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Archaeological Excavations at 32BA415,
32BA428, and 32GG5 on Lake Ashtabula
Barnes and Griggs Counties, North Dakota
Prepared by: Steven J. Fox
Contract Number: DACW37-82-M-2197

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- Site 32BA415 has a Plains Woodland cultural affiliation, although this locus contains a low density of cultural materials. 32 A428 contains materials of Late Plains Archaic cultural ascription. This locus has been virtually destroyed through cultivation and related agricultural activity.

None of the cultural resources examined fulfill the necessary eligibility criteria for nomination for inclusion on the National Register of Historic Places. Consequently, sites 32BA415, 32BA428, and 32GG5 are not recommended for mitigation.

Site Sampling

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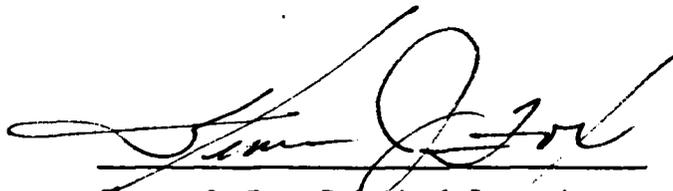
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ARCHAEOLOGICAL EXCAVATIONS AT
32BA415, 32BA428, AND 32GG5 ON LAKE ASHTABULA
BARNES AND GRIGGS COUNTIES, NORTH DAKOTA

Prepared by

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July 1984



Steven J. Fox, Principal Investigator

Executed and prepared for the Department of the Army, Corps of
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MANAGEMENT SUMMARY

Phase II intensive archaeological test excavations were conducted at three prehistoric sites, 32BA415, 32BA428, and 32GG5, on the shores of Lake Ashtabula in Barnes and Griggs Counties, North Dakota during the 1983 summer field season by the Department of Sociology and Anthropology, North Dakota State University. These investigations were sponsored by the Department of the Army, Corps of Engineers, St. Paul District through Contract Number DACW37-82-M-2197.

The present field investigations were undertaken in accordance with the Corps of Engineers obligations to inventory and assess all cultural resources within its jurisdiction, and to preserve and maintain those historical, architectural, or archaeological sites that are determined to be significant and meet eligibility criteria for inclusion on the National Register of Historic Places. The Phase II intensive test excavations of sites 32BA415, 32BA428, and 32GG5 were initiated for the purposes of: delineating the spatial distribution, horizontal and vertical, of each site; determining the respective integrity of these loci; and, where possible, the establishment of the general cultural affiliation and probable function of each cultural resource based upon the analysis of recovered data, including such artifacts, ecofacts, features, botanical and zoological remains, and other products of human behavior as may be present.

In a broader context the information gleaned from these sites becomes part of a larger compendium of scientific and scholarly data regarding the nature and disposition of cultural resources within the Sheyenne River Valley in particular, and the Northeastern Great Plains in general. This will facilitate the formulation of comprehensive preservation and protection policies essential to the proper management of historic and prehistoric archaeological sites within the Corps of Engineers jurisdiction at Lake Ashtabula.

The sampling strategy utilized in the investigations of 32BA415, 32BA428, and 32GG5 involved the placement of one meter by one meter test excavation units throughout each site area in an effort to determine the extent, frequency, and variety of cultural materials present. The primary soil processing technique employed was dry screening. Standard laboratory procedures were used for processing, classifying, analyzing, and interpreting the recovered data.

Recommendations regarding the future disposition of 32BA415, 32BA428, and 32GG5 were made following a thorough examination of all data observed at, and collected from, each site. 32BA415 has a Plains Woodland cultural affiliation. With the exception of one very small concentration of artifacts and ecofacts, this locus contains a low density of cultural materials. It is heavily bioturbated, resulting in the loss of much of its original integrity. 32BA428 contains materials of Late Plains Archaic cultural ascription. All recovered data have been redeposited through

Colluvial action from the uplands adjacent to the eastern margin of the site. 32GG5 yielded Plains Woodland artifacts. This locus has been virtually destroyed through cultivation and related agricultural activities.

None of the cultural resources examined during the present Phase II intensive test excavations fulfill the necessary eligibility criteria for nomination for inclusion on the National Register of Historic Places. Consequently, sites 32BA415, 32BA428, and 32GG5 are not recommended for mitigation.

All documents, records, and other information pertinent to the Phase II test excavations at these sites have been submitted with the final project report to the Department of the Army, Corps of Engineers, St. Paul District. In addition copies of these same materials will be housed within the Department of Sociology and Anthropology at North Dakota State University. Artifacts, ecofacts, and other collected materials will be curated at North Dakota State University.

The present investigations were performed through North Dakota State University in Fargo, North Dakota. The Principal Investigator is a faculty member in the Department of Sociology and Anthropology at that institution. In addition, three anthropology graduate students and eight undergraduate anthropology students assisted in these investigations.

INTRODUCTION

Project Foci and Objectives

Phase II intensive archaeological test excavations were conducted at three prehistoric sites, 32BA415, 32BA428, and 32GG5, on the shores of Lake Ashtabula in Barnes and Griggs Counties, North Dakota. Lake Ashtabula is a man made reservoir located within the valley of the Sheyenne River in eastern North Dakota (Figure 1). Field investigations of these cultural loci were conducted under the auspices of a contract awarded to North Dakota State University by the Department of the Army, Corps of Engineers, St. Paul District.

The present test excavation program was undertaken in accordance with the general obligations of the Corps of Engineers to assess and evaluate cultural resources located on properties under their jurisdiction. These investigations were conducted with the intent of documenting the spatial distributions, integrity, cultural affiliation, function, and significance of each site. Recommendations regarding the future disposition of each cultural locus have been made in accordance with criteria specified in How to Apply the National Register Criteria for Evaluation (Draft) (1982).

The report of these investigations, including the specific site disposal recommendations, is to aid the Corps of Engineers in formulating a comprehensive plan for the preservation and protection of cultural resources within their properties. In addition, this document is intended to be a contribution to the extant scholarly literature on the prehistory of eastern North Dakota and the northeastern Great Plains.

Investigations of sites 32BA415, 32BA428, and 32GG5 were conducted during the months of May and June 1983. Field techniques and laboratory procedures are discussed in detail in subsequent sections of this report.

Originally the Scope of Work for these archaeological investigations specified the three sites to be examined as 32BA413, 32BA415, and 32BA428. Prior to the onset of actual fieldwork a preliminary, observational visit was made to all three loci. At that time it was noted that site 32BA413 was located in the lawn and garden areas of several permanent cabins along the shore of Lake Ashtabula. After consultation with representatives of the Corps of Engineers in the St. Paul District Office a determination was made that site 32BA413 be excluded from the present field project, and site 32GG5 was selected as an alternative locus of investigation.

The three sites examined during the present project are situated within the trough cut by the postglacial Sheyenne River; and all appear to be representative of relatively late periods of human cultural activity on the northeastern Great Plains. These cultural resources were located during a Phase I inventory of the Middle Sheyenne River Valley,

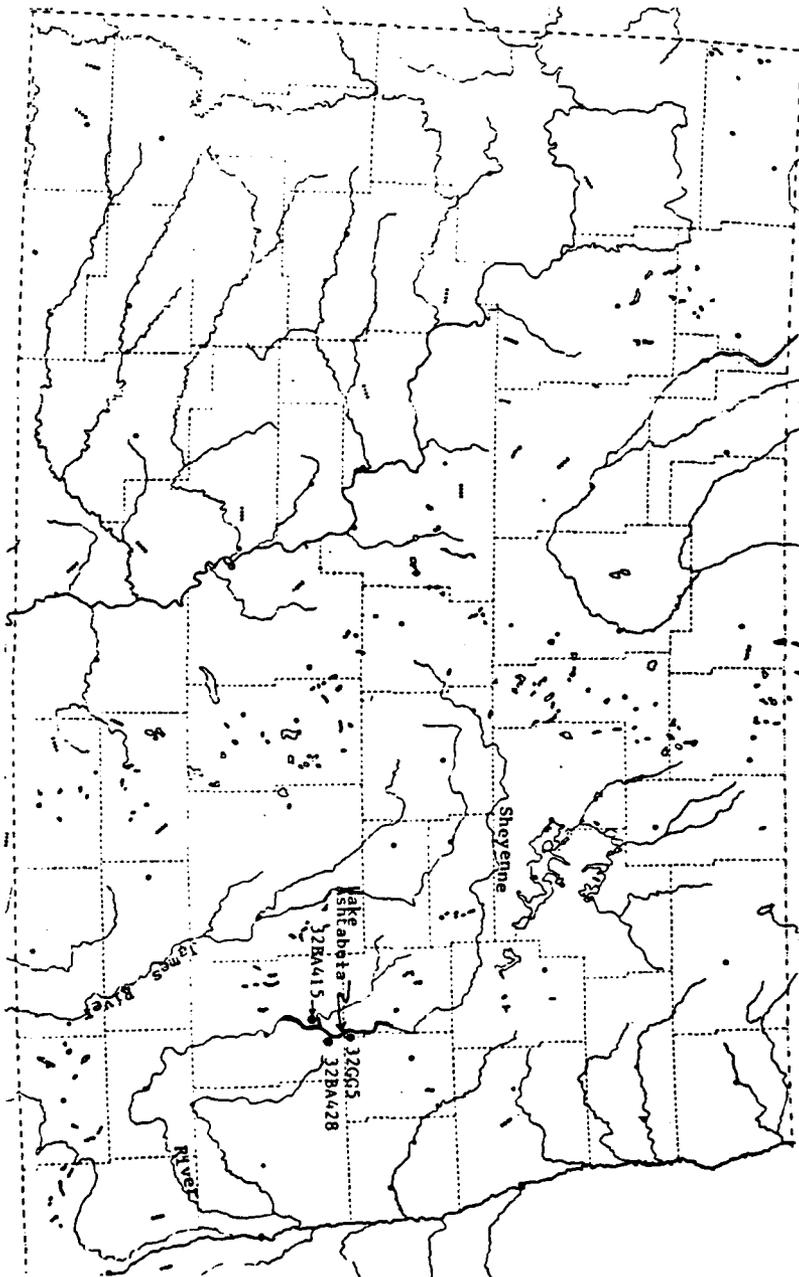


Figure 1. Map of North Dakota showing locations of Lake Ashtabula and sites 32BA415, 32BA428, 32CG5

including Lake Ashtabula, conducted by the Department of Anthropology and Archaeology of the University of North Dakota in 1978 and 1979 (R. A. Fox 1980). No other documented investigations of these loci had been undertaken from the time of their initial location until the implementation of the present Phase II intensive test excavation program. The representative locations of 32BA415, 32BA428, and 32GG5 along the shoreline of Lake Ashtabula are shown in Figure 2.

Background and Literature Review

Prior to the Corps of Engineers embarking upon a systematic cultural resource inventory, assessment, and conservation program in the Middle Sheyenne River Valley, including Lake Ashtabula, archaeological investigations within the Sheyenne River drainage were few and limited in both scope and focus.

Most early archaeological investigations within the Middle Sheyenne River Valley and adjoining localities concentrated upon the examination of selected Plains Woodland mound sites found along the major streams and lakes. Montgomery (1906) excavated mounds in the Devils Lake vicinity, immediately north of the modern Upper Sheyenne River Valley, from 1883 into the first decade of this century. He reports the presence of artifacts fashioned from non-local and exotic materials such as birch bark from northeastern Minnesota, catlinite from southern Minnesota, copper from the Great Lakes region, and marine shell from the Gulf Coast. In addition, numerous osteological remains were recovered from these mounds, with bison and deer bones being most frequent. In some tumuli, burned animal and human bones were recovered (Montgomery 1906). At the same time that Montgomery was working in the Devils Lake Basin, Cyrus Thomas (1891) documented, and possibly sampled data from, mounds along the Sheyenne River in Griggs and Ransom counties, North Dakota; however, he provides no details of his work.

The first recorded systematic archaeological investigations within the Sheyenne River Valley were conducted by Strong (1940) in Ransom County. During the summer of 1938 Strong excavated at the Biesterfeldt Site and sampled a nearby, unassociated Woodland mound. Biesterfeldt is a fortified village containing approximately sixty randomly placed earthlodges and a large central earthlodge facing a central plaza. The general village plan, ceramics, lithic and bone artifacts, and European trade goods recovered are similar to those found in Post-Contact Coalescent Plains Village sites in the Missouri River Valley (Wood 1971). The mound yielded painted bison skull remains and limited, undescribed artifactual materials (Strong 1940).

A brief survey of the general area of the Baldhill reservoir (Lake Ashtabula) was conducted in 1947 (Kivett 1948). Kivett identified six occupation sites and one site of undetermined function primarily along the terraces of the Sheyenne River. Three mound sites were located on the adjacent prairie uplands. Limited test excavations were undertaken at three sites, 32BA5, 32BA6, and 32GG2, believed to be permanent vil-

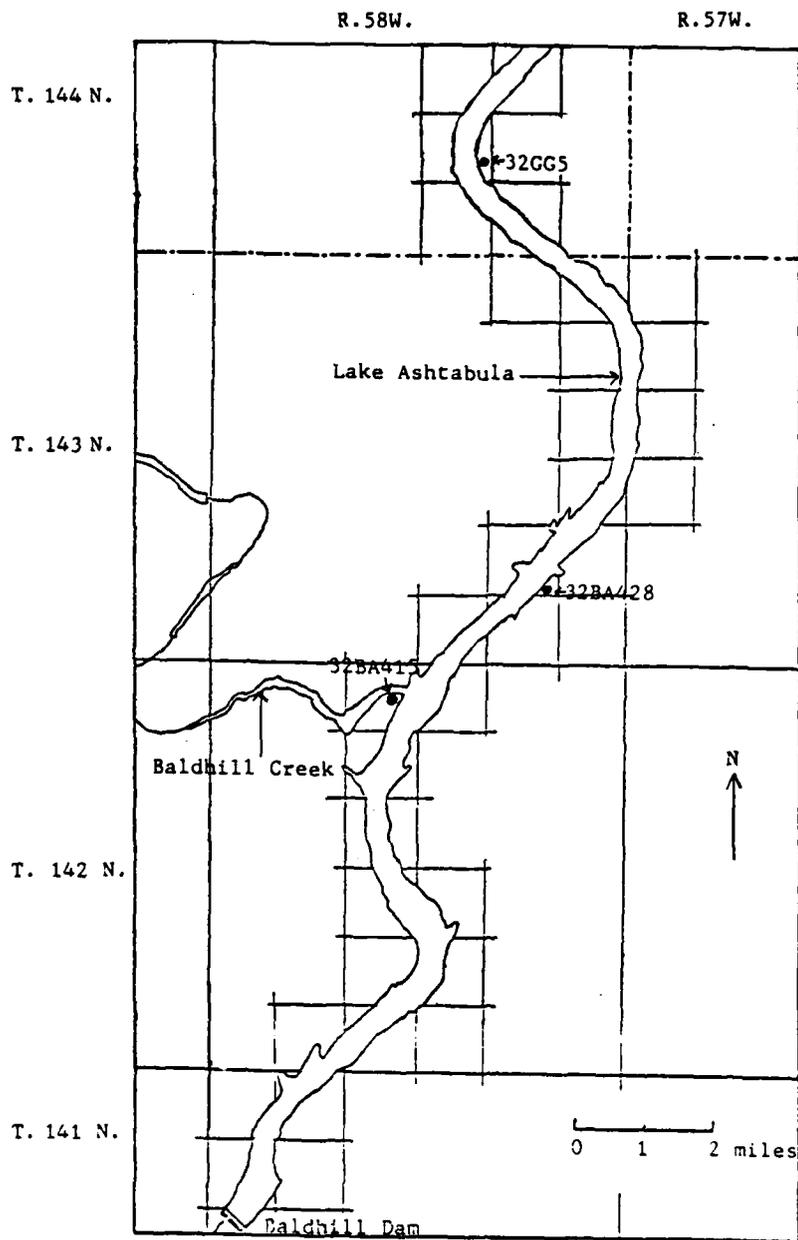


Figure 2. Cross-section of Lake Ashtabula showing the locations of sites 32BA415, 32BA428, and 32GG5.

lages, and two sites, 32BA2 and 32BA3, presumed to be temporary occupations. Descriptions of specific site data are not provided. Test excavations at one mound within site 32GG1 yielded human skeletal remains. These represent eight individuals, all of which were disarticulated. It is also noted that the mound itself, following initial construction, was gradually enlarged at irregular intervals over many years (Kivett 1948).

Hewes sampled 32BA1, a site consisting of "two or more mound groups" located on the uplands along the eastern margin of the Middle Sheyenne River Valley (1949: 322). Two tumuli were excavated. Mound A contained a central burial chamber with artifacts and a disarticulated mass of bones. A shallower, intrusive burial pit was also present. Mound B also possessed a large central burial pit with artifactual materials, a bison skull, and the disarticulated remains of at least twenty individuals. Many of the human bones in Mound B had been painted with red ochre. Hewes (1949) suggests that the human remains are secondary burials of individuals recovered from scaffolds, trees, and other interments.

Approximately 50 kilometers west of the Middle Sheyenne River Valley in Stutsman County, along the James River, Smithsonian Institution, River Basin Surveys personnel conducted investigations at several sites. Neuman (1967) has filed a brief summary of excavations at the Kropp Site. This locus consists of a large dome-shaped tumulus with three radiating ridges, two of which possessed small, terminal mounds. Bison remains, secondary human burials, and sherds of pottery with a cord paddle-marked surface treatment were recovered. Radiocarbon dating places the initial construction of the Kropp Site tumulus at AD 1000₊₈₅ (Neuman 1967).

Also in the James River Valley is the Hintz Site, an unfortified earthlodge village, that served as the basis for Wheeler's (1963) definition of the Stutsman Focus. He posits that this cultural complex may be affiliated with an Hidatsa occupation in eastern North Dakota. The presence of metal knife blades, apparent trade goods of Euro-American origin and late pottery types suggest an early Historic Period chronological placement for the Stutsman Focus, with an assigned date of AD 1750-1800 (Wheeler 1963). Ceramic wares recovered from the Hintz Site exhibit considerable variation, including painted, incised, and stamped surface treatments on vessel forms similar to those from the Missouri River Valley. Other observed features and artifacts associated with this cultural complex are sweat lodges, eagle traps, and triangular, side-notched projectile points (Wheeler 1963). Recent work at related sites along the James River has led Schneider (1982) to conclude that Wheeler's dating is probably too late and that the local cultural chronology is more complex than originally suggested. The absence of fortifications around the Hintz earthlodge village and the presence of ceramic wares suggesting Extended Middle Missouri, Extended Coalescent, and Post-Contact Coalescent affiliations for this site are cited as supporting evidence for his arguments. Also the relative paucity of trade goods is noted. An alternative date of AD 1600 to 1700 is proposed (Schneider 1982).

Schneider (1982) has summarized and interpreted the results of recent test excavations at ten sites within the James River Valley of southeastern North Dakota: Hendrickson II, Hendrickson III, Naze, Kirschenmann II, and Kirschenmann III in Stutsman County; and Schmoker, Rode, Quast, Chappel, and Beeber in La Moure County. A total of nineteen cultural components representing five occupation periods have been identified at these sites. The earliest cultural period present is found at the Naze and Beeber sites and represents a Middle Woodland occupation. Based upon similarities of projectile points, a Sonota Complex affiliation is suggested for the Naze component. At Beeber the pottery is similar to that of the Laurel Culture of Minnesota. Given these artifactual associations and a single radiocarbon date of 85 ± 70 BC, the Middle Woodland occupation in the James River Valley is placed within the interval of 100 BC to AD 600. The second cultural period is represented by the Late Woodland components at Naze, Kirschenmann III, Chappel, and Beeber. Lithic remains include side-notched, corner-notched, and triangular, unnotched projectile points and other, nondiagnostic specimen. Bison bone dominates the composite faunal assemblage. Schneider's primary criterion of cultural affiliation for the Late Woodland components is the presence of Blackduck and Sandy Lake ceramic wares. The Late Woodland period at these sites is posited to be between AD 1000 and 1300. Early Plains Village cultural developments succeeded the Late Woodland at the above sites, as well as comprising the entire assemblages from Quast, Kirschenmann II, and Schmoker. Side-notched arrowpoints are the most frequently encountered diagnostic lithic artifacts recovered from these components. In addition, corner-notched and triangular, unnotched projectile points are also present. Well made grit-tempered pottery similar to Extended Middle Missouri and Cambria wares are in evidence. The faunal assemblage suggests that while bison remained the most important game animal, deer and/or antelope became more important than in earlier cultural periods. Charred maize was also recovered from a hearth at the Quast Site and has been dated at $AD\ 1245 \pm 70$. Available data suggests that early Plains Village populations of eastern North Dakota occupied the James River Valley between AD 1300 and 1400. Plains Village Tradition components are present at the Hendrickson II, Hendrickson III, Beeber and Rode sites. The bulk of the data representing this horizon comes from the Hendrickson III Site, a small, fortified earthlodge village. Small triangular, unnotched projectile points are more numerous than side-notched points. A wide range of bone tools are also present. The ceramics from these components are quite variable, sharing traits with Plains Village Tradition sites in the Missouri River Valley and other Plains Village sites on the northeastern Great Plains, including the Stutsman Focus. The wares from Hendrickson III are regarded as having a generally "'Coalescent' cast," although they share attributes with Initial and Extended Coalescent variants as well (1982: 125). Beeber site ceramics appear to be slightly later, indicating a short term Extended Coalescent occupation in the James River Valley by villagers from the Missouri River. Radiocarbon dates from Hendrickson III range between AD 1365 and 1525, yielding an average corrected reading of $AD\ 1401 \pm 55$. The Beeber site occupation,

based upon dates for the Extended Coalescent variant in the Missouri River Valley, is estimated to have occurred between AD 1550 and 1675. The presence of Euro-American trade goods in association with Plains Village cultural remains at the Naze and Beeber sites serve to identify the beginning of the Historic Period in the James River Valley between AD 1750 and 1800 (Schneider 1982).

The Jamestown Burial Mound Complex (32SN22), located on the western margin of the James River within the city limit of Jamestown, North Dakota, was excavated by the State Historical Society of North Dakota in 1982 (Snortland-Coles 1983). Two tumuli containing four distinct components were sampled. The earliest component is represented by the placement of two burial chambers under Mound A and one central chamber under Mound B. Small pits containing one to four burials were dug into the Mound B chamber. Mass burials were placed in the large subterranean chambers. This component has been dated at AD 20 to 200. The second observed component was present at Mound A only, and is represented by the intrusion of three cache pits and two burial pits into the fill of the tumulus. Both ossuaries appear to have been reused at this time as well. The mound was enlarged subsequent to these activities by the placement of additional fill material over its surface. This episode dates from AD 400 to 770. The third cultural component observed at this site is represented by additional intrusive burials into the fill of Mound A and the interment of individuals in pits extending into Level I of Mound B. The latter tumulus was subsequently enlarged. Component III has been dated from AD 920 to 1000. The last phase of aboriginal cultural activity at 32SN22 is represented by a preponderance of secondary burials placed in the mounds between AD 1000 and 1700. Artifactual associations are greatest with the burials of Component I and become fewer during later cultural developments. Exotic as well as local materials were associated with interments in all components. These investigations suggest that earlier efforts to define temporally distinct burial mound complexes on the Northeastern Plains have to be reassessed (Snortland-Coles 1983).

Along the middle portion of the valley of the Red River of the North, approximately seventy kilometers east of Lake Ashtabula, Michlovic (1981) conducted a pedestrian survey and limited test excavations in extreme western Minnesota. A total of forty-seven sites were recorded during these investigations, two of which were sampled. Surface collections from unsampled sites yielded significant quantities of Late Woodland Sandy Lake ceramics and Mississippian-influenced Oneota wares. The lithic artifacts from the surveyed sites were not considered to be diagnostic of specific cultural periods. Both of the sites that were test excavated contained Sandy Lake ceramics associated with the remains of fish and large mammals. One site contained an undisturbed Archaic component (Michlovic 1981). Subsequent investigations of this Archaic horizon have yielded substantial quantities of bison bone and Archaic dart points (Michlovic 1982: personal communication).

The Irvin Nelson Site on the south shore of Devils Lake, immediate-

ly north of the Sheyenne River Valley in Benson County, North Dakota contained a deep Middle Plains Woodland and Extended Middle Missouri cultural components (S. J. Fox 1983). The Middle Woodland component contained side-notched and corner-notched projectile points, as well as numerous other, nondiagnostic lithic specimen. Ceramic wares are grit tempered and generally similar to Laurel Culture pottery from western Minnesota. The activity focus represented within this component appears to have been short-term, seasonal bison hunting. Two radiocarbon dates from the Middle Woodland horizon indicate that this site was intermittently occupied between AD 130 ± 170 and AD 820 ± 60 . The Extended Middle Missouri component also appears to have been a short-term, seasonal camp with deer being the most important resource exploited; however, the remains of waterfowl, fish, and various species of rodent are also present. Plant remains are limited to wild plum and chokecherry. Small, triangular, unnotched projectile points are the most common diagnostic lithic specimen, but corner-notched and side-notched points are also represented. Ceramics from this component manifest similarities to both Sandy Lake and Middle Missouri wares. A radiocarbon date of AD 1550 ± 100 has been obtained for this occupation (S. J. Fox 1983). The mixture of Minnesota woodland- and Missouri River Valley-derived ceramic attributes noted by Schneider (1982) in the James River Valley among Plains Village Tradition sites is also found in the Extended Middle Missouri variant found at the Irvin Nelson Site (S. J. Fox 1983). This may well be a pattern in many Plains Village sites in the northeastern Great Plains.

The only systematic site excavation in the Middle Sheyenne River Valley since the work of Kivett (1948) and Hewes (1949) discussed above, and prior to the present investigations, has been the Phase III testing of site 32BA418 (R. A. Fox 1982). No diagnostic artifacts were recovered from the sample areas; nevertheless, a Middle or Late Woodland cultural affiliation is hypothesized on the basis of its morphological situation within a disturbed soil matrix (R. A. Fox 1982).

Reports of cultural resource investigations in eastern North Dakota during the past decade have greatly increased the data base and enhanced our understanding of local prehistory. A primary reason for the improved state of knowledge has been the broad scope of archaeological investigations and the formalization of cultural resource management programs and policies by various state and federal agencies.

The amount of archaeological fieldwork being conducted along the Middle Sheyenne River, including Lake Ashtabula, since 1975 has increased dramatically compared to the preceding ninety years. Schneider (1977) and Gregg (1980) conducted test excavations at specified locations along the shoreline of Lake Ashtabula. No cultural resources were recovered during these field investigations. Vehik (1979) surveyed selected portions of the Lower and Middle Sheyenne River Valley below and above Lake Ashtabula. Sixty-one sites were recorded during this study. The cultural distribution of these loci is: five Historic sites; two Plains Village/Mississippian sites; five Plains Village sites; seven

Woodland/Mississippian loci; twenty-eight Woodland, including thirteen mound, sites; one Nomadic Plains Indian site consisting of a tipi ring; five Preceramic loci; and eight sites of undetermined cultural affiliation (Vehik 1979). A cultural resource inventory was conducted along the shoreline of Lake Ashtabula during 1978 and 1979 (R. A. Fox 1980). The latter project represents the first systematic reconnaissance of this locale. It also reassessed the status of those previously reported sites that had not been inundated by the attainment of pool level of the Lake Ashtabula reservoir subsequent to the completion of Baldhill Dam. Forty-one sites were located during these investigations. These loci include: four Historic/Architectural sites; one paleontological site; four Late Woodland affiliated loci; five Middle Woodland sites, including one mound complex and one burial locus; and twenty-seven sites with unknown cultural affiliations (R. A. Fox 1980).

Recommendations regarding the disposition of cultural resources located during the 1978-1979 reconnaissance (R. A. Fox 1980) have resulted in implementation of Phase II intensive test excavations at several sites along Lake Ashtabula, including investigations at site 32BA418 (R. A. Fox 1982) and sites 32BA415, 32BA428, and 32GG5 reported herein.

GEOLOGY AND ECOLOGY

Geological Setting and Background

The Sheyenne River Valley is wholly contained within the Drift Prairie of the Central Lowlands Physiographic Province (Bluemle 1974). Local geomorphology reflects recent glaciation. Glacial tills deposited as ground and end moraines and other glaciofluvial features dominate the prairie surface. The Sheyenne River Valley, which dissects the eastern North Dakota prairies, is itself a resultant phenomenon of Late Wisconsin glacial activity (Kelly and Block 1967).

Bedrock in the Lake Ashtabula portion of the Sheyenne River Valley is the Pierre Formation, a gray to black shale with gray marl and numerous beds of bentonitic clay, of Upper Cretaceous age. It is locally exposed along the river channel (Kelly and Block 1967). On the prairie the till directly overlies the bedrock; within the river valley fluvial and colluvial deposits rest upon the Pierre Formation.

The Sheyenne River is a major tributary of the Red River of the North and, therefore, ultimately drains into Hudson Bay (Kelly and Block 1967). Although numerous streams are present, local surface drainage tends to be poorly developed (Klausing 1968; Scoby, et. al. 1973); this is due in large part to the low permeability of the Pierre Formation (Kelly and Block 1966). During post-glacial times numerous small, shallow lakes and marshes have served as catchments for run-off (Vehik and Vehik 1977) to an even greater extent than they do at present.

By 14,000 years ago the continental glaciers covering eastern North Dakota had retreated northward leaving behind substantial till deposits primarily in the form of ground moraines. The Sheyenne River was formed by proglacial outwash (Kelly and Block 1966), and became a major diversion channel for meltwater ultimately discharging into glacial Lake Agassiz to the east (Brophy 1967).

To the north and west of the Sheyenne River networks of glacial lakes formed as a result of the glacial recession. The largest of these lakes were glacial Lake Souris and glacial Devils Lake, including Stump Lake, which were originally interconnected through numerous smaller bodies of water. The Sheyenne River was the primary outlet for the waters of Devils and Stump Lakes at their post-glacial maximum levels (Aronow 1957, 1961), as well as for the several smaller lakes and meltwater channels.

