessel

Lithics were relatively sparse, consisting predominantly of tertiary debitage. Indeed, only 12 chert items were piece-plotted: three tools, three blades, five flakes, and a core with a total mass of 120.9 gms, or 45% of the total mass of chipped stone material. The great majority of chipped stone debris is Toronto chert and includes both heat-treated and unmodified pieces. There are only a dozen chipped stone tools: eight fairly complete arrow points, a fragment lacking its base, a basal fragment, a tip, and (from the northernmost of the 2003 test units) an arrow point preform. A nearly complete Scallorn

point of dark gray chert may attest to the Late Woodland derivation generally attributed to the Pomona variant (e.g., Witty 1978; Brown 1984). Other points show the range of variability typical of Late Prehistoric projectiles: three are unnotched, two are side notched, one is side and basal notched, and two are double side-notched and basal notched. With regard to raw material type, they include one specimen of Permian chert, one of heat-treated Toronto chert, three of unmodified Toronto chert, and two of a white chert that may be either Toronto or Mississippian. (To these should be added an unnotched point, lacking its tip, of Permian

chert that was found on the surface in the general block area during the KAFS-2003 survey of the site). No other chert tools such as knives, drills, or scrapers were found. The only groundstone artifact from the block was a sandstone shaft abrader found in the northernmost of the 2003 test units. Other lithic artifacts include several pieces of soft ferrous oxide, probably from local sources. Ninety-four percent of the mass of that material occurred as a conspicuous concentration in two adjacent units in the southwestern corner of the block suggesting it was an area of pigment production. Just as no hearth was evident, neither were hearthstones such as burned limestone or fire-cracked quartzite found.

Charcoal and burned seeds were notably sparse throughout the block. No charcoal samples of sufficient mass for conventional radiometric dating were found. While flotation samples, as yet unprocessed, may contain some remains of domesticated plant foods, the waterscreened house fill did not yield any. Two samples of the few burned nutshells have been submitted for AMS dating. Animal remains are limited to 27 very small pieces of burned bone none of which can be identified taxonomically. As all of this burned material was distributed rather evenly throughout the block, no cooking area or "hearth" can be inferred.

In sum, the lack of postmolds, storage pits and a hearth suggest the Caenen house was constructed for a relatively short occupation. Similarly, the presence of only a few broken ceramic vessels, the paucity of chipped stone and groundstone tools, and the small amount of burned plant and animal remains attest to a brief, perhaps seasonal stay.

The Buried Component

During all previous surveys of the Caenen site lithic artifacts, including dozens of pieces of chipped stone debris of Toronto chert and fire-cracked quartzite, were seen in the base of the wash adjacent to the house area. Small numbers of this material and a few chipped stone and groundstone tools (e.g., a nutting/grinding stone) have also been found along the slope at the edge of the wash. It was suggested following the KAFS-2003 investigation that these might belong to a buried component (Logan 2004). This interpretation was confirmed during the KAFS-2004 when a few artifacts were found *in situ* in the profile of the wash 1.3m below the mapping point of the block excavation (Figure 5). These included a few flakes, some burned limestone, and a large piece of burned wood. A sample of the latter returned a radiocarbon date of 2980 \pm 70 BP (ISGS-5654; calibrated two sigma range: BC 1393-1005 [CALIB 4.4.2]). This assay supports a Late Archaic assignment for the buried component. More evidence of occupation of the Evans locality during this time is represented by a complete, extensively resharpened projectile-point/knife with a contracting stem that is comparable to the Langtry type. That artifact was found near the base of the wash at the nearby Paul site (Figure 1), from which the KAFS-2004 also collected a grab sample of 83 pieces of Toronto chert debitage, two pieces of ferrous oxide, and a hammerstone. The KAFS-2003 had also surveyed the wash at Paul and collected 114 pieces of debitage, a projectile point base, and a hammerstone (Logan 2003).

Preliminary Interpretations

The data from the Late Prehistoric component exemplify the traits that distinguish the Pomona and Steed-Kisker cultures. With regard to architecture, the Caenen house had little in common with Scott

other than both structures entailed application of clay plastering to a pole supported structure. The floor of the Scott house was easily inferred from the color contrast between its fill and the soil beyond it, as well as by the postmolds of central and peripheral supports. It was apparent that the structure was square with rounded corners, covered an area of about 56m², and had a strong internal supporting framework of four or five posts centered on a hearth. In all respects, it is a typical Central Plains tradition lodge. When Pomona houses are definable, which is all too rarely the case, they are oval in outline, generally about 25 ft (7.7m) long by 15 ft (4.6m) wide, and lack internal hearths (Brown 1984:407-411; Reynolds 1987). While the

edges of the Caenen house could only be inferred from the distribution of daub within the area excavated (cf. Logan and Hill 2000), it appears to conform to that shape and size. Given the lack of postmolds, it is possible its supporting framework consisted of flexible poles of small diameter that were shallowly set into the ground around the periphery and then bent and lashed over the floor without resort to internal supports. It appears to mark a house floor longer north-south than it was east-west, that is, more oval than square and ca. 50m². If this inference is accurate, it was home to a family no larger than that which occupied the Scott house and perhaps somewhat smaller.

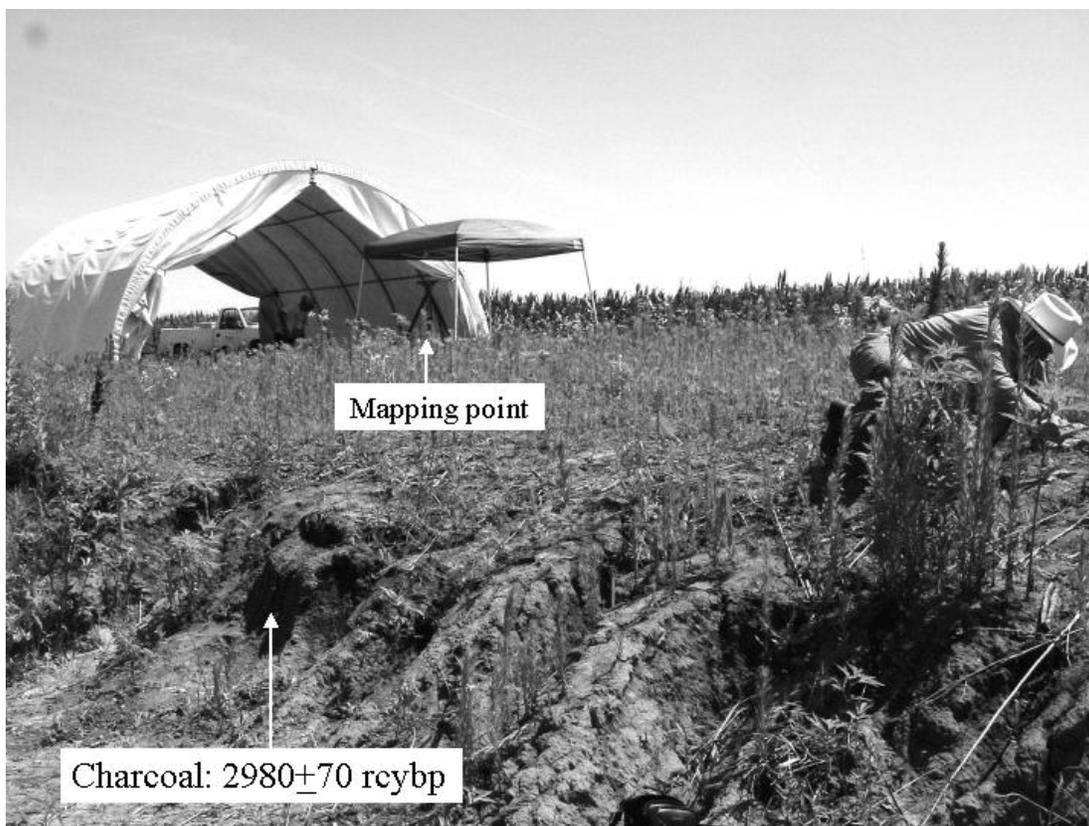


Figure 5. View toward the block excavation showing the relative depth of the buried component and the feature with limestone, debitage, and a charcoal sample that yielded a Late Archaic date. This sample is 1.3m below the mapping point at the base of the tripod. The man to the right is exposing a small cluster of Toronto debitage that is probably part of this component

The Caenen house builders did not excavate a shallow pit for their lodge like those at Scott. Because the latter did, they contributed substantially to the preservation of sub-floor features, including postmolds, pits, and a central hearth, as well as several burned beams. While poor feature preservation in the Caenen house cannot be attributed entirely to its having been erected on the surface, it was likely a contributing factor. The Scott house had an easily discerned central hearth of highly oxidized, hard earth. The Caenen house had no apparent fireplace. The lack of a hearth is not unusual for Pomona lodges. Of them Brown (1984:411) has noted "hearths rarely occur within habitation structures, suggesting either the structures were not occupied during the winter or their thatch construction prohibited the use of interior hearths because of fire hazards". The Scott house had two storage pits, both with ceramic and lithic debris. While Caenen had none, both intramural and extramural trash-filled pits are found at Pomona sites. Thus, it would be worthwhile to conduct remote sensing surveys beyond the area explored by Gao in order to detect outside pits.

The Scott house contained a richer and more varied assemblage than Caenen. In addition to the greater number of ceramic vessels (as yet uncounted but certainly more than 20), Scott yielded more chipped stone and groundstone tools. The Caenen house yielded no plant processing implements, whereas the Scott pits held a large sandstone metate and a mano of metamorphic stone. No formal cutting or scraping tools were recovered at Caenen, but knives and end scrapers were found at Scott. Burned plant remains, particularly nutshells and charcoal, were common in the waterscreened samples from the latter but relatively few were recovered from the fill of the Caenen house.

Indeed, their scarcity at Caenen forces us to rely on AMS radiocarbon dating alone, whereas sufficient samples of burned wood and annual plant remains at Scott made it possible to apply both standard and AMS dating techniques to obtain reliable chronological information.

In sum, the contrasts between the two house sites could not be more apparent. They suggest the duration of occupations and, to some extent, the nature of intramural activities differed. There is no evidence of contact between those who lived in them, so we anticipate radiocarbon dates that will indicate the occupations were not contemporary. Three calibrated and averaged assays from the Scott house date ca. AD 1240-1300 (two sigma range; Logan 2004). We look forward to obtaining the assays from the Caenen house so we might know whether its people or those of the Scott house were the Late Prehistoric "pioneers" of the Evans locality.

Finally, as at the Evans and Scott sites, the ceramic-age groups represented by surface components at Caenen and Paul were preceded by others during Archaic time. All of these sites will be of interest to archaeologists concerned with long-term adaptations of the middle to late Holocene to an area that was transitional in its physical and social environments.

Acknowledgements

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well; Dr. Lauren Ritterbush, who spent a day mapping the buried components at the Caenen and Paul sites; Dr. William C. Johnson and Elizabeth Chabin-Edens (a veteran of the KAFS-2003 in Stranger Creek valley), who spent several days in the field collecting geomorphological and geomagnetic data; and Dr. Steven Gao and his graduate students, for remote sensing of the Caenen site. Thanks also to the Church of the Brethren and the staff of Camp Mt. Hermon, particularly Steve Ward, who provided the KAFS with housing, lab and storage facilities, and many bounteous meals. Support for the project came from an Historic Preservation Fund grant (National Park Service) that was awarded by the Cultural Resources Division, Kansas State Historical Society and by the Department of Sociology, Anthropology and Social Work, Kansas State University. The senior author is particularly grateful to the junior author, who served as his teaching assistant in the field, directed the water screen operations, and processed recovered data in the laboratory. Thanks also to Toby Blake and Daniel Keating, who volunteered time in the lab. And thanks again to John and Robert Evans, owners of the Caenen and Paul sites, to Henry Caenen and Mike McGraw, the former and current farmers, and to Scott DeMaranville, who informed us about the Caenen site during the KAFS-2003.

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*Prehistoric Phase III Archeology Project Recently Completed by the
Kansas State Historical Society*

Christine Garst
Kansas State Historical Society

**Investigations at seventeen Prehistoric Sites in
Greenwood, Wilson, Montgomery, Labette
and Cherokee Counties**

During the summer of 1991, the Kansas State Historical Society (KSHS) completed the Phase II Archeology field investigation of the Southeast Kansas Highway Corridor alignment project. The Kansas Department of Transportation (KDOT) contracted with the Archeology Office, KSHS, to conduct Phase III archeological investigations at seventeen prehistoric sites along this corridor under primary road project numbers K-3292-01 and 02, K-3293-02, K-3295-01, K-4892-01, K-5345-01 and K-5049-01. The sites included in the Phase III investigations were 14GR324, 14GR338, 14GR339, 14GR340, 14GR366, 14GR368, 14GR369, 14WN329, 14WN363, 14WN364, 14WN366, 14WN367, 14MY2332, 14MY2337, 14LT368, 14LT369 and 14CH324. Varying amounts of cultural material were collected from all of these sites during the Phase II investigations. However few sites contained diagnostic artifacts.

The Phase III fieldwork were undertaken at the sites between October 28, 1992 and December 3, 1996 by Archeology Office, KSHS, staff Tim Weston, Christopher Benison, Randy Thies and Marlin Hawley. Assistance was received from various field crewmembers. The writing of the report for the Phase III investigations for these prehistoric sites was undertaken in Christine Garst, KSHS Archeologist, in 2003 and 2004.

Briefly, the investigations at the seventeen sites along the corridor resulted in two of the sites, 14WN363 and 14WN364 as having no cultural component at all (Table 1). Four sites were designated as having a single unknown Prehistoric cultural component and the remaining eleven sites were deemed multicomponent sites.

Table 1. Components Present at Sites in the Southeast Kansas Corridor Project

Sites	Unknown Prehistoric	Late Archaic	Early Ceramic	Middle Ceramic	Late Ceramic	Historic	No Component
14GR324		X	X	X	X	X	
14GR338	X						
14GR339	X						
14GR340	X						
14GR366	X				X		
14GR368	X					X	
14GR369			X			X	
14WN329			X	X		X	
14WN363							X
14WN364							X
14WN366				X		X	
14WN367	X					X	
14MY2332				X		X	
14MY2337		X	X			X	
14LT368		X	X		X	X	
14LT369	X						
14CH324		X	X			X	

Archeological testing of these sites demonstrated that none possess, for the portions tested, the integrity or research potential that would make them eligible for the National Register of Historic Places under Criteria D. Therefore, it was recommended that no further archeological work be conducted at these sites. The State Historic Preservation Office (SHPO) concurred with these recommendations.

Prior to the investigations it was expected that new information might be gleaned from both upland and river valley sites in southeast Kansas. The information generated by the Phase III investigation reveals that in the area examined upland sites tend to be rather shallow and located directed atop the bedrock and river valleys sites tend to be nearly plowed out. While there are exceptions to this tendency, the information gathered from the seventeen sites discussed in this report supports Weston’s (2004) postulation that in southeast Kansas upland sites are sparse and

shallow and that in the river valleys surface components have been heavily impacted by cultivation.

The report on this project, *Archeological Investigations for the Southeast Kansas Highway Corridor: Results of the Prehistoric Phase III Investigations*, was completed by Christine Garst in April 2004. Copies are available from the Archeology Office, KSHS.

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Phase III Investigation at Site 14SN321 Sherman County, Kansas

Timothy Weston
Kansas State Historical Society

Introduction

In 2003, the Kansas State Historical Society (KSHS) completed a Phase II archeological survey for the Kansas Department of Transportation (KDOT) along Highway K-27 south of Goodland (Thies 2003). During the course of that survey, site 14SN321 was located at the south edge of a prominent playa east of Highway K-27 (Figure 1). Phase III testing was recommended, and carried out by KSHS staff in late March of 2004 (Weston 2004). This article will briefly summarize the project's findings.

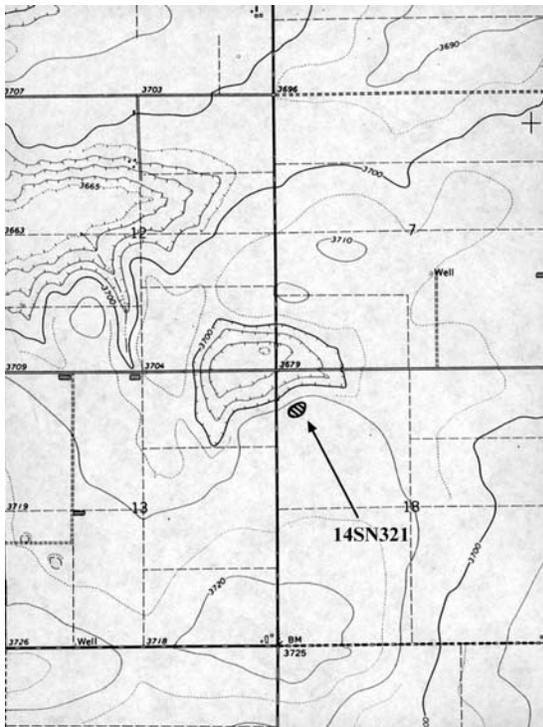


Figure 1. Section of U.S.G.S. topographic map (Goodland 7.5' quadrangle) showing the location of 14SN321 at the south edge of a prominent playa

Previous Archaeological Investigations

The highway project which will impact site 14SN321 consists of a reconstruction of Highway K-27 on offset alignment (east of the present roadway) from the south edge of Goodland southward ca. 6.5 miles. The proposed new alignment stays very close to the existing highway through most of the project's extent. One notable exception though, is the locality (3.5 miles south of Goodland) where the new alignment will divert to the east so as to avoid a prominent playa. Playa basins are of considerable interest, since they provide one of the few consistent water sources on the High Plains. In a region with little reliable surface water, they collect water after every rain. Even today with all the area's modern agricultural changes, playas still collect and hold a surprising amount of water (Figure 2). Given this fact, they have long been a magnet for animals of all kinds, and for the peoples who hunted them. In the project area, the present roadway crosses the playa at its deepest point, and several local informants told the field crew that it is often flooded after even a moderate rain. The site was located at the playa's southern margin, within the area of proposed construction impact.

Recent investigations in the Goodland area are relatively few in number. Some are associated with ongoing reconstruction of Highway K-27. KDOT has been upgrading this major north-south roadway in sections for a number of years. The nearest portion to have seen archeological investigation extends northward from Goodland to the Cheyenne

county line. Survey of this area covered several localities which possessed archeological potential, but no sites were located (Weston 1999). The most promising local investigations have been undertaken at the Kanorado locality, located near the community of Kanorado, some 20 miles west of the project vicinity. In that area, investigations at sites 14SN101 and 14SN105 have been conducted by the Denver Museum of Science and Nature and the University of Kansas Odyssey Institute. Investigators have located lithic artifacts in-situ with late Pleistocene fauna (Holen et al. 2003; Mandel et al. 2004).



Figure 2. Water standing in a playa basin near the Ehmke site (14LA311) in Lane County

Two other nearby High Plains sites (Ehmke and Winger) have been investigated, and are of particular interest here for their association with playas. The Ehmke site (14LA311) is located near Dighton in Lane County, southeast of the project area. It is situated on a hilltop at the southern edge of a large playa. A wide variety of cultural materials have been collected from the surface over a period of many years, ranging

from Paleoindian to Late Ceramic in age. Of particular interest is the presence of a Clovis point in the collection (Hofman and Hesse 2002). An even more promising site is Winger (14ST401) south of the project area near Johnson City in Stanton County. At that locality, a stratified late Paleoindian bison kill has been defined. Two Allen points and a flake tool were found within the bone bed, which is associated with a playa basin (Mandel and Hofman 2003).

Taken together, the presence of such sites in the project vicinity suggested that any prehistoric site associated with a playa basin was worthy of investigation. On this basis, the investigators approached site 14SN321 with the hope that it might contain significant cultural deposits.

