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ARCHEOLOGICAL INVESTIGATIONS ASSOCIATED WITH THE FEDERAL LAND HIGHWAY PROGRAM, OZARK NATIONAL SCENIC RIVERWAYS, 1985

by

Steven LeRoy De Vore



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Department of the Interior
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ABSTRACT

An archeological crew from the Midwest Archeological Center conducted investigations at five locations in the Ozark National Scenic Riverways during 1985. The preconstruction survey and excavations at these locations were in response to planned Federal Land Highway Program road improvements at Chubb Hollow, Gooseneck, Powder Mill, Pulltite, and Round Spring. Excavations were conducted at Chubb Hollow, Gooseneck, and Pulltite. Additional surveys were conducted at the Pulltite campgrounds, at Powder Mill, and at Round Spring. The present discussion is primarily concerned with the excavations at the Chubb Hollow site (23CT104) and the Pulltite site (23SH94). The Chubb Hollow site represents an intact, multicomponent site which has been intermittently occupied by prehistoric peoples from the Late Archaic to the Mississippian periods. The site is a small resource extraction station. The Pulltite site is an intact, single component Late Archaic site. It represents a temporary, intermittently occupied resource extraction station.

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INTRODUCTION

General Background

The Ozark National Scenic Riverways, authorized in 1964, is located in southeastern Missouri approximately 175 miles south of St. Louis and 250 miles southeast of Kansas City (Figure 1). The national park encompasses as area of over 130 miles in Carter, Dent, Shannon, and Texas counties of Missouri along portions of the Current River and its major tributary, the Jacks Fork. The park is noted for its large springs, numerous caves, and natural scenery.

The Federal Land Highway Program (FLHP) plans involve road improvements in five areas of the Riverways. These include the Chubb Hollow picnic area at Big Spring, the Gooseneck/Hawes Memorial Campground, the Powder Mill campground at Owls Bend, the Pulltite campgrounds, and the Round Spring recreation area. Federal historic preservation mandates and National Park Service policy (NPS-28) requires that all areas affected by road improvements be surveyed in order to inventory and evaluate affected archeological sites. Three known sites are located in the project areas at Ozark National Scenic Riverways. These include the Chubb Hollow site (23CT104), the Gooseneck site (23CT54), and the Pulltite site (23SH94). Any new sites discovered during the campground surveys will be recorded with the Archaeological Survey of Missouri.

Methodology

Since initial archeological surveys have been completed at the various project areas, the nature of the archeological investigations varied with each component of the project. Archeological field procedures, as described by Hester, Heizer, and Graham (1975), have been employed for the testing of known sites. These procedures include the setting up of a locational grid, the selective excavation of the cultural zone, and the documentation of the location of artifacts and features. Survey procedures consisted of systematic interval shovel tests.

The analytical framework employed in organizing the data is essentially the same used in standard site reports and further outlined by Willey and Phillips (1958) and by Zeier (1982). For the purpose of describing the archeological data, the categories used to divide the recovered material consist of portable objects (artifacts and ecofacts) and structural remains (features). These categories were subdivided into smaller classificatory units corresponding to natural, formal, and functional attributes. The method employed in the present study was aimed at simplifying the comparison of archeological data from the sites in the project