A large delta began forming about 12,000 years ago along the western margin of the Red River Valley where the Sheyenne River discharged into glacial Lake Agassiz. As the lake began to recede about 10,500 BP the Sheyenne River cut through the delta deposits, stabilizing each time it attained grade with the lake. At the same time down cutting was occurring in the channel of the river (Brophy 1967). The four major ter-

ances with their locally deep sand and gravel beds that are evident along the margins of the Middle Sheyenne River Valley attest to these intervals of trenching and grading (Kelly and Block 1966). The small, but developed floodplain of the modern Sheyenne River is evidence of both its relative stability and low carrying capacity compared to post-glacial times; however, the river is presently deepening its channel (Brophy 1967).

Soils

All of the soils within the Sheyenne River Valley are of recent origin and, in large part, have developed through colluvial and aeolian processes. Fluvial units are occasionally present on the broader terraces. General soil surveys conducted along the shoreline of Lake Ashtabula indicate that within this segment of the river valley, at least to the northern terminus of the reservoir, that Buse loams, hilly and steep are the most prevalent. These loams occur primarily where a 15% to 30% slope is present (Patterson, et. al. 1968). These soils tend to be somewhat variable and unstable.

The three sites investigated during this project all appear to have constituent soil matrices of the Buse loam, hilly and steep variety. Although these resemble the Barnes series loams (described by Patterson, et. al. 1968), the varying quantities of granular, crystalline inclusions and their blocky structure tend to distinguish them from the predominately upland Barnes series soils.

Climate

Present day climate in the vicinity of Lake Ashtabula is best characterized as cool-temperate, dry sub-humid. Winters tend to be long and cold and summers are comparatively brief and cool. The mean annual temperature for the Sheyenne River drainage is 5.5° C, with an average of 130 frost free days per year. Average temperatures range from -13.7° C in January to 21.5° C in July. However, it should be noted that this is a land of extremes. During a ten year interval, 1951-1960, recorded temperatures varied from -38.3° C to 39.4° C (Scoby, et. al. 1973). Rainfall ranges from 45.9 cm to 50.8 cm per year along the course of the Sheyenne River, with approximately 80% of the total falling between the months of April and September (Omodt, et. al. 1966). Heaviest snowfall occurs during December and January with annual totals ranging between 60.7 cm and 72.1 cm (Scoby, et. al. 1973).

Paleoecology

As the Leeds ice lobe retreated northward through eastern North Dakota into Manitoba about 13,900 years ago, a spruce dominated forest soon established itself on the morainal deposits left in the glacial wake (Bryson, et. al. 1970). Pollen cores from central North Dakota indicate that this ecological community remained dominant in the region for at least 3000, and perhaps 4000, years (Wright 1970). The

warming, drying trend that brought about the glacial recession persisted for several millenia. By 9500 years ago the boreal forest was also in northward retreat.

Succeeding the spruce (Picea sp., probably P. mariana and P. glauca) vegetation community on the northeastern Great Plains was a short-lived deciduous forest-parkland ecosystem with dominants of elm (Ulmus americana), oak (Quercus sp.), hazel (Corylus sp.), and, in selected locations, ash (Fraxinus sp.). Associated with the deciduous forest throughout eastern North Dakota were a wide range of species of grasses and herbs. In many locations the herbaceous community rapidly succeeded the eastern derived elm-oak vegetation community. As the warming trend continued, grasslands rapidly established themselves over the Great Plains and a sizeable portion of the Central Lowlands Physiographic Province (Wright 1970). Isolated remnants of the elm-oak community persist as riparian gallery forests along the major rivers and streams in eastern North Dakota, including the Sheyenne River.

The second major ecological shift occurred when the deciduous forest gave way to true prairie grasslands that are considered characteristic of the Great Plains region. Wright (1970) suggests that this event may have taken place on the northeastern Great Plains approximately 9000 years ago, perhaps slightly earlier. With the grasslands came the bison (Bison bison), the most ubiquitous of all Plains faunal species. By 7500 to 7000 years ago the warming, drying trend peaked and stabilized for approximately two thousand years. This interval of maximum thermal conditions is known as the Altithermal (Antevs 1955), or Atlantic climatic episode (Bryson, et. al. 1970). The transition from deciduous forest, or parkland, to prairie was nearly total, with silval species remaining only along water courses and in the vicinity of permanent, standing bodies of water. The semi-arid conditions that brought the tall grass prairie to eastern North Dakota were becoming increasingly dry until, during Altithermal times, the tall grass species gave way to short grass prairie. Although more resistant to periodic stresses of heat and aridity, even the short grass prairie was vulnerable under the dessicating Atlantic climate.

Tomanek and Hulett (1970) collected data on changes in Plains grass densities during short term wet and dry cycles in modern day Kansas. They concluded that under arid conditions some species of prairie grasses may disappear altogether. During the drought of 1936 in North Dakota only 22.4 cm of precipitation fell in Bismarck, and no prairie grasses grew west of the Red River Valley (Robinson 1966). Consequently, a prolonged period of very warm, dry conditions as occurred during the Altithermal probably had a profound effect upon the flora, and by extension the fauna, of the Great Plains. In the Devils Lake region, a short distance north of Lake Ashtabula, the Altithermal climate was sufficiently harsh that Devils Lake proper apparently dried completely (Collander 1967). The impact upon the Sheyenne River Valley may have been equally severe.

Between 4000 and 5000 years ago (McAndrew, et. al. 1967; Wright 1970) a cooler, moister climatic episode began. This Sub-Boreal period marked the return of prairie grasses in general as well as the silval species in some localities. However, the Plains region was, and would continue to be, primarily a grassland. A generally Sub-Atlantic climatic phase began about 2000 to 1500 years ago (Bryson and Wendland 1967), but it did not significantly change the vegetation pattern of the Plains in general, or the Northeastern Great Plains in particular. The last major ecological shift occurred about 850 years ago with the onset of the Pacific climatic episode, during which time steppe succeeded tall grass prairie and gallery forest in many locations (Wendland and Bryson 1974). However, along the Lower and Middle Sheyenne River Valley the riparian forests persisted into modern times.

Flora

Prior to modern Euro-American settlement of the Sheyenne River drainage two major vegetation communities were present. The uplands manifested a prairie grassland ecosystem and the river bottoms contained localized deciduous vegetation in the form of riparian forests. Butzer (1964) has characterized both of these ecosystems as having relatively high carrying capacities in terms of aboriginal extractive economies. Coupling this with the ready access to riverine resources the indigenous populations of the Sheyenne River Valley environs were afforded a considerable variety of potentially exploitable resources.

Herbaceous species native to the prairie grasslands include blue-stem (Andropogon sp.), needle-and-thread grass (Stipa comata), thread-leaf sedge (Carex filifolia), wheatgrass (Agropyron trachyaulum), prairie dropseed (Sporobolus heterolepsis), and buffalo grass (Buchloe dactyloides). Various species of cacti, most notably Plains prickly pear (Opuntia polyacantha) and pin-cushion cactus (Coryphantha vivipara), are also present in certain open microenvironments. Dominant silval species found in the riparian gallery forests include box elder (Acer negundo), bur oak (Quercus macrocarpa), American elm (Ulmus americana), hazel (Corylus sp.), and green ash (Fraxinus pennsylvanica).

Fauna

Numerous faunal species once found within the immediate vicinity of the Sheyenne River Valley are now locally extinct. At present the only large game animal found in the area is the white tail deer (Odocoileus virginianis). In preEuro-American times the most ubiquitous of all faunal species was the American bison (Bison bison). Among the more important terrestrial species known from the region, in addition to the bison which seasonally numbered in the thousands of individual animals, are elk, or wapiti, (Cervus elaphus), eastern cottontail (Sylvilagus floridanus), black-tailed prairie dog (Cynomys ludovicianus), thirteen-lined ground squirrel (Spermophilus tri-decemlineatus), raccoon (Procyon lotor), striped skunk (Mephitis

mephitis), and a variety of lesser species. Predators known from the region include red fox (Vulpes vulpes), coyote (Canis latrans), wolf (Canis lupus), and bear (Ursus sp.). Along the Sheyenne River beaver (Castor canadensis), muskrat (Ondatra zibethicus), log-tailed weasel (Mustela frenata), mink (Mustela vison), and ermine (Mustela erminea) were, and in some cases are, present. Also several species of waterfowl have been identified as locally abundant, including Canada goose (Branta canadensis), snow goose (Chen caerulescens), wood duck (Aix sponsa), pintail duck (Anas acuta), black duck (Anas rubripes), and mallard (Anas platyrhynchos). Various fish species currently inhabit the waters of Lake Ashtabula and the Sheyenne River; however, these are largely the result of deliberate stocking for sport fishing. Prior to the twentieth century northern pike (Esox lucius) and various members of the perch family, Percidae, were probably represented along with other potentially exploitable species. Shellfish, freshwater mussels (Lampsilis sp.), are locally abundant along the Middle and Lower Sheyenne River and may have been seasonally important in prehistoric times.

CULTURAL CHRONOLOGY

Knowledge of the prehistory of eastern North Dakota in general, and the Sheyenne River Valley in particular, is at best incomplete. Therefore, much of the reconstruction of local prehistory must be extrapolated from other northeastern Great Plains locales. Five primary periods of human cultural development have been defined for the region, and each will be discussed below. These cultural periods are: Paleo-Indian; Archaic; Middle Plains Woodland; Late Plains Woodland; and the Plains Village Tradition.

PaleoIndian, 10,000-5,500 BC

Human groups have probably inhabited eastern North Dakota and the Sheyenne River drainage since early Holocene times; however, the low carrying capacity of the spruce forest would have served to limit both group size and population densities. Once the boreal forest had retreated in advance of the deciduous forest and expanding grasslands, it is a certainty that human groups participating in the Llano cultural tradition were present in the region. They were unquestionably present in eastern Wyoming and other central and southern Plains locations, exploiting mammoth and extinct subspecies of bison, well before 10,000 years ago (Beckes and Keyser 1983; Frison 1978; Jennings 1974; Stanford 1979; Wedel 1978). As the warming trend that brought about the recession of the spruce forest continued, the grasslands rapidly established themselves. In the northeastern Plains this shift, as noted above, occurred approximately 9500 years ago (Wright 1970). During this interval late PaleoIndian hunters of the Plano cultural pattern were present, maintaining a primary economic focus upon the bison. Plano sites are well documented from the central and western Great Plains (Frison 1978; Jennings 1978; Wedel 1978).

Evidence of PaleoIndians in eastern North Dakota is scant. To date no PaleoIndian projectile points have been recovered from site excavation within North Dakota (Schneider 1982c); however, the Browns Valley Site in western Minnesota yielded Plano cultural materials in association with human skeletal remains (Wormington 1957).

This investigator examined one Scottsbluff and two Folsom points in a private collection in 1982. These artifacts were found along the Sheyenne River in Eddy County, approximately 12 kilometers east of the New Rockford community. The Folsom specimen were found on the uplands adjacent to the right bank of the Sheyenne River. The Scottsbluff point was recovered from the third terrace of the river a short distance northwest of the location of the Folsom finds. All three specimen were surface finds in cultivated fields. Direct examination of these locales by this investigator failed to produce any additional evidence of prehistoric human activity at these locations.

Schneider (1982c) briefly mentions four isolated PaleoIndian pro-

jectile points have also been reported from Eddy County along the Sheyenne River immediately south of Devils Lake. In addition, Johnson (1962) reports surface finds of Folsom points from the Sheyenne River delta region on the western beaches of Lake Agassiz.

Other PaleoIndian finds in reasonable proximity to the Sheyenne River Valley include an Agate Basin point from the Red River Valley in western Minnesota (Michlovic 1978, cited in Beckes and Keyser 1983). Hlady (1970) also reports the presence of isolated Agate Basin points along the beaches of Lake Agassiz in southern Manitoba. In fact, Agate Basin points appear to be widely distributed in the boreal forest of Manitoba along the prairie-forest ecotone (Ebell 1982).

Schneider (1982c) notes that 76.5% of all known PaleoIndian projectile points found within North Dakota, including the substantial collection from the badly eroded Moe Site in Mountrail County, have been fashioned from Knife River Flint quarried in western North Dakota. The early exploitation and wide distribution of artifacts made from this important, comparatively accessible resource further supports the argument that PaleoIndians were widely dispersed and well represented in all parts of North Dakota and adjacent areas (Schneider 1982c). The geologic history of the Sheyenne River Valley and the Lake Agassiz Basin, coupled with the knowledge of extant finds, suggest that there is a strong possibility that appropriate, intensive archaeological survey procedures will ultimately yield *in situ* PaleoIndian cultural materials in these locales (Beckes and Keyser 1983).

Archaic, 5500-500 BC

Early and Middle Plains Archaic sites are no better known from eastern North Dakota than are those of the preceding PaleoIndian Period. As the warming trend approached its maximum, there was probably human activity on the northern Plains during the Early Plains Archaic, although it was certainly somewhat limited. The Altithermal climatic interval, 5500-3000 BC, was comparatively warmer and drier than at present in the region. Tomanek and Hulett (1970) provide data that suggest that a succession of dry years and even decades as occurred during the Altithermal drastically affected the distribution of flora and fauna on the Northern Plains. Wedel (1961) and others have hypothesized that the region was sparsely populated because of the low density of potential food resources for humans under desert-type environmental conditions. This assumption gains additional support when known site distributions are taken into consideration. Evidence suggests that upland and riverine habitats were more intensively occupied than were the open plains (Wedel 1978). In addition to restricting the effective range of human populations, the warm, dry Atlantic climate of the Altithermal is believed to have limited the availability of adequate forage for herbivores, contributing to an overall reduction in body size of the bison. Quite probably a deemphasis of larger fauna occurred during this time, with small animals becoming considerably more important to the Early Archaic hunters (Joyner and Roper 1980). Reeves (1973) minimizes the

impact of the climate and suggests that adequate herds of bison were always available on the northern Plains. He attributes the relative paucity of sites more to sampling error than to a low population density. This viewpoint is shared by Vehik (1979) and Beckes and Keyser (1983).

External cultural influences are evident on the northern Plains from Altithermal times onward (Jennings 1964; S. J. Fox 1976). These new ideas and technologies resulted in increasing diversification of the exploitation of the available resource base, as well as initiating a trend toward greater local cultural patterning. The latter development becomes apparent during the Middle Plains Archaic Period.

The Middle Plains Archaic, 3000-500 BC, marks not only an observed increase in the number of human groups on the Plains, but a major set of cultural and ecological changes as well. The climate became cooler and moister, and human populations manifested greater cultural diversification than had been evident in earlier times. Middle Plains Archaic sites tend to be dominated by a wider range of material cultural expressions than were characteristic of PaleoIndian or Early Archaic peoples. The McKean-Duncan-Hanna-Oxbow developments are a case in point. These too may reflect certain external influences. The one obvious thread of continuity is the persistent utilization of the bison as a critical resource (Frison 1978). Nevertheless, the exploitation of this species does not appear to have been as intensive as in the earlier PaleoIndian Period or during subsequent Lake Plains Archaic and Late Prehistoric times. In addition to the bison, locally available plant resources were seasonally important, as were various species of lesser game animals (Reher 1979). The Middle Plains Archaic was a period of increased local cultural diversification, economic intensification, and population expansion and movement. These trends continued into Protohistoric times.

At present no sites of Altithermal, Early Plains Archaic, age are known from eastern North Dakota. Moreover, no sites of Middle Plains Archaic ascription have been systematically excavated in the region.

As was the case with evidence of PaleoIndian occupation of the region, Middle Plains Archaic peoples are represented through isolated projectile point finds. Beckes and Keyser (1983) and Vehik (1979) note that specimen similar to McKean Complex and Oxbow, or Parkdale, points have been reported from the general vicinity of the Lower Sheyenne River Valley.

Interestingly, Middle Plains Archaic dart points have also been found in association with Woodland cultural assemblages. Wheeler recovered a hanna point from the Great Mound at the Kropp Site in the James River Valley. This specimen is considered to be an "heirloom", rather than a product, of this Woodland population (Snortland-Coles and G. L. Fox 1984).

The Middle Plains Woodland component of the Irvin Nelson Site on the south shore of Devils Lake also yielded Middle Plains Archaic projectile points. Specimens strongly resembling Oxbow, Hanna, and McKean Complex variants were found in direct association with Besant, Avonlea, and Pelican Lake point types, and with Laurel ceramic wares (S. J. Fox 1983). Haug (1976) also reports that McKean Complex and Oxbow point forms have been found together in sites coeval with Besant and Pelican Lake artifacts in southern Manitoba; and Syms (1977) indicates their persistence into Late Woodland times in the same vicinity. This evidence raises the possibility that these particular projectile point varieties are not especially valuable as Middle Plains Archaic horizon markers on the northeastern Great Plains.

Frison (1978) suggests that the division between the Middle and Late Plains Archaic Periods is rather arbitrary. They tend to merge together and are not readily differentiated, other than the introduction of additional strategies of bison procurement. The same is true of subsequent cultural distinctions. New behavioral patterns and connections were continually emerging and/or being introduced. A tendency for fusing new cultural expressions out of introduced and extant behaviors is a hallmark of northern Plains groups regardless of developmental stage.

Late Plains Archaic manifestations, 500 BC-AD 500, are few compared to later cultures, but better represented than earlier traditions. In the valley of the Red River of the North and along the beaches of post-glacial Lake Agassiz artifacts similar to Old Copper Complex items of the Great Lakes region have been reported at several sites (Johnson 1964; Steinbring 1970). Accurate radiocarbon dates for these materials are, at this time, lacking.

The remains of four individuals buried together in a shallow pit were excavated in the James River Valley. This site, 32SN102, was eroding out of an exposed cutbank. Only one interment was recovered in situ. It is believed that all were secondary burials. A radiocarbon date of 1592 ± 70 BC suggests a Late Plains Archaic affiliation for the site (R. A. Fox and Pearson 1978, cited in Snortland-Coles and G. L. Fox 1984).

Perhaps the best documented Late Plains Archaic component east of the Missouri River Valley is at 32EM49 on the terraces of Beaver Creek, a Missouri River tributary, in Emmons County, North Dakota. Three primary activity areas were identified within this cultural horizon: a tool manufacturing area; a tool manufacturing, food preparation, and hide processing area with an associated hearth; and a food production area. The diversity of tasks represented at the Beaver Creek Site are all associated with maintenance and processing, while the paucity of artifacts indicative of procurement activities suggest that these were undertaken at other, nearby, but unknown, locales. A well developed blade tool assemblage is present at this locus. A mean date of 1192.5 BC has been obtained for the Late Archaic component at this site (Hudek and Malik

1983). The Beaver Creek Site is one of the oldest, reliably dated sites on the northeastern Great Plains.

Middle Plains Woodland, 200 BC-AD 900

The initial appearance of the Woodland tradition on the northeastern Great Plains approximately 2200 years ago is marked by the presence of two, and possibly three, coeval cultural complexes that participated in a regional "co-influence sphere." These cultures share many general attributes. Middle Plains Woodland Period sites are numerous throughout the region.

The Laurel Culture spread into eastern North Dakota from the northern Minnesota and southern Canadian woodlands. This complex is distinguished by its grit-tempered vessels with conoidal, and possibly rounded, bases. Decorations, when present, are quite variable and are usually confined to the neck and upper rim of vessels. Common decorative techniques include dentate stamping, incising, and pseudo-scallop shell stamps. Other Laurel traits include cold-hammered copper artifacts, beaver incisor tools, occasional construction of accretional burial mounds with secondary interments, and antler harpoons. The economic base of Laurel peoples is characterized by an annual round marked by seasonal exploitation of wild plant and animal foods, including fish, wild rice, beaver, moose, and bison (Anfinson, Michlovic, and Stein 1978; Stoltman 1973). The occasional presence of exotic trade items, including obsidian, platform pipes, copper, and, perhaps, Knife River Flint suggest the participation of Laurel groups in the Hopewell Interaction Sphere as defined by Struever (1972) (Syms 1977; Vehik 1979). Stoltman (1973) recognizes an affinity between the Laurel Complex and eastern cultures of the Great Lakes region. This relationship explains the comparatively high frequency of cold-hammered copper in Laurel sites. Also, the relatively close proximity of western Minnesota to the Knife River Flint quarries of western North Dakota probably accounts for the regular occurrence and use of this resource by Laurel peoples. On the other hand, given the comparative scarcity of other exotic materials and artifacts there is no evidence to suggest that the Laurel Culture was any more than a marginal participant within the Hopewell Interaction Sphere.

The second major Middle Plains Woodland cultural variant is the Sonota Complex. Neuman (1975) has defined this culture primarily on the basis of mortuary practices. Sonota Complex sites are characterized by: the construction of conical burial mounds over subterranean chambers or pits; mass secondary burials associated with bison skeletal remains, often skulls; cord-impressed and plain, grit-tempered ceramics; Besant projectile points and other lithic artifacts manufactured from Knife River Flint; and the occasional occurrence of such exotic materials as copper, obsidian, and marine shell as grave goods. Neuman contends that the Sonota Complex ultimately derives from the Kansas City variant of the Hopewell Culture. However, the few attributes shared by Sonota and Hopewell are, in reality, generalized

Woodland characteristics and less noteworthy than the differences between these cultures. The economic focus of Sonota peoples was communal bison hunting, supplemented by the seasonal exploitation of local floral and faunal species (Neuman 1975). Evidence from Kansas City Hopewell sites indicates primary reliance upon smaller game such as deer, turkey, and fish supplemented by gardening, with a marked deemphasis of bison. Moreover, the subsistence cycle of the Hopewellians was accompanied by a considerable degree of sedentism (A. E. Johnson 1979; Reid 1980); a settlement pattern absent among Middle Plains Woodland groups, whose annual economic round of hunting-and-gathering precluded the establishment of permanent, or even semi-sedentary, villages. The interment pattern and the variety and nature of funerary goods found among western Hopewell groups indicates the existence of a social system maintaining status and prestige differences between individuals (Braun 1979), while the Sonota and other Middle Plains Woodland peoples appear to have had an essentially egalitarian form of sociopolitical organization. Anthropometric analyses of human skeletal materials from mound burials on the northeastern Great Plains and from Hopewell sites indicates that these were physically distinct populations (Ossenberg 1974). Also, the mortuary patterns of Sonota and Hopewell do not share any substantive similarities (S. Vehik 1982). The ceramic and other cultural evidence indicates considerable local cultural variation in artifactual and behavioral patterning within the northeastern Great Plains Woodland tradition (Anfinson 1982).

Neuman (1975) has also posited a general relationship between the Sonota Complex and the nomadic bison hunting Besant Culture of the Northern Plains; however, he maintains that, for the most part, these are geographically distinct. Reeves (1983) also maintains a distinction between Sonota and Besant. Mound burial, widespread use of ceramics, and large, side-notched Besant projectile points characterize the Sonota Complex. The Besant Culture is identified by the presence of habitation sites containing uniquely constructed pits, fire basins, and lodges, occasional bison bone uprights, some cord-impressed ceramic wares, and the diagnostic large, side-notched projectile points (Reeves 1983). Another interpretation of this problem is that Besant is a Sonota Complex variant that lacked a well-developed ceramic industry and did not construct burial mounds (A. Johnson 1977, cited in Beckes and Keyser 1983). Syms (1977) suggests that Sonota and Besant are the same cultural groups observed at different intervals within their annual economic round. Similar seasonal cycling has been documented for the Laurel Culture of northern Minnesota (Anfinson, Michlovic, and Stein 1978; Stoltman 1973). Although the archaeological evidence at present lends support to none of these hypotheses, Syms interpretation appears to be likely explanation of the general Middle Woodland cultural pattern on the northeastern Great Plains.

Numerous Middle Plains Woodland sites have been inventoried along the Sheyenne River Valley and elsewhere in eastern North Dakota (Beckes and Keyser 1983; R. A. Fox 1980; Vehik 1979). Mounds believed to be affiliated with the Sonota Complex have been examined along the Shey-

enne River by several investigators during the past half century. The Lisbon mounds excavated by Strong (1940) in the Lower Sheyenne River Valley are believed to have been constructed by Sonota peoples (Neuman 1975). Mound site 32GG1 in the Middle Sheyenne River Valley may also have Sonota affiliations. Kivett (1948) recovered the disarticulated remains of eight individuals, in two groups, that were intrusive into the fill of the tumulus. These skeletal materials had been partially exposed by cultivation. No attempt at further excavation was made, hence the existence of a burial chamber beneath the mound was not determined. However, it was observed that there appeared to be additional human interments within the site. It was also noted that the mound had been enlarged since its initial construction (Kivett 1948). Hewes (1949) and Snortland-Coles (1983) document the presence of intrusive burials into, and accretional enlargement of, Sonota mounds. The Baldhill Mound Site in the Middle Sheyenne River Valley is unquestionably affiliated with the Sonota Complex (Neuman 1975). Both mounds excavated at this site had large, central burial chambers with log coverings containing mass, secondary human interments. A number of the bones from Mound B had been painted with red ocher; also associated with the burials in this tumulus were a copper bead and painted bison skull fragments (Hewes 1949). A radiocarbon date of $AD\ 90 \pm 150$ was obtained from Mound A.

Schneider (1982) posits a Sonota Complex affiliation for the Naze Site in the James River Valley. This locus contains projectile points similar to those found at other Sonota sites reported by Neuman (1975). A date of 85 ± 70 BC places this locus near the initial Middle Woodland in eastern North Dakota. Ceramic wares similar to Laurel Culture pottery were recovered from the nearby Beeber Site. This is also a Middle Plains Woodland occupation, although slightly later than the Naze Site (Schneider 1982). Reconsideration of the cultural stratigraphy of the Kropp Site and the Birks Site, including the presence of buried bison remains from the initial stage of mound construction, indicates possible affinities of the early horizons of these sites with the Sonota Complex (Snortland-Coles and G. L. Fox 1984). The Jamestown Burial Mounds have an initial component characterized by the presence of subterranean chambers containing mass burials and exotic grave goods in both excavated tumuli. Mound A contained a second component marked by the reuse of both burial chambers, and the placement of a cache pit of bison scapulae into the tumulus. Additional intrusive burials and a new accretional level were added at this time (Snortland-Coles 1983). Snortland-Coles (1983) justifiably argues that better definition and more sophisticated analyses of mound burial complexes are essential if the nature of Plains Woodland cultural patterning is to be properly understood. Far too much emphasis has been placed upon comparisons and evaluations of individual traits, rather than making reasoned attempts to document the continuities and configurations of local and regional cultural patterns. Therefore, in spite of the marked similarities between the initial component, and possibly the second horizon, of the Jamestown Burial Mounds and the Sonota Complex, Snortland-Coles (1983) makes no statement of probable cultural affin-

ity for these horizons.

The Middle Plains Woodland component of the Irvin Nelson Site in the Devils Lake Basin has seasonal bison hunting as the activity focus. Artifactual materials present include Besant projectile points, considered to be diagnostic of the Sonota Complex, and Laurel Culture ceramics (S. J. Fox 1983). The data from this site, and perhaps the Beeber Site in the James River Valley, suggest possible relationships between Sonota and Laurel in eastern North Dakota. Exploring the nature and extent of these relations should be an important priority in future Middle Plains Woodland research.

In the North Dakota portion of the Souris River Basin apparent Middle Plains Woodland mounds have been found in close proximity to tipi rings. Although direct associations of these phenomena has yet to be demonstrated (R. A. Fox 1982b), the prospect is tantalizing. Such a demonstration of cultural affinity would provide valuable information about Middle Plains Woodland settlement patterns and seasonal cycles. Even lacking a full corpus of data, it appears that the diagnostic behavioral products of the Middle Plains Woodland constitute little more than a thin cultural veneer over a well established Archaic hunting-and-gathering pattern emphasizing the procurement of bison.

Late Woodland, AD 600-1800

Throughout most of the northeastern Great Plains the Middle Woodland cultural complexes gradually gave way to Late Woodland traditions. Generally speaking, Late Woodland groups exhibit increased population density, more complex cultural patterning, a more diversified economic base, a higher degree of sociopolitical integration, larger habitation sites, and, in some cases, more elaborate funerary practices than Middle Plains Woodland peoples. The Late Woodland is also characterized by considerable local cultural diversification. The reasons for this trend remain to be adequately explained, but one factor that apparently contributed to it was intensified participation by local populations in overlapping co-influence spheres resulting in the introduction of, and selective responses to, new cultural stimuli. The intergroup interactions (Syms 1977; Wedel 1961, 1978; Wood 1974) were important in terms local cultural developments.

Although the Sonota Complex may have persisted into Late Woodland times in southwestern Manitoba (Syms 1977), two other mortuary traditions, the Arvilla Complex and the Devils lake-Sourisford Burial Complex, have been identified as representative of this cultural period in eastern North Dakota. The Arvilla Complex (Johnson 1973: 62) is characterized as:

" . . . a consistent, recurring pattern consisting of linear and circular mounds, subsoil burial pits, flexed and disarticulated primary and bundled secondary burials, frequent use of red and yellow ocher, associated utili-

tarian and ornamental grave goods dominated by bone and shell artifacts, Prairie side-notched and Broad side-notched projectile points, blade side-scrapers of brown chalcedony, and mortuary vessels of St. Croix stamped or Blackduck ware."