Site Description

At the time the site was recorded in late 2003, the cultivated field in which the site is located was covered with harvested corn stubble. Persistent drought in the area meant that surface visibility was quite good (70-80%) among the rows. The site was discovered during deep testing on both the north and south sides of the playa. A total of eight backhoe trenches were placed along the proposed route of the new highway alignment. While excavating the most southerly trench (#5), a scatter of prehistoric artifacts was located (Thies 2003). Additionally, a possible lithic artifact (broken flake or shatter) was found in the wall of the backhoe trench at a depth of 82 cm below ground surface (bgs) (Figure 3). The trench location is in a loess soil, Ulysses-Keith silt loam, 0 – 1 percent slopes. The Keith-Ulysses soil association is prominent on the

High Plains tablelands and makes up a large percentage of Sherman County (Angell et al. 1973:3, 18). No prominent buried soils were observed, nor would any be expected in the site's specific setting (Rolfe Mandel, personal communication). Nevertheless, given the presence of a surface scatter and a possible sub-plow zone artifact, Phase III investigations were recommended.



Figure 3. North wall profile, backhoe trench #5. Trowel marks the location of broken flake or shatter

During the initial investigation of the site, a total of 27 unmodified flakes, 2 pieces of fire-modified quartzite, and 1 quartzite hammerstone were recovered. Despite careful examination, no temporally diagnostic artifacts could be located (Table 1). The lack of ceramics suggested a preceramic occupation, but with such a small collection it

was difficult to draw many conclusions. The flakes found on the surface provided fairly limited information regarding the site's occupation. None exhibited any evidence of heat treatment, and most (with the exception of one Alibates specimen) were derived from locally available jasper, chalcedony, and agate. Alibates agatized dolomite is, of course, available only in a restricted quarry area in the Texas Panhandle north of Amarillo (Banks 1990:91-92).

The property owner was unaware of the site's existence, despite having lived in the area for many years. It therefore seemed unlikely that sustained collecting could have been undertaken at the site without his knowledge, suggesting that the scarcity of artifacts was not related to surface collecting.

Test Unit Descriptions

When testing began in 2004, the cover of corn stubble remained, and surface visibility continued to be good (70-80%). Despite careful systematic examination though, only one additional artifact (an unmodified flake) was located on the site surface. In general, the test excavation strategy was designed so as to cover the limits of the surface artifact scatter, concentrating on the most likely portion of the site area. The location of filled-in backhoe trench #5 was quickly found, thus providing an established central point for the site's surface scatter. During Phase II survey, the surface artifact scatter was found to be roughly centered on the backhoe trench. Accordingly, it was chosen as the central reference point from which test units were located.

Three test units were placed in the site area. X-1 and X-2 were situated 10m east and west respectively from the backhoe trench, while X-3 was placed 10m to the north (Figure 4). Depths were measured with a line level from the southwest corner of each unit,

and all fill was screened over ¼ inch mesh (Figure 5). The units were excavated in 10 cm levels, with the only exception to this being removal of the plow zone as a discrete layer. Since the field crew suspected that the site might be entirely contained in the plow zone, this procedure provided a clear test of that supposition.

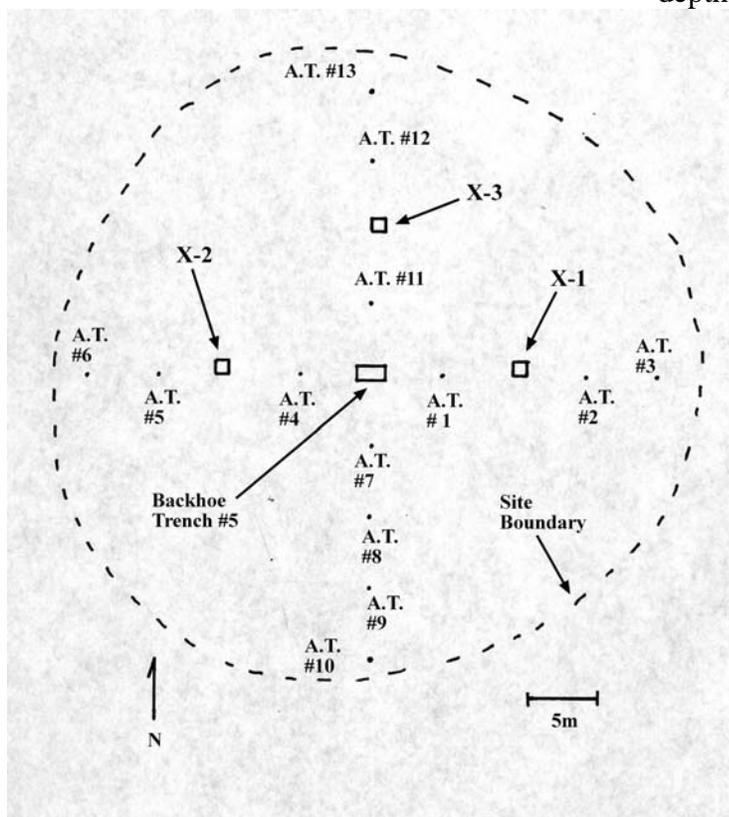


Figure 4. Site map showing the locations of backhoe trench #5, test units X1, X2, and X3, and all 13 auger test

Test Units

The three test units, X1, X2, and X3 exhibited strikingly similar stratigraphy (Figure 6). Each was excavated in ten levels. The first was a loose plow zone, ca. 12 cm in thickness. The fill consisted of loose light brown silt containing corn stalks and other crop residue. A clear transition to sub-plow zone sediments was evident at the level's

base. Levels 2, 3, and 4 were excavated through compact, light brown silt with some clay content. By the base of level 4 (40cm bgs), some threads of calcium carbonate had become visible. Levels 5, 6, 7, 8, and 9 (to a depth of 90cm bgs) were very similar, with all exhibiting light brown silt mixed with calcium carbonate threads. In general, the calcium carbonate content increased with depth. The final level (#10, 90-100 cm bgs) penetrated the parent loess and exhibited softer light brown subsoil with minimal calcium carbonate content.

Taken together, results from all three test units indicate that cultural materials were concentrated in the plow zone (Table 2). X1 was entirely devoid of artifacts, while all four artifacts recovered from X2 were in the plow zone. In X3, four flakes were recovered from the plow zone, while two small broken flakes were found in levels 5 (40-50 cm) and 8 (70-80 cm). Both are believed to have been carried downward from the surface via rodent activity.

The most notable artifacts were recovered from the plow zone in X2. They consist of one chalcedony end scraper and one base section of an expanding stem (probably corner notched) projectile point. While the projectile point fragment is so small as to make any definitive conclusions tentative at best, it does appear to be from a corner notched form, possibly suggesting an Early Ceramic Keith Variant cultural affiliation (Figure 7).

The Keith variant was originally defined by Marvin Kivett (1953) primarily on the basis of results obtained during excavation of the Woodruff Ossuary (14PH1) in Phillips County. It extends roughly from the eastern



Figure 5. Test excavations underway

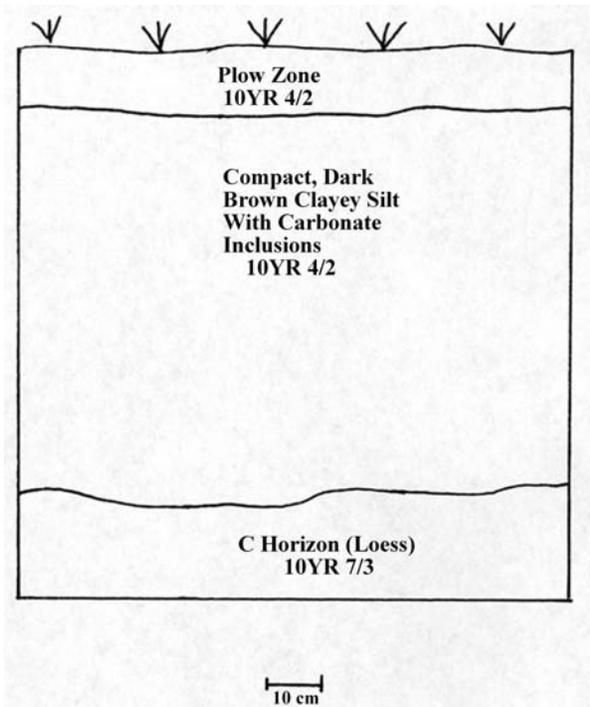


Figure 6. Generalized profile of test units X1, X2, and X3

border of the Plains across western Kansas and from the Platte River in Nebraska to the Arkansas River (Johnson and Johnson 1998:209). Radiocarbon dates suggest a temporal range from ca. AD 400 to 800 (Brown and Simmons 1987:XVIII-2). Keith variant sites generally consist of small camps associated with rivers and tributary streams.

Site 14SN321 likely represents the remains of such an encampment, though in a playa margin setting. A few Keith sites are relatively large, and exhibit shallow basins (which are likely house floors), along with scattered storage pits and post molds (Johnson 2001:168-169). Projectile point forms include medium to large corner-notched dart or atlatl points. Small, un-notched triangular arrow points are also found, demonstrating the shift toward use of the bow-and-arrow (Witty 1966). The single pottery type defined for the Keith Variant is Harlan Cord Roughened (Johnson 2001:169). It is a thick-walled pottery with cord marks usually oriented vertically, is tempered with calcite, and lacks decoration on the lip or rim.



Figure 7. Diagnostic artifact from X3

Unlike eastern Woodland and Hopewell groups, Plains Woodland or Early Ceramic groups did not use burial mounds, but rather reburied in ossuaries (Wedel 1986:86-87). Woodruff Ossuary (14PH1) is probably the best known (Kivett 1953). It contained 61 individuals, some associated with large numbers of disc-shaped shell beads, and represented a cross-section of the local population. It likely contained burials from habitations throughout the nearby area, periodically brought to be reburied in a central ossuary. The site's precise location was, until recently, unknown. However, documentary research, coupled with assistance from eyewitnesses, places its

location just north of the community of Woodruff along Prairie Dog Creek in northern Phillips County (Thies 2004).

Auger Testing

In addition to excavation of the three test units (X1, X2, and X3), systematic auger testing was undertaken. The investigators employed a 6 inch diameter hand-operated rotary bucket auger, and placed a total of 13 units at 5 meter intervals on an east-west and north-south alignment among the three test units (Figure 4). Each auger test was excavated to a depth of 100cm in 10cm intervals, with all fill being screened through ¼ inch mesh. The stratigraphy was nearly identical to that observed in the three test units. Only one artifact was recovered in the auger tests, that being an unmodified flake found in the first level (plow zone) of test #13 (Figure 4).

Summary and Conclusions

In summary, Phase III testing at site 14SN321 revealed rather limited information regarding the prehistoric occupation of Sherman County. The prehistoric artifacts suggest that the site's occupants were primarily utilizing locally available chert raw materials without employing heat treatment. One can reasonably infer that stone tools were manufactured at this location, and that some cutting/processing tasks were undertaken, as indicated by the presence of one end scraper. The fragmentary projectile point base suggests an Early Ceramic Keith variant cultural affiliation. The site's main research contribution is to reinforce the known pattern of prehistoric sites located along the margins of playa basins on the High Plains of western Kansas.

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*Phase III Investigations of Two Sites on the Proposed
Veterans' Cemetery, Fort Riley*

Donna C. Roper
Kansas State University

The Kansas Commission on Veteran's Affairs (KCVA) will construct a new state veterans' cemetery on a parcel of land that currently forms a part of the east edge of Fort Riley, in western Riley County. The National Environmental Evaluation and Remediation Consortium at Kansas State University performed the Environmental Assessment (EA) for this undertaking under the direction of Larry Erickson of the university's Chemical Engineering department. The archaeological portion of the EA process was directed and supervised by Donna C. Roper.

Phase II evaluation of the cemetery property was not required since the area had twice been surveyed and those surveys were determined to meet the requirement of Section 110 of the NHPA. During those surveys, each of which covered large areas and neither of which was for this cemetery, two prehistoric archaeological sites, 14RY117 and 14RY5150, were recorded on the specific property to be affected by the cemetery. The work conducted as part of the EA process for this cemetery consisted of Phase III investigation of each site. This work was performed over a period of about a month, from May 11 through June 7, 2004.

Site 14RY117 was observed during each of the earlier surveys, conducted across and beyond this property in 1992 (McDowell and McGowan 1993) and 1995 (Larson and Penny 1996). Objects observed during the first survey amounted to three flakes, one of which

was in an auger hole and thought to have been recovered from about a meter below the surface (McDowell and McGowan 1993:76). Objects recovered during the second survey amounted to one flake and a "crude biface" (Larson and Penny 1996:42). No cultural affiliation or site type could be determined at either time.

The 2004 investigations were conducted under excellent field conditions: surface visibility was essentially 100%, the field was recently disced, and precipitation had been more than adequate to settle the soil. Under these conditions, a considerable amount of surface material was observed. Phase III investigations, therefore, included intensive surface collection, topographic mapping, and excavation of 8 50-x-50-cm test units. From this were collected a medial segment of a projectile point blade (Figure 1a), a small early stage biface or bifacial core (Figure 1b), one endscraper (Figure 1c), one retouched flake, one small polyhedral core (Figure 1d), and 57 pieces of unmodified lithic debitage. The context of this material was very poor. The cultural horizon was in the A horizon of the surface soil, but repeated plowing and probably wind action had severely deflated the upper sediments. Preservation of the A horizon was spotty across the area of scatter. In short, the site was found to be largely eroded away, with only a surface scatter of artifacts remaining. Obviously it was determined to be not eligible for nomination to the NRHP.

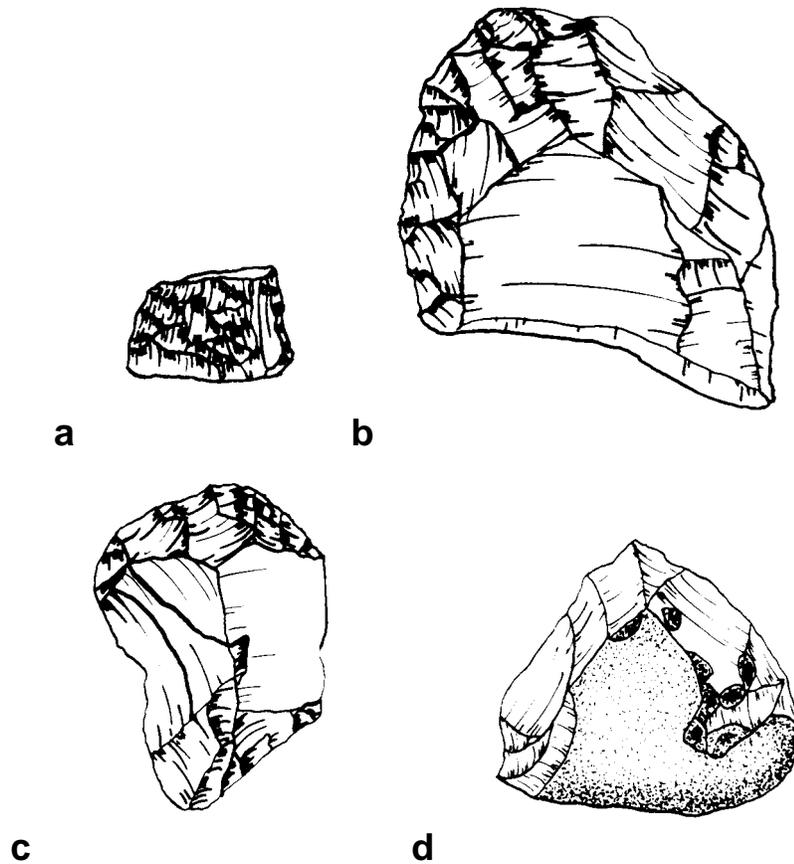


Figure 1. Artifacts from 14RY117: a-b) biface fragments, c) scraper, d) core (objects are shown actual size)

Site 14RY5150 was recorded during the 1995 survey. Two flakes were collected during that survey, and the locus was considered to be an isolated find (Larson and Penny 1996:109-110). The SHPO, however, determined that the 1995 survey protocol, including the transect spacing used at that time, was not adequate to determine if this really was an isolated find or was instead a site. The SHPO, therefore, requested a more intensive survey and, if warranted, a Phase III investigation.

The 2004 investigation, conducted under field conditions identical to those at 14RY117, showed literally with only a few

minutes of work, that 14RY5150 is not an isolated find and is an actual site. Phase III investigations included all the same elements of work as at 14RY117, except that 16 test units were excavated, 15 of them measuring 50-x-50 cm, the other a 1-x-1-m unit. From this were collected one projectile point (Figure 2a), one biface fragment, two endscrapers (Figure 2b-c), and 225 pieces of unmodified lithic debitage. The context overall is quite good. As at 14RY117, the cultural horizon is in the A horizon of a surface soil. Of course, a plowzone is present, but it does not everywhere across the site area penetrate completely through the A horizon. Thus, portions of the cultural

horizon are not plowed. In spite of this, though, it was determined that 14RY5150 is not eligible for nomination to the NRHP. We saw no evidence of features and no organic remains were encountered, which is no surprise since measured soil pH values ranged

from about 6.0 to 6.5. Although we do believe this is an in-place occupation, we doubted that further investigation would produce additional real information. It was, therefore, determined that the site was not eligible for nomination to the NRHP.

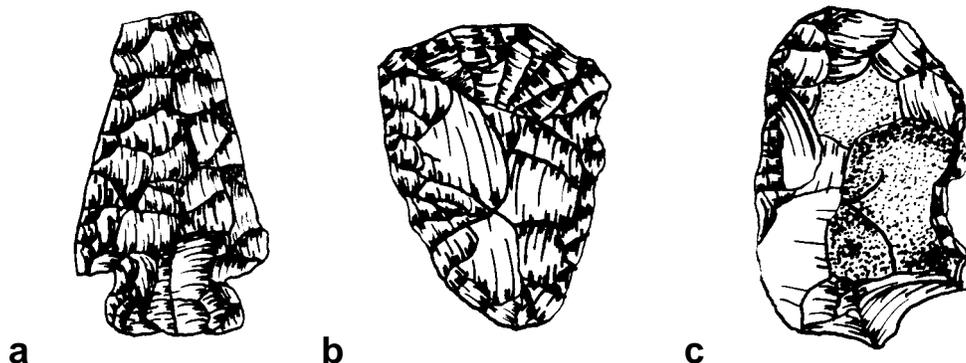


Figure 2. Artifacts from 14RY5150: a) projectile point, b-c) endscrapers (objects are shown actual size)

We did learn something about the nature of 14RY5150 during the Phase III investigations. Judging from the projectile point, the site is attributed to a Late Archaic occupation. It is on a high terrace with an excellent view of the Kansas River valley. It is highly reminiscent of the situation Roper (1998) observed at an Archaic site in the North Loup River valley of east-central Nebraska, where a small site on a hillslope afforded an excellent view of the river valley, and yielded an array of broken projectile points, scrapers, and lithic debitage. The biggest difference between the Nebraska site and 14RY5150—and 14RY117 too, for that matter—is that bone was preserved on the loess slope of the Nebraska site. In that case, the site was suggested to be a sort of lookout associated with a larger base site on a low terrace below it, and a place where some processing of animals was conducted. We

envision the two veterans' cemetery sites as having served a similar function.