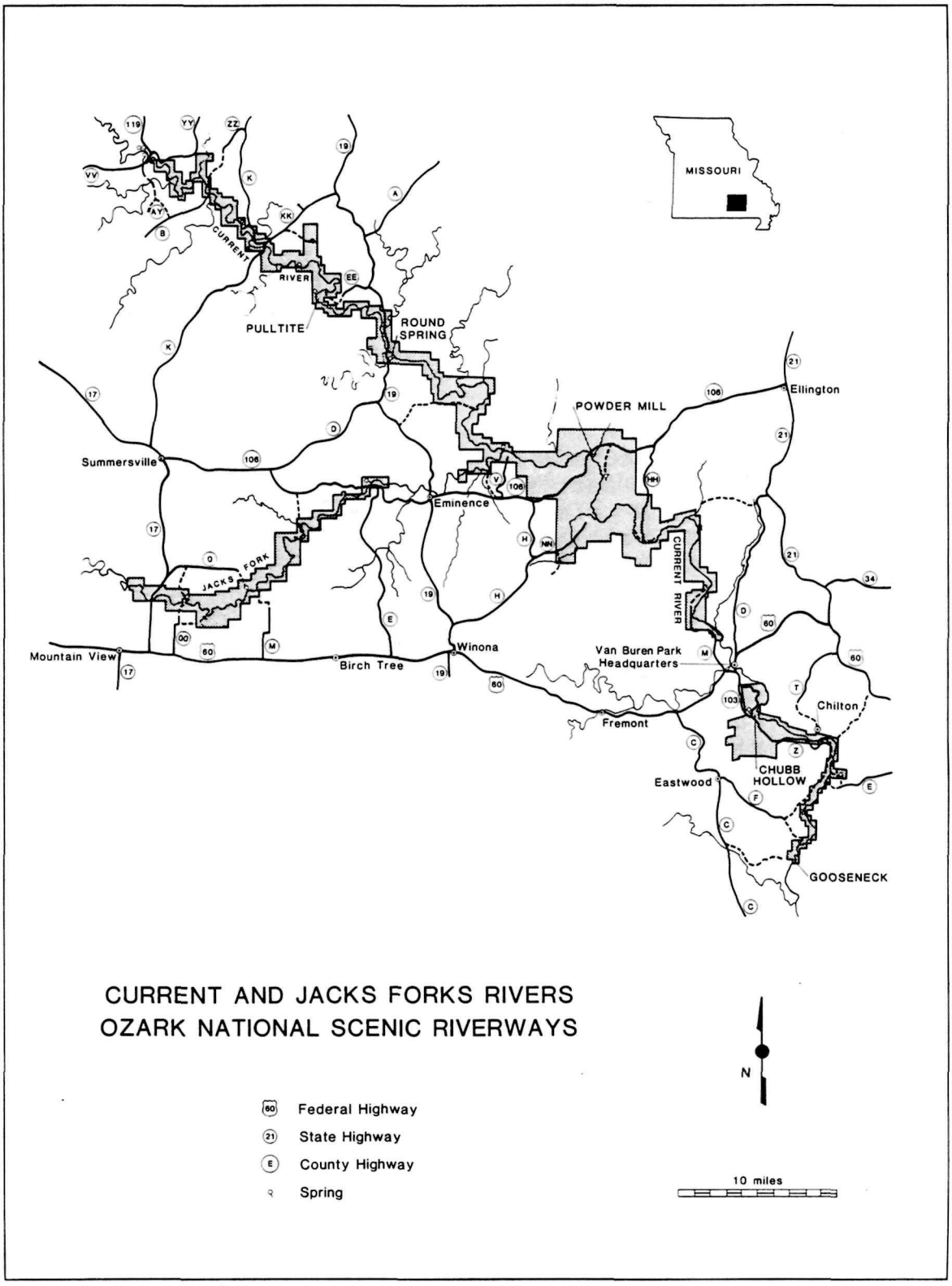


Figure 1. Location of the FLHP Project Areas in the Ozark National Scenic Riverways.

The FLHP archeological investigations are conducted in association with ongoing site inventory and evaluation activities in the Riverways. The project should also contribute to the long-term research endeavors. These endeavors include the study of changing land use patterns over time and to connect the culture history of the Current River drainage into the general regional culture change occurring in the eastern Ozarks and adjacent areas throughout the prehistoric period. The research concerns include utilization of the region by Archaic, Woodland, and Mississippian peoples, development of the Mississippian lifeway in the region, and cultural isolation versus outside contact in the eastern Ozarks during the prehistoric period.

Plan of Presentation

The subsequent discussion is presented in the following manner. The ecological setting of the project area is the focus of second chapter. The primary goal of this chapter is to present the potential resources available exploitation by the human inhabitants of the region during the prehistoric period. The third chapter presents a summary of the culture history of the eastern Ozarks in order to orientate the reader to the cultural historic setting within the Riverways. The fourth chapter presents the history of the archeological investigations at each FLHP project area, a description of the present investigations, and a description of the site stratigraphy for each excavated site. The fifth chapter describes the excavated material from the tested sites in the FLHP project areas. The sixth chapter summarizes the data and presents an evaluation of the significance of the tested sites.

THE ECOLOGICAL SETTING

The Regional Environmental Setting

The Ozark National Scenic Riverways park is located in southern Missouri. This region is part of the Ozark Plateau or Highlands which is located in Arkansas, Illinois, Missouri, and Oklahoma. The area is distinguished from the surrounding interior midcontinent lowlands by its generally higher elevation, greater topographic relief, and general accordance of summit levels. The Ozark region comprises a diverse area with a multitude of natural resources.