None of these traits, according to Johnson (1973), are unique to the Arvilla Complex, but it is the recurrence of them together that is distinctive. Syms (1982) has recently reassessed Arvilla and offers a refined, but tentative definition of the complex. He notes that the variation of actual burial practices is too great to be of any diagnostic value. Also, of the fifty-seven traits identified by Johnson for the Arvilla Complex, Syms observes that more than half of these, 54%, appear to be idiosyncratic to a specific site and are, therefore, of little use analytically. He also rejects consideration of the lithic artifacts and cylindrical shell beads because they are found among virtually all Late Woodland groups in the region. Items enjoying the highest frequency of occurrence are represented in fewer than half of the sampled sites. These objects are also found in association with other cultural groups, and are, for the most part, trade items obtained as a result of co-influence sphere interaction. Using a minimum frequency criterion for individual traits of occurrence in 25% or more of reported Arvilla burial sites, Syms has identified eleven "core traits" aside from the linear and circular mounds for the Arvilla Complex. Only two of these items, clay elbow pipes and clam shell gorgets, are exclusive to this complex. The remaining nine traits enjoy either limited or widespread distribution. Four appear to be trade items, these are trapezoidal shell pendants, snail shell beads, washer-shaped shell beads, and conch columella beads. The remaining five core traits are antler-tine beaver incisor gouges, curved bone arm/anklet bands, tubular beads, unworked freshwater clam shell, and bear canine pendants. One infrequent trait, miniature St. Croix stamped vessels, warrant consideration because it differs from the wares found to the west and it suggests Woodland affinities. A temporal range of AD 600 to 1400 is suggested for the Arvilla Complex. Based upon Ossenberg's (1974) examination of human osteological remains from northeastern Great Plains and northern Woodland burial mounds Syms posits a primary association between the Arvilla Complex and prehistoric Algonquian speaking peoples (Syms 1982). Much of the ambiguity surrounding this mortuary tradition is a result of the limited data base currently available, and the fact that some sites classified as Arvilla may actually have other cultural affiliations. Future studies of Late Woodland burial mounds and associated camp sites with a complete range of radiocarbon dates will go a long way toward formalizing definitions of the Arvilla Complex and its contemporary cultures on the northeastern Great Plains (Syms 1979).

The other regional Late Woodland mortuary tradition is the Devils Lake-Sorisford Burial Complex (Syms 1979). The primary distribution of burial mounds associated with tradition is between the aspen parkland and

forming the northeastern Plains boundary and the Missouri Couteau. The diagnostic traits of the Devils Lake-Sourisford Complex, in addition to mound burial, are: miniature, smooth-surfaced ceramic vessels with incised surface decorations and lips that usually have four distinctive, flaring tabs; incised and plain whelk shell gorgets; columella beads and pendants; catlinite or steatite tubular pipes; and stone tablets bearing incised representations of abstract and real-life forms, such as bison, turtles, horses, thunderbirds, and broken arrows. Many of these traits are believed to be ultimately derived from Mississippian influenced groups. Other characteristics noted by Syms (1979: 284) as "important, but less definitive" due to their association with other regional or local Woodland cultures, including Arvilla, are: curved bone arm/anklet bands; washer-shaped shell beads; antler-tine beaver incisor gouges; trapezoidal shell pendants; harpoons; freshwater clam shell containers; small shell beads; bird bone beads; and birch bark baskets. The temporal range proposed for the Devils Lake-Sourisford Burial Complex is AD 1000 to 1800, indicating some contemporaneity with the Arvilla Complex. Syms (1979) posits that Souian speaking peoples may have been the purveyors of this cultural tradition; however, no associated habitation sites have been excavated. Snortland-Coles (1983) has noted several problems with the definition of, and archaeological context of, data from the Devils Lake-Sourisford Complex, and suggests that additional clarification is necessary. Clearly, both Late Woodland mortuary traditions of the northeastern Great Plains are inadequately documented and incompletely understood.

In the mixed coniferous-hardwood forests of northern Minnesota, Manitoba, and southern Ontario the Blackduck and the chronologically later Wanikan cultures represent distinctive, local Late Woodland developments. The Blackduck Culture succeeds Laurel throughout much of its range dating between AD 800 and 1200 in most areas. Following a rather sudden appearance, it dispersed rapidly throughout the region and onto the northeastern Plains (Syms 1977). Blackduck cultural patterning indicates a subsistence base emphasizing the seasonal exploitation of a wide range of plants and animals. Fish were especially important during the warmer months (Anfinson 1979), and large game exploitation appeared to favor the bison of the Plains rather than moose, bear, deer, and other forest species (Beckes and Keyser 1983). Burial mounds were also constructed but they were not as large as the earlier Laurel tumuli. In addition, Blackduck interments are occasionally intrusive into Laurel mounds. Most mound burials appear to be primary. Grave goods, when present, usually consist of small ceramic vessels, although harpoons, beads, and other objects are occasionally found. Some individuals were wrapped in birch bark or placed on birch bark mats at the time of burial. Blackduck ceramics are useful temporal-cultural indicators. These wares are grit-tempered with cord-marked, paddled, or fabric-marked surface treatments. The neck, upper rim, and lips of Blackduck vessels often bear stamped, punctate, or brushed decorations (Anfinson 1979). Blackduck appears to share some general traits with both the Arvilla and Devils Lake-Sourisford Complexes. The Blackduck Culture shares most of its temporal and geographic range with

the Arvilla Complex, and Blackduck ceramics have been reported from some Arvilla mounds (Johnson 1973). The relationships between the Arvilla, Devils Lake-Sourisford, and Black cultures remain to be determined (Syms 1982).

The Wanikan culture with its distinctive Sandy Lake ceramics replaces Blackduck in the archaeological sequence and represents the terminal Late Woodland throughout the region. Its chronological position ranges from AD 1100 to 1750 (Anfinson 1979). The subsistence cycle of the Wanikan peoples was characterized by marked seasonality emphasizing the exploitation of wild rice (Birk 1977) and, where available, bison (Syms 1977) as critical resources, supplemented by fish, waterfowl, deer, small game, and various plant species. An increased population density apparently resulted from an intensification of resource procurement strategies (Birk 1977). In addition to the shell-tempered, cord-marked Sandy Lake pottery, the Wanikan Culture is characterized by: single, low profile mounds containing shallow burial pits; intrusive mound burials; primary flexed interments accompanied by mortuary bowls; ricing jigs or threshing pits; and small, triangular projectile points (Birk 1977). In comparison to other Late Woodland complexes the Wanikan Culture contains very few exotic items. Syms (1979) suggests a possible Dakota affiliation for this culture.

Although Late Woodland sites are widespread in eastern North Dakota, few have been investigated. Four Arvilla Complex loci were excavated during the early years of this century in Grand Forks County. These consisted of approximately one hundred burial pits and three mounds located on, or near, the Campbell Beach deposits of Lake Agassiz. Although the records of these investigations are either scant or lacking, the information gleaned from the sites was important in early attempts to define the Arvilla Complex (Johnson 1973; Syms 1982).

Mounds associated with the Devils Lake-Sourisford Burial Complex appear to be quite numerous along the major streams, rivers, and lakes in the region, but few have been systematically excavated. The earliest documented investigations of tumuli presumably affiliated with this complex are those conducted by Montgomery. He reportedly excavated all or part of more than forty mounds in the general eastern North Dakota region over a span of approximately two decades. Artifacts recovered in association with burials or from mound fill and intrusive pits, including numerous bones of bison, deer, and other animals, burned human and animal bones; catlinite slabs with incised zoomorphic designs, whelk shell, clay and catlinite pipes, bone harpoon heads, copper, and birch bark mats (Montgomery 1906), provide the bases for including these sites within this mortuary complex (Syms 1979). Syms (1979) suggests that the Hendrickson III Site, a small, fortified earthlodge village, may be a Devils Lake-Sourisford habitation site. However, recent test excavations at this locus reported by Schneider (1982) indicate a Plains Village Tradition affiliation.

The Kropp, Birks, and Jamestown mound sites all contain late com-

ponents that are contemporaneous with the Devils Lake-Sourisford Complex, however, none have been suggested as being affiliated with it. The presence of bundle burials, intrusive burials associated with copper artifacts, the presence of freshwater mussel shell and cord-marked and simple stamped pottery in the mound fill (Snortland-Coles and G. L. Fox 1984), and a date of AD 1000 \pm 85 (Neuman 1967) suggests possible Blackduck cultural affiliations for the later component of the Great Mound at the Kropp Site. Poorly preserved bundle burials are also present at the Birks Mound, four of these interments are intrusive. This burial pattern is characteristic of both the Middle Woodland Laurel and Late Woodland Blackduck cultures. In the absence of associated diagnostic artifacts (Snortland-Coles and G. L. Fox 1984), no statement of possible cultural affiliation can be made. Components III and IV of the Jamestown Mound group represent Late Woodland utilization of these tumuli. In Mound B the Component III burials were placed in shallow, intrusive pits and a new layer of fill was added, enlarging the volume of the tumulus and covering the new interments. Contemporaneous Mound A burials were placed in intrusive pits which were refilled. Mound A was not enlarged at this time. Component III activities occurred between AD 920 and 1000. Burials associated with Component IV are present at both mounds and are secondary, intrusive interments. This horizon has a presumed temporal range of AD 1000-1700. Exotic shell artifacts of columella, Marginella, and Aculosa, trapezoidal pendants, gorgets, and washer-shaped shell beads (Snortland Coles 1983) similar to those considered by Syms (1979) to be diagnostic of the Devils Lake-Sourisford Burial Complex were recovered. However, no statements regarding potential cultural affiliations are being made at this time as these data are still being analyzed.

Late Woodland horizons have been identified in four sites in the James River Valley (Schneider 1982). At the Naze and Chappel sites this component is indicated by the stratigraphic position of nondiagnostic cultural materials. The Beeber Site contains pottery that has been identified as late Blackduck, although a mixture of Blackduck and Sandy Lake attributes have been noted. From the Kirschenmann II Site cord-marked sherds similar to the Middle Plains Woodland Valley Cord-Roughened ware were found in association with Late Woodland small, triangular and small, side-notched projectile points. The subsistence base suggested by the faunal remains at Kirschenmann II represents a typically diversified Late Woodland economy with a bison hunting focus (Schneider 1982).

Cord-marked, shell-tempered Sandy Lake ceramics with crenated, or notched, rims comprise 21.8% of the total pottery sample from the Plains Village component of the Irvin Nelson Site in the Devils Lake Basin. Small, triangular unnotched projectile points are the dominant form from this horizon, although small, side-notched specimen are also present (S. J. Fox 1983). The nature of the relationship between the Plains Village and Late Woodland cultural variants in eastern North Dakota remains to be determined; however much of the apparent "mixing" of traits probably reflects mutual interactions within a regional co-

influence sphere.

In the Sheyenne River Valley, Late Woodland cultures exhibit an array of exploitative strategies reflecting reliance upon a broad spectrum of floral and faunal resources (Beckes and Keyser 1983). Probable Late Woodland habitation sites and burial mounds have been recorded throughout this drainage (R. A. Fox 1980; Vehik 1979), but no reports of excavations of sites of this period are available. Thus, explication of Late Woodland cultural patterns and processes in the Sheyenne River Valley must await future archaeological site investigations.

Plains Village Tradition, AD 1000-1800

The Plains Village Tradition had its primary development and florescence in the Missouri River Basin. Sites affiliated with this cultural development are also found along the courses of other streams in the eastern Dakotas. The behavioral systems represented within the Plains Village Tradition cultural loci are complex in comparison to Middle and late Woodland manifestations. Johnson (1969) contends that the origins of the Middle Missouri cultures was in southeastern Minnesota, near the confluence of the Cannon River with the Mississippi River. Lehmer (1971) believes that the Plains Village Tradition arose within the parklands along the periphery of the Great Plains in southwestern Minnesota and northwestern Iowa; although he does allow that an "in situ" development was possible. Syms (1979, 1982) appears to regard the Late Woodland and Plains Village cultures as distinct coeval developments from Middle Plains Woodland bases. Recently, others have also suggested that the Middle Missouri development and florescence occurred in situ following the introduction and adoption of horticulture by Woodland peoples (Snortland-Coles and G. L. Fox 1984). The exact determination of the origins of the Plains Village Tradition may be difficult to ascertain, because, as Lehmer (1971) points out, this cultural pattern represents a fusion of traits characteristic of both the sedentary populations of the eastern woodlands and the nomadic big-game hunting groups of the northwestern Great Plains.

The primary characteristics of the Plains Village Tradition include: a mixed subsistence base emphasizing cultivation of maize, beans, squash, and sunflowers as well as bison and deer hunting, fishing, and collecting wildplant foods; semi-permanent, occasionally fortified, villages situated near the floodplains of primary water courses; domestic architecture consisting of earthlodges with enclosed entrances; bell-shaped and straight-sided storage pits; grit-tempered ceramic wares with paddle-marked and cord-, or tool-, impressed surface treatments; snubnose scrapers and small, lightweight projectile points; and a wide range of bone artifacts including bison scapulae hoes (Lehmer 1971). Selected Plains Village cultural traits were adopted by many groups in eastern North Dakota who maintained essentially Late Woodland adaptive strategies into protohistoric times (Beckes and Keyser 1983).

In the prairie-lake region of southwestern Minnesota and adjoining portions of Iowa and eastern South Dakota two contemporaneous, Plains Village-related cultural expressions, Great Oasis and Cambria, are in evidence (Anfinson 1979, 1982). The Great Oasis Culture is noted for its distinctive grit-tempered ceramics with finely trailed rims and smoothed vessel bodies. Small, triangular unnotched and small, side-notched projectile points are characteristic of Great Oasis. In southwestern Minnesota a predominately Woodland subsistence pattern of intensive hunting-and-gathering was practiced, with both aquatic and grassland fauna being exploited on a seasonal basis. Maize cultivation was important in Great Oasis sites in northwestern Iowa. The Great Oasis Culture appears to have developed from a generalized Woodland base with the adoption of a small constellation of largely superficial Mississippian elements. At present, Great Oasis is considered to have close affinities with the Initial variant of the Plains Village Tradition. A temporal placement of AD 900 to 1250 is indicated for the Great Oasis Culture (Anfinson 1979).

The Cambria Culture differs in many respects from Great Oasis. Cambria ceramics are well made, grit-tempered wares with smoothed bodies and a wide range of incised or trailed designs on the shoulder, neck, rim and lip areas. Common design elements include bands of horizontal lines, spirals, filled triangles, chevrons, and meanders, or combinations of these (Anfinson 1979). Similarities have been noted between Cambria wares and Middle Woodland, Middle Missouri, Oneota, and Middle Mississippian ceramics (Wilford 1945; Knudson 1967). Other cultural traits include: small, triangular unnotched and small, side-notched projectile points; snub nosed scrapers; bell-shaped storage pits; clay elbow pipes; bison scapulae hoes; and sandstone abraders (Anfinson 1979). Many of these traits are also evident in Middle Missouri sites. Although maize cultivation was practiced by Cambria populations (Wilford 1945; Knudson 1967), there is little evidence to suggest a sedentary, or semi-sedentary, lifestyle. Rather it appears that horticulture was merely incorporated into a seasonal, Woodland subsistence cycle, which, because of cultural and climatic pressures, ultimately shifted toward more intensive exploitation of bison (Watrall 1974). Henning (1973) suggests that the Cambria Culture is probably best regarded as an eastern expression of the Initial Middle Missouri variant of the Plains Village Tradition.

The only widely accepted Mississippian culture in the northern woodlands is the Oneota Culture. Early Oneota manifestations overlapped with both Great Oasis and Cambria populations geographically and temporally, but the Oneota distribution is considerably greater than either of the Plains Village affiliated cultural variants. Oneota peoples manufactured shell-tempered ceramics in the form of globular vessels with constricted necks. Rectilinear trailed design elements are common on the shoulders of the vessels. Other material cultural traits associated with Oneota include small, triangular unnotched projectile points, bison scapulae hoes, and an assortment of bone and antler implements. The Oneota occupation in southwestern Minnesota

suggests generalized Woodland hunting-and-gathering subsistence patterning. Maize may have been seasonally important to these peoples, however, its cultivation has only been inferred from the presence of bison scapulae hoes in some sites (Anfinson 1979). A similar pattern is evident in Developmental Oneota sites in Wisconsin, where maize represented one of many resources within a diversified, primarily hunting-and-gathering, subsistence system. Oneota sites vary greatly in size, presumably reflecting seasonal economic activities, with fortified village sites being common during the later cultural phases (Overstreet 1978).

Howard (1953) was one of the first authors to attempt to systematically analyze and describe the pattern of Mississippian influences within cultures occupying the northeastern Great Plains. Similarly, Wilford (1945) made general observations about the presence of southeastern-derived cultural traits among peoples in the adjacent woodlands of southwestern Minnesota. Since the appearance of these pioneer articles other researchers have regularly noted apparent Mississippian elements in the cultural inventories of groups occupying both of these areas during the past millenium. While the presence of shell-tempered ceramic wares, imported marine shell beads, gorgets, and other objects, distinctivte decorative features and artistic motives in a variety of media, and the selective, limited cultivation of maize may, and often do, suggest some Mississippian influences, it should be noted that with the exception of the late phase of the Oneota Culture, Developmental Oneota (ca. AD 1300-1600), no variants of the Mississippian cultural tradition are known north of west-central Illinois-eastern Missouri or west of eastern Oklahoma. Also, throughout the Southeast there is abundant evidence that Mississippian cultures coexisted with, and exerted influences upon, Late Woodland peoples. Those Southeastern traits that do appear on the northeastern Great Plains and in the adjacent woodlands of southern Minnesota and northern Iowa are rather generalized and, in many instances, are as diagnostic of eastern Late Woodland as Mississippian cultures. The presence of these traits in northern locales, in all probability, are the product of nondirected, incidental diffusion through participation in a vast network of overlapping co-influence spheres. The Great Lakes region, the Minnesota woodlands, and the northeastern Great Plains are at best marginal to the Mississippian cultural flourescence. Nevertheless, the Plains Village Tradition and its Woodland variants represent the apex of aboriginal cultural development in the northeastern Plains and adjacent eastern woodlands. Its unique expressions represent a blending of regional cultural patterns with selectively adopted, and locally interpreted, foreign cultural stimuli.

The Plains Village Tradition in eastern North Dakota is neither as well documented, nor as completely understood, as it is in the Missouri River Valley. Schneider (1982) offers an interpretive summary of test excavations at six sites containing components of Middle Missouri cultural variants in the James River Valley. Early Plains Village habitations are indicated by stratified components at the Naze, Chappel,

Kirschenmann III, and Beeber sites and by the entire assemblages from the Quast, Kirschenmann II, and Schmoker sites. Charred cob fragments, kernels, and cupules of both the eight- and ten-rowed varieties of maize were found in a hearth at the Quast Site and dated at AD 1245 \pm 70. At present this is the earliest chronometrically determined evidence of this cultigen in North Dakota (Schneider 1982). Although it would appear that horticulture was practiced in the area, bison hunting and processing were also of economic importance. Given the large quantities of small, broken, unburned bison bone fragments and fire-cracked rocks, Vehik (1977) has argued that the primary economic activity performed at the Quast Site appears to have been the manufacturing of bone grease, especially given the absence of habitation structures; however, she does note that evidence of other activities are also represented. In addition, ceramic wares present suggest affinities with both Extended Middle Missouri variant and Cambria cultures (Schneider 1982). The remaining five early Plains Village components also contain grit-tempered ceramics with the same apparent cultural affiliations as noted at the Quast Site. No evidence of cultivated plant species were recovered from these loci, rather the constituent faunal assemblages indicate a generalized Woodland subsistence pattern with a primary emphasis upon bison. Freshwater mussel shells were especially well represented at the Kirschenmann II site. A significant trend noted during early Plains Village times in the James River Valley is the increasing use of raw materials other than Knife River Flint for the manufacture of lithic artifacts (Schneider 1982). This may reflect changes in patterns of intergroup interaction at this time.

The second Plains Village horizon documented in the James River Valley is represented in surface collections from the Rode and Hendrickson II sites, a stratigraphically identified component at the Beeber Site, and by the entire assemblage of the Hendrickson III Site, a small, fortified earthlodge village (Schneider 1982). The settlement pattern and artifact inventory of the Hendrickson III village compares favorably to the larger habitation sites in the Missouri River Valley. A wide range of bone tools are present including assorted spatulas, hide abraders, awls, choppers, punches, and one bison scapula hoe. The decreasing frequency of Knife River Flint in the lithic inventory and the increased representation of more immediately accessible raw materials would suggest possibly weak, or irregular, contacts between the inhabitants of eastern North Dakota and populations located in more westerly regions. Differences between the contemporaneous Plains Village peoples of the James and Missouri river valleys are also evident in their subsistence patterns. The Hendrickson III Site, like the earlier Quast Site, contains evidence of maize. The frequency of occurrence of this cultigen is low compared to Missouri River Valley villages. The subsistence pattern indicated for inhabitants of the Hendrickson III Site is a broad-based, seasonally focused hunting-and-gathering mode with an emphasis upon bison exploitation. Schneider (1982) posits a late summer to late fall occupation of this locus. The ceramics recovered during excavations at the Hendrickson III Site cannot be conveniently classified within extant taxonomic frameworks. These wares exhibit a

complex admixture of attributes suggesting the Initial and Extended Coalescent variants of the Middle Missouri, the Stutsman Focus of eastern North Dakota, and one vessel reminiscent of the mortuary pots found in some Devils Lake-Sourisford Burial Complex interments. On the basis of these data, a simultaneous, but apparently independent, development of Missouri River Valley and eastern North Dakota Plains Village cultures is hypothesized (Schneider 1982). Syms (1979) has suggested that the Hendrickson III Site may be an occupational locus associated with the Devils Lake-Sourisford Complex. Three radiocarbon dates with an average corrected value of AD 1401 \pm 55 were obtained at the Hendrickson III Site. The Beeber Site also contains Plains Village Tradition ceramics, although they appear to be somewhat later than those found at the Hendrickson III village. Grit-tempered wares with parallel incised triangular and chevron-shaped elements present at the Beeber Site appear to be comparable to those recovered from Extended Coalescent variant sites in the Missouri River Valley. Schneider (1982) concludes that this horizon at the Beeber Site probably reflects a short-term, seasonal occupation by a group of hunters from the Missouri River Valley.

Two of the James River Valley sites reported by Schneider (1982), Naze and Beeber, contain Plains Village cultural components in which Euro-American trade goods are present. A gray gunflint, a white glass bead, and fragments of bottle glass were collected at Naze, and a small sheet of brass came from Beeber. The presence of these foreign materials signifies the beginning of the Historic Period in aboriginal culture history in eastern North Dakota. A temporal range of AD 1750 to 1800 is suggested for these sites (Schneider 1982).

The Hintz Site is an unfortified earthlodge village also located within the James River Valley of eastern North Dakota. Data from this site served as the basis for Wheeler's (1963) definition of the Stutsman Focus, a cultural interval identified with the Hidatsa occupation of this area during the period of early Euro-American contact. Four metal knife blades, apparently Euro-American trade goods, and chronologically and stylistically late ceramic wares are given as validation for a temporal assignment of AD 1750-1800 for the Stutsman Focus. Hintz Site ceramics, like those at the Hendrickson III Site, manifest considerable variation and are similar to wares found in the Missouri River Valley. Surface treatments on recovered sherds include painting, incision, and stamping. Other diagnostic elements of the Stutsman Focus are the ubiquitous small, triangular unnotched projectile points found throughout the region in late prehistoric and early historic times, sweat lodges, and eagle traps (Wheeler 1963). Other sites have been included by Wheeler within the Stutsman Focus; however, diagnostic data is largely lacking. Analyses of recently collected site data from the James River Valley discussed above, have led Schneider (1982) to conclude that the local cultural chronology is considerably more complex than Wheeler originally thought. Given the absence of fortifications around the Hintz village, the presence of ceramic wares sharing Extended Middle Missouri, Extended Coalescent, and Post-Contact Coalescent

stylistic elements, and the relatively small number of Euro-American trade goods Schneider (1982) proposes an alternative temporal range of AD 1600 to 1700 for the Stutsman Focus.

In the Lower Sheyenne River Valley the Post-Contact Coalescent variant is represented at the Biesterfeldt Site, a large, fortified village containing more than sixty randomly placed, burned earthlodges and a large "ceremonial" earthlodge facing an interior, central plaza (Wood 1971). All earthlodges maintained entries oriented toward the southeast. Storage pits were placed outside rather than within the domiciliary structures. The occupants of this protohistoric village were sedentary horticulturalists and hunters. The ceramic wares are generally similar to those manufactured by the protohistoric and historic Arikara in the Missouri River Valley; however, the frequency of dowel-impressed, cord-marked and linear check-stamped decorations on vessel rims represents a local stylistic departure from the Missouri River Valley wares. The few chipped stone artifacts present, like the bone and ground stone implements, are also quite similar to their Middle Missouri counterparts. Most of the flaked stone tools have been replaced by trade goods, including both unmodified pieces and metal implements that attempted, with varying degrees of success, to copy pre-contact prototypes. Based upon internal cultural patterning and the presence of horse bones, a post AD 1750 date is implied for the Biesterfeldt Site (Wood 1971).

In the Devils Lake Basin, the Irvin Nelson Site contains, in addition to Sandy Lake ceramics discussed above, Extended Middle Missouri variant pottery in association with a broad spectrum, Woodland hunting-and-gathering subsistence pattern emphasizing the exploitation of deer or elk, fish, waterfowl, and various species of rodent during the late summer to late fall months. One copper artifact of Euro-American origin, a heart-shaped center piece from a rosary, was recovered from this component. A cross and an inscription in French are present on the face of this specimen. The inscription, "Marie Coneal (or Conal) Péche . . ." has been interpreted as "Mary conceived without sin, pray for us." This artifact probably originated with the early Jesuits in eastern Canada, or perhaps an early explorer or trapper. A radiocarbon date of AD 1550 \pm 100 was obtained from the component containing these materials. The ceramic chronology appears to compare favorably with this temporal assessment; however, in light of the historic specimen, the radiocarbon date appears to be one or two centuries too early (S. J. Fox 1983).

Even though well represented in eastern North Dakota, the Plains Village Tradition is incompletely understood. Moreover, with the exception of selected protohistoric sites, such as Biesterfeldt and possibly Hintz, there seems to be a mixture of both Middle Missouri and Late Woodland cultural elements within the Plains Village variants in the region. In order to better understand the complex patterns of cultural interaction within eastern North Dakota, and between this and adjacent areas, intensive excavation at sites with a high degree of

integrity representing all developmental periods need to be undertaken and a complete series of radiocarbon dates obtained. In addition to defining the nature and intensity of relationships between Late Woodland, including the burial mound complexes, and Plains Village cultures, the patterns of interaction between the Plains Village Tradition variants of the Missouri River Valley and the eastern Dakotas must also be ascertained and interpreted.

METHODOLOGY

Grid and Mapping Procedures

Working from site survey information (R. A. Fox 1980) and local topography, a datum point for each archaeological locus was selected in a location presumed to be outside of the probable site boundaries. The datum points for sites 32BA415 and 32BA428 were marked by driving 0.8 meter long, heavy wooden stakes into the ground with nails set in their tops. At site 32GG5 a mark was chiseled into a large, relatively flat surfaced glacial erratic boulder located on top of a small knob near the eastern margin of the locus. At all sites the datum points were left intact. The rationale for selecting a datum point outside of the presumed site boundary was to limit the potential for confusion in recording and cataloging data. This was accomplished by having virtually all sampling units located within a single grid quadrant, thus eliminating the possibility of having cardinal directions misrepresented during field data recording and recovery.

Subsequent to the establishment of the datum point, a grid was laid out on each site. The grid was used as the basis for documenting and maintaining horizontal control during the test excavation process. All grids were established by aligning with true North. The transit and metric stadia rod used in setting the grid were also used to shoot elevations from established grid points. These readings were recorded for purposes of constructing a topographic map of each site.

Excavation Methods

Test excavation units were one meter by one meter squares. The number of units sampled at each site varied with the size and configuration of the locus. Specific information regarding sample sizes is contained in the individual site discussions that follow. Each unit was excavated in accordance with the natural stratigraphic horizons present in each site. Individual strata were excavated in ten cm levels. In situations where a stratum was especially deep the practice of subdividing it into smaller, arbitrary levels affords the opportunity to isolate sub-components that may be indicative of differential use or occupation, if such are present. Stratigraphic profiles were mapped for each test excavation unit. In addition, two walls and the floor of each sample unit were photographed. The excavation at all units was terminated with attainment of sterile clay or sand.

All excavated soil matrices were processed through 6.35 mm by 6.35 mm wire mesh. A dry screening process was used almost exclusively during these site investigations. Water screening was attempted; however, inadequate water pressure forced an abandonment of this process. All materials recovered from the screens were bagged, labeled, and prepared for laboratory cataloging.

The water separation, or flotation, technique was originally intended to be an integral part of the sampling strategy at each of the sites investigated during this project. However, the generally shallow nature of the culture-bearing strata with large quantities of roots and rootlets, and the high degree of bioturbation significantly limited the effective application of this data recovery technique. This was an unfortunate development in light of the potential contribution that small-scale data can make toward site interpretation.

Laboratory Processing

Processing of data within the laboratory entailed cleaning, cataloging, numbering, describing, sorting, and analyzing all excavated materials. Most of the site data underwent microscopic examination at 20X to 40X magnification. Lithic materials were scrutinized for evidences of utilization as well as manufacturing technique and patterns of retouch, where present. Ceramics received similar treatment, however, the primary concern with these artifacts was determining the temper, manufacturing technique, when discernable, and the form and pattern of such surface treatment and decoration as may be present. Bone material was selectively examined to determine deliberate versus random fracturing, evidence of utilization as tools, and, on larger specimen, evidence of the butchering process. In addition, taxonomic identification was attempted on all osteological remains sufficiently complete to permit classification.

Site Documents, Records, and Data Curation

Artifacts, ecofacts and other collected materials from sites 32BA415, 32BA428, and 32GG5 will be curated at North Dakota State University. In addition, copies of all documents, records, photographic negatives, and other information pertinent to the Phase II test excavations of these sites will be on file in the Department of Sociology and Anthropology at North Dakota State University, Fargo, North Dakota.

32BA415

Site Description and Setting

Site 32BA415 is located near the center of the northern terminus of a large peninsula formed by the confluence of Baldhill Creek and the Sheyenne River. In the vicinity of the site the waters of both streams have been confined by Baldhill Dam and are part of Lake Ashtabula. Site 32BA415 lies within the NW $\frac{1}{4}$, NE $\frac{1}{4}$, NW $\frac{1}{4}$, SE $\frac{1}{4}$ of Section 4, Township 142 N, Range 58 W (Figure 3).

The locus is situated at the edge of the peninsula where a steep bank descends to the impounded waters of Baldhill Creek, and is slowly eroding into Lake Ashtabula. Erosional gullies have cut through the bank to the lake at both the eastern and western ends of the site. These phenomena attest to the runoff that periodically occurs on the peninsula, which has a gradual downward slope to the north in the site area (Figure 4).