Finally, the original plan was to conduct backhoe trenching across the sites and possibly elsewhere on the cemetery parcel to search for deeply buried cultural horizons. The justification was the results from a core Johnson and Abbott (1986:186) placed nearby and from which they concluded that the landform is “probably archaeological fair game.” Our evaluation of the topography and soil maps, for both the cemetery and where Johnson and Abbott placed their core, showed that the cemetery is on a high and very old Pleistocene terrace, while Johnson and Abbott cored a much younger late Pleistocene and Holocene terrace representing fill into an old meander scar the Kansas River had cut into the older Pleistocene terrace. Thus, the cemetery parcel has no potential to contain deeply buried cultural components.

The report of investigations is:

Roper, Donna C.

2004 *Phase III Archaeological Investigations of Two Sites on the Proposed State Veteran's Cemetery, Fort Riley, Riley County, Kansas*. Report to the Kansas Commission on Veteran's Affairs, Topeka. Department of Sociology/Anthropology/Social Work, Kansas State University, Manhattan.

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Acknowledgements

The Phase III investigations were conducted under contract with the Kansas Commission on Veteran's Affairs, and with a letter in lieu of an ARPA permit from Fort Riley. The collections and records are curated at Fort Riley. The crew included, although not all at the same time, HC Smith, Kirk Smith, Chris Beemer, Dustin Caster, and John Dendy. HC Smith, sometimes assisted by Kirk Smith, did most of the work to prepare the collections for analysis. Linda F. Williams prepared them for curation. The artifact drawings were executed by Cindy LaBarge.

McDowell, Jacqueline M., and Kevin P. McGowan

1993 *Phase I [sic] Archaeological Survey at Fort Riley, Geary and Riley Counties, Kansas*. Report to U.S. Army Construction Engineering Research Laboratory, Champaign, Illinois. Public Service Archaeology Program, Department of Anthropology, University of Illinois at Urbana-Champaign, Urbana.

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Abstracts of Several Reports Recently Submitted to the Historic Preservation Office

compiled by William E. Banks
Kansas State Historical Society

Bevitt, C. Tod, Rolfe D. Mandel and Anne M. Bauer

2003 Phase III Archeological Investigations of Site 14BU1305 and 14BU1308 at Whitewater Watershed Structure #29, Butler County, Kansas. Archeology Office, KSHS, Topeka. Submitted to

Whitewater Watershed Joint District No. 22, El Dorado. Copies available from the Kansas SHPO, Topeka. (Biblio Number 3331).

Abstract

Site 14BU1305 was identified within the area of potential effect of the planned Whitewater Watershed Structure #29 during a Phase II survey conducted in the fall of 2001. The site was found eroding from a short cutbank, approximately 1.2–1.5 m below ground surface (bgs). Phase III investigations were conducted in May 2002. The results of this work led to the conclusion that the site occupied a portion of an alluvial fan that extended onto the Fourmile Creek valley floor. Cultural activities associated with the site include faunal processing, food preparation, and lithic tool production and rejuvenation. While cultural materials were relatively dense they were also confined to a very small area due to: 1) the small size of the alluvial fan and 2) erosion by modern drainage from the same draw leaving only the periphery of the original fan intact. Phase III investigations removed nearly all intact deposits of substance. As a result, no further work is recommended for site 14BU1305.

Also during the May 2002 investigations, a large feature containing massive amounts of burned rock was found eroding from a nearby cutbank. This site, 14BU1308, was identified at approximately 4 m bgs and was initially recognized only as a large basin-shaped, rock-filled feature. Phase III investigation was recommended for this site and investigations were conducted in June 2002. Backhoe excavation of the overburden above and around the feature allowed for direct investigation of the cultural feature that was in danger of further impact from the adjacent creek. Excavation revealed a large oval-shaped basin 2.8 m long, 1.5 m wide (truncated by creek erosion), and 50–60 cm deep below the identified prehistoric surface. Massive quantities of burned rock lined the sloping walls and floor of the feature. Intermixed with the rock on the floor and

covering much of the lower portion of the feature was a lens of burned soil and organic material. Excavation immediately west of the feature uncovered evidence of a former living surface with a thin scatter of debris consisting of chipped stone debitage and bison bone. These remains make 14BU1308 eligible for listing on the National Register of Historic Places under criterion D (36 CFR 60.4). The Natural Resource Conservation Service has determined the undertaking would have an adverse effect on 14BU1308 and recommends Phase IV excavations to mitigate this adverse effect.

Bevitt, C. Tod and Anne M. Bauer

2003 Phase III Investigations at 14HO308: An Early Middle Ceramic Campsite on Buckner Creek, Hodgeman County, Kansas. Archeology Office, KSHS, Topeka. Submitted to Pawnee Watershed Joint District No. 81. Copies available from the Kansas SHPO, Topeka. (Biblio Number 3304).

Abstract

Site 14HO308 was identified within the area of potential effect of the planned Horsethief Reservoir during a Phase II survey conducted in 1986. Return visits to the site between 1992 and 1997 documented several diagnostic artifacts eroding from the site on the cutbank above Buckner Creek. The assemblages collected suggested a variety of activities including hunting, faunal processing (butchering and hide processing), tool manufacture and rejuvenation, and cooking/heating had occurred at the location. On the basis of the artifacts recovered during the initial Phase II investigation and subsequent visits, it was recommended that further investigation at the Phase III level be undertaken. Phase III was carried out in July 2002. The assemblage of lithic tools, debitage, ceramics, faunal remains, burned

earth, and fire-cracked rock recovered during Phase III corroborate the previously suggested activities. Cultural material from prior site visits was believed to originate from only one component, but the present excavation identified at least three relatively distinct cultural components in addition to a sparse, poorly defined component near the surface. Three of the cultural zones containing moderate to dense artifact frequencies were identified in the northwest portion of the site at depths of nearly a meter. Excavations identified two probable hearths in association with two of the buried components. Radiocarbon dating of material from these features confirms 14HO308 dates to the early Middle Ceramic period (ca. A.D. 1000). For these reasons the site is determined to be eligible for inclusion on the National Register of Historic Places under Criterion D. The Archeology Office of the Kansas State Historical Society recommends archeological investigations proceed to the Phase IV level to preserve the information available from this important archeological site.

Banks, William E., and Peter E. Wigand
2004 Reassessment of Radiocarbon Age Determinations for the Munkers Creek Phase. Paper presented at the 62nd Annual Plains Anthropological Conference, Billings, Montana.

Abstract

The cultural assemblages recovered from the William Young site, located in the north-central Flint Hills of Kansas, were used to initially define the Munkers Creek phase. Radiocarbon ages for the Munkers Creek phase have been obtained from a handful of other sites, and the accuracy of the radiocarbon ages from the type-site is suspect due to stratigraphic inconsistencies and extremely large standard deviations on all but

one date. Curated samples of wood charcoal from stratigraphically separate cultural levels at the William Young site were recently submitted for dating in an attempt to better ascertain the age range of the Munkers Creek cultural components at the site. The new radiocarbon ages are more precise and are stratigraphically consistent. These new assays and all other contemporaneous radiocarbon dates from other Munkers Creek phase contexts have an average age of 5259 ± 26 RCYBP with a three sigma range of 5180–5338 RCYBP. The sum of the areas under the polynomial curves using decadal means indicates the mean to be ~5240 RCYBP. The new dates and this statistical analysis have helped to refine our understanding of the Munkers Creek phase's temporal placement in the Kansas prehistoric cultural sequence.

Butler, Todd L., Christopher M. Schoen, and Susan E. Butler
2004 Phase III–IV Archaeological Data Recovery Investigations at Site 14CO1310, Cowley County, Kansas.

Abstract

The Louis Berger Group, Inc. (Berger) has completed a Phase IV archaeological investigation of Site 14CO1310. The following report details the results of both Phase III and Phase IV archaeological investigations at Site 14CO1310. This investigation was conducted on behalf of the Kansas Department of Transportation (KDOT) and is associated with proposed improvements to K-15 at its crossing with Grouse Creek in southeast Cowley County, Kansas (Project Number 15-18K 6413 01). The archaeological investigations were completed as part of the KDOT's obligations under Section 106 of the National Historic Preservation Act and 36 CFR § 800 to take

into account the effects of the undertaking on significant cultural resources.

Site 14CO1310 appears to represent a series of occupations consisting of at least four cultural components and potentially a fifth component including: a potential historic period occupation Osage camp (Component 1), a Late Prehistoric Great Bend aspect occupation (Component 2), a Early Ceramic occupation (Component 3), and two Late Archaic period occupations (Components 4 and 5). The Osage occupation was not confirmed during Phase IV investigations. Differentiation between Components 2 and 3 were not possible based on the stratigraphic deposition of these deposits. Undisturbed archaeological deposits associated with at least two Late Archaic occupations (Components 4 and 5) were identified at various depths ranging from 35 to 170 and 182 to 295 centimeters below the modern ground surface. The high degree of variability of depth between the two occupations is a direct result of the spatial location of the deposits on the T-1 terrace or terrace scarp and the amount of T-0 flood deposits accumulated in these areas.

The Phase III archaeological testing was completed by Wichita State University in the summer of 2003. The Phase IV data recovery investigation was completed by Berger in the fall of 2003. These investigations recovered stratigraphic information and artifacts that can

be used to address research questions about the Late Archaic period in southeast Kansas. Charcoal samples provided radiocarbon dates for several archaeological features and six postmolds and a large area of burning were suggestive of a possible living surface associated with Component 5. Lithic materials provide data about lithic resource use and technology. Bone, shell, and seed remains contribute information about subsistence activities.

The data recovery activities at Site 14CO1310, therefore, have satisfied the intent of the investigation, to preserve the site area to be affected by the proposed construction through data recovery. Much more of this important site is preserved outside of the project area. Thus, Berger recommends that no additional archaeological work be done within the proposed construction area of potential effect.

Subsequent to Phase IV data recovery investigations, the Kansas State Historical Society (Thies 2004: see Appendix M) conducted additional survey work for a proposed borrow area adjacent to the current project limits. Thies (2004) survey work delineated the site boundaries to the east outside of the planned project right-of-way. The site boundary utilized in the following report reflects Thies (2004) survey.

Another Solomon River Clambake? Salvage Archaeology at 14ML1590

Mark A. Latham

This short article details the salvaging of archaeological data at a Solomon River phase site 14ML1590 in the Glen Elder locality,

north central Kansas. The site contained at least one Solomon River phase house and a Late Plains Woodland habitation, but the site

was being destroyed when it was briefly investigated. The feature salvaged was a subterranean storage pit filled with mussel shells that appear to be from a one-time event. Essentially, the feature was filled with the discarded shells from a feast or what has been referred to as a clambake. Clambakes have been identified at similar sites and research will continue into the evidence and significance of feasting during the Central Plains tradition.

During survey work for my thesis in the Glen Elder locality of north central Kansas (Latham 1996), the author was informed about numerous archaeological sites. One of these sites was 14ML1590, a Plains Woodland and Solomon River phase habitation site situated on a terrace remnant overlooking the Solomon River below the Glen Elder Dam in Mitchell County, Kansas (Figure 1). A local informant reported the site to the author during the summer of 1995. At which time it was being destroyed by land leveling with equipment that included a belly scraper and front-end loader were in the process of removing the topsoil and the underlying soil. During the topsoil removal numerous artifacts and at least three features were exposed. One of the features was a Solomon River phase house floor, which was quickly sketched after it was exposed and subsequently removed by the belly scraper. To the northeast of the house floor was a pit feature filled with fresh water mussel shells. The author was allowed only limited time to recover this feature before the leveling operation reconvened. The third feature is a Plains Woodland midden or house floor that could not be investigated due to the time allowed. Previous uncontrolled surface collection over other parts of the site contributed to the low artifact recovery. This paper gives an overview of this destroyed site and a detailed description of the contents of the salvaged pit feature.

Site Setting

Site 14ML1590 is situated on a second terrace above the Solomon River. The meandering river has cut a series of channels across the broad T-2 terrace. Near the tree-lined river channel was the high terrace remnant, standing 20 feet above the rest of the tilled field and the portion left after a few days of mechanical stripping about 30 wide and 70 meters long. The crescent shaped terrace was truncated at the southwestern end by earth moving equipment. The high terrace soil was being spread across the field to fill in the channel scars and create a level field more suitable for a pivot irrigation system. The earth moving operation had removed the topsoil and spread artifacts, mainly chipped stone debris across much of the landscape prior to my investigation. A single large dark, essentially black, soil stain was exposed at the edge of a T-2 terrace that had not been completely leveled.

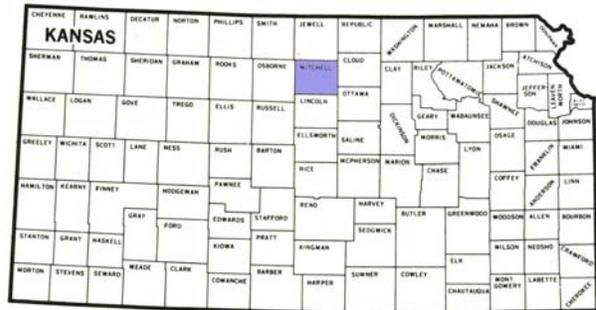


Figure 1. General Location of 14ML1590

Features

The oval shaped stain was measured quickly (Figure 2). The six pieces of daub collected from the soil stain, is evidence that this feature was a structure. From the visual inspection of the feature and the few artifacts observed, it was my interpretation that this was a Solomon River phase house floor. An adjacent pit feature contained the remains of a clambake, similar to one identified at

14ML15, another Solomon River phase site (Blakeslee 1999, Dorsey 1998).

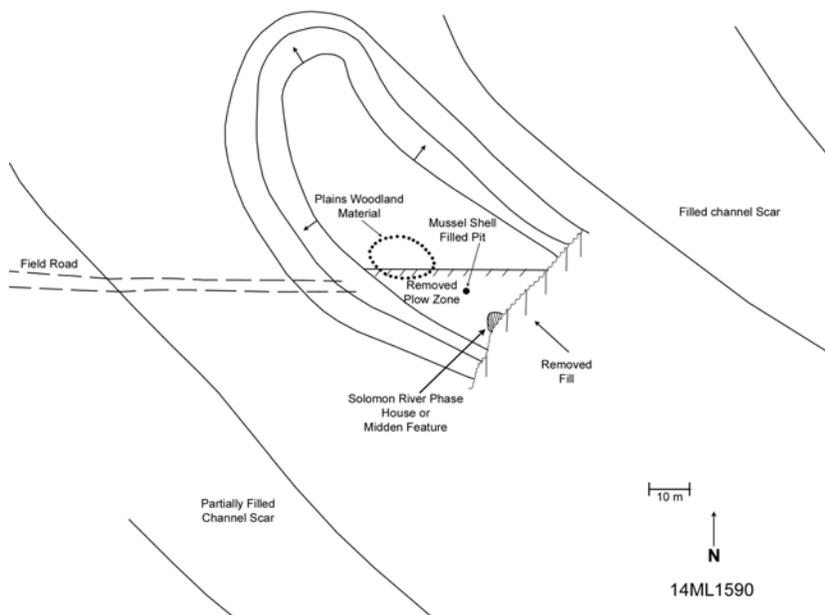


Figure 2. Site Map of 14ML1590

Artifact Descriptions

Several small artifacts were also recovered from the site, mainly from within the pit. Including four small ceramic bowl body sherds. These sherds were thin, ranging in thickness from 5.20 mm to 5.60 mm. They were all vertically cordmarked and appear similar to the bowl found in the clambake pit at 14ML15. Another clambake pit was identified at an Upper Republican site within the Medicine Creek locality.¹ Blakeslee (1999:106) speculated that the function of these bowls was to contain condiments, such as salt, for the clambake.

Three biface preforms were recovered from the pit, along with 16 broken flakes. All are of Smoky Hill jasper and all had been subjected to high heat, as indicated by the reddish color and pot lids across their

surfaces. The preforms were small, likely arrow point preforms, that range in length from 30.2 to 35.0 mm and width from 19.5 to 23.9 mm. Thickness of the preforms was fairly uniform as well, within a narrow range of 7.6 to 8.2 mm. The similarity in size and shape indicates that all three were produced expediently for use as arrow points. No finished tools were found in the pit, but it was full of discarded debris, so it is concluded that the preforms were also discarded.

Faunal remains identified at the site included several larger mammal bones that were observed being removed from the house area by front-end loaders and redistributed across the field. The few mammal remains recovered from the pit included a bison molar and 23 small fragments. The bone fragments are generally less than a centimeter square, similar to “commuted” fragments of bone associated with later stages of bone grease production. Four of the smaller bone fragments are heavily burned.

Clambake Evidence

About 7 meters to the northeast of the house was a 34 cm diameter basin pit. The pit was 24 cm deep and filled with fresh water mussel shells (Figures 3 and 4). Other materials found in the pit included bone fragments of large mammal bones, flakes of Smoky Hill jasper, preforms, small pottery sherds, and seeds.

The Minimum Number of Individuals (MNI) of the mussel shells identified was 300, with 290 Maple Leaf mussels (*Quadrula quadrula*), four Pyramid Pig-Toed mussels (*Pleurobena cordatum pyramidation*), and six

Paper-Shell mussels (*Leptodea laevis*). None of the mussels were very large and appeared to be in two age brackets. The majority (n=214) of the Maple Leaf mussels were under two years of age when collected and remaining 76 were between two and three years old. Pyramid Pig-Toed mussels and Paper-Shell mussels are found in large streams such as the Solomon River, whereas the Maple Leaf mussels are found in small to moderate sized streams (Murray and Leonard 1962).

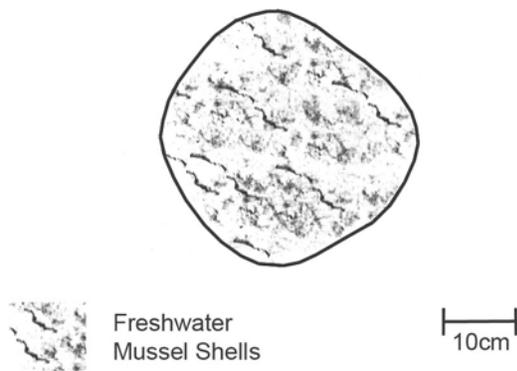


Figure 3. Plan View of Pit

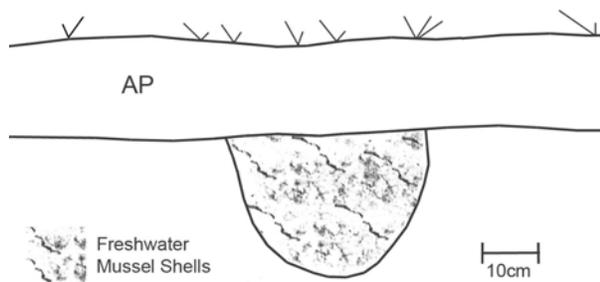


Figure 4. Profile of Pit

It appears this pit was used for storage prior to the clambake after which it was filled with the fresh water mussel shells and other debris. The most significant information gained from the excavation of this pit was that

concerning subsistence, as mussel shells, bone fragments, and seeds dominate the fill. The flotation processing of the fill around the mussel shells produced few botanical materials such as three hackberry seeds, two fragments of walnut shells, and charred fragment of a corn kernel. Essentially, the Solomon River people had a varied diet that included nearly every edible plant and animal found in the locality supplemented with small crops of corn and other domesticated plants. Clambakes appear to be unique feasting events that varied in size and frequency. It is unknown if the clambakes were undertaken when mussel populations were abundant, if it was a traditional aspect of life, or possibly a meal indicating a time of limited food supplies or starvation. Clearly more research needs to be conducted on evidence of feasting activities at Central Plains Tradition sites.

¹ Editor's Note: I know of several mussel shell pits at Medicine Creek. They are always associated with houses and nearby middens may be loaded with mussel shell.