The portion of the peninsula containing the site was formed by two successive episodes of downcutting by the post-glacial Sheyenne River. Site 32BA415 is situated on a remnant of the third, or second oldest, terrace of the river. Each of the four terraces evident in the valley was formed by downcutting as the river sought aggradation with the receding waters of Lake Agassiz (Brophy 1967; Kelly and Block 1966).

During the millenia since the formation of the higher river terraces the topography of the peninsula has been modified through colluvial action and wind erosion. Sediments have been redeposited from the southern, higher, elevations on the peninsula down slope toward the north. Also, aeolian deposition from the bluffs across Baldhill Creek to the north has occurred on the lower portion of the landform. It should also be noted that the site area has experienced aeolian erosion, as well as erosion from slumping near the lake margin. However, the depositional action has occurred at a slightly greater rate than has erosion within the general vicinity of 32BA415.

Site vegetation at the present time consists mainly of a heavy brush cover. Tall prairie grasses are locally dense. These flora have helped to stabilize soils on the northern end of the peninsula. The grasses have contributed to the development of a thick sod layer, in some cases as deep as 12 cm. The brush has numerous large roots, between 0.5 cm and 1.0 cm in diameter, with a horizontal dendritic pattern. Thus the vegetation, along with numerous burrowing animals in a relatively shallow soil, usually 40 cm or less including the sod layer, has resulted in a substantial degree of bioturbation within the site.

Soils

Buse loams, hilly and steep are present over the entire lower por-

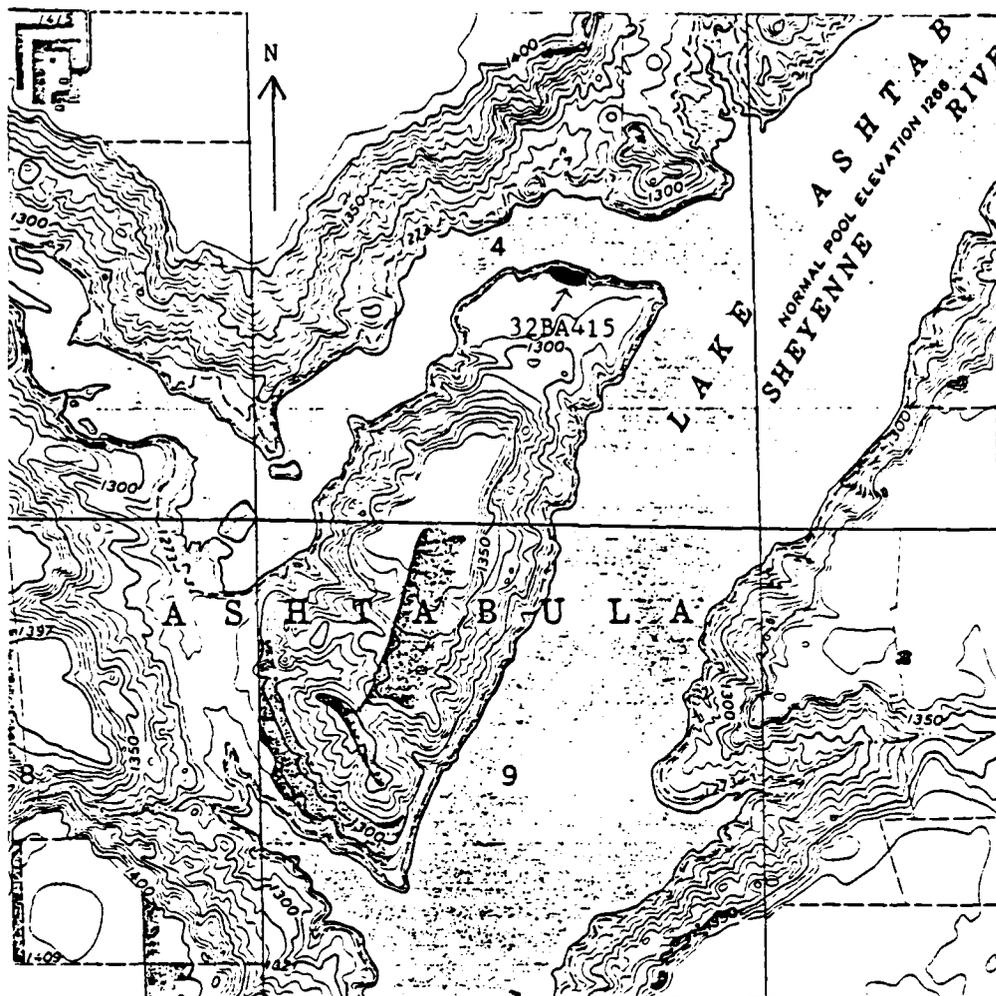


Figure 3. USGS Topographic Map, Dazey NE Quadrangle, showing the location of site 32BA415.

tion of the penninsula containing 32BA415 (Patterson, et. al. 1968). These soils are most common on slopes of 15° to 30°, or adjacent to the lower extremities of such slopes. The latter condition exists in the vicinity of the site. Buse loams, hilly and steep tend to be somewhat variable with poor sorting, this is due in large part to their primarily colluvial origin. As noted above, limited aeolian erosion and deposition have contributed to the soil profile within the general penninsula area.

Site stratigraphy is relatively simple and homogeneous. Excluding the sod layer, only two soil horizons were noted throughout virtually all of the test excavation units. The upper soil level, A Horizon, consisted of Buse loams, hilly and steep. This matrix is a fine silt with a very high clay content that retains moisture very well. Throughout the silty-clay are numerous small, less than 2.5 cm in diameter, rounded or fractured pieces of shale. The surfaces of these tend to be highly oxidized. In addition to the shale, small water worn siliceous pebbles and granular, crystalline rock fragments are occasionally present, however these are few compared to the quantity of shale pieces. All of the stone and much of the clay and silt comprising this soil matrix had upland glacial tills as parent material. Soil color is brownish black (5 YR 2/1).

No B Horizon was observed within the sample units excavated at this site. The silty-clay directly overlies a glacial till that comprises the C Horizon. This lower stratum contains numerous cobbles and rocks of varying size, from 3.5 cm to more than 50 cm in diameter. The constituent soil is an oxidized clay of moderate reddish brown color (10 R 4/6). Representative site stratigraphy is depicted in Figure 5.

Excavation Plan

Based upon preliminary site survey data (R.A. Fox 1980) and existing site topography, a site datum was established beyond what was expected to be the southwest perimeter of the locus. This point is 67.8 meters south of the present lake shore. It is also south and immediately east of the erosional gully that marks the effective western terminus of the site. All but two test excavation units were placed in the north-east quadrant of the site grid. The two exceptions were located immediately west of the north-south axis of the grid, south of the gully.

A total of twenty-six one meter by one meter square test excavation units were placed within site 32BA415. All but two of these units contained lithic materials, ceramics, or bone or shell fragments within the sod or the silty-clay horizon. Fifteen of the sample units were located within twenty-five meters of the northern terminus of the penninsula. The rationale for concentrating sampling activity near the bank was due in large part to the previous experience of the Principal Investigator excavating sites in similar physical settings. Under these conditions there tends to be the greatest concentration, variation, and distribution of archaeological data nearest the minor stream at the confluence

of two water courses. This strategy was validated by the fact that these test excavation units yielded the most substantial quantities of cultural materials in all observed categories.

The remaining eleven test excavation squares were distributed at varying intervals south of this initial series of units. Artifact densities diminished significantly away from the northwest corner of the site. The site has a maximum north-south axis of 65 meters and extends east-west along the end of the peninsula for 110 meters. Locations of the sampling units are indicated in Figure 4.

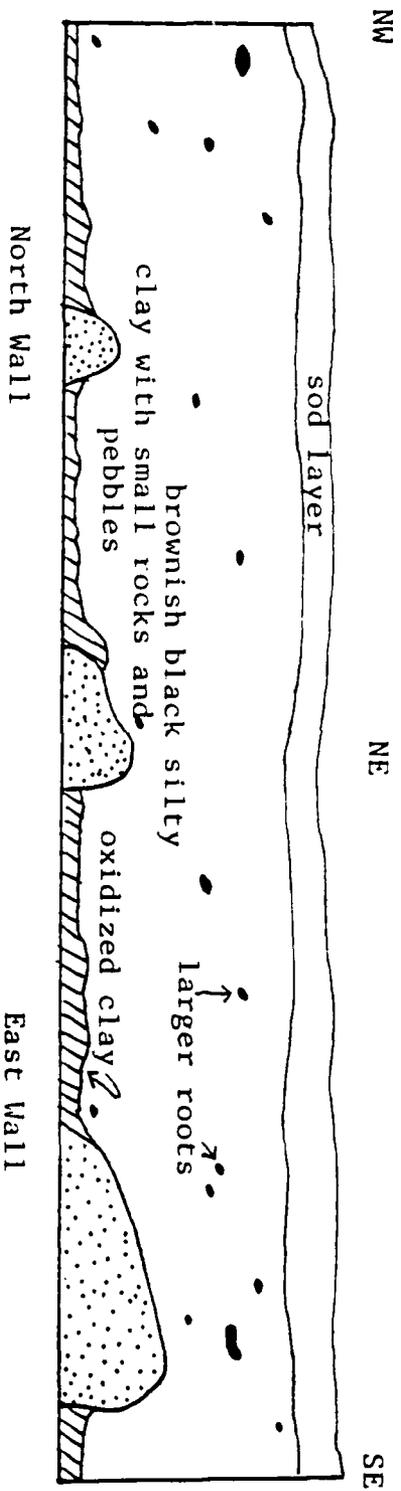
Testing of the site began with the systematic removal of the sod layer from those units where it was present. The sod was broken and examined by hand for human cultural materials. Subsequently, the silty-clay soil horizon was excavated in 10 cm levels until the sterile, oxidized clay of the glacial till was encountered, usually within 30 cm to 40 cm below the original surface.

Cultural materials were recovered from the sod layer and the silty-clay A Horizon. The glacial till is sterile. Throughout the excavation units the oxidized clay horizon is relatively free of roots and rootlets. However, the culture-bearing stratum has been heavily disturbed by dense horizontal root structures of the predominately brushy vegetation cover. The degree to which the cultural materials of this site are actually in situ is highly suspect. In addition, burrowing animals have been, and continue to be, quite active within the site. In fact so active are these fauna that the initial site survey (R. A. Fox 1980) was able to delineate site boundaries relatively accurately by examining artifacts and other cultural materials recovered from the spoil dirt of these animals' burrows.

Results

Materials recovered during the test excavations of site 32BA415 fall into four general categories: bone; lithics; ceramics; and shell. In terms of quantity of specimen collected the bone fragments dominate the material inventory from this locus. Lithics, primarily debitage, had the next greatest frequency of occurrence, followed by ceramics and freshwater mussel shell fragments (Table 2).

A clustering of bone fragments, lithic debitage, and ceramic materials was excavated from the northwest corner of the site in grid units 49N, 15E and 49N, 16E at 14 cm to 22 cm in depth. Other than four core fragments and two fire-cracked rocks, all of the lithic artifacts recovered from this cluster were waste flakes. Thirty-seven flakes were present. The 43 culturally modified pieces of stone found within these grid units represent 19.1% of the total site inventory of lithic materials. Ceramics were even more abundant than lithics within this artifact cluster. Eighty-three individual pot sherds were recovered. Many of the ceramic pieces are quite small, having a diameter of less than 2.0 cm.



Scale: 1 cm=10 cm

Figure 5. Representative stratigraphy of site 32BA415 from test excavation unit 49N, 16E

This sum comprises 94.3% of the total number of sherds collected from site 32BA415. By far the most common items present within this artifact grouping were small fragments of bone, numbering 131 individual pieces, eight of which had been burned. This is 14.1% of the total site bone sample. In spite of the presence of burned bone, fire-blackened pot sherds, and fire-cracked rocks no charcoal was recovered from the matrix containing this artifact concentration, nor was any burned earth present. The entire cluster of cultural materials was excavated (Figure 6).

The activity represented by the artifact grouping is difficult to ascertain directly; however, two interpretations seem most likely. First, this is simply a refuse area; or second it is a locale where some type of processing activity took place, perhaps the manufacturing of bone grease. Vehik (1977) has identified the latter activity at the Quast Site in the James River Valley. In addition, she presented an ethnological overview of the techniques and importance of bone grease manufacture among historic Plains Indian groups and a review of the archaeological evidence of this rendering process. This activity has been suggested for other archaeological sites in eastern North Dakota, including the Irvin Nelson Site in the Devils Lake Basin (S. J. Fox 1983) and site 32BA418 on Lake Ashtabula (R. A. Fox 1982). The present data indicate that this activity may have taken place at 32BA415 as well. Bones of large game animals, bison and possibly deer, were apparently fractured while still green for the purpose of processing the marrow, the primary ingredient in bone grease. This resulted in the by-production of many very small bone fragments. Cobbles from the glacial tills may have served as implements for fracturing the bone, but none were recovered. The larger erratic boulders could have served as anvil stones. The pot sherds may represent receptacles used in the actual rendering of the bone marrow into grease. The fire-blackening evident on many of the sherds, the occasional small pieces of burned bone, and the fire-cracked rock would tend to suggest that some kind of processing activity took place, and it may have been the manufacturing of bone grease from the marrow of bison, and possibly deer, bones.

It must be emphasized that this is only an hypothetical interpretation of activities at site 32BA415. Important forms of secondary evidence of bone grease manufacturing, fire pits, burned earth, and potential hammerstones, were not recovered from any of the test excavation units. Also, the number of bone fragments present is extremely low compared to the Quast Site (Vehik 1977), the Irvin Nelson Site (S. J. Fox 1983), and site 32BA418 (R. A. Fox 1982). At these loci the bone pieces number in the thousands of individual specimen. It is doubtful that even with the entire site collection of bone, 932 fragments, taken into consideration, that there are enough pieces to represent the volume necessary to have produced any more than a meager amount of bone grease; particularly in light of the fact that it is estimated that the skeletons of two adult bison are required to produce only twelve pounds of grease (Vehik 1977). Although bone grease manufacture may have taken place at site 32BA415, the possibility remains that the artifact cluster

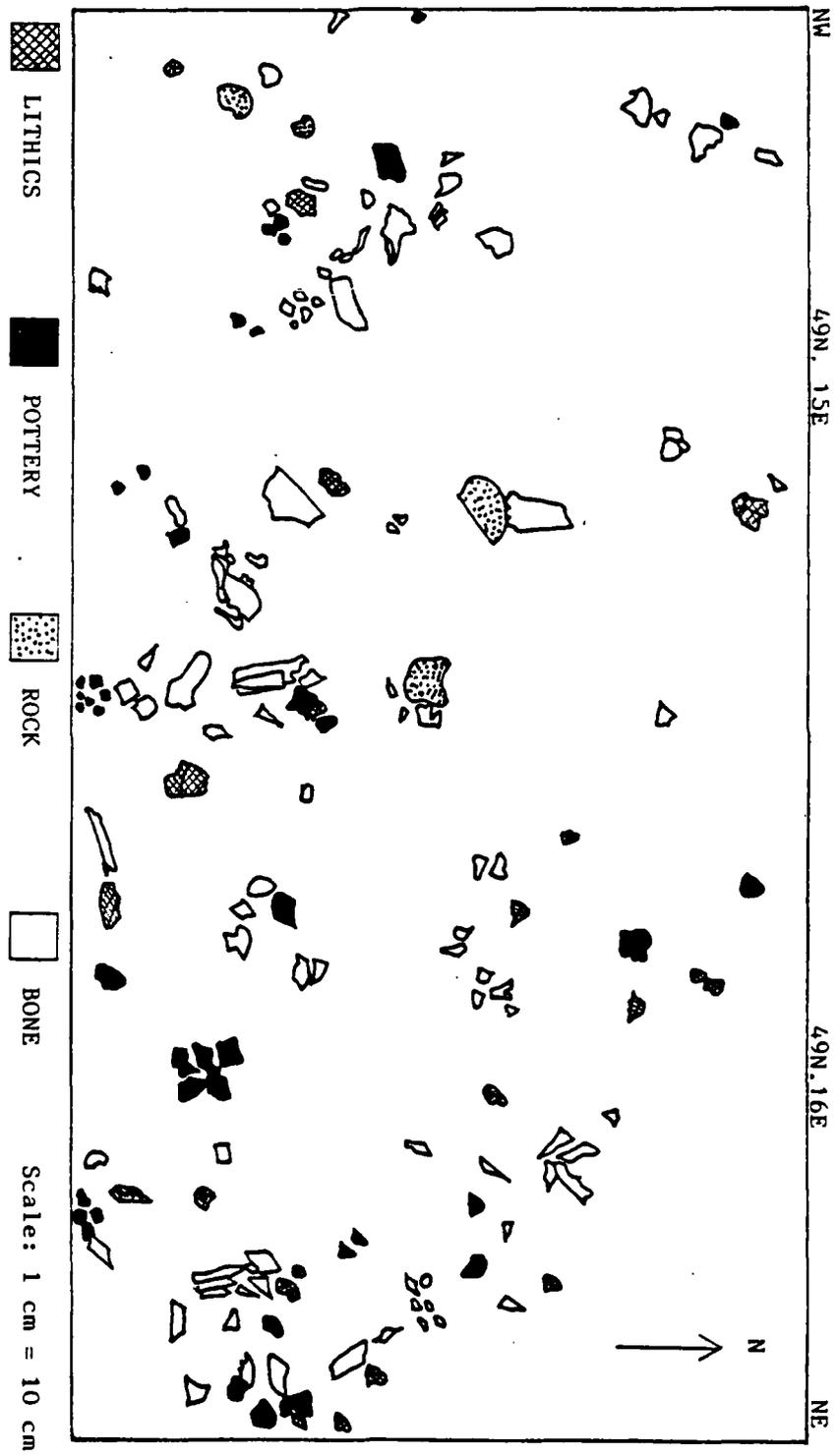


Figure 6. Bone, ceramic, and lithic artifact cluster in grid units 49N, 15E and 49N, 16E of site 32BA415.

merely represents a small, undistinguished refuse scatter associated with a seasonal encampment of brief duration. Much of the evidence appears to be badly disturbed through bioturbation, primarily roots and rodent burrows. In most units cultural materials have been so displaced that they are randomly scattered throughout the 30 cm to 40 cm of site matrix composed of the sod layer and the A Horizon soil.

Lithics

The second largest data category, following bone, represented in the collection from site 32BA415 is lithic materials. These comprise 17.9% of the total inventory. Including fire-cracked rock, 224 lithic pieces were recovered. Of this total, 212, or 94.6%, are lithic debitage, or flakes. The debitage was analyzed according to three criteria: stage of manufacture; evidence of utilization; and raw material of manufacture.

All flakes were analyzed according to the stage of manufacture that they represented. The parameters for this mode of classification have been outlined by Schneider (1972). Primary flakes are those with cortical material present over the entire dorsal surface and represent the initial stages of stone tool manufacture. Secondary flakes also have cortical material on the dorsal surface, but it has only partial coverage. These flakes are also representative of the initial stages of tool manufacture. Tertiary flakes have no cortical material present at all, and are seen by Schneider as representative of the final stages of stone tool manufacture, or as by-products of tool maintenance. A total of 31 primary flakes, 63 secondary flakes, and 118 tertiary flakes were recovered during test excavations at 32BA415. The distribution of these data suggest that tool manufacturing, and possibly some tool maintenance, were practiced by the inhabitants of this locus.

Evidence of utilization was determined by examining the working edges of the flakes under magnification of 20X and 40X. Striations resulting from use were noted when present, as were small wear-induced irregularities in the working edge. The presence of many flakes fashioned from coarse raw materials made positive identification of use patterns difficult in most instances. In cases where there was no obvious evidence of use-wear, the artifact was classified as non-utilized. These examinations indicated that a large number of the primary and secondary flakes had been used as tools, principally for cutting and scraping; and that many of the larger, greater than 1.0 cm diameter, tertiary flakes also functioned as implements rather than simply being discarded. Eleven, or 35.5%, of the primary flakes manifested obvious signs of use. Nineteen, or 30.1%, of the secondary flakes had been utilized. Comparably, only 32, or 27.1%, of the tertiary flakes had been used as tools. Retouching was evident on one tertiary and two secondary flakes.

The raw materials from which the lithic materials were manufactured were quite diverse, representing a mixture of local and exotic, or foreign, materials. Exotic sources of stone accounted for 58.5% of the

lithic debitage; while local raw materials represented 41.7% of these artifacts. The best represented raw material is Knife River Flint from which 29.5% of the flakes were fashioned. This is one of the most common sources of stone used in tool manufacture in the region. It is imported from western North Dakota. Other exotic materials used for making artifacts at 32BA415 were: Swan River Chert from southern Manitoba, 15.2%; silicified sediment from southwestern North Dakota and eastern Montana, 4.9%; agate, probably from eastern Montana, 3.6%; porcellanite from eastern Montana, 2.2%; and obsidian from northwestern Wyoming, 1.8%.

Locally available materials used for manufacturing artifacts derive primarily from the glacial tills. These include quartzite, from which 21.4% of the flakes were made; granite accounts for 7.1%; basalt was used for 4.0% of the flakes; and quartz flakes comprised 2.7% of the total debitage collection (Table 1).

Schneider has posited that cultural groups occupying eastern North Dakota valleys and lake basins became less dependent upon foreign materials for the manufacture of lithic artifacts, and more reliant upon local materials through time (Schneider 1982a). This pattern was observed at the Irvin Nelson Site in the Devils Lake Basin (S. J. Fox 1983), and may have been occurring at 32BA415. In the deeper Middle Woodland levels of sites in the James River Valley, Schneider (1982a) noted that approximately 71% of the total lithic inventory was composed of artifacts manufactured from Knife River Flint, and that by Late Woodland times this total had decreased markedly. The fact that only 29.5% of the total lithic materials were manufactured from this material at 32BA415 would suggest that a similar shift was going on here, especially with 42.9% of the artifacts having been fashioned from locally available sources of stone.

A total of six finished artifacts, or artifact fragments, were recovered during test excavations at this site. These items are typically associated with game procurement and processing activities. The artifacts include two flake cutting-scraping tools, one end scraper, two biface fragments, and a corner-notched projectile point.

Artifact Descriptions

A retouched flake cutting-scraping implement fashioned from a pentagonal-shaped flake of Knife River Flint was collected (Figure 7a). This specimen has stepped pressure retouch in an incurvate notch on one side. Two other edges evidence signs of utilization as well. The implement is unifacially worked with random percussion flaking on the dorsal surface. The distal end is acute. It has a maximum length of 21.6 mm, a maximum width of 19.9 mm, and a maximum thickness of 7.2 mm. The color of the specimen is moderate brown, 5 YR 4/4.

A retouched flake cutting-scraping tool manufactured from a

	Knife River Flint	Swan River Chert	Obsidian	Silici- fied Sediment	Porcel- lanite	Quartz- ite	Basalt	Granite	Silice- ous
	N	N	N	N	N	N	N	N	N
	%	%	%	%	%	%	%	%	%
primary flake	4 1.8	4 1.8		3 1.3	1 0.4	8 3.6	3 1.3	2 0.9	6 2.7
secondary flake	18 8.0	10 4.5		3 1.3	3 1.3	12 5.4	3 1.3	4 1.8	10 4.5
tertiary flake	42 18.8	20 8.9	4 1.8	4 1.8	1 0.4	27 12.1	2 0.9	7 3.1	11 4.9
projectile point	1 0.4							1 0.4	1 0.4
biface fragment									
scraper	1 0.4			1 0.4		1 0.4	1 0.4		3 1.3
core									
	66 29.5	34 15.2	4 1.8	11 4.9	5 2.2	48 21.4	9 4.0	16 7.1	31 13.8

Table 1. Distribution of lithic artifacts by material of manufacture for site 32BA415.

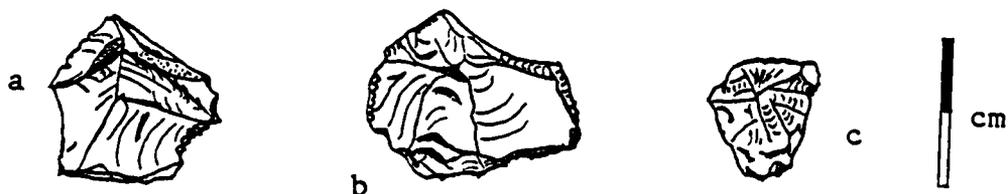


Figure 7. Flake cutting-scraping implements (a, b); and an end scraper from site 32BA415.

tertiary flake of Knife River Flint was recovered from site 32BA415. This artifact has random percussion flaking on the dorsal surface. Simple pressure retouch occurs along two edges. The ventral surface manifests simple percussion retouch along one edge, otherwise it is unworked. This artifact has a maximum length of 17.8 mm, a maximum width of 11.9 mm, and a maximum thickness of 6.3 mm. The color of this specimen is moderate brown, 5 YR 3/4 (Figure 7b).

Also recovered was a small end scraper (Figure 7c). This artifact is unifaceally worked. It has been manufactured from a tertiary flake of Swan River Chert. The dorsal surface is steep and domed with random pressure flaking. Pressure flaking is also evident along the broad distal working edge. It has a plano-convex cross-section. All edges of the specimen manifest signs of heavy utilization. The artifact has a maximum length of 15.9 mm, a maximum width of 14.3 mm, and a maximum thickness of 5.0 mm. Surface color of this implement varies from white, N9, to light brown, 5 YR 6/4.

A distal fragment of a bifacially worked tool was collected from this site. The specimen has been fashioned through percussion flaking of both the dorsal and ventral surfaces. It is rather crude compared to the other artifacts recovered from this locus. The distal end is broad and its sides are essentially straight (Figure 8a). It has a bi-convex cross-section. The implement has been manufactured from local granite and has a patine on one surface. The patinated surface is yellowish gray, 5 Y 8/1, and the opposite surface is olive gray, 5 Y 4/1. The artifact has a maximum length of 37.3 mm, a maximum width of 41.6 mm, and a maximum thickness of 15.6 mm.

The proximal portion of a small, bifacially worked artifact was recovered during test excavations at 32BA415. This specimen evidences random percussion flaking on both the dorsal and ventral surfaces. It is bi-convex in cross-section. The base is straight and thinned, and the sides are also straight. Light percussion retouch is present along the sides and base. The implement has a maximum length of 17.1 mm, a maximum width of 14.4 mm, and a maximum thickness of 3.6 mm. It has been fashioned from a gray chert, and has a color identifica-

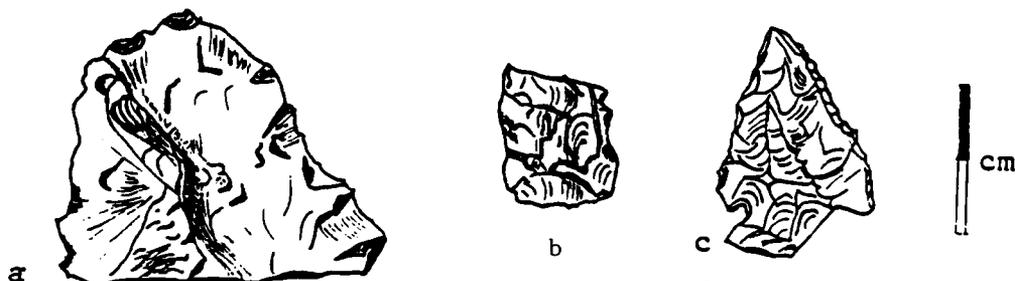


Figure 8. Distal fragment of a biface (a); proximal biface fragment (b); corner-notched projectile point (c) from 32BA415.

tion of light olive gray, 5 Y 6/1 (Figure 8b).

One projectile point was collected during investigations at site 32BA415. The artifact is corner-notched and has been manufactured from Knife River Flint. It is unifacially worked. The dorsal surface of the implement manifests random pressure flaking. The distal end of the specimen is acute. One side is straight, the other side is excurvate and beveled (Figure 8c). Simple pressure retouch is present along the beveled edge. Simple percussion retouch is present along the straight edge, on both the dorsal and ventral surfaces. The base is fragmentary; however, the remaining portion is straight with an expanding stem. The blade of the specimen has simple barbs. It has a flattened cross-section. The artifact has a maximum length of 30.5 mm, a maximum shoulder width of 20.4 mm, and a maximum thickness of 3.0 mm. The notches are 4.3 mm deep. This specimen is moderate brown in color, 5 YR 3/4.

Only one lithic artifact has any diagnostic potential, that being the corner-notched projectile point. This specimen is characteristic of the Middle Plains Woodland cultural horizon. Similar artifacts have been reported from many sites of this cultural ascription on the Great Plains. The only unique attribute that this specimen possesses is the beveled blade edge. Nevertheless, this is a representative artifact of this cultural horizon in the region, and, for that matter, the woodlands of the Eastern U. S. This cultural assignation is substantiated by the presence of Middle Plains Woodland ceramics at this site.