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The Stauffer-Allison Collection

Donald J. Blakeslee
Wichita State University

Richard Stauffer, a retired art professor from Emporia State University, has been a life-long collector of archaeological materials. As a boy, he collected with his brother, the late Jim Stauffer of McPherson. Later, he taught his daughter, now Brendy Allison, to collect. Recently, Jim and Brendy and Brandy's husband Lee donated their collection to Wichita State University.

The collection includes material from 425 sites in seven counties, mostly in the Flint Hills. So far, about two-thirds of the collection has been transferred to WSU. A quick inspection of it reveals a few Paleoindian point fragments, including one nearly complete Clovis point, and numerous Archaic items, including Logan Creek points and hafted scrapers, a beautiful adze head, and Munkers Creek knives and axes. Among the Early Ceramic assemblages, there is a cluster of sites with Hopewellian pottery. Later complexes include some Middle Ceramic and Great Bend components, with a few historic Native American artifacts.

Dick and Brendy have kept excellent records for the collection, including site maps and field notes. They numbered all of their sites, and as the collection grew, they were forced to refine their system. Recently, Brendy has been working hard to obtain proper trinomials for all of the sites as they are transferred to WSU.

At WSU, materials from the collection will be used in museum displays (a temporary exhibit has already been opened), for classroom teaching, and as study collections. The Stauffers made a generous monetary donation, the income from which will be matched with federal work-study funds to provide support for students studying Plains archaeology. Dick, Brendy and Lee gave Bob Hoard, Don Blakeslee and Jim Dougherty a tour of some of the sites to determine whether one or more might be appropriate for a KATP dig. We will be learning from the Stauffer-Allison collection for years.

Lovewell Renaissance: Archaeological Investigations at Lovewell Reservoir, Jewell County, Kansas—2004

Brad Logan
Kansas State University

Over a three-week period in September 2004, archaeologists from Kansas State University and Burns and McDonnell Engineers, Inc. carried out a Phase III (NRHP evaluation) investigation of three prehistoric sites at Lovewell Reservoir, Jewell County, Kansas. They returned in November and December for Phase IV excavation of one of these sites. The findings of this work have opened a new vista to the activities of regional populations of the Late Prehistoric period and perhaps the Protohistoric period as well. They may resolve some aspects of critical research problems concerning relations between groups assigned to the Central Plains and Oneota traditions (Logan 1995, 1998; Ritterbush and Logan 2000). The project was undertaken through a continuing cooperative agreement between KSU, which subcontracted the fieldwork phase to Burns and McDonnell, and the Bureau of Reclamation.

In the summer of 2002 the author and Lauren W. Ritterbush had been directed to the sites by Mr. Dick Eckles, a local avocational archaeologist, and subsequently recorded them as Montana Creek East (14JW46), Montana Creek West (14JW47), and Phil (14JW48) (Figure 1). This last site was named for Phil Eckles, Dick's father, who had first noted pottery and other artifacts that were occasionally exposed on the lakebed following release of water from the reservoir for irrigation.

In addition to intensive surface survey, mapping, and test excavations at 14JW46, 14JW47, and 14JW48, approximately two

days were devoted to survey of other terrain that, like those on which these sites are located, was recently exposed when the reservoir was drawn down to allow for maintenance operations on the dam. The survey resulted in discovery of three other sites and a few find spots. During the testing project it became apparent that at least three of the sites, 14JW46, 14JW48, and 14JW49 (one of those newly recorded), deserved extensive investigation in order to mitigate the adverse impact of fluctuating water levels and of vandalism during times of exposure.

Funds were available for Phase IV excavation of the Phil site shortly after the test investigations. Thus, twelve days of fieldwork from November 15th to December 3rd were sufficient to expose all of the floor and associated features and artifacts of a Central Plains tradition house. This article summarizes the 2004 investigations and the research potential of the sites.

The Montana Creek Sites

Sites 14JW46 and 14JW47 make up the Montana Creek sites, East and West respectively (Figure 1). They are partially inundated by the waters of Lovewell Reservoir during normal and high conservation pool levels. Dick and Phil Eckles first noted artifacts in this area in the mid-1960s. At that time the site now designated 14JW46 occupied an island in the conservation pool between what had once been the lower reaches of Montana Creek and White Rock Creek. Since that time, fluctuating water levels (erosion and silt deposition) have modified the landscape

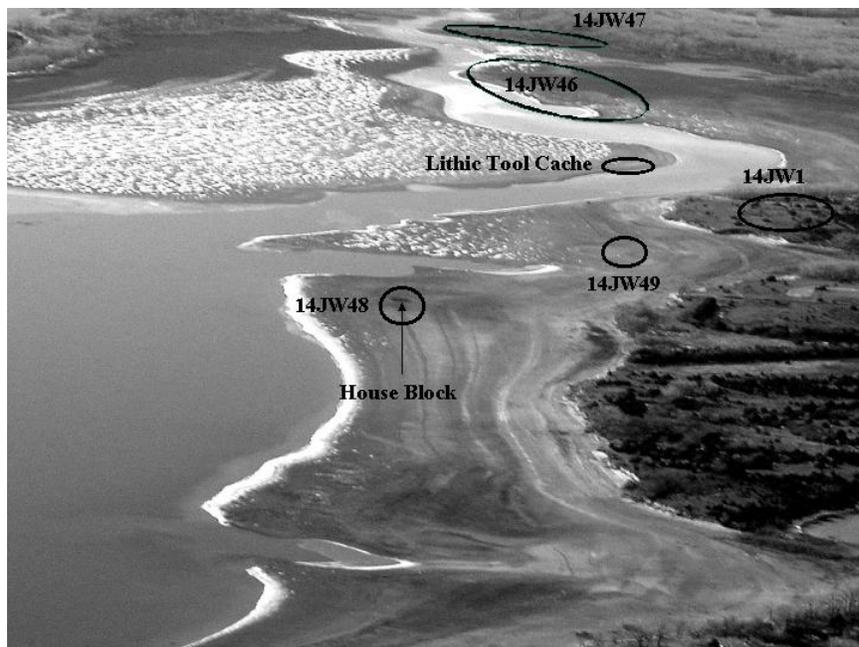


Figure 1. Aerial view of Lovewell Reservoir looking west and showing the locations of sites mentioned in the text

along what had once been the lowest reach of Montana Creek. A major portion of the site lies near what must have once been the east side of the mouth of Montana Creek. When exposed during periods of low water level, this area is littered with bison bone, some lithic debris, and other artifacts. Scattered artifacts have also been found upstream from the most exposed portion of the site along Montana Creek on small “islands” and along the left (west) terrace. Among the artifacts in the Eckles collection from this site are unnotched and side-notched arrow points, end scrapers, graters, drills, beveled knives, debitage, retouched flakes, three obsidian flakes, small disk shell beads, bone awls, a bone “pendant”, bison rib rasps, and a metal “pendant.” The arrow points, end scrapers, and beveled knives suggest Late Prehistoric and/or Protohistoric age. Given the proximity of this site to other Oneota sites (Warne, Intermill, and White Rock), this site was presumed to be Oneota. However, several artifacts differ than those of nearby White

Rock phase sites. These include slightly different forms of drills and graters, small disk shell beads, edge-notched bone rasps, the metal “pendant”, and obsidian flakes from Obsidian Cliff, Wyoming, and Wild Horse Canyon, Utah. (Obsidian analyses conducted by Richard Hughes and reported to Lauren W. Ritterbush, August 13, 2001.)

Site 14JW47, Montana Creek West, lies directly west of 14JW46 and occupies a strip of land between Montana Creek on the east and White Rock Creek to the south and west. The waters of Lovewell Reservoir inundate portions of this site during times of normal or high conservation pool. At other times much, if not all, of this site is exposed, although archaeological deposits are affected by occasional wave action or burial under flood deposits. Few artifacts, generally widely scattered, were noted on the exposed surface of the site when visited during low water level in August 2002. These included a polished, resharpened hafted knife, a crude Sioux quartzite grooved maul, bison bone fragments, and lithic debris. Previously reported finds from this site include an Oneota pot, grooved ax, and scapula (hoe?). The pot is a large, shell-tempered, smooth-surfaced jar with trailed lines that form sets of opposed parallel vertical and horizontal lines on the shoulder. It has a low rim decorated on the interior of the lip with a discontinuous horizontal trailed line (or series of long dashes). Certain attributes of this vessel are unique, and while it is clearly Oneota in origin its age cannot be determined solely on the basis of its stylistic and formal attributes.

The Montana Creek sites suffer from erosion and deposition caused by fluctuating water levels. Several shallow excavations were seen during visits in August 2002 and August 2003, indicating periodic looting. Ground cover at the sites ranges from none, soon after exposure, to dense cockleburs and grass after a period of exposure, and dense willows on higher terrain that is above normal conservation pool. Inspection of previously collected artifacts and of the surface of these sites suggested that their deposits are potentially significant for understanding the Late Prehistoric and/or Protohistoric periods of the region, particularly with regard to the movement of groups that focused their subsistence practices on bison.

Phase III Investigation: A team of five persons devoted nine days to investigation of the Montana Creek sites to evaluate their potential for nomination to the National Register of Historic Places. Our intensive survey found that the surface of both sites contained many bison bones, the great majority of them articular ends of appendicular elements. Their fragmented nature indicates marrow extraction was a major activity. Both sites also contained lesser quantities of lithic artifacts, pottery, and burned limestone. Montana Creek East is far more extensive, covering a band of terrain from 200 to 300m wide for 900m along White Rock Creek eastward from Montana Creek (ca. 22.5 ha). Montana Creek West is confined to a relatively narrow strip of land about 50m east-west and 400m north-south, though the great majority of surface material we recorded was within the northern 90m, an area of ca. 4500m². A total of 558 artifacts and artifact clusters were mapped at Montana Creek East; 29 were mapped at Montana Creek West. Of those mapped at the former, all but 99 were bone or bone clusters, a few of which also included flakes and sherds. The others were debitage, pottery sherds, a few

chipped stone tools, and burned limestone. Of those mapped at Montana Creek East, three were sherds, four were flakes, and the balance was bison bone fragments.

Given the relative paucity of cultural material on the surface at Montana Creek West, only one 1x1m test unit was dug there. A few bone fragments were found in the upper ten cm, eight of which were piece-plotted at the surface. No artifacts were found in the second level and the unit was then shovel-scraped through sterile soil without screening to a depth of 60cm to determine if the buried component found at 14JW46 (see below) was present in this area of Montana Creek West. While the buried soil horizon was found, it yielded no cultural material.

Fourteen test units were dug at Montana Creek East, ten in areas of greater artifact concentration. Of the latter, three were dug over a surface concentration of burned limestone that appeared to be a large hearth. Those units, as all others dug to explore the depth of surface artifacts, revealed a component confined to the upper 3-5cm. The limestone, though densely distributed over about 5m², had no definite shape that would suggest a particular function. It was associated with burned and unburned bone, flakes (including one of obsidian), sand-tempered pottery sherds, and a small amount of charcoal. It is likely that this conspicuous area of burned rock marked a hearth, though the alternative, that it was an area of hearth-cleaned and dumped debris, cannot be ruled out. Three units were dug over relatively dense areas of fragmented bison bone (Figure 2). In each case, excavation also revealed very shallow cultural deposits. One of these units, TU 7, was shovel scraped from 20cm to a depth of one meter without screening in order to locate the buried component found in TU 6 and TU 11. While a few pieces of charcoal, burned earth, and bone were found

from 40 to 50cm, this material appeared to be associated with krotovinae, suggesting it had moved downward from the surface component through rodent burrowing.



Figure 2. Surface of TU 7 at the Montana Creek East site exemplifying density and fractured nature of bison bone

Several artifacts, including a few cordmarked sherds, were found along the base of a scarp near what used to be the confluence of Montana Creek and White Rock Creek. These appeared to have eroded from the adjacent terrace fill. A series of four 1x1m test units was dug, one at the base of the scarp, two on the scarp, and one near the edge of the terrace tread. TU6, dug on the higher part of the scarp, yielded cultural material in the upper 30cm; the 30-40cm level contained markedly fewer artifacts. Indicative of a buried component, the quantity of artifacts, including lithic debris, burned and unburned bones, burned earth and daub, increased considerably from 40 to 60cm, dropped markedly from 60 to 65cm, and nearly disappeared below that depth to the termination of the unit at 70cm. A biface tip of Niobrara jasper was found at 56cm and a bone fragment was recovered at a depth of 66cm. In order to confirm the buried component in TU 6, TU 11 was excavated

just at the edge of the terrace a few meters north.

Fragments of burned and unburned bones, burned earth, debitage, and a scraper fragment were found in the upper 3cm of the first 10cm level of TU 11. Only two artifacts were found in the second level; pieces of bone, burned earth, and two flakes were scattered throughout the third; no cultural material was found in the fourth. This distribution suggested a rather shallow surface component, that which also extends across Montana Creek East. A buried soil was encountered in the lower portion of the sixth level (50-60cm), but only a few burned and unburned bone fragments were found. A significant increase in bone, debitage, and daub was found lower in this soil, in the seventh and eighth levels, including a long bone shaft fragment and rib shaft fragment at depths of 79 and 80cm respectively. Cultural material in the ninth level yielded numerous flakes, burned and unburned bones, burned stone, charcoal, and several piece-plotted artifacts, including a piece of burned limestone, a possible bison scapula fragment, pieces of worked antler, a nearly complete bison rib, two scapulae fragments, two complete scrapers of Niobrara jasper, a complete biface (knife?) of Niobrara jasper, and a biface fragment. Very few artifacts were found from 85 to 88cm, where the B horizon of the buried soil was encountered, and no artifacts were found from 90 to 95cm, the final level excavated. It is apparent from TU 11 that the buried soil horizon contains an archaeological component that predates the surface occupation. However, its age and cultural affiliation are unknown. A general age will be provided by a radiocarbon assay on a bulk humate sample from the A horizon of buried soil that was collected by William C. Johnson, University of Kansas.

Discussion: The cultural affiliation and age of the surface components at the Montana Creek sites are problematic. However, several artifacts from 14JW46 differ sufficiently from those of Late Prehistoric cultures of the region to suggest they are attributable to one or more cultures of Late Prehistoric or Protohistoric age.

Among these are several sherds of what appears to be a single vessel uncovered in four contiguous test units in a portion of the site that contained the greatest density of surface material. Three of the units were dug around the initial unit, which had been laid out over a single rim sherd and a few pieces of bone and which proved to contain several sherds. The other units also contained several sherds of a vessel with a smooth exterior surface, predominantly black but with some areas of light gray and yellowish brown, very fine sand temper, and a high, straight, undecorated rim. It ranges in thickness from 6 to 10.5mm. Other sherds of this ware were scattered elsewhere at Montana Creek East. This pottery is unlike the Walnut Decorated Lip ware that is diagnostic of the White Rock phase or the cord-marked wares that are indicative of the Central Plains tradition. It also differs from the Oneota vessel found by the Eckles at Montana Creek West and suggests that an as yet unidentified group occupied this area.

One of the bison ribs found during surface mapping is a rasp like those collected by Dick Eckles. The edge-notching of these ribs differs from the modification of bison ribs found at nearby White Rock sites, including one found in a bell-shaped pit at the White Rock site in 1993 (Anderson 1994:63). In those instances, the ribs exhibit shallowly scored grooves across the lateral surface of the bone. The bison rib rasps found at Montana Creek East are characteristic of Late Prehistoric and Protohistoric complexes of the

Southern Plains, such as the Plains Border variant, and of the Southwest and Midwest. In the latter region, they appear in Oneota assemblages (Ritterbush 2002).

Also recovered from the surface and one of the test units in this area of the site are four more flakes of obsidian. These may also be sourced, like those previously mentioned, to localities other than those represented by obsidian artifacts from the Warne site of the White Rock phase. Six flakes from that site have been geochemically matched to sources at Malad, Idaho and Obsidian Ridge, New Mexico (Logan et al. 2000). Finally, two triangular unnotched arrow points were found, one of a white chert and the other of Alibates agatized dolomite. The latter, like similar artifacts recovered by the Eckles, reflects contact with southern Plains groups.

It is apparent from the extensive nature of the surface component at Montana Creek East and its unique nature with regard to the ceramic, lithic, and modified bone assemblages of other sites at Lovewell Reservoir that it warrants NRHP nomination. It obviously represents encampment along White Rock Creek by a group not represented elsewhere in the locality, but one that, like the White Rock phase, was attracted to the area by bison. NRHP consideration is only strengthened by the presence of an earlier component, which appears to be more intact than that on the surface. The buried component has been shielded from the erosive affects of fluctuating water levels and the vandalism during times of exposure that have adversely affected the surface component. Montana Creek East contains the only recorded instance of stratified cultural horizons at Lovewell Reservoir, investigation of which will shed light on cultural dynamics in the region during the Late Prehistoric and, perhaps, the Protohistoric periods.

The Phil Site

Site 14JW48 appeared during low water levels on August 17, 2002 as a dense scatter of pottery, chipped stone debris and tools, bone, burned limestone, and a limestone pipe. No daub was noted. Surface sediments then exposed, prior to the growth of ground cover, were darker than surrounding deposits, suggesting erosion had revealed a previously buried soil horizon. The ceramics indicated a Central Plains tradition affiliation. While the Central Plains tradition is Late Prehistoric, the exact date of occupation by groups of that tradition along White Rock Creek is unknown. Because Oneota migrants also occupied this area during the Late Prehistoric period (Logan 1995, 1998), determining the time of habitation of the Phil site is critical to understanding relations during that period. Given the temporal and spatial overlap of the Central Plains and Oneota traditions, sites of both in this locality are potentially significant for understanding whether groups of them interacted or, indeed, ever met (Logan 1995, 1998; Ritterbush and Logan 2000). To date, no evidence of any interaction has been documented at a site of the White Rock phase. The absence of any sherds of White Rock pottery or any other artifact diagnostic of that culture from the Phil site suggests the same, at least for that component.

Phase III Investigation: A team of five persons devoted five days in September to investigation of the Phil site. Artifacts including several pottery sherds, chipped stone tools and debris, burned limestone, and charcoal were found over an area 136m north-south and 128m east-west (ca. 1.75 ha). Eighty artifacts and artifact clusters were mapped and recovered and ten 1x1m test units were dug in promising areas of artifact concentration. Seven of these were in the area of densest artifact concentration, an area 130m north-south and 60m east-west (ca. 7800m²) that correlates with a conspicuous

area of dark grayish brown soil. Four of the units were contiguous and their upper 15cm contained numerous pieces of pottery, two arrow point fragments, an end scraper, lithic debris of Niobrara jasper and Permian chert, burned limestone, charcoal, a bone bead, an antler awl, burned and unburned bones, shell, and daub. One of the units contained the bases of two burned, vertical posts below which the soil was noticeably softer in texture than that around it, though unchanged in color. The postholes were both 16cm in diameter and extended to depths of 24 and 40cm. These proved to be remnants of two of the supports of the eastern wall of a house that was completely excavated during the Phase IV investigation (see below).

Two other adjacent units were dug at a surface exposure of burned limestone. The southern one of these contained several large pieces of this material, as well as a large body sherd, a poorly preserved bison scapula, and a segment of a horizontal, burned wood post. The northern unit was nearly sterile. Later, during excavation of the house, it became clear that the southern unit was inside the north-central wall of the structure while that to its north lay just beyond it.

During surface survey, a continuous scatter of pottery and lithic debris was found and mapped well to the north of the dark soil patch. Three units were dug there to determine if this marked the true extent of the site, or reflected wave deposition of some artifacts during times of inundation. The latter proved to be the case, as only TU 9, the southernmost of the three units, contained subsurface artifacts. Despite the absence of buried cultural material, the northernmost unit was dug to a depth of 80cm. A buried soil horizon was found at 62-69cm and excavation of that horizon to the base of the unit did not reveal any cultural association. Dating and interpretation of this horizon is one of the

goals of anticipated geomorphological investigations by Bill Johnson.

Phase IV Investigation:

Shortly after the Phase III project and the submission of proposals to mitigate three of the sites (14JW46, 14JW48, and 14JW49; for the latter, see “Survey” below), funds were made available for mitigation of one of the Lovewell sites: 14JW48. This site was selected because it is the lowest in elevation of the three and therefore believed to be the most vulnerable to wave erosion. It had also yielded evidence of a Central Plains tradition house, study of which would provide considerable insight to Late Prehistoric adaptations in the Lovewell locality, particularly with regard to Central Plains tradition–Oneota relations.

Again, Kansas State University subcontracted the excavation of the Phil site to Burns and McDonnell Engineers, Inc. Mark Latham, Field Director, and Mark Darrow, who had both participated in the Phase III investigation of the site, provided continuity. Tod Bevitt, who had also been one of the Phase III team members, joined the Phase IV work during the final two days of excavation. In addition to these persons, 12 others contributed to the excavation. Fieldwork at the site occurred November 15-24, with the loss of one day to rain, and December 2-3. It entailed excavation of an approximately 8x10m block that fully exposed the floor of a structure ca. 7m (north-south) by 8m (east-west) in area (Figure 3).



Figure 3. View east of the Phil site house block excavation. Pin flags mark locations of postmolds and other features. When this photograph was taken, slightly less than half of the entryway had been exposed. It is marked by the cluster of flags about one meter north (left) of the exploratory trench

Early during Phase IV fieldwork, a series of contiguous units was dug eastward from the Phase III test units with the two postmolds (Features 1 and 2) and for a distance of six meters. A seventh unit was dug one meter beyond its terminus. The units of this shallow (10-20cm) trench were excavated to see if the house lay in that direction or if a second house might also be found in the area where many surface artifacts had been mapped during Phase III. Because cultural material lay shallow across those units and no features were discerned, the surface artifacts found east of the house are believed to have been part of a sheet midden. Interestingly, during

Phase III no surface artifacts were found where most of the house was eventually uncovered (a few isolated finds were mapped about 80m west of the house that, in retrospect, may be another shallowly buried component). Indeed, the postmolds then found and thought to be part of the western wall of a structure were instead realized as evidence of its eastern wall. In other words, nearly all the house fill proved to be buried just west of the Phase III test units without any surface indication of what lay beneath, attesting to the potential for discovery of even more Late Prehistoric components in buried contexts along White Rock Creek.

Parallel to and just one meter north of the exploratory trench we dug a series of 1m units and, adjacent to them to their north and south, partial units to expose an eastward extending entryway of the house that was ca. 4-5m long. The presence and location of the entryway were not suspected until the trench had been completed and much of the house floor had been exposed.

The house fill yielded a rich assemblage of pottery, chipped stone tools (arrow points, scrapers, knives, and at least one drill fragment), debitage, groundstone implements, burned limestone, burned and unburned bone, bone tools, and daub. Figures 4-6 illustrate some of the sherd clusters and large portions of vessels found. Figure 4 also shows Feature 3, a concentration of burned limestone initially thought to be the hearth. Associated with the stones were a bison mandibular molar and part of the base of a deer antler tool. The latter cross-mends to a worked tine (awl) found a few meters east in one of the Phase III test units. The true hearth (Feature 5) was subsequently found at the center of the

lodge 2m west and 75cm north of Feature 3. The fire pit was a roughly circular area of dense ash and highly oxidized soil about one meter in diameter and 15cm thick.



Figure 4. View of the Phil house floor showing Feature 3, a concentration of burned limestone, a large vessel fragment, and other artifacts

A single cache pit was found just west and 1.5m south of the hearth. Its orifice was 60cm in diameter from which its shaft descended 30cm before belling to a maximum diameter of 1.13m at its base 1.02m below the house floor. As we had suspected of any such feature, given a peek at the water at a depth of 75cm in a core hole made by Bill Johnson for geomorphic inspection about 20m north of the block excavation, most of the cache pit fill lay below the water table. The upper 42-45cm of the pit, most of which was the cylindrical access shaft, was above the water line and it yielded a few artifacts and, just at the water line, pieces of burned wood and limestone. This suggested that the pit was open to that approximate depth when the house burned. From below the waterline, the mucky fill

yielded several potsherds, pieces of burned limestone, debitage, an arrow point, an end scraper, the distal end of the humerus of a canid that exhibits cut marks, and the proximal end of the long bone of a bird. Most of the pit fill from below the water table was recovered, drained, and saved for flotation. Both that task and photographing the feature at its watery base required its intrepid excavator (Mark Darrow) and a “bucket brigade” to bail the pit as quickly as possible before it filled again with water.

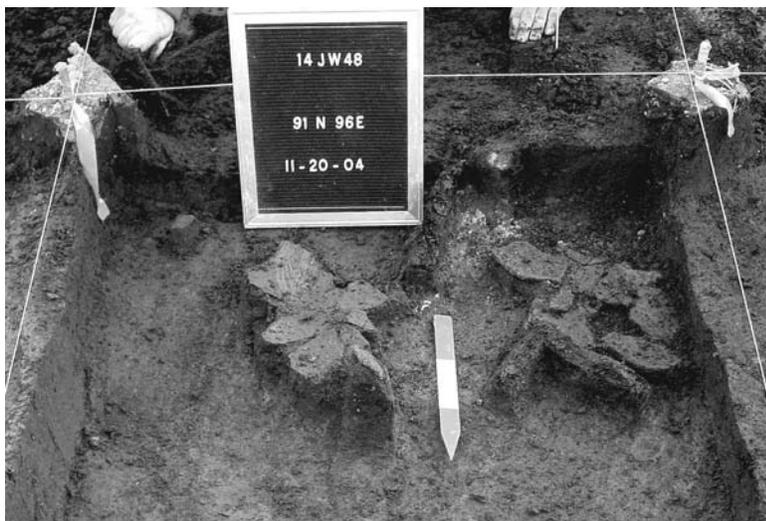


Figure 5. A concentration of pottery sherds near the center of the Phil house floor

Forty-nine postmolds were found, including the two documented during Phase III. At least four are larger internal supports that form a rough square around the hearth. These are from 20 to 23cm in diameter and from 16 to 50cm in depth. Peripheral and entryway posts varied in diameter from 8 to 15cm and in depth from only 3 or 4 to 50cm. All but two of those recorded during Phase IV were discovered in the same manner, that is, by probing with the wire of a pin flag and spooning out the noticeably softer fill that distinguished them from the more compact soil around them. In a few cases, rodents had burrowed across or through these features. It

is possible that some postmolds had been so thoroughly disturbed in that manner that they were not found. In several cases postmold fills contained charcoal probably derived from the posts that had burned to floor level. The burned, lower portions of two adjacent posts were found in the northeastern corner of the house to depths of 15 and 26cm below the house floor. Extensive evidence of the burning of the structure was found in the form of remnants of charred supports on the floor (Figure 5). Whenever possible, these were pedestaled, mapped, and wrapped in foil for removal to the KSU Archaeology Lab, where they have been dried and rewrapped for analysis and radiocarbon dating.

Due to the onset of cold weather, only 150 bags of the house fill were water screened at the station established on the lake about 200m west of the excavation. More than 1,000 bags remain to be screened pending additional funding and warmer weather. Fill from all 52 features and a standard (5gl) sample from the southwestern quadrant of excavation units were also retained for flotation, a process that also remains to be done. At this writing, we also anticipate funding to undertake the analysis and report preparation phase of the project. But it is clear from the data at hand that the Phil site represents a Central Plains tradition occupation of the Lovewell reach of White Rock Creek heretofore documented only at three burial sites (Neuman 1963; Thies 1982) and one other habitation. The latter is the Johns Creek site (14JW34), the subject of test excavations done last year by the Kansas Archaeological Field School (Logan and Ritterbush 2003). No evidence of a house had been found at Johns Creek and only a modest assemblage of ceramic and lithic artifacts was recovered. Yet as the following section

makes clear, the Phil house is not a singular incidence of Central Plains tradition lodge occupation at Lovewell.



Figure 6. This artifact concentration near the northwestern corner of the house indicates how some debris on the floor was exposed at the time the structure burned. A charred beam lies across a severely burned and fractured bison scapula and several sherds of one vessel. The latter are warped and their surfaces checked by intense burning

Survey

During a hike along the lakebed from Montana Creek East to the Phil site a team of three persons encountered another Central Plains tradition site ca. 400m west of the latter and on the same surface (Figure 1). Subsequent survey and mapping of the site indicated most of its surface artifacts were within a rather small area 26m north-south and 32m east-west. These included pieces of burned limestone, several in a distinct cluster, bone (e.g., a bison scapula fragment), several rim and body sherds, a complete and well-made side-notched arrow point of chalcedony, debitage, and daub. Fifty-nine artifacts were piece-plotted. It is likely that this site

(14JW49), just across an unnamed tributary of White Rock Creek from the latter, also has remains of a lodge that is threatened by continued wave erosion, inundation, and vandalism.

One day was devoted by three members of the Phase III crew to cursory survey of the exposed lakebed on the south side of White Rock Creek from a point opposite the mouth of Montana Creek to another across from the Phil site. Much of the limited time was invested in documenting two previously unrecorded sites and nine find spots. Of the latter six were isolated bison bones or small concentrations of them (none was associated with cultural material), two were isolated jasper flakes, and one was a jasper biface fragment. Of the sites, one included two flakes, a jasper blade, and a few bison bones. At the other a number of bison bones were found and among those recovered are a bison vertebral column complete from atlas to second thoracic vertebra, two humeri, and a radius. A few meters from these the team found six small sherds of plain, finely sand tempered ware of unknown cultural affiliation, an end scraper of Niobrara jasper, two small flakes of the same material, a small metate of Sioux quartzite, and a few bone fragments.

The latter site also contained a cache of lithic tools associated with a bison scapula hoe (Figure 7). Mark Latham, its discoverer, initially discerned the edge of a jasper knife and the glenoid portion of the hoe protruding from the soil just a few meters from the water's edge. The rest of the feature was shallowly buried and, given its potential significance and vulnerable nature, it was excavated, mapped and photographed.

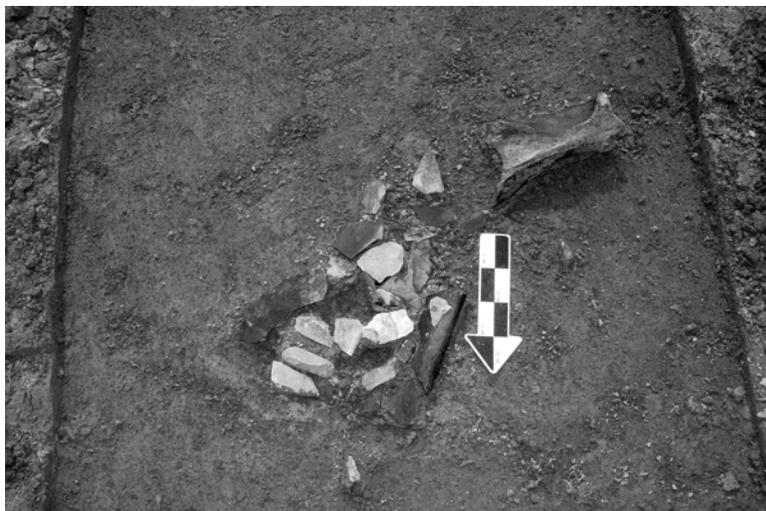


Figure 7. Bison scapula hoe and lithic cache at one of the sites discovered on the south side of the reservoir bed.

It is evident that the chipped stone tools had been placed, perhaps in a perishable container such as a leather bag, on the blade of the scapula. All but four of the artifacts were directly associated with the hoe. The others, all small end scrapers, were found within 25cm of it and were probably part of the cache. The other 23 items are seven end scrapers, four of Niobrara jasper and three of Permian chert, and blades and flakes that exhibit either bifacial or unifacial edge retouch, beveling, or nibbling consistent with use as cutting tools. Of the latter, five are Niobrara jasper and the rest are bluish gray to dark gray chert probably of Permian sources. The cultural affiliation of the cache is unknown but Late Prehistoric to Protohistoric age is likely given that its geomorphic context is like that of nearby sites such as 14JW48 and 14JW49. Though the cache site is opposite White Rock Creek from the White Rock site (14JW1), proximity is not sufficient to suggest a common cultural affiliation (Figure 1). Dick Eckles has noted several “caches” of lithic tools on the south side lakebed of the Reservoir (personal communication to author and Lauren W. Ritterbush, November 3, 2001). 14JW5, an

isolated find and cache of two nearly complete bison scapula hoes, was recorded in that area about 350m south of the lithic/hoe cache during the 1991 survey by the Museum of Anthropology, University of Kansas (Logan and Hedden 1992:34-37).

A final endeavor during the September fieldwork was tying the mapping points of all investigated sites to a permanent benchmark on Pawnee Point, which is within the

boundaries of the White Rock site. I had used that convenient benchmark as the datum for work at the White Rock site from 1992 to 1994 and hoped to link it to those tested this year. Doing so required establishing a mapping point 75m south of the benchmark, from which I was able to sight the latter and the mapping points of 14JW46/47, 14JW48, and 14JW49. I was also able to obtain sights of the lithic/hoe cache and all other finds on the south-side lakebed. Though GPS fixes had been obtained at all these sites and find spots, use of the EDM from Pawnee Point enhanced the precision of their spatial relations and will facilitate any future attempt to relocate mapping points that may be lost through periodic inundations.

Conclusions

The reach of White Rock Creek that is inundated by Lovewell Reservoir has for many years provided significant information about a westward, Late Prehistoric migration of Oneota groups ca. AD 1300-1450. One of the most critical problems about that movement has been to determine whether the migrants, manifested archaeologically as the White Rock phase, encountered and interacted with groups of the Central Plains tradition in that area. Data recovered from the sites investigated this year may resolve, or at least refine, that problem. At present, there

seems to have been no contact between these groups. No site at Lovewell has yet yielded evidence of contact or exchange. Indeed, it is remarkable given the proximity of the Phil site and 14JW49 to the White Rock site (Figure 1) that no sherd of White Rock ware has been found at either of the former sites and neither has any Central Plains tradition pottery been found at the latter. The Phil house yielded considerable quantities of burned wood radiocarbon dating of which will hopefully tell if its occupation was contemporary with that at White Rock. My present hypothesis is that the CPT presence preceded White Rock, ending sometime before AD 1300.

In addition to the significance of Central Plains tradition sites at Lovewell for understanding Late Prehistoric cultural dynamics with regard to Oneota they are important for the information they will provide about regional variability in the Central Plains tradition. The reader will note that my reference to non-Oneota, Late Prehistoric sites at Lovewell has been at the "tradition" level and that I have not assigned them to a particular phase (Upper Republican, Smoky Hill, or Solomon River). This is because I share the current concern among Central Plains archaeologists about the integrity of phase-level taxa that have been recognized in the region and whether they continue to be of any use beyond that of general, spatial reference (cf. Blakeslee 2002; Logan and Beck 1996). It is more likely that the groups we identify as belonging to a Central Plains tradition were members of a widely dispersed population with much in common, who shared information and exchanged goods down-the-line or across several localities. Variation in settlement-subistence patterns, household architecture, lithic resource procurement, and other cultural activities across the region may reflect differences in environmental factors through

space and time (Roper 2002) and group distance (I have suggested the latter for Nebraska and Steed-Kisker phases; Logan 1998).

While other Central Plains tradition sites have been documented in Jewell County and at least one house has been excavated (i.e., the Bud Hill site on Buffalo Creek), little information from them has been disseminated. Sites such as Phil and 14JW49 not only increase their number, they help fill a geographical gap with respect to Central Plains tradition between the Harlan County Reservoir locality on the Republican River in Nebraska and the Waconda Reservoir locality on the Solomon River in Kansas. Moreover, their proximity to sites assigned to the Smoky Hill phase to the south and southeast, on the lower Solomon, Smoky Hill, and Republican Rivers, also raises the issue of taxonomic integrity and the need for revision in that regard as well (cf. Hedden 1992, 1994).

One would hope that the stratigraphic relation of the two components at Montana Creek East would support a hiatus between Central Plains tradition and Oneota at Lovewell. However, the upper component there does not appear to have been White Rock phase, or even Oneota (despite the singular pot of that tradition from a cache at Montana Creek West) and the lower component is only tentatively identified as Central Plains tradition. Indeed, the identity of the cultural affiliation of the surface component at 14JW46 is problematic; it may indicate a later, possibly Protohistoric, occupation. However, whatever group encamped there shared with the White Rock phase an economy focused intensively on bison.

After many years of being the focus of archaeological research concerning its Oneota inhabitants, Lovewell Reservoir has now

revealed a new facet concerning the Late Prehistoric period, and perhaps the Protohistoric. It is likely that evidence of long-term occupation along White Rock Creek by Central Plains tradition groups was not recognized by previous investigators, including this author (whose previous surveys had found only one site on its tributary, Johns Creek), because it lay in a buried soil below the first terrace, beyond reach of agricultural disturbance. While we can be grateful that the waters of Lovewell Reservoir have exposed this evidence for us, we must now race against them as they continue to erode it.

Acknowledgements

I am grateful to the Bureau of Reclamation and Bill Chada, Archeologist with the Nebraska-Kansas Area Office, for recognizing the need for the investigations described here during a critical window of opportunity and for providing the necessary funds to do them. Thanks to Rob Unruh, Rick Cleveland, and other staff of Kansas Wildlife and Parks at Lovewell for logistical support and patience. Burns and McDonnell Engineers, Inc. provided key personnel for the fieldwork phases and I am grateful to Dan Shinn for making that possible. It was my great pleasure to work with Mark Latham, Field Director, throughout the projects. His experience, resourcefulness, and dedication are beyond measure. Thanks also to the crew he supervised, particularly to Mark Darrow and Tod Bevitt, who were there during both phases. They really know how to move dirt! This alludes not only to their outstanding expertise as excavators, but for their helping Mark Latham and me move a thousand bags (1,020, but who's counting?) of the Phil house fill (sounds redundant, but it's not) from Two Mile Road to a haven four miles away, where they await spring water screening. Thanks also to Mark D. for connecting me with Justin Reed, who piloted us over the project area for aerial photography and took excellent close-

ups of the block excavation at the Phil site. Bob Thompson and Ransley Welsh were great help during Phase III. Bob must have hiked a hundred miles (or felt like it) with the prism to map the hundreds of bones and other material at Montana Creek and all the other sites we investigated. My thanks also to the crew that excavated the Phil house. Most of them worked through some really cold days and, because of hunting season, were inconvenienced by moves between two motels and cabins with hard bunks: Heather Applegate, Todd Bevitt, Bob Brandon, Mark Darrow, Sarah McIntire, Melanie Naden, Selwyn "J" Nash, Wes Neal, Trever Murawski, Alejandro "Alex" Pineda, Jack Ryan, Kirk Smith, Craig Southern, and Dustin Walker. I am grateful to Bill Johnson for his continued work at Lovewell Reservoir and his insights about its geomorphology. We are all indebted to Dick and Phil Eckles for providing information about the Montana Creek and Phil sites. Dick took the time to lead us to them and we appreciate his efforts in getting them the professional attention they deserve. Finally, thanks to Lauren Ritterbush for continued discussions about the data as they came out of the ground. She would have preferred to be in the field with us digging the sites she helped explore and record, but her teaching responsibilities at KSU took priority. Now we have our work cut out for us.