Ceramics

A total of 88 pieces of ceramic data were recovered from test excavation units at site 32BA415. Of this sum, as noted above, 83 sherds were collected from the artifact cluster. Four descriptive categories of ceramic materials have been identified for this locus. The criteria

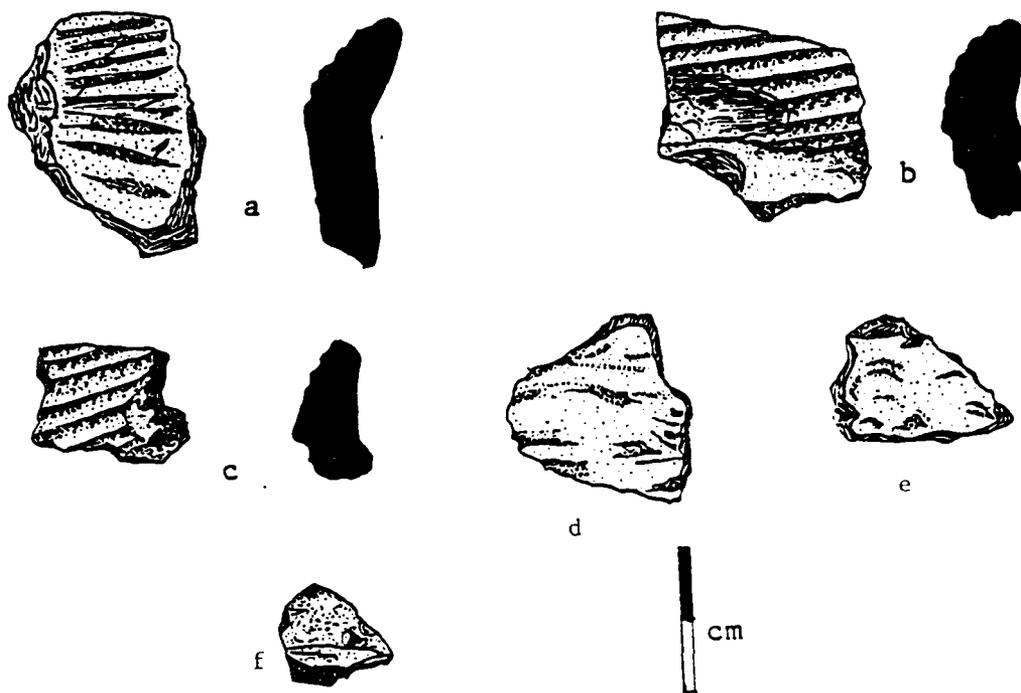


Figure 9. Cord-impressed rim sherds (a-c); and cord-impressed, smoothed body sherds (d-f) from site 32BA415.

for discrimination among these specimen were the pattern and method of surface treatment, temper, and rim shape and decoration.

The most common variety of ceramic materials present are 64 undecorated, or plain, body sherds. These are grit-tempered with crushed granite and sand. The surface of these specimen tend to be smooth and fire-blackened. Surface color varies from moderate brown, 5 YR 3/4 to grayish brown 5 YR 3/2. The interior color ranges from dusky yellowish brown, 10 YR 2/2, to grayish brown, 5 YR 3/2. Sherd thickness varies from 8.6 mm to 4.3 mm. The entire collection of plain ceramics did not contain any sherds that exceeded 2.5 cm in diameter. Vessel shape is undetermined.

A cord-impressed ware was also present within the site. A total of six cord-impressed rim sherds and thirteen cord-impressed, smoothed body sherds comprise the second group of ceramic materials. The rim sherds possess distinct, oblique cord-impressions form the lip of the vessel to its neck (Figure 9 a-c). The rims are straight to slightly incurvate and thickened. Vessel lips are rounded and thinned. Rim-neck inflec-

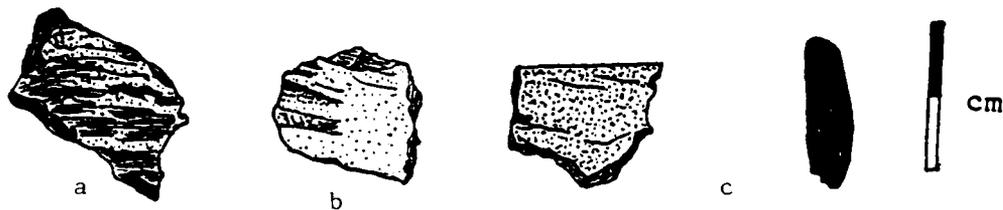


Figure 10. Trilled body sherds (a, b) and a plain rim sherd (c) from site 32BA415.

tion is short. A mouth-rim flare of up to 135° is present. Sherd thickness at the neck varies between 8.1 mm and 8.8 mm. Lip thickness at the vessel mouth ranges from 3.8 mm to 4.1 mm. The cord-impressions are 0.2 mm to 0.3 mm deep and 0.2 mm to 0.5 mm wide. The rim, with the cord-impressions, is raised up to 1.6 mm above the thinned body of the vessel. Exterior surface color of the rim sherds varies from light brown, 5 YR 5/6, to moderate brown, 5 YR 3/4. The interior color of these sherds is moderate brown, 5 YR 3/4 to 5 YR 4/4. The body portion of vessels with cord-impressed rim sherds contains different surface treatment. These sherds are cord-impressed, smoothed (Figure 9 d-f). This form of surface treatment results in the presence of discontinuous ridges across the body of the vessel. These ridges vary from being distinct linear protrusions to low, slightly irregular contours. The ridges are either rounded or flattened. They vary in height for 0.1 mm to 0.7 mm, and range between 1.4 mm and 2.1 mm in width. The separation between ridges is from 3.4 mm to 3.6 mm. The body sherds are thinner than the rim sherds, varying from 4.3 mm to 7.9 mm thick. Surface color varies from grayish brown, 5 YR 3/2 to light brown 5 YR 6/4. The interior color of the body sherds ranges from grayish brown, 5 YR 3/2, to dusky brown 5 YR 2/2. This ware is grit-tempered, with crushed granite and sand having been added to the clay to increase plasticity. Vessel form cannot be determined from the present data base.

Four body sherds with trilled surface treatment were also collected during the test excavations at this site. The trilled elements have been slightly smoothed (Figure 10 a-b). This surface treatment results in the appearance of parallel lines on the sherds. These lines tend to be discontinuous. The trilled elements are recessed into the vessel surface; they are 0.7 mm to 1.1 mm wide and 0.4 mm to 0.6 mm deep. The distance between these decorative elements ranges from 2.7 mm to 4.1 mm. Sherd thickness varies from 4.0 mm to 4.4 mm. The exterior surface color of the sherds is light brown, 5 YR 6/4, and the interior color is moderate brown, 5 YR 3/4. These sherds, like those comprising the above described wares, are grit-tempered. Vessel shape cannot be determined due to the limited sample size.

One plain rim sherd comprises the fourth variety of ceramic material collected from the site. It may be associated with either the plain body sherds, the trailed body sherds, or it may be another distinct variety of pottery. The rim is straight to slightly inverted. The lip is thinned and rounded. Rim thickness is 6.0 mm. Minimum lip thickness is 3.9 mm. The exterior surface color ranges from light brown, 5 YR 6/4, to grayish brown, 5 YR 3/2. The interior color is light brown, 5 YR 6/4. This ware is grit-tempered. No vessel shape can be determined. This specimen is illustrated in Figure 10c.

All of the ceramic materials collected at site 32BA415 are representative of the Middle Woodland cultural tradition in eastern North Dakota and western Minnesota. Most likely these sherds represent the fusion of elements from the Sonota Complex of the northeastern Great Plains (Neuman 1975) and the Laurel Culture of northern Minnesota (Anfinson 1979, Stoltman 1973), as suggested by Syms (1977). A similar ceramic mixture has been reported by Schneider (1982a) at the Naze and Beeber sites in the James River Valley, during the Middle Plains Woodland occupation in that area.

Bone and Shell

Bone fragments comprised the largest category of data recovered from site 32BA415. A total of 932 individual bone pieces were collected. Virtually all of this material is too fragmentary to permit anything but the most general identification. Most of these items are less than 5.0 cm in length or breadth. Positive identification was possible on only six pieces within the entire inventory. These include the two first phalanx' from bison, a cuneiform from the forefoot of a bison, a second metacarpal from a bison forefoot, and a naviculocuboid and an astragalus from a bison hind foot. The remainder of the bone materials appear to be from the long bones, primarily the femurs and humeri, of bison, and possibly deer.

The extreme fracturing of these bones may be representative of the process of extracting marrow for bone grease manufacture. It is also possible that some of the fracturing is the result of scavenging animals, but few specimen revealed the presence of gnaw marks on their surfaces. Also, it is possible that some of the fracturing is the result of natural weathering processes, especially freezing and thawing. Given the shallow nature of the cultural deposits at this site, once the bone had been fractured for the purpose of marrow extraction, other agents, such as scavenging animals and weathering, may have compounded the breakage.

A 10% sample of all bone materials was examined for possible utilization as tools. The same analytical processes were employed as with the lithic debitage. However, no signs of utilization were noted.

In addition to the bone, eleven pieces of weathered freshwater

mussel shell were collected. These were quite dispersed throughout the site, and do not appear to have been important as a food source.

Discussion

Site 32BA415 appears to have been a processing, and perhaps kill, site. The possibility of rendering bone marrow into grease by the inhabitants is suggested by the presence of fractured bones of bison, ceramic receptacles for separating the grease, and lithic tools used in the preparation of the bone for processing. Furthermore, the fire-cracked rocks, burned bone fragments, and fire-blackened pot sherds provide indirect evidence for the presence of fire, essential to the rendering process. The animal(s) whose remains were being processed may have been dispatched at, or near, the site. In addition, the relatively high percentages of primary and secondary flakes suggest that tool manufacturing may also have occurred at 32BA415. It is most likely that this is a special activity locus whose inhabitants performed particular tasks during one stage of an annual economic round. Because virtually all Middle Plains Woodland peoples were hunters-and-gatherers, such a special function site would be expected in terms of their overall adaptive strategy. The small data base and the unusual amount of bioturbation at the site inhibit the formulation of a substantive interpretive statement for this locus.

Most Middle Plains Woodland populations of the northeastern Plains and the adjacent forests of Minnesota and Manitoba probably participated in numerous networks of communication and exchange, or co-influence spheres (Syms 1977). These provided regular social and economic interactions between various diverse groups inhabiting the region. Similar interactive patterns have been defined for Middle Woodland peoples living in the deciduous forests and river valleys of the Eastern U. S. by Struever (1972). The existence of such spheres of interaction results in a certain degree of cultural homogenization. Thus, the broad distribution of ceramic wares and exotic raw materials for stone tool manufacture can be readily explained and understood. Such an argument is more plausible than the assertion that populations occupying eastern North Dakota regularly included the area west of the Missouri River into their annual round. Therefore, because of the existence of these overlapping co-influence spheres, and their constantly changing dynamics, the presence of certain exotic materials, such as obsidian, in limited quantities should be no more surprising than the presence of Knife River Flint. The increasing reliance upon local materials for the manufacture of stone tools that Schneider (1982a) has noted for Woodland cultures in the eastern Plains may reflect either a constricting of the co-influence, or interaction, spheres; or, a re-orientation of these spheres in light of changing cultural preferences and stimuli.

Kivett (1949) suggested that the general settlement pattern of Woodland peoples in the Baldhill Reservoir, Lake Ashtabula, area con-

centrated their mortuary sites on the uplands bordering the river valley, and their habitation loci on, or near, the floodplain of the Sheyenne River. Consequently, the possibility exists that the primary occupations of Middle Plains Woodland populations in the Lake Ashtabula area have been inundated. Only additional work along the lake shores and on the floodplains of the Lower Sheyenne and James River Valleys will ultimately substantiate or refute Kivett's hypothesis. Site 32BA415 appears to be a special activity locus occupied for only a brief period of time, but because of its disturbed state and limited data yield, it contributed little to the resolution of the enigma surrounding the Middle Woodland cultures of the northeastern Great Plains.

A fundamental problem to be addressed through future archaeological investigations is the relationship between the Sonota Complex and the Laurel Culture. It must be determined whether or not they were members of the same co-influence sphere and/or were genetically related behavioral systems. The Middle Plains Woodland economic focus upon the exploitation of large game animals, bison, suggests that the cultural patterning of these peoples, save mound building and pottery making, may not have been significantly different from Late Plains Archaic populations. The question of this cultural convergence requires exploration and clarification. These are basic issues that must be addressed if more sophisticated problems are to be responsibly resolved and more complex interpretive models developed.

Recommendations

Assessments regarding the potential eligibility of site 32BA415 for inclusion on the National Register of Historic Places are herein made in accordance with Department of Interior criteria and guidelines contained in How to Apply the National Register Criteria for Evaluation (Draft) (1982). Two primary conditions, integrity and context, must be met in order for evaluation criteria to be applied.

Integrity is manifested through the retention of physical aspects that existed during the site's period of occupation or utilization. There are seven dimensions of integrity, six of which are applicable to small, open prehistoric sites. 32BA415 has integrity of location and workmanship; that is, the site remains in its original location and contains evidence of the "crafts of a particular culture," in this case a Middle Plains Woodland culture. This site also has, making allowances for local ecological changes and the construction of Baldhill Dam and its reservoir since its habitation, integrity of setting. With the possible exception of the artifact cluster, which was completely excavated, none of the test excavation units contained cultural materials that retained original provenience. Even squares from which numerous bone fragments and/or lithic debitage were recovered possess soils that have been so thoroughly bioturbated over the

centuries that data configurations are random scatters, both horizontally and vertically. Consequently, site 32BA415 does not possess integrity of either materials or association. The site data have not retained their original depositional patterns well enough to provide specific, valuable information about the activities that took place within the locus. In fact, it is difficult to state with certainty what tasks were being performed by the inhabitants of site 32BA415. Given the poor data associations, one must argue that the locus does not possess a particularly strong sense of integrity of feeling.

The context, or theme, of site 32BA415 is, because of its weak integrity, also problematic. It has been hypothesized that bone grease processing, and possibly stone tool manufacturing and maintenance, took place at this locus; but poor associations and a limited data base make it difficult to accurately define these activities. This is evident when comparisons are made with other small, temporary sites in the region. The extant information regarding Middle Plains Woodland economic patterns is incomplete; however, the quantities of data at site 32BA415 are too limited and their associations are too tentative for this locus to make any substantive informational contribution to the literature on this topic. No additional investigations of this site are recommended.

Both the integrity and context of 32BA415 are highly questionable; and the information gained from the artifact cluster is suggestive, but inconclusive. Therefore, under the guidelines for Criterion D, which is specifically applicable to archaeological sites, 32BA415 does not qualify for inclusion on the National Register of Historic Places.

Grid Unit	Primary Flake	Secondary Flake	Tertiary Flake	Core	Scraper	Biface Fragment	Blade	Projectile Point	Chopping Tools	Ceramics	Bone/Shell	Historic/Recent
49N, 1E											29	
49N, 3E											5	
49N, 5E	2					1					24	
49N, 7E		4								2	25	
49N, 9E		1	2								197	
49N, 11E	1	2	2								75	
49N, 13E	STERILE											
49N, 15E	5	15	11	3						56	127	
49N, 16E	2	6	8	1						30	17	
49N, 19E	3	5	4			1					12	
49N, 23E			8								24	
49N, 27E	2	5	21								69	
49N, 31E	1	5	9								13	
49N, 35E	2	10	11	2							94	
49N, 65E	6		4								2	
49N, 85E	1	1	0		1						16	
49N, 105E			1								4	
49N, 10E			1								3	
49N, 35E	STERILE											
15N, 3E	2		2					1			30	

Table 2. 32BA415: Excavated data by category and sample unit.

Grid Unit	Primary Flake	Secondary Flake	Tertiary Flake	Core	Scraper	Biface Fragment	Blade	Projectile Point	Chopping Tools	Ceramics	Bone/Shell	It's tortic/Recent
25N, 0E	1	1	7								17	
25N, 25E			2								2	
25N, 50E			3									
25N, 100E	1	3									6	
35N, 10E	1	4	5								52	
15N, 10W	1		5								51	
25N, 10W		1	3								52	

Table 2. continued.

32BA428

Site Description and Setting

Site 32BA428 is located at the base of the Luverne Escarpment on the east side of Lake Ashtabula in the $W\frac{1}{2}$, $NE\frac{1}{2}$, $SW\frac{1}{2}$, $SE\frac{1}{2}$, $SE\frac{1}{2}$, and $NE\frac{1}{2}$, $SW\frac{1}{2}$, $SW\frac{1}{2}$, $SE\frac{1}{2}$, $SE\frac{1}{2}$ of Section 26, Township 143 N, and Range 58 W. The shoreline of Lake Ashtabula forms the western terminus of the site. An intermittent stream channel enters the site area from the southeast. The stream flows down a long, steep ravine in the face of the escarpment. To the north the escarpment gradually turns northwest and approaches the shore of the lake, thereby forming an effective northern boundary for the site (Figure 11).

The Luverne Escarpment was originally formed by the down-cutting of the Sheyenne River during post-glacial times. Since the containment of the river waters more than three decades ago, Lake Ashtabula has apparently been the cause of increased slump activity along the face of the escarpment; a condition that has always been characteristic of this landform (Patterson et. al. 1968). In fact, site 32BA428 is located on erosional material from the slumping escarpment.

The topography of the site reflects these conditions. The surface of the land within the site slopes from the base of the escarpment toward the lake shore to the west and northwest. Sedimentation within the site is a direct result of colluvial action, although minor fluvial deposits have been laid down by the stream (Figure 12).

An on site evaluation of the geology and depositional sequence of this locus was conducted by Dr. Donald Schwert of the Department of Geology at North Dakota State University. Dr. Schwert indicated that the constituent soil matrices within the site were all deposited primarily through colluvial action (Dr. Donald Schwert personal communication). Moreover, he concluded that all cultural materials present within these soil horizons were themselves, like the soils, redeposited. Consequently, none of the data collected during the test excavations at site 32BA428 were in situ.

At present site vegetation is limited to scattered brush, elm trees and prairie grasses. The general site area is currently being used as a pasture for approximately thirty head of cattle. A moderate to heavy sod layer is present in some locations, especially toward the lake. While near the escarpment, at the eastern margin of the site, there is very little sod development. This latter circumstance may be the result of the erosion of bentonitic clays out of the Pierre Formation that comprises much of the lower face of the escarpment. The Pierre Formation is the bedrock within the Sheyenne River Valley.

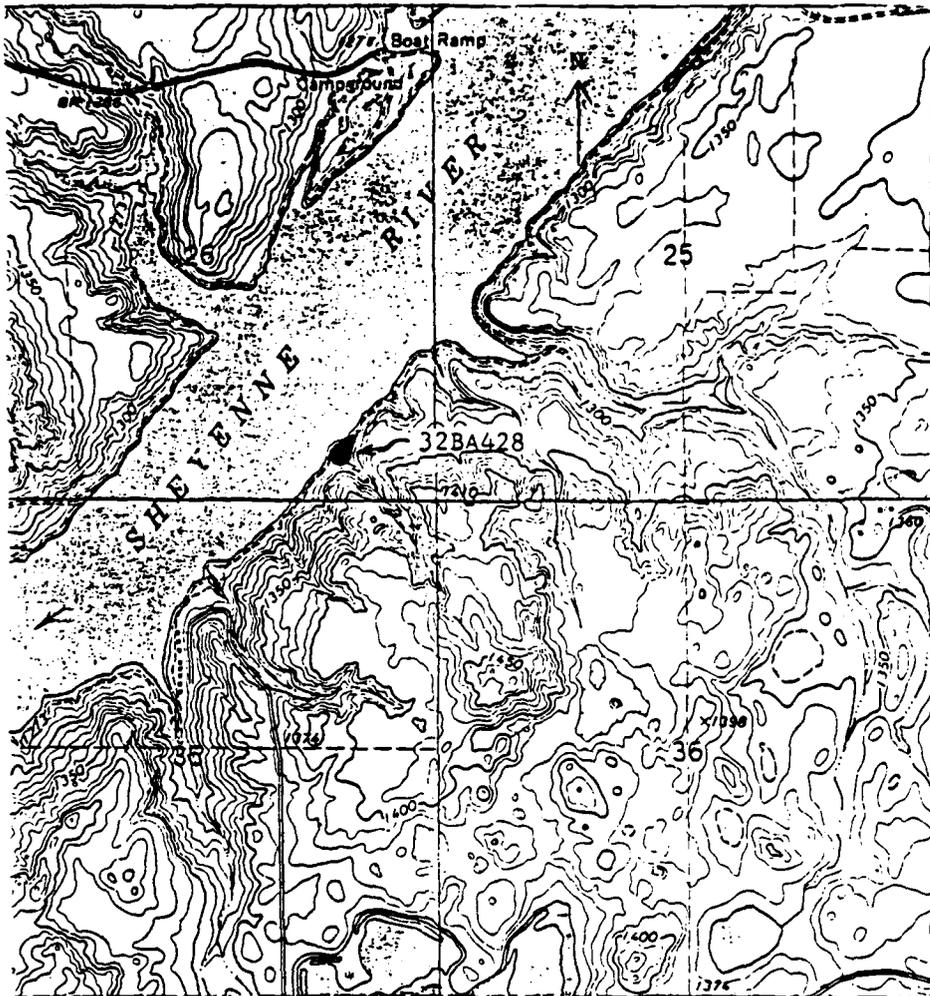


Figure 11. USGS Topographic Map, Sibley Quadrangle, showing the location of site 32BA428.

Soils

Buse loams, hilly and Steep are the primary constituent soils present within the site. As noted earlier, these soils tend to be somewhat unstable and are, in many cases, associated with redeposited loams from adjacent upland areas. This is certainly the situation at site 32BA428. In addition, there is some mixing of the Buse loams, hilly and steep with the clays from the Pierre Formation in certain horizons. A maximum of five distinct soil strata were documented for this site (Figure 13).

The upper stratum consists primarily of a fine, friable silty clay that is dark brown in color, 10 YR 3/1. This unit contains few rocks or pebbles and possesses locally dense roots and rootlets from the prairie grasses, where they are present.

Underlying the sod layer is the second component of the A Horizon. This soil is much like that contained in the sod, except that it is slightly more friable and has numerous small, rocky inclusions. These occur in the form of small, granular crystalline particles from weathered granite, water worn pebbles of siliceous material, and small, rounded and angular fragments of weathered shale. These materials tend to be small, generally less than 2.0 cm in diameter. All of the inclusions have their origin in the glacial tills of the uplands. This soil matrix is also dark brown in color, 10 YR 3/1.

The third stratum present within site 32BA428 is a dark brown, 10 YR 3/1, silty-clay with numerous small rocks and pebbles. The factor that distinguishes this matrix from those overlying it is that it appears to have a slightly higher clay content. Thus, it retains moisture better and is more densely compacted. This is a buried A Horizon soil.

A probable B Horizon soil is present underlying the buried A Horizon. This matrix shares many of the same features as the overlying strata, except that it has a higher clay content, is more densely compacted, and is slightly lighter in color. This stratum is dark yellowish brown, 10 YR 4/1.

The pale yellowish brown, 10 YR 8/3, C Horizon is primarily a clay matrix. Few rocks or cobbles are present. When wet it is quite gummy, and when dry it is extremely hard. This stratum is very densely compacted. It was not located in all of the test excavation units within the site.

Excavation Plan

The site datum was established at the extreme northern end of the slump area containing 32BA428. This point is 40 meters north of the perimeter of the site defined by the initial survey (R. A. Fox 1980).

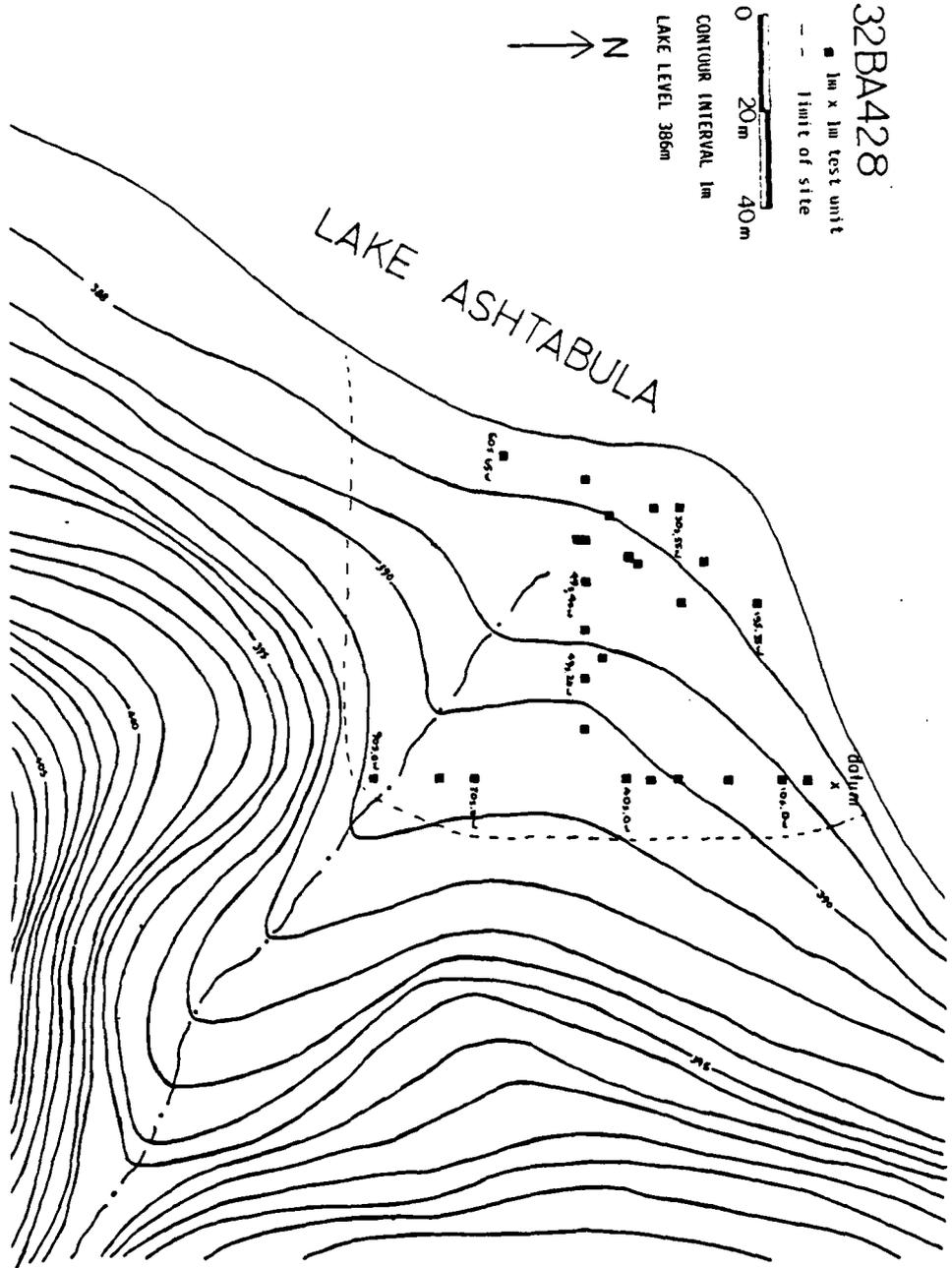


Figure 12. Topographic map of site 32BA428, including location of test excavation units.

Given local topography a determination was made to focus test excavations on the slump area north, as well as south of the intermittent stream. The colluvium containing the site was sampled from the escarpment to the lake. All test excavation units were located in the southwest quadrant of the site grid.

A total of twenty-six one meter by one meter test excavation units were placed in this site. All but two of the units yielded either bone or lithic materials, or both. No ceramics were recovered during testing at 32BA428. The collected data were obtained from both the A horizon and B Horizon soils; however, no patterns of density could be ascertained.

Test excavations began with the systematic removal of the sod layer, where it was present. Excavation proceeded with the removal of the constituent soil matrices in 10 cm levels until the attainment of a natural stratigraphic change. At this point the stratigraphic break was followed. Because of the low yield of the site in terms of artifacts, and the badly eroded nature of the bone fragments, the maximum depth attained was 70 cm below surface; which in some units was the level at which the clay C Horizon, a sterile matrix, was encountered.

As noted above, data were collected from most units at varying levels, and in all strata except the C Horizon. These materials consisted mainly of small fragments of bone in poor condition. Lithic artifacts were few in number.

Results

The data recovered during test excavations at site 32BA428 were, as mentioned above, all redeposited. Nevertheless, these materials fall into four primary categories: bone; lithics; shell, including freshwater mussel shell and snail shells; and historic materials. Bone fragments accounted for 88.6% of the total data sample. Shells were next in terms of frequency of occurrence with 7.8% of the total. Lithics represented 3.3% of the site sample. Historic materials comprised the remainder of the data sample (Table 4).

Lithics

A total of 37 pieces of worked stone were collected during the investigation at site 32BA428. Debitage, waste flakes, comprised 91.9% of the total lithic sample, numbering 34 specimen. All lithic debitage was analyzed according to three criteria: the stage of tool manufacture that each item represents; evidence of utilization as artifacts; and the raw material from which each was manufactured. The specific attributes of each classificatory grouping have been discussed earlier in this report.

One primary flake was recovered, representing 2.9% of the total

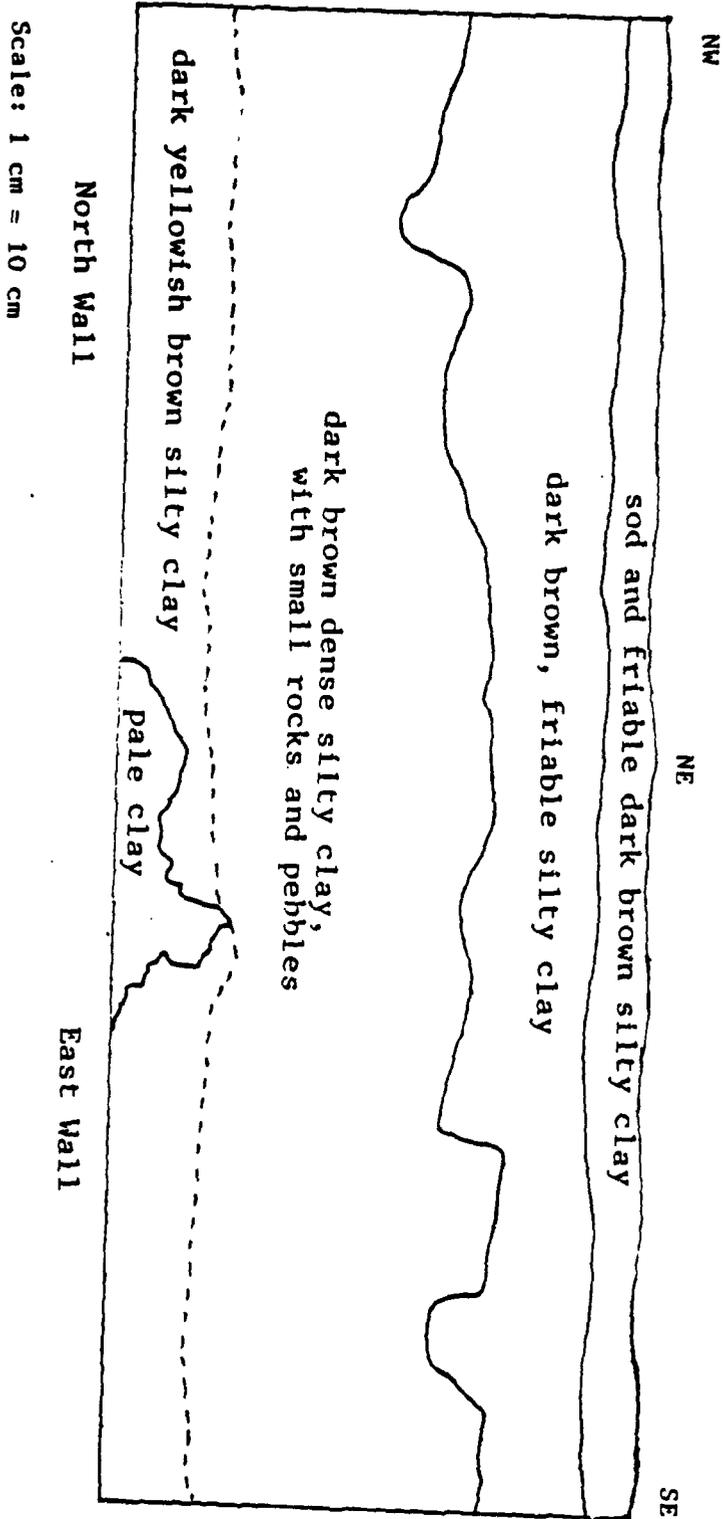


Figure 13. Representative stratigraphy of site 32BA428 from test excavation unit 49S, 30W

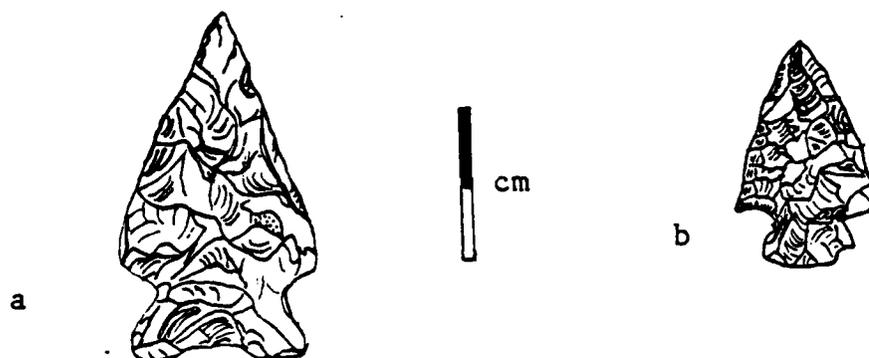


Figure 14. Side-notched projectile points from site 32BA428.

debitage inventory. Nine secondary flakes, or 26.5% of the debitage total, were collected. In addition, 24 tertiary flakes, representing 70.6% of the total debitage recovered, comprise the remainder of the sample of waste flakes. Within these categories, utilization was apparent on three secondary flakes and five tertiary flakes.

The range of raw materials used to manufacture the lithic artifacts was rather broad given the limited number of specimen recovered. Imported stone accounted for only 20.6% of the total. Local raw materials were used for the remaining 79.4% of the flakes. Three flakes were manufactured from Knife River Flint and five were fashioned from Swan River Chert, comprising 8.8% and 11.8%, respectively of the total debitage sample. Local quartzite accounts for 12 flakes, or 35.3% of the inventory. Siliceous materials were used to manufacture 12 flakes, also 35.3% of the total. In addition, two flakes of basalt, 5.9%, and one of granite, 2.9%, were collected.

A single core fragment recovered during test excavations at site 32BA415 was manufactured from Swan River Chert. Two projectile points comprise the remainder of the lithic sample, and both have been fashioned from Knife River Flint (Table 3).

Artifact Descriptions

A large side-notched projectile point (Figure 14a), found in a vertical position, was collected during the test excavations at this locus. The artifact has an acute distal end and straight sides on the blade. The shoulders of the implement are tapered. Random pressure flaking is evident on both the dorsal and ventral surfaces. There is no indication on the edges of the blade having been retouched. The base is auriculated and thinned to facilitate hafting. An expanding stem is also characteristic. The implement has a plano-convex cross-

	Knife River Flint		Swan River Chert		Quartzite		Siliceous		Granite		Basalt	
	N	%	N	%	N	%	N	%	N	%	N	%
primary flakes			1	2.7	3	8.1	1	2.7	1	2.7		
secondary flakes			3	8.1	9	24.3	4	10.8			2	5.4
tertiary flakes	3	8.1	3	8.1			7	18.9				
core			1	2.7								
projectile points	2	5.4										
	5	13.5	4	10.8	12	32.4	12	32.4	1	2.7	2	5.4

Table 3. Distribution of lithic artifacts by material of manufacture for site 32BA428

section. This artifact has a maximum length of 46.0 mm, a shoulder width of 26.3 mm, and a maximum thickness of 5.5 mm. The notches average 4.7 mm deep and 9.7 mm wide. Basal width is 23.0 mm. The basal auricle is 2.2 mm deep and 10.4 mm wide. The specimen has been manufactured from Knife River Flint and is moderate brown in color, 5 YR 3/4.

A second side-notched Knife River Flint projectile point was recovered from this site (Figure 14b). Random pressure flaking is present on both the dorsal and ventral surfaces. Simple, light pressure retouch is evident near the distal end on both sides of the specimen. The distal end is acute, and the sides of the blade are straight. One shoulder of the blade is tapered, the other is slightly barbed. The base is excurvate and thinned with an expanding stem. The implement has a flattened cross-section. The maximum length of the artifact is 29.1 mm, the shoulder width is 18.4 mm, and the maximum thickness is 4.0 mm. Average notch depth is 3.7 mm and mean notch width is 4.1 mm. The base is 11.8 mm wide. The specimen is moderate brown, 5 YR 3/4, to grayish brown, 5 YR 3/2, in color.

Both of the projectile points recovered from site 32BA428 are representative of the Late Plains Archaic Stage of cultural development. In many locations on the northeastern Great Plains these cultures co-existed with Woodland peoples. In the absence of pottery and other cultural associations it is best to simply suggest a Late Archaic cultural assignation for these artifacts.

Bone and Shell

Bone fragments dominated the data inventory from site 32BA428. For the most part, these specimen were badly eroded and largely unidentifiable, either as individual specimen or to species of origin. Collected bone pieces numbered 991 from this site. Of this total all classifiable fragments belonged to bison, the primary faunal resource of Late Plains Archaic hunters.

Identifiable bone fragments consist almost exclusively of foot bones from bison. These include both a first and a second phalanx; in addition, two fragmentary phalanx were collected, one appears to be a second phalanx and the other lacks the proximal articulation, thus it cannot be completely identified. All of these specimen manifest signs of erosion. Two relatively fresh skeletal parts were also classifiable, these are the naviculocuboid bone from the hind foot of a bovid, and eleven fragments of a bovid scapula. Given the relative freshness of appearance of these latter pieces no additional classification is being made. The main reason for not identifying them lies in the presence of domestic cattle within the site area. Also, these items were recovered very near the present ground surface. Thus, there is a strong possibility that these are the bones of domestic bovinds rather than of bison. It is virtually impossible to distinguish between

the skeletons of domestic and wild bovids on the basis of these anatomical parts alone.

Three teeth were recovered and identified from this site. These are the first and second molars from the upper jaw of a bison, and the second premolar from the lower right mandible of the same species.

In addition, eight eroded fragments of freshwater mussel shell were collected. These items may or may not have been originally associated with the other faunal remains or the lithic artifacts of the Late Plains Archaic hunters at this locus.

Seventy-nine snail shells representing three species were recovered during site test excavations. Five specimen have been identified as Gastrocopta armifera. Discus cronkhitei is represented by 16 individuals. The most abundant gastropod present within the site matrix was Lymnaea spp., accounting for 58 of the shells. Discus cronkhitei and Gastrocopta armifera are terrestrial snails, preferring shaded, moist habitats with abundant decaying organic matter. Lymnaea spp. is a shallow water aquatic form often found in temporary pool along the shores of streams and lakes. These species appear to represent local ecological conditions, rather than a potential food source for early site inhabitants.

Discussion

No reasonable data interpretation is possible from a site in which the entire assemblage is present in a secondary depositional context. The cultural materials that dominate the collection from 32BA428 suggest a big-game, bison, hunting focus by Late Plains Archaic hunters-and-gatherers. Little else in the way of insight can be gained into these materials unless the original site is found to be reasonably intact on the Luverne Escarpment east of the locus. Given the volume of colluvium that has been redeposited within the site, this prospect is highly unlikely.

Recommendations

By virtue of the fact that site 32BA428 consists entirely of re-deposited soils and cultural materials, this locus completely lacks integrity. Context, or theme, is weak because of its lack of integrity, the poor quality of preservation of bone fragments, and the very small number of lithic artifacts. Therefore, no additional field investigations are recommended for 32BA428. This site is not eligible for inclusion on the National Register of Historic Places.

Grid Unit	Primary Flake	Secondary Flake	Tertiary Flake	Core	Scraper	Biface Fragment	Blade	Projectile Point	Chopping Tools	Ceramics	Bone/Shell	Historic/Recent
5S, 0W			1								5	
10S, 0W		1	3								2	
20S, 0W	STERILE											
30S, 0W											18	
35S, 0W		1	1								6	
40S, 0W	1	2	4								4	1
70S, 0W											3	
79S, 0W											1	
90S, 0W											62	
49S, 10W			2					1			50	1
49S, 20W											33	
49S, 30W											151	1
49S, 40W		1	3								245	
49S, 49W			2								56	
49S, 60W											11	
50S, 49W											4	
45S, 25W											1	
15S, 35W			2								41	
30S, 35W			2								9	
19S, 44W			1	1							134	

Table 4. 32BA428: Excavated data by category and sample unit.

32GG5

Site Description and Setting

Site 32GG5 is located on the third and fourth terraces of the post-glacial Sheyenne River, near the base of the Luverne Escarpment. These terraces are the two oldest documented for the river valley. The shoreline of Alake Ashtabula is, in this vicinity, the second post-glacial river terrace. Site 32GG5 is located in the NW $\frac{1}{2}$, SW $\frac{1}{2}$, NE $\frac{1}{2}$, SE $\frac{1}{2}$ of Section 27 and the NW $\frac{1}{2}$, NW $\frac{1}{2}$, NW $\frac{1}{2}$, NW $\frac{1}{2}$ of Section 35, Township 144 N, Range 58 W (Figure 15).

The topography of the site reflects the geological history of the region. The terraces are still relatively well defined; however, their contours have been modified through colluvial and aeolian activity over the past several millennia. For the most part, the immediate site area has undergone minimal erosional damage. Both terraces contain significant quantities of fluvial deposits that underlie the A Horizon soils.

The site is badly disturbed. During the early years of this century the terraces containing the site were regularly cultivated. The disturbance from this agricultural activity has been substantial. Materials of recent historic origin are present within the site to depths approaching 30 cm below surface.

Within the site area the land slopes toward the north and northwest in the general direction of Lake Ashtabula (Figure 16). The primary concentrations of cultural materials are to be found in the northern portion of the locus, as reported from the initial site survey, on the lower terrace. Large glacial erratic boulders, presumably deposited through fluvial action, are fairly common on the upper terrace.

Vegetation within the site consists of moderately dense brush and prairie grasses. The floral community has reestablished itself since the cessation of farming activity, and represent the climax vegetation within the local ecosystem. With the reestablishment of the grasses, a locally dense sod layer has developed in certain portions of the site. Also, large and small burrowing animals are present in large numbers. The damage to the site through bioturbation is negligible when compared to the destruction wrought by frequent, deep plowing. Virtually none of the cultural materials within this locus are in situ.

Soils

Buse loams, hilly and steep are also found within site 32GG5. These soils, however, are somewhat different from those found in 32BA415 and 32BA428. The A Horizon at this locus consists of a fine, silty, sandy loam. Although small rocks are present within the ma-

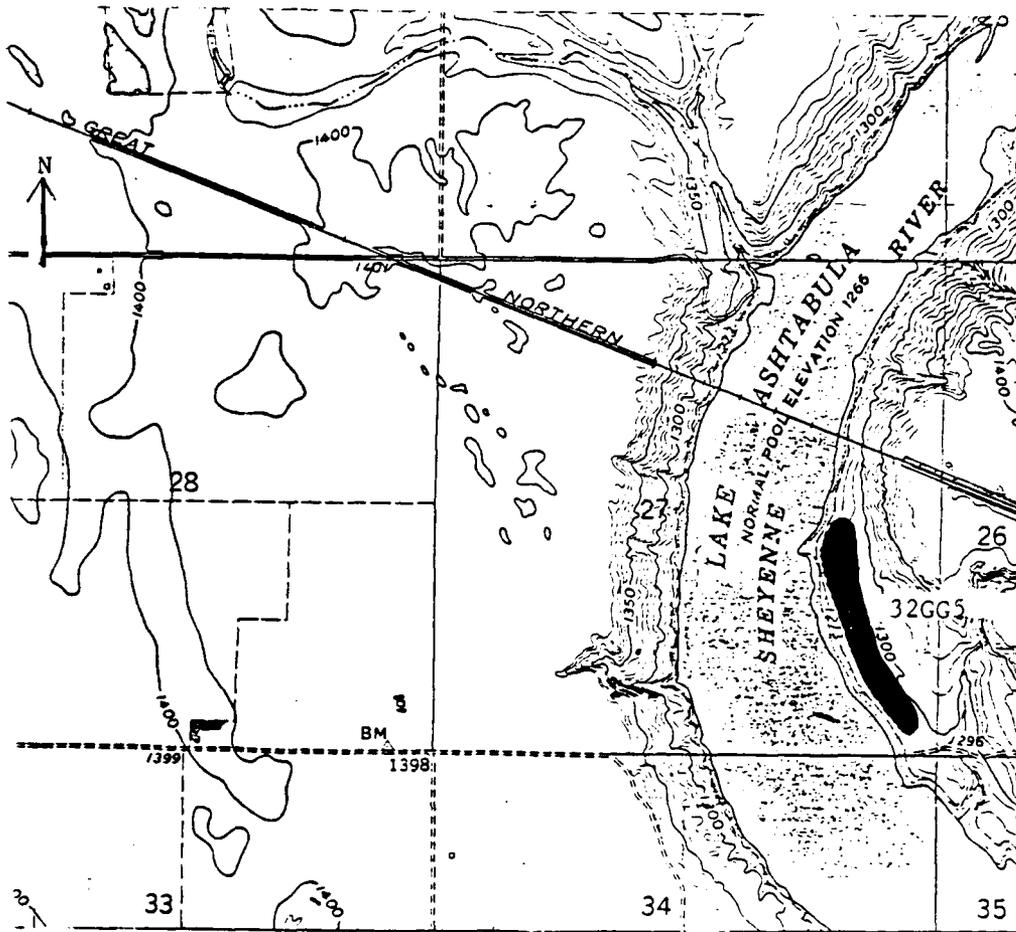


Figure 16. USGS Topographic Map, Karnak Quadrangle, showing the location of site 32GG5.

trix, they are substantially fewer in number than in the upper horizons of the other two sites investigated. Also, the soils within 32GG5 are not as well compacted as in the other loci. The A Horizon within this locus consists primarily of colluvial and aeolian deposited materials. This stratum varies between very dark brown, 10 YR 2/1, and brownish black, 5 YR 2/1.

An A2 Horizon underlies this unit in many locations within the site. This stratum is more compact than the overlying matrix, and contains a substantially higher number of small rocks and pebbles. This soil unit appears to be primarily colluvial in origin. It has been color coded at 10 YR 3/1, very dark gray (Figure 17).

There is not B Horizon soil within this site. Directly underlying the A2 Horizon is a variable stratum of fluviially deposited sand. This matrix was apparently deposited upon the terrace as the load of the post-glacial Sheyenne River diminished when approaching the grade of Lake Agassiz. This stratum is culturally sterile. It is quite sandy and is dark yellowish brown, 10 YR 3/6, in color.

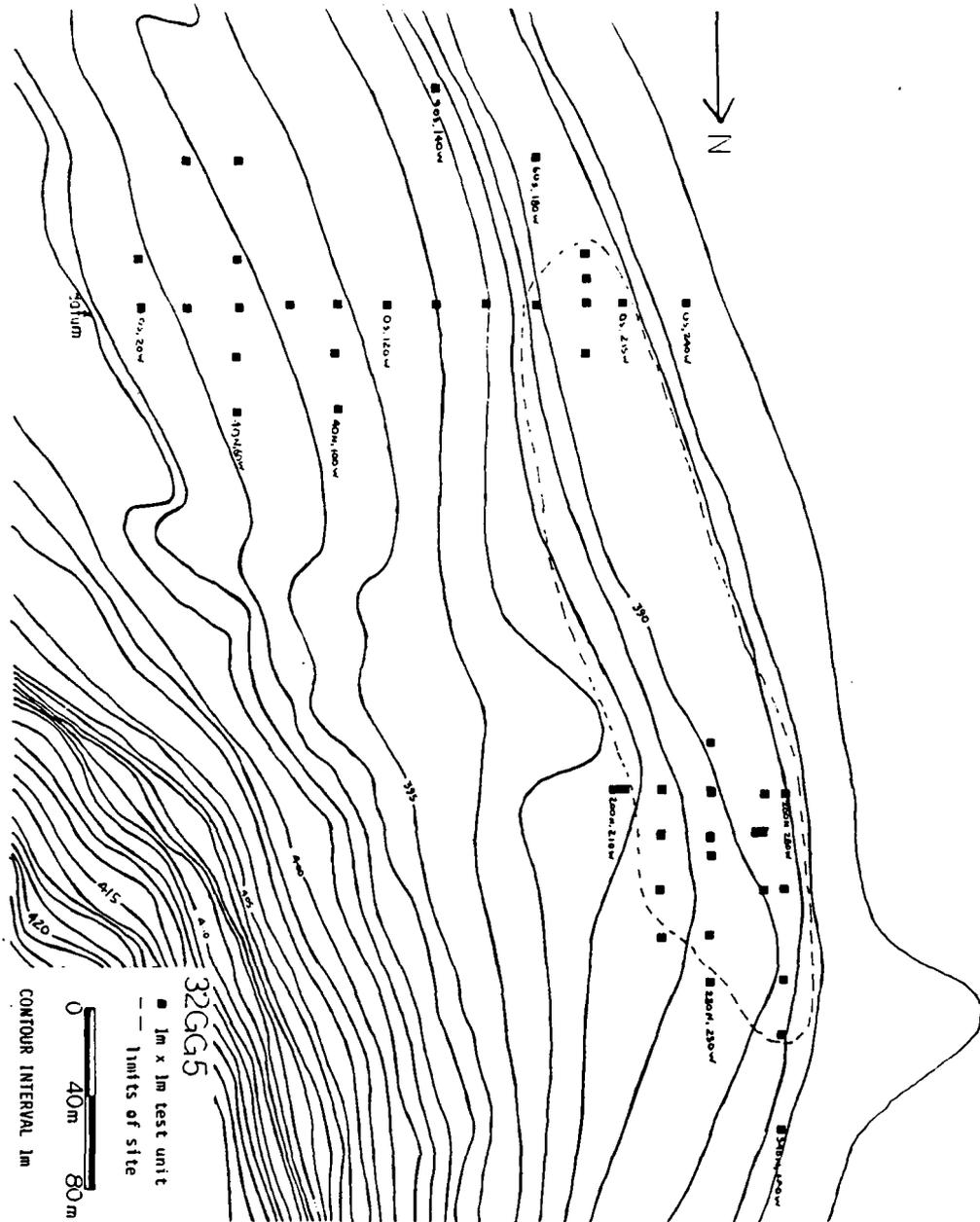
Underlying the sand horizon in many portions of the site is a level of extremely large, water worn rocks. These are, in some cases, greater than 40 cm in diameter. According to Dr. Donald Schwert (personal communication), these are river gravels that were deposited by the post-glacial Sheyenne River during a period of active down-cutting. This horizon is culturally sterile. The only soil present amid the gravels is that of the overlying matrix, which throughout most of the site is finely sorted fluvial sand.

Excavation Plan

The site datum for 32GG5 was established on top of a small knoll above the upper river terrace. The actual datum reference point was chiseled into a large, glacial erratic boulder on top of the knoll. Primary test excavation activity took place within the northwest quadrant of the site grid, on the north end of the site.

The rationale for focusing upon the north end of the site was twofold: First, it was anticipated that because it is slightly lower in elevation that agricultural activity may not have occurred within this portion of the locus; and, second, based upon the initial sampling unit yields, the heavier concentrations of cultural information appeared to be at the north end of the site. The second hypothesis was validated by the collection of substantial quantities of lithic materials. However, the first hypothesis proved to be invalid, as the entire area containing site 32GG5 has, as mentioned above, been plowed extensively. At present, the tract of land containing this site is a pasture for a small herd, approximately fifty

Figure 16. Topographic map of site 32GG5 indicating locations of test excavation units.



head, of cattle.

A total of forty-six one meter by one meter test excavation units were placed within site 32GG5 in an effort to ascertain the parameters of the locus, and to locate any undisturbed portions of the site, if such should be present. Thirty-one of the sample units yielded artifactual materials and fifteen were culturally sterile. The sterile units were, for the most part, situated at the extreme northern and southern ends of the sample area. All but six of the test excavation units were located in the northwest quadrant of the site grid.

The testing program began with the removal of the sod layer where it was present. natural stratigraphic matrices were followed in all sample units. Deep horizons were excavated in arbitrary 10 cm levels. Testing was terminated when sterile horizons were encountered, usually between 25 cm and 35 cm below the present surface. The culture-bearing strata were confined to the A Horizon soils, which are largely limited to the plowzone.

Results

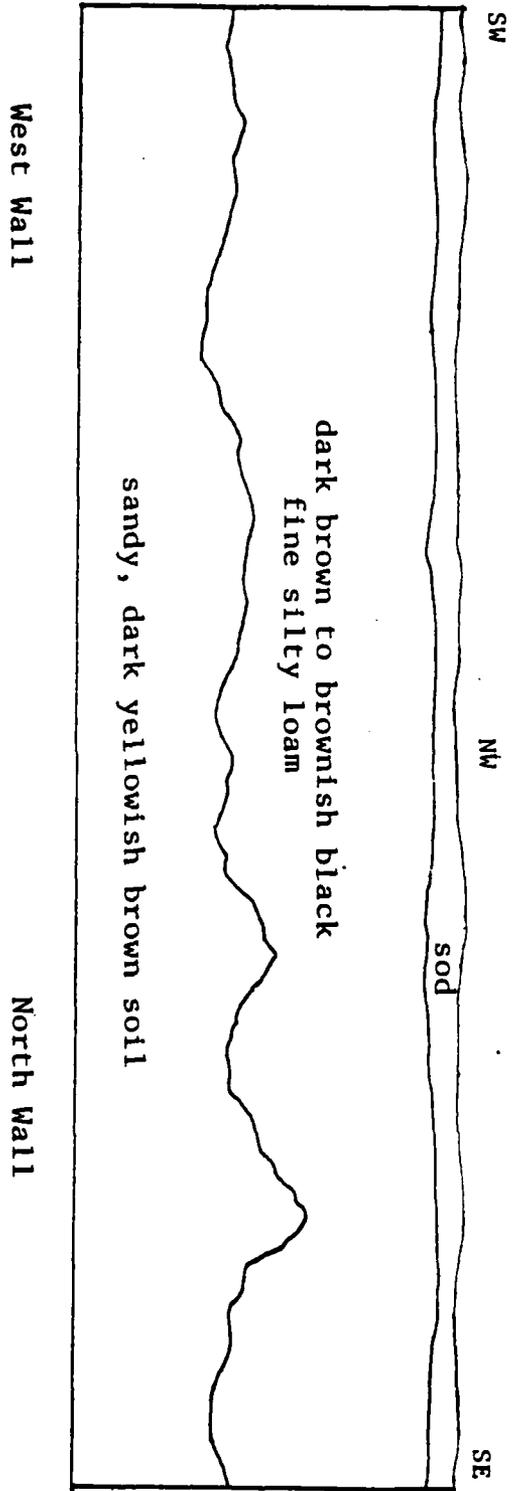
Four primary categories of data were recovered from site 32GG5. These are lithics, bone, historic materials, and pottery, in descending order of frequency of occurrence. Lithic debitage comprised the single largest body of collected data. Only one piece of shell was recovered, and it was small and worn. The intensive agricultural activity obliterated any features that may have been present at this locus.

Of the total data inventory from this site, lithics account for 72.8% of the data. Bone fragments represent 15.6% of the total. Historic refuse comprises 8.9% of the site artifact sample. The remaining 2.6% of the collected data were ceramics. However, as was the case at the other two sites investigated, diagnostic artifacts were few in number (Table 6).

Lithics

Lithic materials comprise the largest category of data collected from site 32GG5. A total of 628 pieces of worked stone were recovered during investigations at this locus. All but 11 specimen are lithic debitage, or waste flakes. Only one potentially diagnostic lithic artifact was present, a small, side-notched projectile point.

The lithic waste flakes were examined in the laboratory according to three primary criteria: the stage of tool manufacture that the item represented; whether or not the specimen had been utilized; and the variety of raw material from which each piece had been fashioned. The rationale for each of these criteria has been discussed in preceding sections.



Scale: 1 cm = 10 cm

Figure 17. Representative stratigraphy of site 32GG5 from test excavation unit 05, 140W



Figure 18. Granite chopping tool from site 32GG5.

Primary flakes account for only 5.7% of the total debitage inventory, numbering 35 pieces. Secondary flakes were more frequent in occurrence, totaling 98 specimen and comprising 15.9% of the sum. The remainder of the debitage consists of tertiary flakes. These number 484 pieces and represent 78.4% of the debitage collected. The high proportion of tertiary flakes suggests that tool maintenance activities may have taken place at this site.

Only 17.0% of the waste flakes manifested signs of utilization. By far the most numerous of the utilized pieces were tertiary flakes. These accounted for 79 of the total 105 utilized specimen; however, this represents only 16.3% of the tertiary flake class. Six primary flakes, or 17.1% of that class, had been utilized. While 18.4%, numbering 18 pieces, of the secondary flakes were used as tools.

A wide range of raw materials were used for the manufacture of stone tools. Three sources dominated the lithic inventory. Local materials were utilized most frequently and accounted for 78.7% of all lithic artifacts. Quartzite was used for 34.6% of the stone tools. Knife River Flint was the best represented exotic raw material; however, it accounted for only 16.1% of the total. Siliceous stone of varying kinds, both local and foreign, was used to fashion 34.9% of the implements recovered. Exotic sources of stone were used for only 21.3% of the lithic artifacts from site 32GG5. Swan River Chert, silicified sediment, and granite each accounted for 2.5% of the raw material inventory (Table 5).

In addition to the debitage, three core fragments were collected during test excavations at site 32GG5. Two of these specimen have been manufactured from local cherts, and third was made from granite. It is readily apparent that in the prehistoric Shyenne River that human populations were making substantial use of readily available, local sources

	Knife River Flint		Swan River Chert		Silicified Sediment		Quartzite		Siliceous Granite		Unknown			
	N	%	N	%	N	%	N	%	N	%	N	%		
primary flake	1	0.2	1	0.2			13	2.1	12	1.9	6	0.9	1	0.2
secondary flake	11	1.8	3	0.5	6	0.9	28	4.5	37	5.9	5	0.8	8	1.3
tertiary flake	87	13.9	12	1.9	10	1.6	173	27.5	166	26.4	3	0.5	33	5.3
core									2	0.3	1	0.2		
scraper	1	0.2							1	0.2				
retouched flake							1	0.2						
blade							2	0.3	1	0.2				
projectile point	1	0.2									1	0.2		
chopping tool														
	101	16.1	16	2.5	16	2.5	217	34.6	219	34.9	16	2.5	42	6.7

Table 5. Distribution of lithic artifacts by material of manufacture for site 32GG5.

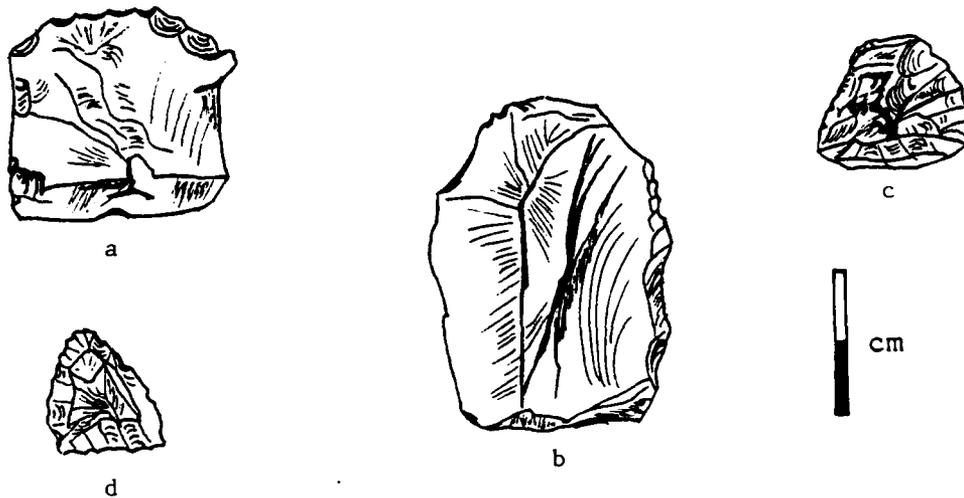


Figure 19. Unifacially worked cutting-scraping tools (a-c); bifacially worked cutting-scraping implement from site 32GG5.

of stone for the manufacture of their tools and weapons. However, the possibility does exist that this may be a situational rather than a general cultural pattern.

Artifact Descriptions

A large, heavy granite chopping tool was recovered during test excavations at this locus. The implement has a beveled, broad distal end and a tapered, squared proximal end. One side is straight and squared, while the other is excurvate (Figure 18). The specimen has been fashioned through pecking and abrasion. The distal end manifests considerable signs of use. This artifact has a maximum length of 231.8 mm, a maximum width of 98.4 mm, and a maximum thickness of 66.7 mm. It is olive gray, 5 Y 4/1, in color.