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Radiological Examination of a Rifle and a Pair of Revolvers from a Native American Burial Site, 14KW310, in Southern Kansas

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Discovery and Excavation of the Bissitt Site

The Bissitt Site, 14KW310, was discovered and excavated in a sand hill blowout in 1940 by two local residents—Bernard Graff and Vollie Sturgeon (Anonymous 1940a; Lees 1992:213; Feagins 2004b). The site is located north of Greensburg in north-central Kiowa County, Kansas. The site is in the south-central part of the state (Figure 1), in the upper reaches of the Rattlesnake Creek drainage south of the Arkansas River. At that location a few skeletal elements and numerous historic burial goods were recovered by the grave's discoverers. Their excavation was mentioned at the time in two newspaper articles (Anonymous 1940a, 1940b). Near the head of the grave a "rough stick of wood" had been placed (Anonymous 1940a). Other than that, there are very few clues as to the arrangement of burial furniture.

The Skeletal Remains

The burial was that of a single young adult. Over the years, the skeletal remains were closely examined on four occasions by different physical anthropologists—Kim Schneider, Peer Moore-Jansen, Michael Finnegan, and an unidentified physical

anthropologist associated with the Smithsonian Institution (Lees 1992:228; Anonymous 1940b after Hoover 1940; Finnegan 1998; Feagins 2004). A small

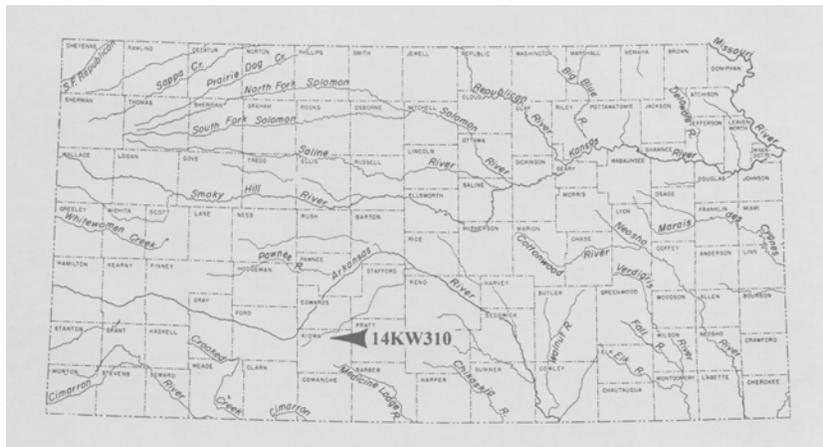


Figure 1. Location of the Bissitt Site, 14KW310, in Northern Kiowa County, Kansas

sample of dark human hair is with the collection. Numerous bones, including many vertebrae, were found (Anonymous 1940a); however, it appears that portions of four skeletal elements were the only bones retained by the excavators. They were, "Disparate pieces of the right proximal humerus, glenoid cavity of the right scapula, distal radius and sternal two-thirds of the right clavicle" (Finnegan 1998). Based solely the skeletal remains the race was indeterminate and no consensus could be reached on the sex

of the individual. However, when considering the 1860s-1870s artifacts associated with the burial, they seem to be representative of what one would expect to find with a Native American male.

Summary of the Artifacts from the Bissitt Site

William Lees has previously presented a broad description of the burial artifacts (Lees 1992), and a detailed study of 13 metal hair plates from the site has been completed by Feagins (2004b). This material (UBS1991-7) is part of the unmarked burial sites collections at the Kansas State Historical Society. The Bissitt site collection includes: two “bullet” type buttons attached to a brass chain; seven U.S. general service buttons; two “German silver” finger rings; 12 shell hair pipes; 13 metal hair plates; a lead alloy cross; 30 glass beads of (at least) three types; feather, cordage and textile fragments; a wood frame mirror decorated with brass tacks and red paint; a sample of a reddish yellow pigment; fragments from a small iron container; fragments of an iron bridle bit; wood and leather pieces from a saddle; a harness ring; a cinch buckle; a “German silver” headstall and parts of another; a stirrup; an iron hatchet; an axe; a knife; an iron awl; possibly two whetstones; part of a lance (made from a sword blade); a “Kentucky” rifle; two model 1851 Colt Navy revolvers; three lead bars from the St. Louis Shot Tower Company; four .55 caliber lead balls; and an iron arrow point (Feagins, personal observations; Lees 1992). None of these items would be unusual in a male Native American burial during this time period. Certainly, the many weapons and related items would much more likely be associated with a male burial rather than a female interment.

The Radiographic Investigations

What follows will focus on the percussion weapons recovered from the burial

that were subjected to radiological investigations—CAT scan and standard x-ray technology. The primary purpose of this investigation was to determine if these three weapons were loaded or (in one case) fully loaded when placed in the burial. However, additional details concerning these weapons were also noted. Also a number of related questions were generated during this research. One important advantage in subjecting these artifacts to a radiological study is the non-disturbing and non-destructive nature of this type of research.

Over a period of a few years, a number of other artifacts from unmarked burial sites in Kansas have been investigated using a radiographic method of research and documentation (Feagins 2001). The Computed Axial Tomography (CAT) scans and the standard X-ray images were obtained by Randy Ritchie and Rory Ritchie at the Independence Regional Health Center in Independence, Missouri. A Marconi MX8000 (multi-slice helical) scanner and a mobile OEC fluoroscope with a C-arm were used during this investigation.

The “Kentucky” Rifle

The barrel and a portion of the lock from a “Kentucky” rifle (Lees 1992:215) were closely examined. [The rifle was most likely produced in Pennsylvania rather than Kentucky.] Unfortunately (or fortunately in some ways), the iron from this artifact was heavily oxidized. This rust enabled additional information to be obtained as it contained pseudomorphs of the wooden foregrip along the bottom of the barrel and textile layers elsewhere on the barrel of this weapon. Also glass beads along with other seed bead impressions were found on the distal end of the lock plate. In addition, there was a small amount of wood adhering to the rust under the tang of the breech-plug behind the lock plate. The other pieces of this weapon (the main

part of the wooden stock and the brass trigger guard, butt plate, and patch box cover) were not closely examined since the primary purpose of this investigation was to determine if the rifle was loaded at the time of burial.

The Rifle Barrel

The total length of the barrel is octagon-shaped in cross-section. Its minimum diameter is 26.65 mm. The barrel with breech-plug is 116.7 cm (45.9 inches) long

(Figure 2). Measuring the diameter at the muzzle opening was hindered because of rust. Lees (1992:215) states that the rifle's caliber is between .50 to .55 and that the four .55 caliber lead balls in the collection were probably for use with this rifle (1992:217).



Figure 2. "Kentucky" Rifle Barrel and Lock from the Bissitt Site, 14KW310

The rifle contains a front sight but surprisingly no evidence of a rear sight was observed. While it seems rather unlikely, it was possibility obscured by rust. Of course, a rifle would be expected to have both sights. The front sight is 10.8 mm wide and 1.0 mm high and is located 27.2 mm from the muzzle end. The sight platform is 8.35 by 12.8 mm in size.

(Figure 3). A pseudomorph is, "a mineral, usually a metal corrosion product that completely covers and replicates the form of a perishable object such as a yarn or feather" (Drooker 2000:272). No textile pseudomorph is found along the bottom of the barrel as that portion was mostly covered by the wooden foregrip of the stock. That area contains wood pseudomorphs.

The barrel was fastened to the stock (including the foregrip) with three metal tabs spaced along the bottom of the barrel and by a large screw through the breech-plug tang. Each tab contained a small hole which was used to secure the barrel with a metal pin to the wooden forearm. These attachment tabs were located at distances of 9.7 cm, 50.1 cm and 90.8 cm from the muzzle.

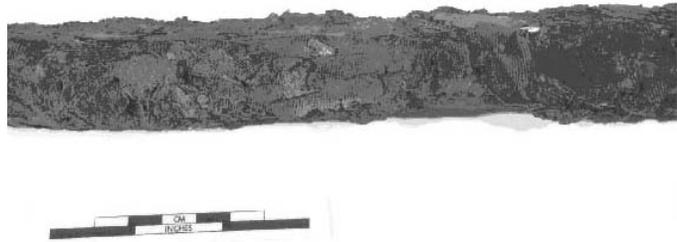


Figure 3. Detail of Textiles and Foregrip Wood on the Rifle Barrel from Site 14KW310. The barrel is inverted; thus, the wood pseudomorphs are at the top and the textile pseudomorphs are at the bottom in this view.

Clearly, some areas, if not most, of the rifle barrel were in contact with cloth when placed in the burial. There were two types of multi-layered textiles recorded in the pseudomorphs of iron oxide along the barrel

At one location on the barrel there are six layers of textile (counting folds of the same material in a few cases). Textile number 1 is woven in a twilling (Drooker 2000:274; Montgomery 1984: 368-369) weave. What I am calling, the weft thread passes over two warp threads and then under one, after that the sequence is repeated. The warp threads pass under two weft threads and then over one, etc. Of course, viewing the other side of this textile would give a reverse appearance. The twist of the warp threads was rust obscured and could not be determined. The weft threads were “S” twisted. The weft thread count is approximately 18.52 threads/cm (47.04 threads/inch) and the warp thread count is approximately 22.22 threads/cm (56.22 threads/inch).

Textile number 2 formed the outermost layers. It is made of a simpler weave called a “balanced plain weave” (Drooker 2000:270)—over one, under one, etc. Its thread count appears to be about the same (hence balanced) for the weft and warp—approximately 16.95 threads/cm (43.05 threads/inch). The thread twists could not be determined. Also the color of the two textiles could not be determined from their pseudomorphs.

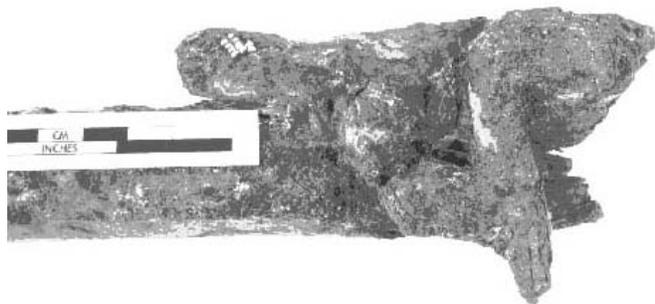
The Lock

The cock or hammer is rusted in place while resting on the nipple. Due to the amount of rust, the presence or absence of a percussion cap could not be determined. Also the CAT scan and standard X-ray images were inconclusive in that regard.

The lock plate is 108.1 mm long and its distal end is 17.2 mm wide. This end contained 11 glass beads that were attached by the rust from the plate (Figure 4). In addition there were eight depressions where additional beads had rested in the burial before coming loose. Thus, there had been, at

least, 19 beads (in four rows) that once were in contact with the lock plate. The axis of the bead rows was at a 48 degree angle to the axis of the barrel. The first row contained no remaining beads. The 11 beads remaining, from three rows, are made of white, opaque glass which were donut shaped and had been tube (cane) drawn to manufacture. Their metric measurements are presented in Table 1. Some measurements, including all the hole dimensions, could not be accurately obtained because of rust. Since all bead diameters are less than 2.0 mm, they can be considered as true seed beads. A few other larger beads of various types (Lees 1992:219) are also in the collection. Probably many beads were missed by the excavators.

Figure 4. Lock and Breech Portion of Rifle



Barrel the Bissitt Site, 14KW310. Note white seed beads on lock plate at the top in this view.

A CAT scan and standard X-ray images were produced of the lock and the breech end of the barrel. Because of the density of the object, quite a bit of experimentation was necessary with the x-ray images in order to obtain a somewhat acceptable image of the chamber. The CAT scan method seemed to work the best in this case. It indicated that no lead bullet was present in the weapon’s chamber (Figure 5). Clearly, the “Kentucky” rifle was not loaded when placed with the burial.

Bead Numbers	Bead Diameter (mm)	Bead Thickness (mm)	Bead Row
1	1.55	1.0	2nd
2	1.4	1.05	2nd
3	--	1.25	2nd
4	--	1.0	2nd
5	1.65	0.95	3rd
6	1.95	1.0	3rd
7	--	--	3rd
8	--	--	3rd
9	1.7	--	3rd
10	1.7	1.0	4th
11	1.75	1.05	4th
Range	1.4-1.95	0.95-1.25	
Median	1.68	1.1	
Average	1.67	1.04	

In the burial, a seed-bead-decorated artifact of leather or textile was in direct contact with the lock plate of the rifle. It appears to not have been a beaded rifle case. Since the barrel area contained pseudomorphs of folded layers of textiles of two different types, it seems that the rifle was resting on or was covered by (perhaps wrapped in) rather loose textiles. It is unfortunate that we have no notes, drawings, or photographs from the site’s excavators.

The Colt, Model 1851 Revolvers

Two Colt, Model 1851 (Navy pattern), .36 caliber revolvers (Lees 1992:215) were found with the Bissitt site burial (Figures 6-7). These are cap and ball weapons with standard length barrels and of a model manufactured from 1850 to 1873. Photographs and other information on these revolvers can be found in Baenteli (no date:11), Coates and Thomas (1990:54-55), Davis (1989:222-223), Logan (no date:8), Patterson and Marco (no date:4), and (Woodhead (1998:64-65). Based on the company serial numbers, one revolver was

probably manufactured in about 1856 and the other early in 1862 (Lees 1992:217). During the 70 or so years the revolvers were buried (before 1940), they rested in holsters. Though nothing remained of the holsters, as the weapons oxidized, rust filled most of the holsters leaving an imprint of their inside surfaces as pseudomorphs.

Both revolvers have a brass trigger guard and a brass backstrap on their handles. The handle of one revolver (serial number 54072) still contains the wooden side plates. There is a red stain on one small portion of the wood handle that appears to be from red ocher or vermillion.

The second revolver (serial number 119800) has a broken hammer spring and a bent connection between the cylinder frame and the frame supporting the barrel and the loading lever. This weapon would have been unusable at the time of interment. CAT scan and standard X-rays indicated that this gun was not loaded.

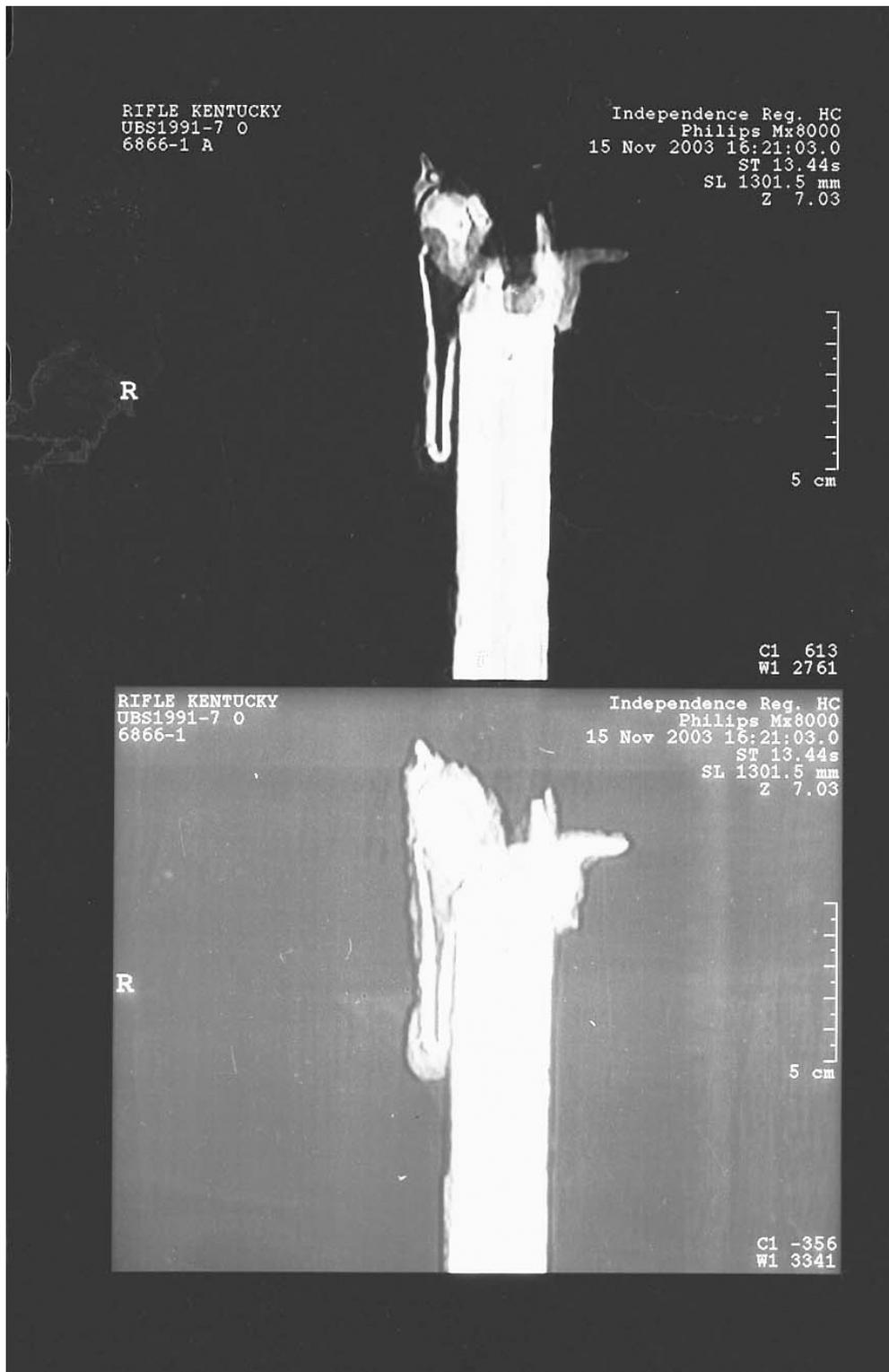


Figure 5. CAT Scan of the Breech and Lock of “Kentucky” Rifle from Site 14KW310. Note that main spring shows clearly and no bullet is in the chamber

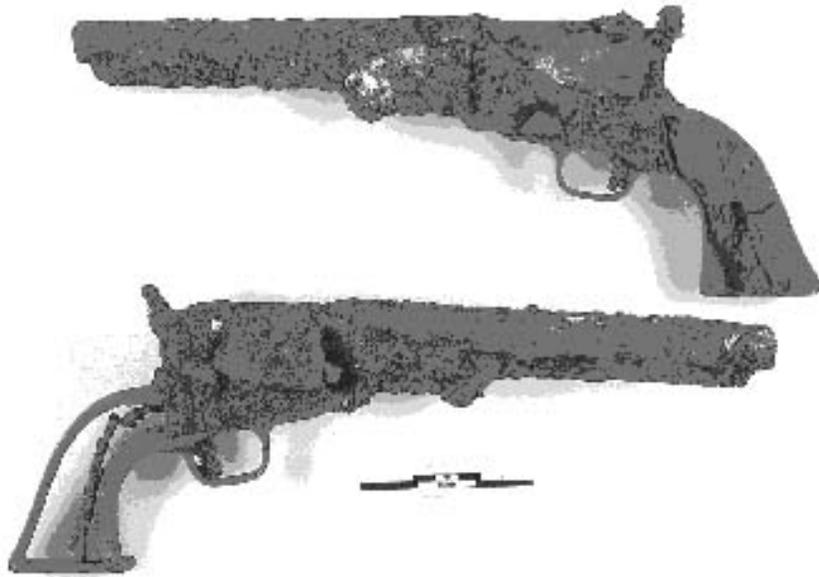


Figure 6. Photograph (Obverse) of the .36 Caliber, Colt, Model 1851 (Navy Pattern), Revolvers from the Bissitt Site, 14KW310.