A retouched flake tool, presumably used for cutting and scraping purposes, was also collected. This artifact has been fashioned from a wedge-shaped tertiary flake of quartzite. Percussion retouch is present along the distal, working edge. The specimen is unifacially worked. The utilitarian edge is serrated (Figure 19a). The artifact has a maximum length of 28.3 mm, a maximum width of 30.2 mm, and a maximum thickness of 8.4 mm. The surface color is yellowish gray, 5 Y 8/1.

Another flake cutting-scraping tool manufactured from local quartzite was recovered from the site. This specimen is unifacially worked, with percussion retouch present along the distal end and

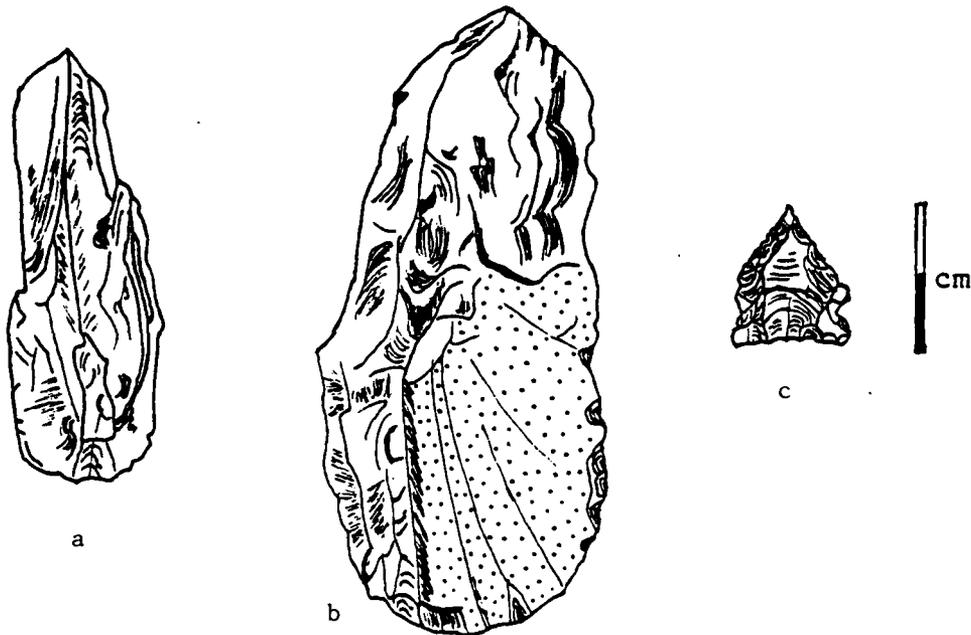


Figure 20. Prismatic quartzite blade (a); unifacial basalt blade (b); and a side-notched projectile point (c) from site 32GG5.

sides. The distal end is broad. The sides are straight. The implement has a triangular cross-section. Its maximum length is 46.3 mm, maximum width is 32.7 mm, and maximum thickness is 14.4 mm. The surface color is yellowish gray, 5 Y 8/1. The specimen is illustrated in Figure 19b.

A side- and end-scraper was collected from site 32GG5. This implement has been fashioned from a tertiary flake of Knife River Flint. It is unifacially worked. Oblique, transverse pressure flaking is present on the dorsal surface of the artifact. The distal end is broad, almost straight, and steep. Pressure retouch is evident on this end. The proximal end is rounded. One side is straight, and the other is slightly excurvate (Figure 19c). The maximum length of the artifact is 17.6 mm, its maximum width is 20.8 mm, and the maximum thickness is 7.1 mm. The color is dusky brown, 5 YR 2/2.

A small, triangular-shaped cutting-scraping tool manufactured from local siliceous material was recovered during site test excavations. This specimen is bifacially worked. Random pressure flaking is present on both the dorsal and ventral surfaces. Random pressure retouch is apparent along the sides and base of the tool. The distal end is acute and both sides are slightly excurvate (Figure 19d). The proximal end is

straight and thinned. The artifact has a maximum length of 16.6 mm, a maximum width of 15.5 mm, and a maximum thickness of 3.6 mm. Surface color is light brown, 5 YR 5/6.

A crude prismatic blade fashioned from local quartzite was collected at this site. The implement possesses random percussion flaking on both the dorsal and ventral surfaces. The distal end is broad. The proximal end is straight with limited, random percussion retouch. One side is straight, the other is slightly excurvate. In cross-section this specimen is median ridged. The artifact has a maximum length of 58.3 mm, a maximum width of 19.9 mm, and a maximum thickness of 12.8 mm. Surface color is very light gray, N8. This implement is illustrated in Figure 20a.

A unifacial blade manufactured from a large secondary flake of fine-grained basalt was recovered during field investigations at site 32GG5. Random percussion flaking is present along one side and near the distal end of the implement. The distal end is broad. The proximal end is rounded. One side is incurvate, the opposite side is excurvate. A large area of cortical material is present on the dorsal surface of the specimen along the incurvate side, near the proximal end (Figure 20b). The artifact has a plano-convex cross-section. Its maximum length is 85.9 mm, the maximum width is 36.2 mm, and the maximum thickness is 17.0 mm. Surface color of the worked faces is dark gray, N3, and the color of the cortex is greenish gray, 5 GY 6/1.

The only diagnostic lithic artifact recovered from this site was a small, side-notched projectile point. This specimen has an acute distal end and straight sides. Pressure retouch is present on both edges of the blade. Random pressure flaking is evident on both the dorsal and ventral surfaces. The base of the specimen is expanding and slightly incurvate. Basal thinning is also apparent. The shoulders of the blade are tapered. In cross-section the artifact is flattened. It has a maximum length of 18.4 mm, a maximum shoulder width of 14.1 mm, and a maximum thickness of 3.6 mm. The base is 14.3 mm wide. Mean notch depth is 2.0 mm and average notch width is 3.9 mm (Figure 20c). The specimen has been manufactured from Knife River Flint, and has a dusky brown, 5 YR 2/2, surface color.

Small, side-notched projectile points are often associated with Late Middle Woodland to Late Woodland cultural developments in the northeastern Plains and adjacent woodlands. In this instance, the cultural assignation is supported by the presence of Plains Woodland ceramics.

Ceramics

A total of twenty-two pieces of ceramic data were collected from test excavation units at site 32GG5. Three descriptive categories of pottery are present. The primary criteria for classifying

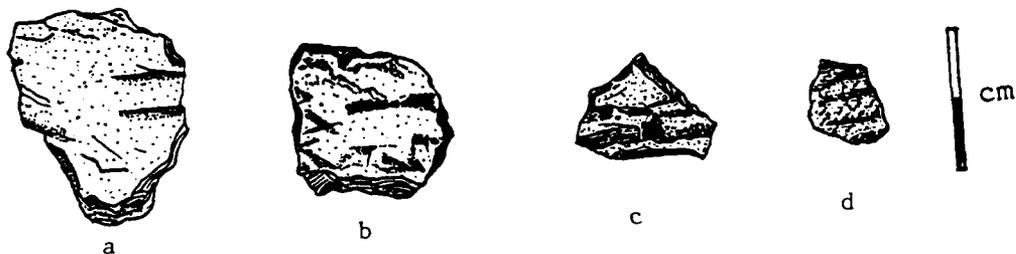


Figure 21. Trilled body sherds (a-c); and a cord-impressed body sherd from site 32GG5.

these materials are pattern and method of surface treatment.

The largest group of sherds recovered from this site are 11 plain, undecorated, body sherds. These have a fine grit temper. They vary in thickness from 3.9 mm to 5.7 mm. Surface color is pale brown, 5 YR 2/2. The interior of the sherds is a grayish brown color, 5 YR 3/2. No reconstruction of vessel form was possible from these limited data.

The second class of pottery consists of six sherds with horizontal and oblique lines cut into the vessel surface. This decorative motif was applied while the clay was still plastic, prior to firing (Figure 21a-c). These sherds all possess a fine grit temper. The trilled lines have been lightly smoothed after being incised. Sherd thickness varies from 4.8 mm to 6.5 mm. The trilled lines range from 1.4 mm to 2.0 mm wide, and are approximately 0.4 mm deep. The distance between these design elements is 4.0 mm. Surface color of the sherds ranges from moderate yellowish brown, 10 YR 5/4, to grayish brown, 5 YR 3/2. The interior color of the sherds varies from dusky yellowish brown, 10 YR 2/2, to grayish brown, 5 YR 3/2.

Cord-impressed sherds form the third class of ceramic wares present at this site. Five body sherds comprise this grouping. The ware is grit tempered. The sherds range in thickness from 4.3 mm to 4.8 mm. The cord impressions average 0.2 mm in depth and vary from 0.2 mm to 0.4 mm in width. Both the surface and the interior of these sherds are moderate brown in color, 5 YR 3/4. This ware is illustrated in Figure 21d.

The ceramic sample from site 32GG5 is too small to permit definitive statements of the associations of these wares with specific cultural traditions of the northeastern Plains or the northern woodlands. However, it is safe to suggest that they exhibit many of the elements that are characteristic of the ceramic technology of Late Plains Woodland groups in the general region.

Bone and Shell

Bone fragments were fewer in number at 32GG5 than at the other two cultural loci sampled during the present investigations. A total of 135 fragments of bone were recovered. All pieces were extremely small, and many were badly eroded. None of these items were sufficiently intact to permit osteological identification. In addition, one piece of eroded freshwater mussel shell was collected.

Discussion

Given the depth and extent of the disturbance of site 32GG5 through agricultural activity, it is not possible to accurately interpret extant site data. Virtually all of the recovered cultural materials were recovered from the plowzone. Those specimen collected from soil horizons below the plowzone were most often found in the fill of rodent burrows. Historic artifacts, primarily coal clinkers, regularly occurred at depths of 20 cm to 27 cm below surface. The clinkers were probably by-products of coal burning locomotive engines that were discarded over the site from the Great Northern Railroad bridge that crosses the Sheyenne River approximately 200 meters north of the archaeological locus. The complete absence of an interpretive context for the prehistoric cultural data collected renders this site useless in terms of understanding the behavioral patterning of its inhabitants. This was probably a seasonal encampment of Late Woodland peoples. However, the activities performed at this locus cannot be documented. Site 32GG5 is of little value in understanding the lifeways of prehistoric peoples of the Sheyenne River Valley.

Recommendations

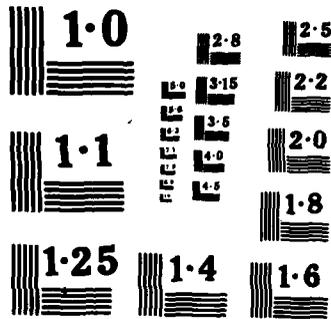
Extensive cultivation of the site area during the early decades of the present century have completely destroyed the integrity and context of the cultural data present. No features, or portions of features, remain within the locus. Therefore, no additional investigations are recommended for this site. 32GG5 is not eligible for inclusion on the National Register of Historic Places.

Grid Unit	Primary Flake	Secondary Flake	Tertiary Flake	Core	Scraper	Biface Fragment	Blade	Projectile Point	Chopping Tools	Ceramics	Bone/Shell	Historic/Recent
OS, 20W	STERILE											
OS, 40W		2										
OS, 60W	STERILE											
OS, 80W			3								3	5
OS, 100W	STERILE											
OS, 120W	STERILE											
OS, 140W	STERILE											
OS, 160W	STERILE											
OS, 180W	1	1	5								10	1
OS, 200W	1	5	50								3	
OS, 215W	3	1	3									
OS, 240W	STERILE											
10S, 200W		2	6		1					4	4	
20S, 20W	STERILE											
20S, 60W		1	7								4	
40S, 61W			5								1	
59S, 60W			2								3	
60S, 180W		1										
90S, 140W	STERILE											
20S, 200W		3	23									

Table 6. 32GG5: Excavated data by category and sample unit.

Grid Unit	Primary Flake	Secondary Flake	Tertiary Flake	Core	Scraper	Biface Fragment	Blade	Projectile Point	Chopping Tools	Ceramics	Bone/Shell	Historic/Recent
20N, 60W	STERILE											
20N, 100W	STERILE											
20N, 200W	2	1	6								7	
40N, 60W			2									
40N, 100W	STERILE											
180N, 250W	3	7	9		1						12	
199N, 280W	1	9	27							1	15	
200N, 210W	1			1								
200N, 211W			3									
200N, 230W	1	1	2						1			56
200N, 250W	3	3	11								7	
200N, 270W		2	31							3	18	
220N, 230W		1	2								1	
220N, 250W	1										1	
220N, 269W	3	10	109							5	3	1
220N, 270W	3	13	66				3			3	5	
224.5N, 249W	6	14	56	1	1						15	14
240N, 230W	2	1	5					1		1	4	
240N, 270W	2	7	21								6	
240N, 280W	1	2	10							2	3	

Table 6., continued.



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1970 Vegetational History of the Central Plains. In, Pleistocene and Recent Environments of the Central Great Plains. Wakefield Dort, Jr. and J. Knox Jones, Jr., eds. Department of Geology, University of Kansas, Special Publication 3. Lawrence, Kansas. 157-172.

APPENDIX I

Site Survey Forms for
32BA415, 32BA428, and 32GG5

Base Data Form

1. County BARNES 2. Site Number 32BA415
3. Site Name: (s) PLEASANT SITE
4. Type of resource: Archaeological Historical Architectural Paleontological
 District Site Building Structure Object
5. Map Reference: USGS 7.5 MIN. QUAD. "DAZEY NE" 1961
6. Location: NW $\frac{1}{4}$ of NW $\frac{1}{4}$ of NE $\frac{1}{4}$ of SE $\frac{1}{4}$ of Sec. 4 T 142 N / R 58 W
 Plat: _____ Block _____ Lot _____
 UTMG: A. _____ B. _____
 C. _____ D. _____
7. Access: FROM THE WESLEY ACRES BRIDGE ACROSS BALDHILL CREEK, PROCEED SOUTH ON IMPROVED GRAVEL ROAD FOR 7 MILES TO SECTION LINE. TURN EAST (LEFT) AND PROCEED ALONG UNIMPROVED SECTION ROAD TO 1/2 SECTION FENCE LINE. TURN LEFT (NORTH) AND PROCEED DOWN STEEP JEEP TRAIL. FOLLOW THIS TRAIL ACROSS OLD MEANDER UP ONTO HIGH GROUND. CONTINUE UP JEEP TRAIL PARALLELING WIND BREAK AND TURN DOWN TO END OF LAND.
8. A. General description of site: SITE IS EVIDENT ONLY IN THE RODENT BACKFILL AREAS REST OF SITE IS HEAVILY COVERED WITH DENSE GRASSES. WE TROVELED ABOUT 8 BACKDIRT PILES AND CAME UP WITH 1KRF FLAKE AND BONE FRAGS. SITE IS SITUATED ON A FLAT TERRACE AT THE CONFLUENCE OF BALDHILL CREEK AND SHEYENNE RIVER. WE ALSO DISCOVERED A SHALLOW NOTCHED BASAL FRAGMENT FROM RODENT BACKFILL.
- B. Condition of site: UNDISTURBED
9. Owner's name/address: U.S. ARMY CORPS OF ENGINEERS, ST. PAUL
10. Occupant's name/address: N/A
11. Historic Register value: Nat. State Untd. None On Reg. In District District
12. Open to public: Yes No 13. Preservation Underway: Yes No
14. Endangered by: BALDHILL CREEK RECREATION AREA (PROPOSED)
15. Survey Project: Title LAKE ASHTABULA SURVEY 1978-79 Director RICHARD A. FOX
 Other surveys in which included NONE
16. Recommendations: SITE SHOULD BE SYSTEMICALLY TESTED TO DETERMINE EXTENT.
17. Environment: Elevation 1280' Nearest Water: Type CREEK
 Name BALDHILL CR. Distance ADJACENT Direction N
 Soil conditions: DRY, HEAVY GRASS COVER, FRIABLE
 Soil Texture: SANDY CLAY

Site Number 32BA415

17. Environment, Cont.

Ground Cover: HEAVILY COVERED WITH PRAIRIE GRASSES AND SNOW BERRY

Terrain: FLAT TO GENTLY SLOPING--HIGH RIDGES TO SOUTH

18. Local contact person or organization: AUDREY THOMAS, U.S. ARMY CORPS OF ENGINEERS,

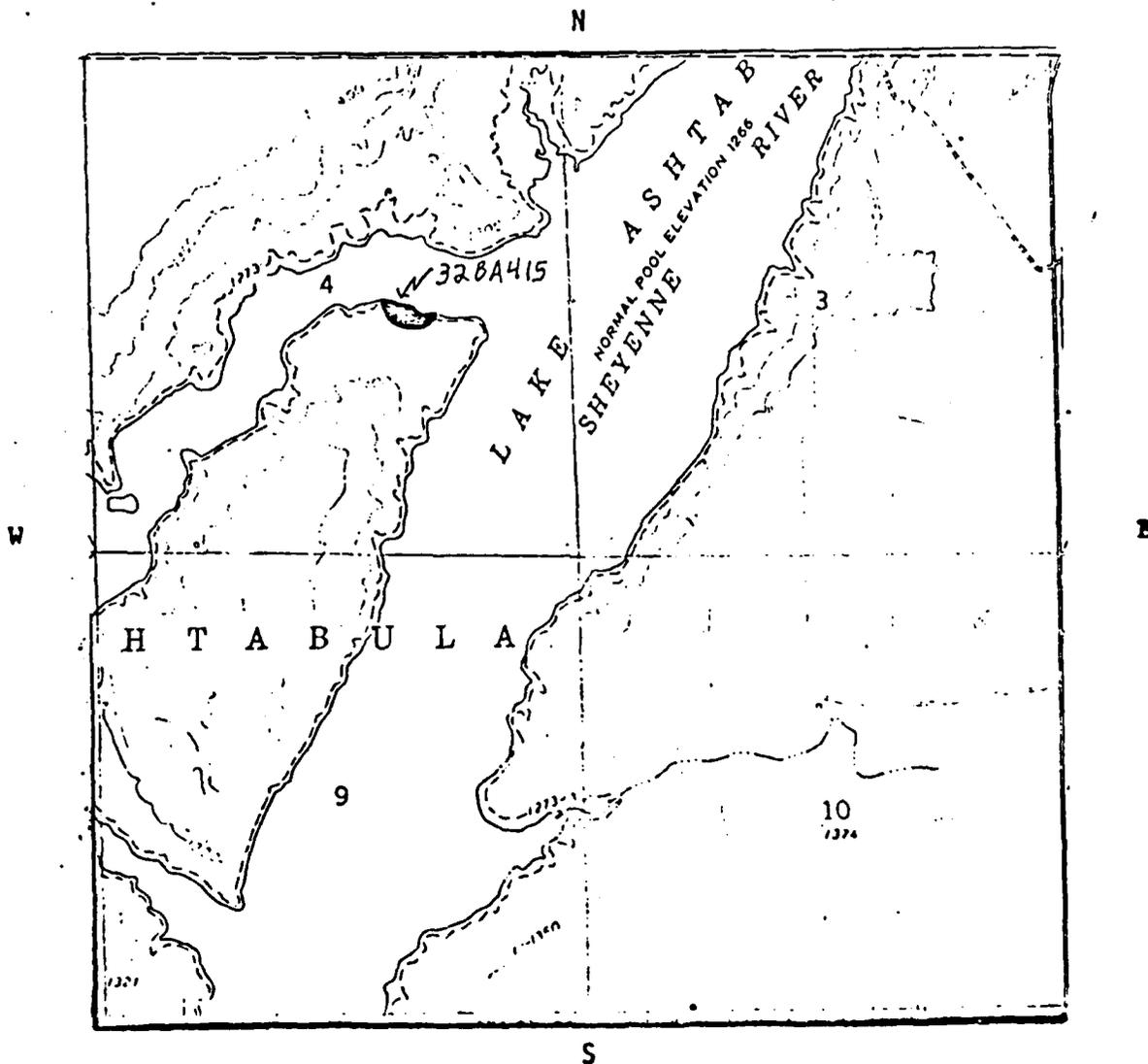
19. Photos: No B/WX Color Prints SlidesX Comments/ID code ST. PAUL DISTRICT, MN
 One each of site overview

Negatives stored at: Anthro/Arch - UND

In space below attach and identify a picture or contact print of the site.

20. Sketch Map of Site:

Scale: 1:24,000



Recorded by: R. FOX

Date 10/21/78

Revised by: _____

Date _____

21. Preliminary cultural assessment.

22. Site Type: LITHIC SCATTER

23. Collection: Time spent collecting: 2 pers / .3 hr(s). Materials collected: 1 PARTIAL PROJ. POINT BASE OF BROWN CHALCEDONY (KRF), 1 FLAKE (UNIFAC RETOUCH) BROWN CHALCEDONY (KRF), 1 FLAKE QUARTZITE, 1 FLAKE GRANITE PYRITE, 8 VERY SMALL BONE FRAGS. PROJECTILE POINT BASE FRAGMENT IS OBVIOUSLY A SIDE NOTCHED VARIETY.

Artifacts stored at: UND DEPT. ANTHROPOLOGY/ARCHAEOLOGY

Materials observed, but not collected: NONE

Collections observed: Material NONE

Owner/address: N/A

24. Site size: (Meters, feet-yards, acres) UNDETERMINED--HEAVY GRASS COVER

How determined: Paced Eyeballed Taped Other

25. Surface Features Observed: NONE

26. Comments/References: THE CULTURAL MATERIALS FROM THE FEW RODENT BACKFILL AREAS ARE ALONE NOT IMPRESSIVE IN NUMBERS. HOWEVER, WHEN COMPARED TO THE GREAT AREA OBSCURED BY HEAVY GRASSES, WE FEEL THE FINDINGS ARE SIGNIFICANT AND REPRESENTATIVE OF REMAINING SUBSURFACE CULTURAL MATERIALS. INSPECTION OF CUTBANK NEARBY REVEALS NO MATERIAL. SMALL BONE FRAGMENTS MIGHT INDICATE A FOOD PREPARATION AREA.

Final Report: 1978-1979 CULTURAL RESOURCE INVESTIGATIONS ALONG THE MIDDLE SHEYENNE RIVER VALLEY INCLUDING LAKE ASHTABULA AND A PORTION OF THE SHEYENNE RIVER (FOX 1980)

Recorded by: R. FOX

Date: 21 OCT 1978

NORTH DAKOTA CULTURAL RESOURCES SURVEY

Base Data Form

1. County BARNES 2. Site Number 32B7428
3. Site Name (s) Omega Site
4. Type of Resource: A. Archaeological Historical Architectural Paleontological
B. District Site Building Structure Object
5. Map Reference: 1967 Sibley Quad USGS 7.5' Series
6. Location: W $\frac{1}{2}$ of NE $\frac{1}{4}$ of SW $\frac{1}{4}$ of SE $\frac{1}{4}$ of SE $\frac{1}{4}$ Sec. 26 T 143 N / R 58 W
Plat: and NE $\frac{1}{4}$ of SW $\frac{1}{4}$ of SW $\frac{1}{4}$ of SE $\frac{1}{4}$ of SE $\frac{1}{4}$ Block _____ Lot _____
UTMG: A. _____ B. _____
C. _____ D. _____
7. Access: From the Ashtabula Crossing, proceed southerly on paved County Road # 21 for 1 mile. Then turn left (east) onto gravel county road for and proceed for .7 miles. Turn left (north) and proceed for 1 mile to lake's edge. From the summer cottages located here, proceed on foot along shoreline in a northeasterly direction for 900 meters. Site is on alluvial terrace where cattle rub and salt lick are located.
8. A. General description of site: Site is situated on an alluvial fan terrace formed by small ephemeral drainage that empties into Lake Ashtabula. In several places can have exposed large areas of earth to a depth of approx. 10 cm. We found all of the lithic debris in these exposed areas. This indicates subsurface deposits. We found what appears to be butchered long bones (Bison?) in the shoreline cutbank. The fragments came from the same area; one at a depth of 28 cm., the other at a
B. Condition of site: disturbed by erosion (from lake) and cattle
9. Collector's name/address: Corps of Engineers
10. Occupant's name/address: unknown
11. Historic Register value: Nat. State Undt. None On Reg. In District District
12. Open to public: Yes No 13. Preservation Underway: Yes No
14. Endangered by: Erosion and/ or pool elevation raises
15. Survey Project: Title 78-79 Lake Ashtabula Director R. Fox
Other surveys in which included None
16. Recommendations: See final report for Items 11 & 16
17. Environment: Elevation 1280-1300' Nearest Water: Type Lake
Name Ashtabula Distance Adjacent Direction NW
Soil conditions: dry
Soil Texture: Sandy loam, loosely compacted

17. Environment, Cont.

Ground Cover: pasture and several patches of ground, a few trees

Terrain: flat alluvial terrace

18. Local contact person or organization: none

19. Photos: No x B/W Color Prints Slides Comments/ID code

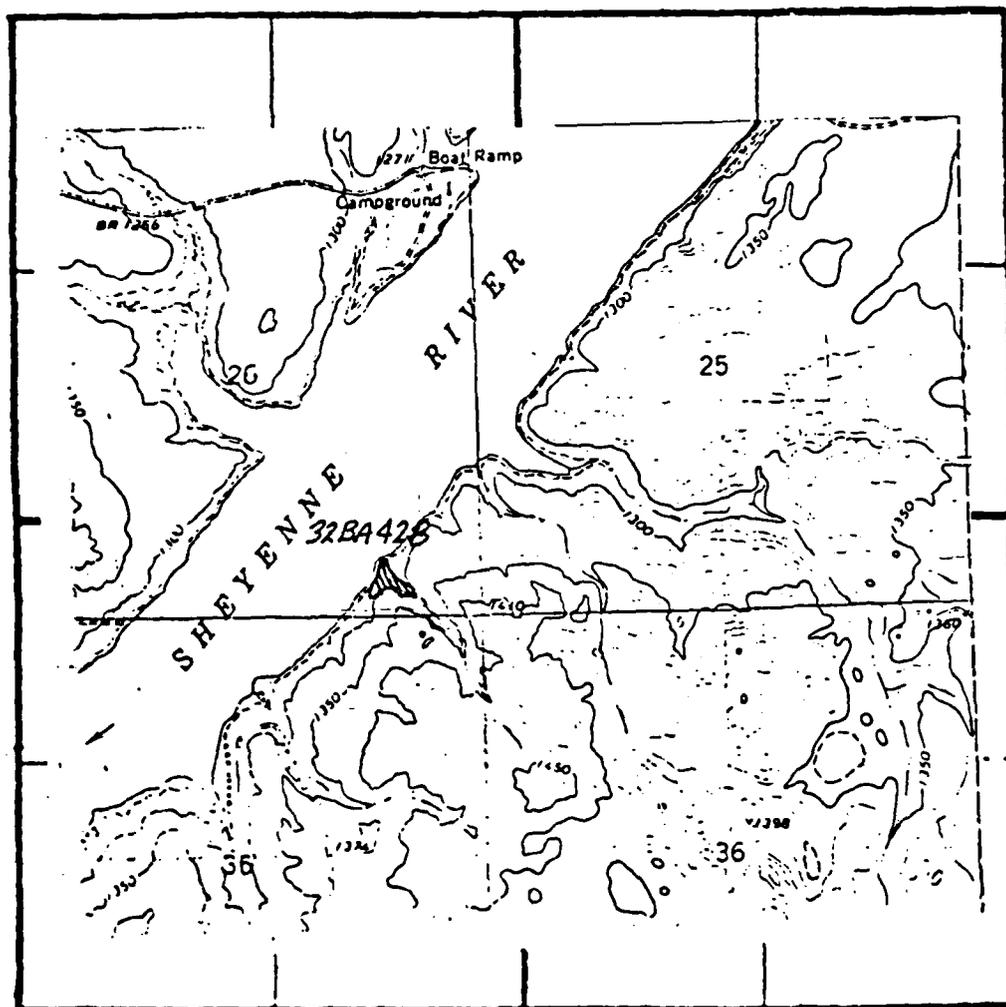
Negatives stored at: N/A

In space below attach and identify a picture or contact print of the site.

20. Sketch Map of Site:

Scale: 1:24000 contour interval=

N



Recorded by: R. Fox with O'Brien & Timian

Date 23 Aug. 79

Revised by:

21. Preliminary cultural assessment: Unknown

22. Site Type: Butchering area(?)

23. Collection: Time spent collecting: 3 persons¹hr(s). Materials collected: 3 flakes of Swan River Chert- one large basalt flake (possible a fortuitous chopper tool- 4 bone fragments

Artifacts stored at: Anthro/ Arch Dept.- UND

Materials observed, but not collected: None

Collections observed: Material None

Owner/address: N/A

24. Site size: (Meters, feet-yards, acres) 110m x 140x

How determined: Paced Eyeballed Taped Other

25. Surface Features Observed: none

26. Comments/References: Item #8 con't- depth of 34cm. We also found (an olecranon process and another butchered bone in the ephemeral drainage channel approx 110 met up from the mouth. These two bones may have washed down from above (Site 322A is located above and on the drainage. The drainage could have been used as an impoundment but the sides are not exceptionally steep.