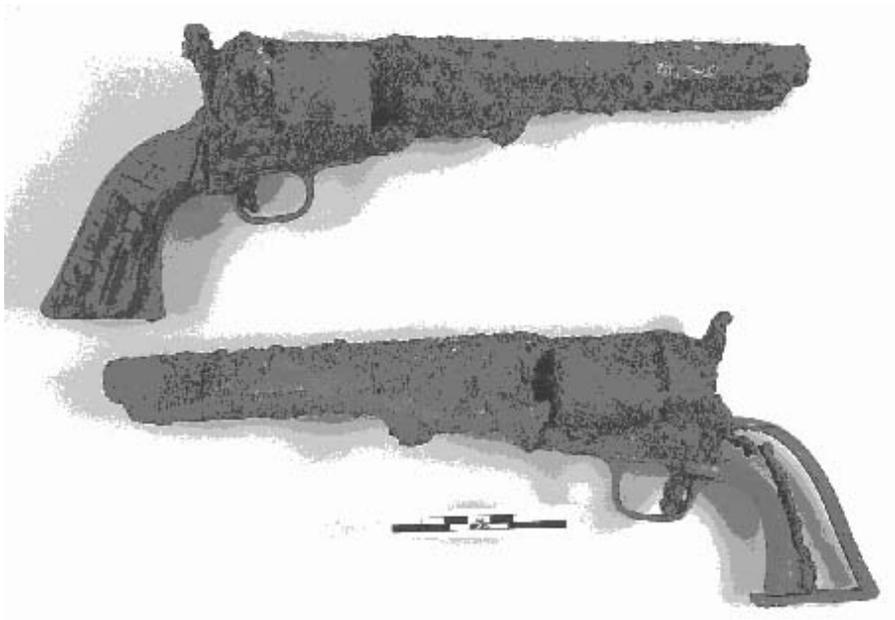


Figure 7. Photograph (Reverse) of the .36 Caliber, Colt, Model 1851 (Navy Pattern), Revolvers from the Bissitt Site, 14KW310.

However, the first revolver (serial number 54072) did contain two lead bullets. The other four chambers in its cylinder were not loaded. This was difficult to observe except by comparing a series of CAT scan images cross-cutting the cylinder (Figure 8). Were these two rounds placed in the revolver to accompany the burial or were there just two unfired rounds left after the others had been fired? To give light on this question, it would be interesting to know if all the chambers in this cylinder had percussion caps still in place. One would presume that percussion caps are in place for the loaded chambers. However, if all the chambers contained percussion caps, it would be a strong argument for the latter scenario. CAT scan sections through the cylinder clearly showed the nipples for mounting percussion caps; however, the percussion caps could not be discerned as the detail was not of that quality. They were not observable on the x-ray images (Figure 9).



Figure 8. X-Ray Image of Colt, Model 1851 (Navy Pattern), Revolver from the Bissitt Site. 14KW310.

The radiological images indicate that the placements of the two round balls are at a sufficient distance from the proximal end of their cylinder chambers to suggest that they might be a little over charged with powder. This can be quite dangerous, especially with

the old cap and ball revolvers, as cross-sparking can occur. This happens when a spark during the firing of one round crosses over to one or more other cylinder chambers (perhaps all of them) causing their rounds to also fire at the same time. Perhaps that could account for the type of damage that occurred with the second revolver. Or perhaps its damage was simply due to a blow on the side of the weapon. We do not know what really caused the damage. Or on a broader scale, perhaps these weapons contain information which hints at the cause of death of the individual buried at this location. I will resist the temptation to develop some interesting, but probably un-provable, scenarios along this line of thought.

In another historic Native American male burial, this time from Reno County, Kansas, a similar revolver was found (Bork 1988). It is said to have been fully loaded and fully cocked (Bork 1999; Feagins 2004a). Clearly that weapon was also intended to accompany the dead and it was ready for action.

Summary and Interpretations

Based on osteological examinations, a young adult is buried at the Bissitt site. The physical anthropologists who examined the skeletal material did not reach a consensus on the race or sex of the individual. However, the hair plates, the weapons (rifle, revolvers, lance, arrow point and related items), and other artifacts from the burial are consistent with what one would expect to find interred during the 1860 to 1880 period with a Native American male.

The “Kentucky” rifle was found in association with textiles of two different varieties of weave and thread counts and also with an item of cloth or leather containing rows of white glass seed beads. However, the

rifle appears to have not been placed in a beaded gun case. Also the information from the CAT scan images proves that the rifle was not loaded when placed in the burial.

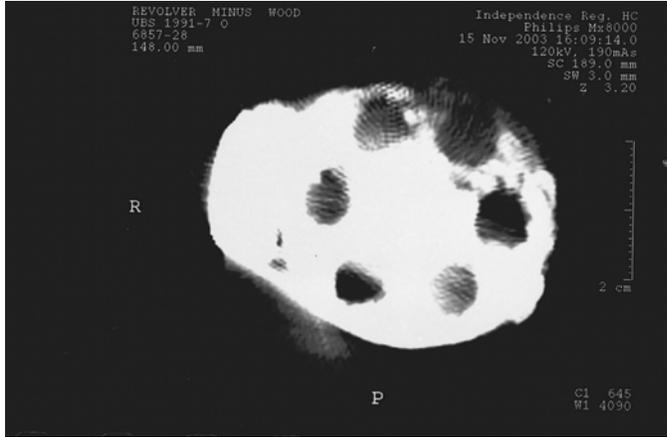


Figure 9. CAT Scan Image of Cross-Section of Unloaded Cylinder—Colt, Model 1851 (Navy Pattern), Revolver from the Bissitt Site, 14KW310. Top of revolver is to the right.

Two .36 caliber, Colt, model 1851 (Navy pattern), revolvers were also among many items recovered from this burial. The first revolver (to be described) appears to have been in working order when placed in the burial and, according to radiographic images, it only contained two rounds. Both were in adjacent cylinder chambers. Neither of the loaded chambers had been advanced so that they were aligned with the barrel and ready for firing. Was this weapon loaded with two rounds simply to accompany the burial? And if so, why was one of the rounds not advanced where it would be aligned with the barrel and ready to fire? Or had the four chambers been fired with the two unfired rounds remaining?

The images of the loaded chambers showing the spacing between the percussion cap end of the chamber and the lead ball at the other end, indicates the rounds were well powdered, perhaps slightly over powdered. This would increase the potential for cross-sparking between the chambers.

The second revolver contains a broken hammer spring and the frame between the cylinder and the barrel/loading lever is quite bent to one side. Thus, the barrel was not quite in alignment with any of the cylinder chambers. This weapon was not workable at the time of burial. Also this weapon was not loaded.

The condition of these percussion weapons presents tantalizing tidbits to suggest a few possible scenarios of their use prior to placement in the burial. At this point we do not know the cause of death of the Native American (interpreted to be a male) interred herein. We do know that he was placed by his friends or family with a vast array of artifacts as accompaniment to the afterlife. Detailed analysis of additional artifacts (beside the hair plates and the percussion weapons) would undoubtedly be useful to further interpret this burial.

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direction photographed selected items from this collection—archeologist, Tim Weston and photographers Craig Cooper and Barry Worley. Thanks should also be given to my wife, Peggy Feagins, for reading an early draft of this manuscript. As usual, none of these individuals are accountable for any shortcomings or errors contained herein.

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Excavations at the Meadowlark Cemetery, Manhattan

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Meadowlark Hills Retirement Community in Manhattan is currently constructing new residential units. Hemmed in by a small shopping center on one side, land belonging to Kansas State University on two others, and a steep bluff edge with a highway below it on the fourth, Meadowlark had few options but to build these new units on what appears to have been the only vacant portion of their property. Not all is as it appears, however, for this parcel of land actually held a small nineteenth-century cemetery. Meadowlark's chosen option for dealing with this cemetery was to seek to move it, so in July 2003, they contacted Roper about conducting this work. Following nearly a year of administrative and legal steps necessary for performing the excavation, a court order permitting testing for human remains and exhumation of any located remains was issued in Riley County District Court in May 2004 and Roper was notified in mid-June that all was ready for the excavation to proceed. The excavation was conducted over a two-month period from July 14 to September 14, 2004. To clarify the circumstances, this was not a cultural resources compliance project, and Roper led this project as an independent consultant.

History of the Cemetery

At the outset of the project, little was known about the history of the land on which the cemetery was located. Local lore is that the land was once the site of a poor farm or orphanage. Initial research suggested that this was not the case, as the Riley County poor farm was located not on this property, but on a farm three miles northwest of Manhattan (Manhattan Mercury 1896 7/8). In order to ascertain why burials were located on the property, research into the ownership and use of the property was necessary.

William H. Stillman, the landowner, was a physician from Rhode Island, who homesteaded in Riley County, Kansas, in 1860 (RCGS 1976:461). In 1890, the *Portrait and Biographical Album of Washington, Clay and Riley Counties, Kansas*, claimed that Stillman had 525 acres and was one of the largest landowners in Riley County (Chapman Bros. 1890:662). Though records on file at the Riley County Historical Society show that Stillman leased and mortgaged parcels of this land to various people between 1860 and 1900 (WHSF, Warranty Deeds), he never parted with the specific lot of land containing the cemetery, as this lot also contained his house (WHSF Warranty Deeds 1860-1901). Dr. Stillman advertised in local newspapers as "Wm.H.Stillman, Botanico Eclectic Physician

and Surgeon office at residence 1 mile north of Manhattan on Blue River Road” (Manhattan Independent 1864 4/18).

Evidence corroborating the local folklore that this cemetery was the result of the land having been a poor farm and orphanage consists of sporadic notices that appeared in the newspapers of the day regarding Dr. William H. Stillman receiving funds for the poor. In 1882 and 1883 notices were published stating that William H. Stillman was paid \$125.00 and \$189.00 for keeping the poor (Manhattan Nationalist 1/12/1882; Manhattan Republic 1/12/1883 respectively). Not necessarily corroborating this as a poor farm, but at least consistent with it are the notices of the opening of the first official county poor farm at the beginning of 1894. Stillman apparently had been providing these services on a more or less *ad hoc* basis until that time. The excavation of the cemetery provided additional evidence for the property having been used in this capacity.

The Cemetery Investigation

The cemetery occupies less than 0.1 acre near the edge of a bluff top on the west side of and overlooking the Blue River valley in northeast Manhattan. As are many cemeteries, it is a scenic and pleasant place to be. At the beginning of our study, it had very few overt markings of a cemetery. One gravestone lay on its back on the ground. One socket that had held a gravestone was visible nearby. A few other corners of rocks were visible, but on a Flint Hills upland, that is hardly unusual and, *per se*, was not indicative of anything. Meadowlark had indications that some graves had been removed and pointed to some obvious surface depressions as evidence. These surface depressions appeared randomly scattered across the indicated cemetery area. Not sure that these represented all the graves in the cemetery, Meadowlark had, in early July

2003 (before Roper became involved in the project), engaged Larry Conyers and a person working with him to conduct a ground-penetrating radar (GPR) study across the area. The map they produced appeared to identify the locations of 10 or 11 burials (Hamilton and Conyers 2003), again randomly scattered across the 40-x-20 meter area they investigated. These few pieces of information: the two grave markers, at least one of which must have been an unknown distance from the grave it originally marked, the depressions, and the results of the GPR study, were all that we had available to work from to excavate this cemetery.

We felt, however, that our best approach to the site would be to take the available information at face value at the start and work from there as needed. Accordingly, a grid was placed across the area, depressions were flagged, and an effort was made to match the locations of burials indicated on the map from the GPR study to places on the ground. The plan was to conduct excavations from the surface over these locations. The first excavations were two small blocks: one placed over one of the depressions and the other surrounding the single remaining gravestone. A grave outline (Feature 2) was soon located in the depression excavation. A portion of this grave was excavated to bedrock, ca. 1.6 m below the surface. The grave proved to be empty. Excavations surrounding the gravestone encountered portions of a stone path, but no indications of a grave. Meanwhile, though, we were realizing that the ground surface was not smooth, and that what counted as a depression was not a presence-absence thing but a matter of degree. We also were puzzling over the GPR map (which had no north arrow or other indication of orientation, and which we could match on the ground only at the single known gravestone) and what it really was indicating. Further, indications from the GPR study were

that the burials were shallow, but we could easily follow the Feature 2 grave edge all the way to bedrock, clearly showing that this had not been a shallow grave.

With all this and more happening at once, we decided that the depressions were not going to be the best way to find graves and that the GPR study was unreliable—in short, that even less was known about this cemetery than the little anyone thought they knew. We realized that we would have to proceed as if nothing was known and develop a new strategy to discover the graves and their layout. On the thoughts that the GPR study had been looking for burials when what they should have been looking for was graves, we considered having a new remote sensing study done, possibly using electromagnetic conductivity, since that had been shown to be the preferable geophysical technique for successfully locating graves in the Flint Hills (Wilson-Agin 2003). We ultimately decided, though, that although the remote sensing would be interesting and probably informative, our mission was to move this cemetery anyway, so we eventually were going to have to “directly sense” the graves and we ought to just get on with it. Our only real second thought about not conducting a new remote sensing survey was that, of course, we would have had a good ground-truthing situation. (Randy Thies wanted to bring over a grave witcher for the same reason, and we were willing to let him have a go at it, but we could not work out a schedule that would not delay our excavation.) To get on with the excavation, mechanical stripping seemed to be the only reasonable option. Concerned, though, to use too aggressive a stripping operation, since we did not know if the depth of the Feature 2 grave was characteristic and since we initially were not sure how large an area we would have to strip nor what obstacles might need to be avoided,

we decided on a skid loader as the best instrument for our purposes.

We do not here detail the course of stripping, but simply note that, with about 6 days (not consecutive) of skid loader operation, we opened most of an area measuring roughly 40-x-20 meters. This encompassed the entire area holding obvious depressions and, assuming we correctly oriented the GPR map, a sizable part of the area inspected during the GPR study. Stripping was carefully monitored to ensure that no burials were damaged and to avoid rock alignments or buried large rocks that, we fairly quickly learned, might mark graves (in the end, some did and some did not). It proved necessary to remove the entire dark (10YR4/3 dry, and when moist it appeared darker) A horizon of the soil formed on this upland to have much of a chance of locating graves. Graves were most readily detected within the B horizon, a yellowish red (5YR4/6) clay (nearly 69% clay in one analyzed sample) horizon that provided reasonably good contrast with grave fill. Grave fill varied in its appearance and texture. In general, though, it was darker than the matrix and often contained a lot of gravel—a concentration of gravel, in fact, often was the first clue that we were over a grave.

The final configuration of the cemetery was determined by this combination of stripping, cleaning the surface to look for graves, and repeated re-inspection of the surface for graves with a subtle appearance. As finally defined, the cemetery occupied an area of no more than 20-x-20 meters (Figure 1). Seventeen graves lay in three parallel rows that extended along north-northwest–south-southeast axes. Individual graves within the rows were parallel to one another and oriented along west-southwest–east-northeast axes. The overall alignment of both the rows and the graves within rows was

rotated about 30° in a counter-clockwise direction from north-south–east-west. This, however, placed the rows parallel to the bluff edge with the individual graves more or less perpendicular to the valley.



Figure 1. View to the Southwest Across the Completely Excavated Cemetery

Excavation showed all burials were laid with the head to the west. The middle row, with nine graves, was the most complete. Grave spacing along this row was slightly irregular and there may or may not have been room for additional interments. The west row contained only three graves closely spaced relative to one another and toward the south end of the cemetery. The east row contained five graves, three closely spaced relative to one another and lying toward the north end of the cemetery, and two more closely spaced relative to one another and toward the south end of the cemetery, widely separated from the northern graves in this row. The cemetery apparently was partially enclosed by a stone path or low wall on the north, west, and south sides. Two small, square, features in the vicinity of the south wall, when cross-sectioned proved to have straight sides and a

square bottom. We presume these indicate a gate or entryway to the cemetery. This presumed entrance is in line with a path leading to a house to the south of, and downhill from, the cemetery. Stillman had built and lived in this house. The west and middle rows of graves were within the enclosed area, as were the two southern graves of the east row. The middle one of the northern three graves of the east row, however, was at the end of the north path or wall, placing the northernmost of these three graves north of the enclosed area. As the analysis proceeds, we will be looking for temporal differences in the graves that might help us understand this seeming disruption from the orderliness of the graveyard.

Graves were mapped at the level at which they were detected. Both a 2"=1 meter general cemetery map and 5"=1 meter individual grave maps were prepared. Excavation, of course, proceeded by hand from the stripped surface. Most grave fill was excavated by trowel. Coffin hardware often was encountered before bone. Since there is a potential for burials of this era to have been embalmed using arsenic, once a skeleton was encountered, a small portion of it might be exposed, mostly to make sure we were on the skeleton and not just encountering a miscellaneous bone moved up in the profile. A soil sample then was taken from around the skeleton and submitted for testing for arsenic, lead, and mercury (initially, other heavy metals and gasses as well, but that was eventually suspended). Excavation of most skeletons was not completed until the testing results were received. Only one sample had an arsenic level that exceeded regulatory limits, and that was not high above regulatory

limits and was far below the limits necessary to qualify as hazardous material. Several samples had somewhat elevated lead levels, although they never exceeded and usually did not even approach regulatory levels. No mercury was ever detected—we continued to have samples tested for it only because it was a possibility and it is so toxic that we did not want to take the slightest chance with it. Once it was known that a skeleton was clean (or not), excavation proceeded by completely exposing and recording it prior to removal. As the individual grave descriptions below indicate, the coffins were preserved in three of the graves (see also Table 1 for a summary). These were drawn and photographed in place and removed in as few pieces as possible, but their condition and the difficulty of extracting a fragile large object from a cramped place made it impossible to keep them intact for removal.

Artifact Analysis Methods

Artifact analysis has not been completed at this time; however, a significant number of preliminary assessments have been made. Artifacts have been identified using catalogs of coffin hardware, button types, and nail types that show manufactured artifacts indicative of 1800s. Temporal ranges of elaborate coffin hardware have been determined using a plethora of illustrated trade catalogues from various manufacturing companies (see References Cited).

Adhering wood was removed from many artifacts, including nails, tacks, and screws, in order to locate identifying characteristics, however rust and other corrosion masked many identifying landmarks. Thorough and appropriate cleaning of the artifacts to remove corrosion requires day to weeks of acid baths, and time has not yet allowed for this step in the analysis process. Wood removed from artifacts was saved for identification.

All porcelain buttons were washed, thus removing the soil so that the button's characteristics could be viewed. Buttons in fragile conditions (as in feature 6), and buttons with cloth adhering to their surfaces were not handled directly, or altered; therefore, many diagnostic characteristics may still be masked. Buttons (particularly the ceramic buttons) were identified using the National Button Society of America's 1970 publication of *Guidelines for Collecting China Buttons*, as well as several other contemporary button guidebooks (see References Cited).

Graves and Burials

Thirteen of the seventeen graves contained relatively complete skeletons; the other four contained sparse or no bone and few artifacts. The individuals originally interred in the graves containing little recoverable material were removed at an earlier date. Dr. Stillman himself, along with a daughter had been buried in this cemetery, but were removed in 1901 (about 6 months after Stillman's death), and reinterred in Sunset Cemetery, in Manhattan (Soldan and Olney 1979:204). Two other individuals are believed to have been moved from the Meadowlark Cemetery to Sunset Cemetery. These were Geary Taylor and Martha J. (Mattie) Taylor. Both were moved in 1880 (RCHS 1990:84;Soldan and Olney 1979:209).

Feature 2. The Feature 2 grave was 203.19 cm long (roughly 6'8") and rectangular. No skeletal remains were recovered and the only artifact recovered was a type 11 round shank iron wire nail from high in the fill. Our suspicion is that this might have been Stillman's original grave. Since he was moved only about 6 months after his death, his coffin presumably would still be intact, with no missing hardware and, of course, completely containing the corpse.