Final Report: 1978-1979 Cultural Resource Investigations Along the Middle Sheyenne River Valley - including - Lake Ashtabula and a Portion of the Sheyenne River (Fox 1980)

Recorded by: R. Fox with O'Brien & Timian Date 23 Aug. 79

Base Data Form

1. County GRIGGS 2. Site Number 32GG5
3. Site Name (s) Many Ticks
4. Type of Resource: A. Archaeological Historical Architectural Paleontology
B. District Site Building Structure Object
5. Map Reference: USGS 7.5 min. 1-2400 Karnak ND Griggs 1961
6. Location: from the NW $\frac{1}{4}$, SW $\frac{1}{4}$, NE $\frac{1}{4}$, SE $\frac{1}{4}$ of 27 to NW, NW, NW, NW Sec. 35 T 144 N / R 58
Plat: SE Block _____ Lot _____
UTMG: A. _____ B. _____
C. _____ D. _____
7. Access: Proceed west from the NW corner of Luverne, ND on gravel road for 2 mile heading down river terrace till crossing small bridge--site is exposed, along 2 track road to the northwest.
8. A. General description of site: Scattered lithics found on 2 track road approx 25 cm deep with exception of one flake, also fire hearth found on road. Site extends from small bridge north to small cove of trees, approximately 100 m e of Lake on long rather narrow flat with rolling hills to the east, northern portion of site on lower sloping terrace and southern portion of site on high terrace.
- B. Condition of site: Undisturbed except for dirt road
9. Owner's name/address: USA Game Refuge
10. Occupant's name/address: N/A
11. Historic Register value: Nat. State Undt. None On Reg. In District Distr.
12. Open to public: Yes No 13. Preservation Underway: Yes No
14. Endangered by: Further erosion by road (small trail) Lake Ashtabula
future pool elevation rise
15. Survey Project: Title Lake Ashtabula 1978-79 Director Fox
Other surveys in which included None
16. Recommendations: See final report for items #11 & 16
17. Environment: Elevation 1296 feet Nearest Water: Type Lake
Name Ashtabula Distance 100 m Direction east
Soil conditions: Unplowed pasture with good grass & shrub covering
Soil Texture: dark brown sandy loamy clay

17. Environment. Cont.

Ground Cover: Prairie grasses and small shrub

Terrain: Gently west sloping river terraces

18. Local contact person or organization: none

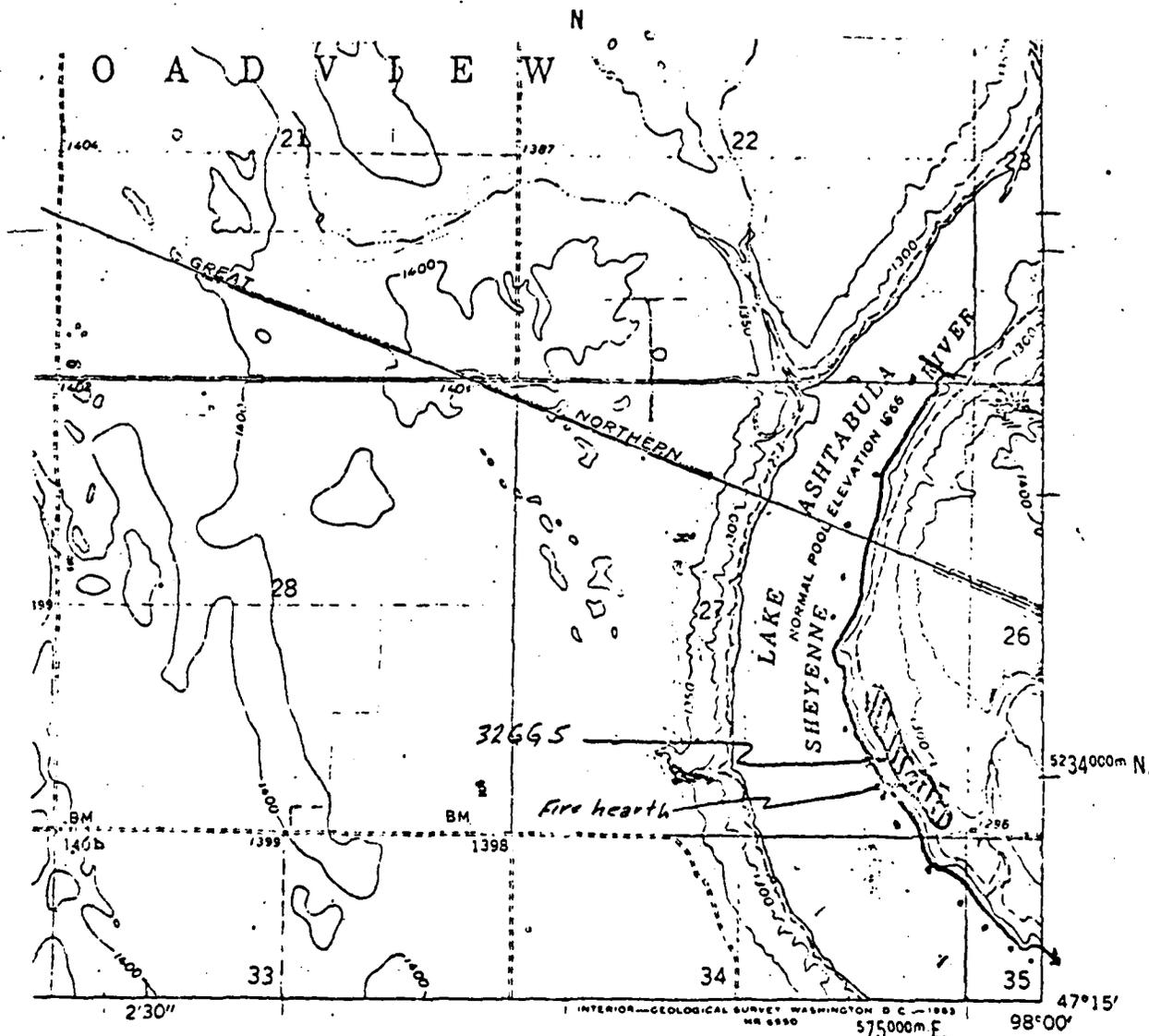
19. Photos: No B/W Color X Prints Slides X Comments/ID code one each of fire hearth feature

Negatives stored at: UND--Department of Anthropology and Archaeology

In space below attach and identify a picture or contact print of the site.

20. Sketch Map of Site:

Scale: 1:24,000



Recorded by: S. Lantz, (L.O'Brien, C. Adeniji)

Date 6-12-79

Revised by:

21. Preliminary cultural assessment: unknown

22. Site Type: habitation (?)

23. Collection: Time spent collecting: 3 man hr(s). Materials collected: From end--5-5cm to 10cm flakes of Swan River chert; 3-10cm to 15cm flakes of Swan chert; 2-20cm to 30 cm flakes of Swan River chert; 1-45 cm flake of Swan River; 2-10cm to 15cm fragments of bone; 1 fragment of brown chert; 1 piece (large) gneiss (schist) hard material 1-20 cm piece of white smooth chert. North end- 2-60 cm to 70 cm fragments of bone; 1-40 cm fragment of bone; 7-2 cm to 10 cm
Artifacts stored at: UND--Department of Anthropology and Archaeology
Materials observed, but not collected: Firehearth

Collections observed: Material None

Owner/address: N/A

24. Site size: (Meters, feet-yards, acres) unknown; lithics collected from 630m long
How determined: Paced Eyeballed X Taped Other

25. Surface Features Observed: Fire hearth on two track road

26. Comments/References:

Final Report: 1978-1979 CULTURAL RESOURCE INVESTIGATIONS ALONG THE MIDDLE SHEYENNE RIVER VALLEY INCLUDING LAKE ASHTABULA AND A PORTION OF THE SHEYENNE RIVER (FOX 1980)

Recorded by: S. Lantz (L. O'Brien, C. Adeniji)

Date 6-6-79

NORTH DAKOTA ARCHAEOLOGICAL SURVEY
CONTINUATION SHEET

SITE NO. 32GG5 LOCATION _____ SEC. _____ T. _____ R. _____
NAME _____ DATE _____

Item # 23:

flakes of Knife River flint; 5-11 cm to 15 cm Knife River flint flakes; 1-3
fragment (core-small) of Knife River flint; 1-15 cm (knife) or projectial
1-15 cm worked flake (possible scraper) fragment of Knife River flint; 7-5 c
10 cm flakes of Swan River chert; 9-18 cm to 25 cm flakes of Swan River che
5-26 cm to 40 cm Swan River chert; 1-23 cm flake of grey chert; 1 fragment
Swan River chert; 1 fragment of hematite; 1 fragment of gneiss (schist)

APPENDIX II

Scope of Work
Cultural Resources Investigation
of Sites 32 BA 413, 32 BA 415, and 32 BA 428
Lake Ashtabula

SCOPE OF WORK
CULTURAL RESOURCES INVESTIGATION
OF SITES 32 BA 413, 32 BA 428, and 32 BA 415
LAKE ASHTABULA

1.00 INTRODUCTION

1.01 The Contractor will undertake a cultural resources investigation of sites 32 BA 413, 32 BA 428, and 32 BA 415 at Lake Ashtabula, Barnes County, North Dakota.

1.02 This cultural resources inventory partially fulfills the obligations of the Corps of Engineers (Corps) regarding cultural resources, as set forth in the National Historic Preservation Act of 1966 (Public Law (P.L.) 89-665), as amended; the National Environmental Policy Act of 1969 (P.L. 91-190); Executive Order (E.O.) 11593 for the "Protection and Enhancement of the Cultural Environment" (Federal Register, 13 May 1971); the Archaeological and Historical Preservation Act of 1974 (P.L. 93-291); the Advisory Council on Historic Preservation "Regulations for the Protection of Historic and Cultural Properties (36 CFR Part 800); the Department of the Interior guidelines concerning cultural resources (36 CFR Part 60); and applicable Corps regulations (ER 1105-2-50).

1.03 The laws, guidelines, and regulations listed above establish the importance of Federal leadership, through the various responsible agencies, in locating and preserving cultural resources within project areas. Specific steps to comply with these laws, particularly as directed in P.L. 93-291 and E.O. 11593, are being taken by the Corps "... to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures, and objects of historical, architectural, or archaeological significance." A part of that responsibility is to locate, inventory, and nominate to the Secretary of the Interior all such sites in the project area that appear to qualify for listing on the National Register of Historic Places.

1.04 Executive Orders 11593 and the 1980 amendments to the National Historic Preservation Act further direct Federal agencies "... to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished or substantially altered." In addition, the Corps is directed to administer its policies, plans, and programs so that federally- and non-federally owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved and maintained for the inspiration and benefit of the people of the United States.

1.05 This cultural resources investigation will serve several purposes. The Contractor's report will be a planning tool to help the Corps meet its obligations to preserve and protect our cultural heritage. This report will be a comprehensive, scholarly document that not only partially fulfills federally mandated legal requirements but also serves as a scientific reference for future professional studies. It will identify sites that may require additional investigations and that may have potential for public-use development. Therefore, the report must be analytical, not just descriptive.

2.00 PROJECT DESCRIPTION

2.01 Lake Ashtabula and Baldhill Dam, authorized by the Flood Control Act of 1944, is a multi-purpose project operated to provide flood control, water supply, and recreational opportunities.

2.02 A cultural resource literature search and records review and Phase I survey of Lake Ashtabula conducted in 1980 located 46 sites. The results of this survey are detailed in a report entitled 1978-1979 Cultural Resource Investigations Along the Middle Sheyenne River Valley Including Lake Ashtabula and a Portion of the Sheyenne River. This report was prepared by the University of North Dakota under contract with the St. Paul District, Corps of Engineers.

2.03 One of the sites located during this Phase I survey was 32 BA 413. This site is in the SE $\frac{1}{4}$, SW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 22, T. 142 N., R. 58 W. Situated on a sand and gravel beach, this site is undergoing erosion. It contains lithic material and one possible rim sherd.

2.04 Another site located during this survey was 32 BA 415. This site is in the NW $\frac{1}{4}$, NE $\frac{1}{4}$, NW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 4, T. 142 N., R. 58 W. This site is a lithic scatter located in a relatively undisturbed field. The materials recovered were all picked up from rodent backfill and included one partial projectile point base, flakes, and small bone fragments.

2.05 A third site located during this survey is 32 BA 428. This site is in the W $\frac{1}{2}$, NE $\frac{1}{4}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$ and NE $\frac{1}{4}$, SW $\frac{1}{4}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 6 T. 143 N., R. 58 W. This site is a possible butchering area that has yielded lithic and bone material.

3.00 DEFINITIONS

3.01 For the purpose of this study, the cultural resources investigation will involve Phase II testing. A literature and records search and review, and Phase I survey will not be conducted at this time.

3.02 "Cultural resources" are defined to include any building, site, district, structure, object, data, or other material relating to the history, architecture, archaeology, or culture of an area.

3.03 "Phase II testing" is defined as the intensive testing of those sites that may provide important cultural and scientific information. Phase II testing will result in data adequate to determine the eligibility of the resources for inclusion on the National Register of Historic Places, a plan for the satisfactory mitigation of eligible sites that will be directly or indirectly impacted, and detailed time and cost estimates for mitigation.

4.00 TESTING SPECIFICATIONS

4.01 Phase II testing will be undertaken at sites 32 BA 413, 32 BA 428, and 32 BA 415.

5.00 PERFORMANCE SPECIFICATIONS

5.01 The Contractor will use a systematic, interdisciplinary approach in conducting the study. The Contractor will provide specialized knowledge and skills during the course of the study to include expertise in archeology, and other social and natural sciences as required.

5.02 The extent and character of the work to be accomplished by the Contractor will be subject to the general supervision, direction, control, review and approval of the Contracting Officer.

5.03 Techniques and methodologies that the Contractor uses during the investigation must be representative of the current state of knowledge for their respective disciplines.

5.04 The Contractor will keep standard records that must include, but not be limited to, field notebooks, site survey forms, field maps, and photographs.

5.05 The recommended professional treatment of recovered materials is curation and storage of the artifacts at an institution that can properly insure their preservation and that will make them available for research and public view. If such materials are not in Federal ownership, the consent of the owner must be obtained, in accordance with applicable law, concerning the disposition of the materials after completion of the report. The Contractor will be responsible for making curatorial arrangements for any collections which are obtained. Such arrangements must be coordinated with the appropriate officials of North Dakota and approved by the Contracting Officer.

5.06 When sites are not wholly contained within the right-of-way, the Contractor must survey an area outside the right-of-way limits large enough to include the entire site within the survey area. This procedure will be done in an effort to delineate site boundaries and to determine the degree to which the site will be impacted.

5.07 The Contractor shall provide all materials and equipment as may be necessary to expeditiously perform those services required of the study.

5.08 If it becomes necessary in the performance of the work and services, the Contractor will, at no cost to the Government, secure the rights of ingress and egress on properties not owned or controlled by the Government. The Contractor will secure the consent of the owner, his representative, or agent, in writing prior to effecting entry on such property. If requested, a letter of introduction, signed by the District Engineer, can be provided to explain the project purposes and request the cooperation of landowners. Where a landowner denies permission for survey, the Contractor must immediately notify the Contracting Officer and must describe the extent of the property to be excluded from the survey.

5.09 The Contractor will test the site areas sufficiently to determine the existence of cultural materials and/or features, their condition (in situ or disturbed), the horizontal and vertical distribution of the remains, and, if possible, the cultural affiliation of the site(s).

5.10 Recommendations on the significance of the sites according to the National Register of Historic Places criteria will be included in the final report. These recommendations will include a detailed justification for the significance or non-significance of the site(s), including what research questions the sites can answer.

5.11 The Contractor will recommend appropriate mitigative measures, including time and cost estimates, where warranted.

5.12 All testing will employ standard archaeological techniques, including formal test pits. All material will be screened through $\frac{1}{4}$ -inch mesh screen.

5.13 The tested areas will be returned as closely as practical to pre-survey conditions by the Contractor.

6.00 GENERAL REPORT REQUIREMENTS

6.01 The Contractor will submit the following types of reports, which are described in this section and in section 9.00: field report, field notes, draft contract report, final contract report, and completed National Register form(s), if appropriate.

6.02 The Contractor's technical report will include, but will not be limited to, the following sections, as appropriate to the study.

a. Title Page: The title page will provide the following information: the type of investigation undertaken, the cultural resources assessed (archeological, historical, and architectural), the project name and location (county and State), the date of the report, the Contractor's name, the contract number, and name(s) of the author(s) and/or Principal Investigator, the signature of the Principal Investigator, and the agency for which the report is being prepared.

b. Management Summary: This section will include a concise summary of the study, which will contain all essential data for using the document in the Corps of Engineers management of the project. This information will minimally include: why the work was undertaken and who the sponsor is, a brief summary of the scope of work and budget, a summary of the study (field work; lab analysis), study limitations, study results, significance, recommendations, and the repository of all pertinent records and artifacts.

c. Table of Contents

d. List of Figures

e. List of Plates

f. Introduction: This section will identify the sponsor (Corps of Engineers) and the sponsor's reason for the study; an overview of the testing project, with the site(s) located on USGS quad maps. This section will also provide an overview of the archeological study to be undertaken; define the location and boundaries of the study area (with regional and area-specific maps); define the study area within its cultural, regional, and environmental context; reference the scope of work; identify the institute that did the work, the number of people involved in the study, the number of person-days/hours utilized during the study, the dates when the various types of work were completed, and the repository of records and artifacts; and provide an overview of how the study report will proceed and of the major goals that the study/study report will accomplish.

g. Previous Archeological and Historical Studies: This section will provide a brief summary and evaluation of previous archeological and historical studies of the project area and region, including the researchers, date, extent, adequacy of the past work, study results, and cultural/behavioral inferences derived from the research.

h. Environmental Background: This section will include a brief description of the study area and regional environment, including the following categories: geology, vegetation, fauna, climate, topography, physiography, and soils, with reference to prehistoric, historic, ethnographic, and contemporary periods. Any information available on the relationship of the environmental setting to the area's prehistory and history shall be included. This section will be of a length commensurate with other report sections.

i. Theoretical and Methodological Overview: This section will include a description or statement of the goals of the Corps of Engineers and the study researcher, the theoretical and methodological orientation of the study, and the research strategies that were applied in achieving the stated goals.

j. Field Methods: This section will describe the specific archeological activities undertaken to achieve the stated theoretical and methodological goals. The section will include all field methods, techniques, strategies, and rationale or justification for specific methods or decisions. The description of the field methods will minimally include: a description of field conditions, topographic/physiographic features, vegetation conditions, soil types, stratigraphy, testing results with all appropriate testing forms to be included as an appendix, and the rationale for eliminating uninvestigated areas. Testing methods will include descriptions of test units (size, intervals, stratigraphy, depth) and the rationale behind their placement.

k. Analysis: This section will describe and provide the rationale for the specific analytic methods and techniques used, and describe and discuss the qualitative and quantitative manipulation of the data. Limitations or problems with the analysis based on the data collection results will also be discussed. This section will also contain references to accession numbers used for all collections, photographs, and field notes obtained during the study, and the location where they are permanently housed.

l. Investigation Results: This section will describe all the archaeological resources encountered during the study, and any other data pertinent to a complete understanding of the resources within the study area. This section will include enough empirical data that the study results can be independently assessed. The description of the data will minimally include: a description of the site; amounts and types of material remains recovered; relation of the site or sites to physiographic features, vegetation, and soil types; direct and indirect impacts to the site(s); analysis of the site and data (e.g., site type, cultural historical components and information, cultural/behavioral inferences or patterns); site condition; and location and size information (elevation, complete quad map source, legal description, address if appropriate, and site size, density, depth, and extent).

m. Evaluation and Conclusions: This section will evaluate and formulate conclusions concerning location of the site(s); size, condition, distribution, and density in relation to other sites in the area; and significance in relation to the local and regional prehistory, protohistory, and history. This section will also discuss the potential and goals for future research, the reliability of the analysis; relate results of the study and analysis to the stated study goals; identify changes, if any, in the research goals; synthesize and compare the results of the analysis and study; integrate ancillary data; and identify and discuss cultural/behavioral patterns and processes that are inferred from the study and analysis results.

n. Recommendations: This section will discuss the significance of the site(s) in relation to the research goals of the study and the National Register of Historic Places criteria, make recommendations as to the eligibility of the site(s) to the National Register; recommend future mitigative priorities and needs; and make suggestions with regard to the Corps of Engineers planning goals. These recommendations will include a time and cost estimate for mitigation, if necessary. If it is the Contractor's assessment that the site(s) is (are) not significant, the methods of investigation and reasoning which support that conclusion will be presented. Any evidence of cultural resources or materials that have been previously disturbed or destroyed will be presented and explained.

o. References: This section will provide standard bibliographic references (American Antiquity format) for every publication cited in the report. References not cited in the report will be listed in a separate "Additional References" section.

p. Appendix: This section will include the Scope of Work, resumes of all personnel involved, all correspondence derived from the study, all State site forms, all testing information, and any other pertinent report information referenced in the text as being included in the appendix.

6.03 The location of all sites and other features discussed in the text will be shown on a legibly photocopied USGS map that will be bound into the report. All maps will be labeled with a caption/description, a north arrow, a scale bar, township, range, map size, and dates, and the map source (e.g., the USGS quad name or published source) and will have proper margins.

6.04 Failure to fulfill these report requirements will result in the rejection of the report by the Contracting Officer.

7.00 FORMAT SPECIFICATIONS

7.01 The Contractor must submit to the Contracting Officer the photographic negatives for all black and white photographs that appear in the final report.

7.02 All text materials will be typed, single-spaced (the draft reports should be space-and-one-half or double-spaced), on good quality bond paper, 8.5 inches by 11.0 inches, with 1.5-inch binding and bottom margins, and 1-inch margins on the top and other margin, and will be printed on both sides of the paper.

7.03 Information will be presented in textual, tabular, and graphic forms, whichever are most appropriate, effective, or advantageous to communicate the necessary information.

7.04 All figures and maps must be clear, legible, self-explanatory, and of sufficiently high quality to be readily reproducible by standard xerographic equipment, and will have margins as defined above.

7.05 The final report cover letter will include a budget of the project.

7.06 The draft and final reports will be divided into easily discernible chapters, with appropriate page separation and heading.

8.00 MATERIALS PROVIDED

8.01 The Contracting Officer will furnish the Contractor with the following materials:

a. Access to any publications, records, maps, or photographs that are on file at the district headquarters.

9.00 SUBMITTALS

9.01 The Contractor will submit reports according to the following schedules:

a. Field Report: The original and one copy of a field report will be submitted after completion of the field work. The field report will summarize the work, project/field limitations, methodology used, time utilized, and survey results.

b. Project Field Notes: One legible copy of all project field notes will be submitted with the draft contract report.

c. Draft Contract Report: The original and 10 copies of the draft contract report will be submitted on or before _____ days after contract award. The draft contract report will be reviewed by the Corps of Engineers, the State Historic Preservation Officer, the State Archeologist, and the National Park Service. The draft contract report will be submitted according to the report and contract specifications outlined in this Scope of Work.

d. Final Contract Report: The original and 15 copies of the final contract report will be submitted _____ days after the Corps of Engineers comments on the draft contract report are received by the Contractor. The final contract report will incorporate all the comments made on the draft contract report.

e. National Register Forms: An original and 1 copy of a completed National Register Nomination Forms will be submitted with the final contract report for each site considered, in the Contractor's opinion, to be eligible for inclusion on the National Register of Historic Places.

9.02 Neither the Contractor nor his representative will release any sketch, photograph, report, or other material of any nature obtained or prepared under the contract without specific written approval of the Contracting Officer prior to the acceptance of the final report by the Government. After the Contracting Officer has accepted the final report, distribution will not be restricted by either party except that data relating to the specific location of extant sites will be deleted in distributions to the public.

9.03 All materials, documents, collections, notes, forms, maps, etc., which have been produced, gathered or acquired in any manner by the Contractor for use in the completion of this contract, must be made available to the Contracting Officer upon request.

10.00 METHOD OF PAYMENT

10.01 Requests for partial payment under this fixed price contract will be made monthly on ENG Form 93. A 10-percent retained percentage will be withheld from each partial payment. Upon approval of the final reports by the Contracting Officer, final payment, including previously retained percentage, will be made to the Contractor.

APPENDIX III

Vita of
Steven J. Fox,
Principal Investigator

Vita

Steven J. Fox

Address

Department of Sociology and Anthropology
Southern Station, Box 5074
University of Southern Mississippi
Hattiesburg, Mississippi 39406-5074
(601)-266-4306

Education

B.A. Anthropology. University of California, Santa Barbara. 1969.

M.A. Anthropology. University of Nevada, Reno. 1972.

ABD Anthropology. University of Utah. Ph.D. expected 1984.

Dissertation Title: "The Dallas Culture and its Significance
to Southeastern United States Prehistory"

Areas of Specialization

North American Archaeology; Human Ecology; Anthropology of Play; North
American Ethnology; American Cowboy

Academic Appointments

1983-84 Visiting Assistant Professor. Department of Sociology & Anthropology.
University of Southern Mississippi. Hattiesburg, Mississippi.

1978-83 Assistant Professor. Department of Sociology & Anthropology.
North Dakota State University. Fargo, North Dakota.

1975-78 Assistant Professor. Department of Sociology & Anthropology.
Middle Tennessee State University. Murfreesboro, Tennessee.

1973-75 Instructor. Division of Social Science and Education.
Motlow College. Tullahoma, Tennessee.

Courses Taught

Introduction to Anthropology; Cultural Anthropology; Human Ecology; Economic
Anthropology; Kinship and Social Organization; Anthropological Theory; Issues in
Contemporary Anthropology; North American Indians; South American Indians;
Peoples and Cultures of the World; American Cowboy in Cultural Perspective;
Archaeology; Method and Theory in Archaeology; Plains Prehistory; North
American Archaeology; Physical Anthropology; Seminar in Physical Anthropology

Research Projects (partial Listing)

- 1981-82 Field Director. Coal Lands Archaeological Survey Project. Survey and evaluation of prehistoric archaeological resources located within 12,000 acres of proposed coal lease lands in Montana and North Dakota. Wibaux County, Montana and Golden Valley and Stark Counties, North Dakota. Department of the Interior, Bureau of Land Management.
- 1979-82 Principal Investigator. Devils Lake Archaeological Project. Excavations at the Irvin Nelson Site, a multicomponent, lacustrine oriented locus on the south shore of Devils Lake. Benson County, North Dakota. Department of the Interior, U. S. Fish and Wildlife Service.
- 1976-77 Principal Investigator. Fortress Rosecrans Archaeological Project. Excavation of Civil War earthworks documenting activity areas, construction techniques, and original features as the initial stage of a program of restoration of the site as an interpretive historical park. Rutherford County, Tennessee. National Park Service and Tennessee Historical Commission.
- 1976 Principal Investigator. Gainesboro Archeological Project. Survey and excavation of five Archaic and Woodland sites on the Upper Cumberland River. Jackson County, Tennessee. Department of the Army, Corps of Engineers.
- 1975-76 Principal Investigator. Blairsville Archaeological Project. Survey of archaeological sites along a twenty-five mile long transect in northern Georgia. Union County, Georgia. Tennessee Valley Authority.
- 1975 Principal Investigator. Columbia-Duck River Archaeological Project. Survey and test excavation of three Archaic sites on the Duck River northwest of the proposed Columbia Dam. Maury County, Tennessee. Tennessee Valley Authority.
- 1975 Principal Investigator. Harpeth River Archaeological Project. Survey and test excavation of two Archaic sites on the Harpeth River. Williamson County, Tennessee. Tennessee Valley Authority.
- 1973-74 Principal Investigator. Elk River Archaeological Survey Project. Reconnaissance of archaeological sites using locational analysis with the primary floodplain of the Elk River. Coffee, Moore, and Lincoln Counties, Tennessee. Tennessee Valley Authority.
- 1973 Principal Investigator. Taylorsville-Bledsoe Creek Archaeological Project. Survey of archaeological resources on the Middle Cumberland River. Wilson and Sumner Counties, Tennessee. Tennessee Valley Authority.

Publications, Presentations, and Technical Reports (partial listing)

- 1984 Games on the Range: Play Forms of the Traditional American Cowboy. Paper presented at the Annual Meeting of the Southern Anthropological Society. Atlanta, Georgia. April.
- 1984 Rodeo: Western Sport and Subculture in Transition. Paper presented at the Annual Meeting of The Association for the Anthropological Study of Play. Clemson, South Carolina. March.
- 1983 Excavtions at the Irvin Nelson Site, 32BE208. Department of the Interior. U. S. Fish and Wildlife Service. Denver, Colorado.
- 1983 A Cultural Theory of Play. Paper presented at the Annual Meeting of The Association for the Anthropological Study of Play. Baton Rouge, Louisiana. February.
- 1982 (with Kurt P. Schweigert). A Cultural Resource Survey of Federal Coal Lease Lands within the Dickinson, North Dakota and Miles City, Montana Districts of the Bureau of Land Management. Department of the Interior, Bureau of Land Management. Denver, Colorado.
- 1980 Play and Games as Social Boundary Maintaining Mechanisms in Plains Indian Societies. Paper presented at the Thirty-Eighth Plains Anthropological Conference. Iowa City, Iowa. November.
- 1980 Theoretical Implications for the Study of Interrelationships between Ritual and Play. In, Play and Culture. Helen B. Schwartzman, ed. Cornwall, New York: Leisure Press.
- 1979 Relational Dimensions of Games and Sport among Nonkin-based Social Structures in Tribal Societies. paper presented at the Annual Meeting of The Association for the Anthropological Study of Play. Henniker, New hampshire. March.
- 1978 The Archaeology of Fortress Rosecrans: A Civil War Garrison in Middle Tennessee. Department of the Interior, National Park Service. Washington D. C.
- 1977 A Paleoanthropological Approach to Recreation and Sporting Behaviors. In Studies in the Anthropology of Play: Papers in Memory of B. Allan Tindall. Phillips Stevens, ed. Cornwall, New York: Leisure Press.
- 1977 Archaeological Investigations at the Gainsboro Port Authority, Jackson County, Tennessee. Department of the Army, Corps of Engineers. Nashville District. Nashville, Tennessee.
- 1976 Cultural Ecological Patterns of the Eastern Shoshoni. Tebiwa: Journal of the Idaho State University Museum, Miscellaneous Papers 2. Pocatellow, Idaho.
- 1972 (with Donald L. Hardesty). A Survey of Archaeological Resources in the Modoc and Shasta-Trinity National Forests, California. Department of Agriculture, U. S. Forest Service, california Region. San Francisco, California.

Professional Organization Memberships

American Anthropological Association
American Ethnological Society
Council on Anthropology and Education
Society for American Archaeology
Society for Historical Archaeology
Society of Psychological Anthropology
The Association for the Anthropological Study of Play
Plains Anthropological Society
Southeastern Archaeological Conference
Southern Anthropological Society

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