Feature 5. Feature 5 was covered by a capstone lying horizontally over the grave. Mechanical stripping exposed the capstone, which was broken into four large pieces and several smaller fragments, only a few centimeters below the modern ground surface. Though now broken, the capstone had been worked into a 158.47-cm long oval shape, but was unmarked. The exposed grave outline was directly beneath the capstone and was very small, measuring only 119.04 cm long. The entire grave was excavated to bedrock, but no bone was recovered. Artifacts were limited to seven iron square shank nails. This burial may have been moved and reinterred elsewhere.

Feature 6. Feature 6 was one of the few graves in the cemetery that retained any surface markings. A socketed rectangular headstone holder was visible on the modern ground surface. Mechanical stripping revealed that the grave was covered with small flat stones. The front-end loader also revealed a rectangular upright marble footstone engraved with the initials SJJ, as well as a second unmarked and unworked footstone. One of the headstones removed from the site by previous landowners and recorded in *Cemeteries of Riley County* read “Sarah Jane, daughter of Linos (?) and Sophia Jackson, burned to death, 27 January 1878, age 1 yr and ? mo.” It is inferred, then, that this is the grave of Sarah Jane Jackson.

The grave was 76.84 cm long. Skeletal remains recovered were fragmentary and not all skeletal elements were present. Excavators noted possible charring on at least one bone fragment. Recovered coffin hardware consists of eight iron square shank cut nails with rounded heads (cf. type 8c).

Items indicating clothing include one straight pin, one white porcelain 4-holed button with a plain opaque body with lines radiating out from the center (type 2A saw-tooth radiating line rim pattern 7/16” in diameter), and three small 4-hole buttons with white enamel-like centers and coppery color exterior coating that are 5/16” in diameter. The small buttons with the enamel-like centers and the coppery exterior sheen may have been burned. The only identifiable fragment of coffin wood appears to be cottonwood.

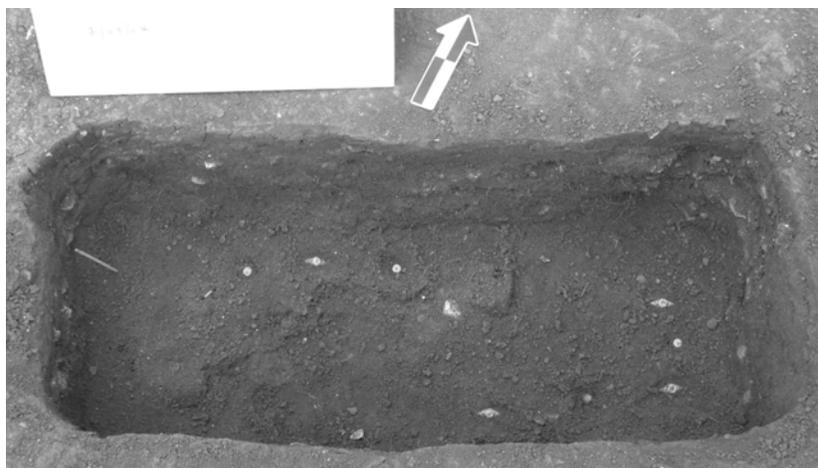


Figure 2. Coffin Hardware Forms the Outline of a Shouldered Coffin in Feature 7

Feature 7. Feature 7 yielded a mostly complete and articulated skeleton. This grave was unmarked and was identified by the darker rockier fill that formed a marked contrast to the surrounding subsoil. This was the grave of a subadult estimated to have been 18 months to 2 years of age at time of death. Coffin tacks and screws of white metal preserved the outline of a shouldered coffin (Figure 2). The coffin wood itself was largely deteriorated, except for small amounts of wood adhering to and preserved by the metal hardware. The grave was 128.55 cm in length. The skeleton was well preserved, but the facial region disintegrated upon removal, as it had been covered by a portion of the

occipital and consequently was not as well preserved as the remainder of this individual.

Coffin hardware consists of 27 triple filigree white metal coffin tacks, 8 triple filigree white metal coffin screws with diamond shaped bases, and 9 square shank iron cut nails (5 cf. type 8c, 1 cf. type 8g, and 3 unanalyzed).

Feature 8. Somewhat shaped but unmarked stones placed upright at the head and foot ends of the grave marked Feature 8. The grave contained the well preserved (both chemically and mechanically) and exceptionally complete skeleton of an adult male (by field assessment). The hardware from this grave includes four double lug white metal swing bail handles (Figure 3), five flat crown thumbscrews in association with five crown design base plates (escutcheons), fourteen nails with no heads (finishing nails), and eleven square shank iron nails (cf. type 8c). Evidence for clothing consists of two plain opaque white 4-hole porcelain buttons that are 7/16" in diameter (body style 1, dish, smooth beveled rim pattern). Some wood fragments are tentatively identified as pine.

Feature 9. Feature 9 was the unmarked grave of an infant with an unfused metopic suture and fontanelle. A shouldered coffin was strongly suggested by a dark black soil stain 103.27 cm long. Coffin wood was not preserved. Though the skeleton was very well preserved chemically, the entire thoracic region and many small bones of the hands and feet had been displaced by rodent activity and both tibiae were missing. Levels of arsenic above the regulatory limit suggest this individual may have been embalmed. Coffin hardware included 15 square shank iron nails

(cf. types 6c-8c), 21 flat headed tacks (with both round and square heads), and 6 standard flat headed wood screws of an oxidized metal material that does not appear to be iron. Two straight pins may be shroud pins.

Feature 10. A roughly shaped upright stone revealed by mechanical stripping marked Feature 10. This stone was well below the ground surface and was not inscribed. The grave was 154 cm long, and the interred individual was a child estimated in the field to have been four to seven years old at the time of death. The placement of the marker stone was ultimately determined to have been over the lower leg portion of the burial.



Figure 3. One of the Handles from the Feature 8 Coffin

This grave held an intact wood coffin, with an oval shaped viewing glass (broken but complete) in the head and chest area of the lid (which appears to have collapsed shortly after interment) (Figure 4). No evidence of caulking (as in static glass windows) or a sliding mechanism (as in sliding glass windows) was seen. The coffin was made of pine boards fastened with nails and screws. The boards of the lid and sides ran lengthwise, while short boards laid cross-wise

formed the bottom of the coffin. The skeleton was very well preserved (chemically) and was fully articulated, though the skull was distorted by the collapse of the coffin lid and viewing window. There was little soil matrix present between the collapsed lid and the bottom of the coffin, and much of the skeleton was impressed into the lid, leaving impressions in the wood upon removal. The coffin hardware for this feature has not been analyzed or quantified at the time of this publication, but several square shank iron nails of some length were present, as were screws. Some straight pins were the only indication of clothing or a shroud.

Feature 11. Feature 11 was adjacent to the path along the north side of the cemetery. The grave was 204.31 cm long. It contained only miscellaneous pieces of coffin hardware and a few bone fragments. It appears that this was one of the relocated burials. Relocation probably was done in the early twentieth century.

Feature 12. Feature 12 lay immediately south of feature 10. It contained the skeletal remains of a child estimated in the field to have been eight to ten years old at the time of death. The grave outline measured 141.66 cm long. The analysis of the recovered artifacts has not yet been completed. However, it is known that this burial contained some number of type 6c-8c iron square shank nails, and possibly at least one type 11a wire nail. Also recovered from this burial were at least one 4-holed plain opaque white body type 1 (dish) porcelain button with a saw tooth radiating line rim pattern (7/16" in diameter), and two buttons of unknown construction material covered in cloth. These two buttons were both 3/4" in diameter. In addition to the cloth, the thread was also preserved in an "x" pattern. Future analyses of these buttons will seek to determine the button construction material

and to identify any temporal implications of the threading pattern.



Figure 4. Feature 10, Showing Preserved Coffin with Glass Viewing Window

Feature 13. Feature 13 lay at the north end of the middle row of graves, immediately north of Feature 11. This grave was marked by a partially shaped, upright, unmarked headstone integrated into the rocks forming the north path. The grave outline was 211.12 cm long, making it the largest grave in this cemetery. Field assessments and preliminary measurements of the femur suggest that the interred individual was a robust male, who stood around 6'2". The skeleton was in good

chemical condition; however, the thoracic region had suffered some rodent damage.

The arrangement of the recovered hardware in this grave suggests a shouldered coffin. Except for fragments, the coffin wood is not preserved. Five triple filigree white metal coffin screws were recovered, as were more than 25 square shank iron nails (cf. types 6c-8c). Twenty-three medium-length square shank iron nails (cf. types 6-8 with form c or no heads), and nine small nails with form c heads or no heads, also were found. The grave also contained 49 flat-headed and four dome-headed lining tacks. Feature 13 held the only example of coffin hinges in the cemetery. There were 5 pieces of coffin butt hinges. These types of hinges are designed in two pieces; each piece contains a portion of the pin casing. The pieces are placed together, and a pin is inserted into the pin casing, thus joining the two pieces. Three of the hinges from feature 13 retained the pin casings and pins. Each hinge piece accepts three small screws in order to be fastened to the coffin. These hinges were recovered in the chest region of the coffin, in a line across the skeleton, suggesting that the head of the coffin lid could open and fold towards the foot. Five porcelain plain opaque white 4-holed buttons were also found in association with the skeleton: two body type 1 (dish), pie-crust rim pattern (7/16" and 3/8"), and three body type 2 (ink well), smooth beveled rim style (3/8"). There were also many cloth covered metal buttons and fragments: thirteen 3/4" cloth covered metal buttons (4 have posterior metal fasteners); one 9/16" cloth covered metal button; one metal button fragment; and one eyelet backing of a cloth covered metal button. A small curved fragment of a metal buckle also was recovered from Feature 13.

Feature 16. Feature 16 was 153 cm long. This seems to be about the average grave

length for a small child. The bones were, however, sparse in this instance, appearing in two major concentrations near the center of the grave. The excavators believed that this burial represented a young child or perhaps a gracile young adult; however, further inspection of the bones (a patella and a relatively complete hand) during analysis show that the individual would be at least an average sized young adult. No evidence of heavy rodent activity could account for the paucity of bone in this burial. It is likely that this individual was removed at an earlier date, and some bones were missed.

The coffin hardware formed the outline of a rectangular coffin. It is unclear how the majority of the skeletal remains were removed without disturbing the hardware arrangement. Thirty-nine square shank iron nails were recovered from this burial: seventeen large headed (cf. type 8c) nails with heavy shanks, fifteen small headed (finishing nails?) with slender shanks, two small (cf. type 8c) nails, and five shaft fragments or headless nails. Two iron standard head wood screws were also found *in situ*. A small white (bead-like) object 6.62 mm in diameter, appears to be part of a cloth button backing when compared to the cloth covered metal buttons in Feature 13.

Feature 17. Feature 17, the grave of a small child, was unmarked and revealed in outline by mechanical stripping. The grave outline measured 122.58 cm long. This grave held a preserved pine wood rectangular coffin, measuring 100.69 cm long. The coffin lid had collapsed. Heavy red paint concentrations were observed on the coffin wood. Coffin hardware consists of two white metal double filigree coffin tacks, three white metal double filigree coffin screws, thirty-one large shank nails (cf. types 7c or 8c); eight small shank finishing nails or brads (cf. head form c), and four flat headed lining tacks.

Clothing is indicated by five plain opaque white 4-hole buttons (one body type 2 ink well shaped, saw tooth radiating line rim pattern, 1/2" diameter; two body type 1 dish-shaped, smooth beveled rim pattern, 1/2" and 9/16" in diameter; two body type 2 ink well shaped, smooth beveled rim pattern, 7/16" and 1/2" in diameter) and green and blue fiber. Two buttons were located to the right of the midline of the body in the thoracic region, one to the left of the lumbar vertebrae, and one just below each knee. The buttons at the knees are suggestive of knickers or some sort of pantaloons.

Feature 18. Feature 18 contained the skeleton of an adult, however the grave was only 153.96 cm long, and this is disproportionately small for the size of the interred individual. The skeleton's legs were semi-flexed, making this the only individual not laid in an extended position. The left tibia is inexplicably missing, though the left fibula is present. The feet were also missing. A field assessment of the skeleton is that it is that of an 18-20 year-old male (based on the presence of formed, but not yet erupted third molars and closure but not yet complete obliteration of long bone epiphyses).

Coffin hardware consisted of 35 large square shank iron cut nails (cf. type 7c or 8c), 24 small shank iron square shank cut nails (cf. types 6-8), and 7 nail fragments. This grave also contained the only artifact in the cemetery that was a personal effect (other than clothing) buried with the deceased. This is a white clay pipe stem that was lying within the left portion of the rib cage, suggesting that it was in a suit coat or dress shirt breast pocket. Clothing is further suggested by five plain opaque white 4-hole porcelain buttons (body type 2, ink well with smooth beveled rim patterns 7/16" in diameter), four cloth covered metal buttons 11/16" in diameter, and four small metallic

buttons with adhering cloth 1/2-5/8" in diameter. The five white buttons were positioned such that the excavators referred to them as shirt buttons, while the cloth covered metal buttons were inferred to be suit jacket buttons, and the small metallic buttons to be pants buttons. Two fragments of a buckle were also recovered, forming a nearly complete buckle assembly. The clothing evidence lends further credence to this being a male individual.

Feature 19. Feature 19 was the grave of the youngest individual excavated at the cemetery. This was a prematurely-born infant (gestational weeks as yet undetermined). The coffin was much larger than necessary for such a small infant. It was 85 cm long and was painted white on the inside. During excavation it appeared that there may have been pink, yellow and white designs painted on the coffin, but the discolorations were very faint and were obscured since the coffin was fragmented. The bone of the fetus was very well preserved chemically, but the skeleton was disarticulated. The skeleton is well represented in terms of elements present, though the skull was crushed and little of it is preserved.

Coffin hardware in this grave was abundant and ornate. It includes 32 square shank iron cut nails (three large headed cf. type 6c-8c, twenty-three small shank type 6c-8c, 4 short type 6c-8c, and two type 6-8 finishing nails), 23 lining tacks (8 corroded dome tack heads, 15 small type A head tacks), and 2 iron standard head wood screws. Of the ornate hardware, there were four floral designed diamond shaped thin metal studs (Figure 5) and four three-dimensional crown design thumbscrews in association with four cross designed base plates (escutcheons) (Figure 6). There were also two straight pins (shroud pins?). One button was present near the throat (plain opaque white 4-holed

porcelain button type 1, dish type with smooth beveled rim pattern 7/16" in diameter).



Figure 5. Floral designed diamond shaped thin metal studs from Feature 19



Figure 6. Two of the three-dimensional crown design thumbscrews with cross designed base plates (escutcheons) from Feature 19

Feature 20. Feature 20 measured 173.22 cm long. It lay at the east end of the path along the north part of the cemetery. An upright limestone slab at the head marked the grave. The stone may have been roughly shaped but it was not inscribed. The grave outline indicated a rectangular coffin, however the coffin wood was not preserved, except for fragments adhering to iron nails.

The skeleton was well preserved and was that of an adult, probably a male. This individual was the oldest individual in this cemetery. The individual had suffered severe ante-mortem tooth loss. A defect in the molar region of one side of the mandible could indicate a healed infection.

This grave contained little coffin hardware compared to other the burials in this cemetery. Eleven large square shank iron nails (cf. type 6c-8c) and eight small shank nails (cf. types 6-8 with form c heads or no heads) were recovered.

Feature 21. The outline of feature 21 measured 88.5 cm long and was the smallest grave in the cemetery. An unmarked upright limestone slab, which marked the head of the grave, was uncovered during mechanical stripping. Upon excavation of this feature, only 4 (cf. type 8c) square shank iron nails and several fragments of wood were recovered.

Feature 22. The initial outline of Feature 22 suggested a grave of a small individual. However as the excavation progressed, the grave was found to be 179.01 cm long. The interred adult individual's skeleton was in excellent condition chemically. It was fairly well articulated, although the right fibula was next to the skull and many ribs were slightly out of place. A field assessments is that this individual was male.

The orientation of the skeleton within the grave and the arrangement of coffin hardware indicates that this individual was buried in a shouldered coffin. Eleven large square shank iron nails (cf. type 6c-8c), one nail fragment, and one small shank, finishing nail were recovered from the excavations. This individual contained many articles related to the clothing at the time of burial. Two buckle fragments and two corroded metal base/cloth

covered buttons (11/16") were documented. The porcelain buttons recovered in feature 22 represent the only instance of calico ceramic buttons. While there was one plain white 4-hole opaque body type 1 (dish), saw-tooth radiating line pattern (6/16") button and one plain opaque white body type 1 (dish), smooth beveled rim pattern (7/16") button, there were also five 4-hole calico buttons, type 1Bi (dish)(7/16"), with a tear drop, checkered faint light blue pattern.

It is unclear whether this button patterning could indicate that this individual is a female. Further skeletal analyses are currently being performed to definitively determine the age and sex of this individual.

Discussion

The age and sex distributions of the burials on the Meadowlark property certainly seem to support use of the property as a poor farm and orphanage or foster home. Skeletons remaining in the cemetery included those of 6 adults and 7 subadults. The coffin with the viewing glass, and burials with seemingly ornate hardware, led us to question whether the individuals interred at the cemetery had indeed been paupers. Extensive research (including into Dr. Stillman's membership in the Seventh Day Adventist Church) failed to support alternatives. In fact, additional research actually lent further support to this having been a pauper's cemetery (and Stillman family plot) associated with the keeping of the poor by Dr. Stillman. During the Victorian Era two complementary and interdependent phenomena occurred which led to elaboration of both burial accoutrements and burial practices for all social strata: industrialization and mass production, and the Beautification of Death Movement.

Industrialization in the United States was the vehicle by which the lower class was able to emulate the burial practices of the upper

class. This is important to the study of historic cemeteries and social status in the late 1800s for four reasons:

1) The mass production of coffin hardware was a result of technological improvements in machinery that replaced the hand-formed hardware previously manufactured.

2) With an increase in type and number of goods produced, including coffin hardware, manufacturing companies developed the illustrated trade catalogue. The catalogues provided a means of advertisement for manufacturing companies, relaying product information to people of all socioeconomic classes.

3) Innovations in metallurgy produced inexpensive alloys, making hardware more affordable to members of all socioeconomic classes.

4) Growth of a nationwide transportation network, by means of the railroad, along with a communications network based on the telegraph and telephone, increased the possibility for wide distribution of manufactured products (Bell 1990:57-59; Norton 1982:73-78). With an expanding capitalist market, mass production of such things as coffin hardware lowered costs of products, making it possible for people of the lower socioeconomic class to purchase these items (Mytum 2004:35; Norton 1982:75). It is for this reason that the presence of elaborate coffin hardware at the Meadowlark Cemetery does not specifically indicate the presence of elites.

Also during this period, there was an increase in the expense and ritual behavior involved with death. This increased attention manifested itself in mourning clothing, adornment of the home of the deceased, elaborate grave markers, and increased

embellishment in coffin designs and hardware (McKillop 1995:96). Mourning became a public ceremony during this time, where the cemetery became a park. The increased mass production of coffins and coffin hardware enabled the perpetuation of this new image of death.

As of this writing, the analyses of the Meadowlark Cemetery skeletons and artifacts remain in progress. Michael Finnegan and his advanced osteology students, including Hillary Glasgow, at Kansas State University are analyzing the skeletons. Françoise Bouchet at the UFR de Pharmacie, Labatoire de Parasitologie Environnementale et Paléoparasitologie, in Reims, France is, through arrangements kindly made by Dixie West, analyzing soil samples taken from the gut region of several skeletons for evidence of internal parasites. Pye and Smith will continue the coffin hardware analysis and historical research, and Roper has begun identifying coffin wood as best as possible from the preserved fragments. We are looking into the possibility of doing 3D plots of the piece-plotted hardware to develop reconstructions of the coffins and their placement in the graves. Other analyses will continue.

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