The present discussion provides a brief orientation to the ecological settings which relate to past human adaptive patterns in the southeastern Missouri Ozark region. The discussion includes a description of the regional physiography and topography, the geology and soils, hydrology, climate, vegetation, and faunal resources. This orientation reflects a late prehistoric or early historic setting based on historic observations and studies of the natural environment. The final section of the chapter deals with a consideration of changes in the Holocene environment based on recent paleoecological studies of the southeastern Missouri Ozark region.

Physiography and Topography

The Ozark National Scenic Riverways park lies in portions of Carter, Dent, Shannon, and Texas counties in southern Missouri. This area is part of the Ozark Plateau (Fenneman 1938:631) or Highlands (Sauer 1968:3). The Ozark Plateau in Missouri forms part of the Interior Highlands Province in the interior United States (Fenneman 1938; Rafferty 1980:7). The Ozark Plateau is one of the four geographic provinces in Missouri. The major determining factor for regional differences within Missouri is topography (Collier 1955:370).

The rugged topography of the Ozark Plateau is quite dissimilar to the surrounding rolling or level lowlands. Dissected till (glacial) plains of northern Missouri are separated from the Ozark Plateau by the Missouri River. The western section of the state is located within the Osage Cuestas. This region is bounded on the north by the Missouri River. The western edge of the Ozark Plateau bordering the Osage Cuestas runs along a diagonal line from the corner of Saline and Howard counties southwest to Jasper county. An escarpment from Cape Giradeau county to Ripley county separates the plateau from the southeastern Mississippi Alluvial Plain.

The Ozark Plateau is a broad asymmetrical dome with a general accordance of summit levels. This accordance is believed

to represent an ancient peneplain surface which has undergone subsequent uplift and erosion. The southeastern margin is bounded by a relatively steep escarpment. The northern and western flanks of the plateau are more gently sloping. The interior Ozark region is characterized by steep hills and valleys with entrenched, meandering streams (Tarr 1924). The region is generally forested except for occasional small prairies and open parklands in the undissected upland regions. Karst topography is widespread among the limestone and dolomite geologic formations which blanket the region. As a result of variations within the natural environmental setting, the Ozark Plateau has been divided into eight subdivisions (Collier 1955; Fenneman 1938; Rafferty 1983; Sauer 1968). The project area along the Current River is contained within the Courtois Hills (Sauer 1968:68). The park area along the Jacks Fork is also in the Courtois Hills except for a portion along the upper Jacks Fork which is located in the Central Plateau (Lynott 1981a:17). Fenneman (1938:645,647) describes the entire region as part of the Salem Plateau.

The Courtois Hills subprovince of the Ozark Plateau is characterized by rugged countryside. The valleys are deep and narrow. Numerous streams dissect the region into innumerable deep ravines separated by narrow upland divides. The Courtois Hills represent some of the steepest slopes and roughest terrain in the Missouri Ozarks (Rafferty 1980:16). Caves, sinkholes, solution valleys, and springs, characteristic of karst topography, are common features of this region. Several spectacular springs are located within the park boundaries along the Current River. These karst features are the result of groundwater activity within the limestone and dolomite formations of the Salem Plateau.

The topography of the project area is determined by the geologic formations and the erosive action of the surface and subsurface drainage systems. The Current River and its tributaries, including the Jacks Fork, dissect the landscape into topographic zones consisting of the stream, natural levels, floodplain, lower slopes, upper slopes, and ridges (Price et al. 1976:17). Smaller intermittent streams may lack the floodplain and natural levels associated with the Current River and its major tributaries.

The region has been subjected to subaerial degradation over an extremely long period which has created the two major topographic elements of the upland peneplain and the valleys and their terraces (Sauer 1968:21). The general accordance of the upland ridgetops or summits presents an almost level view. The accordant summits are evidently remnants of the gently domed Ozark Plateau (Bridge 1930:30). The beds of sandstone which underlie the region serve as a resistant cap on the ridges. The streams cut their valleys by eroding the more soluble dolomite strata in both lateral and vertical directions. This results in a rolling landscape. The sandstone cap retards valley widening which results in the entrenchment of the stream within a narrow valley with over-steepened slopes (Bridge 1930:31; Rafferty

1980:8). Relief of 300 feet to 600 feet between the ridgetop and valley floor is typical (Rafferty 1983:228).

Upland slopes are steep with bold limestone or dolomite bluffs located along the outside stream bends (Rafferty 1980:8). Erosion of the limestone strata has left large quantities of residual chert on the slopes. Downslope movement of the chert by alluvial or colluvial action has also deposited large amounts of chert in the valleys. Chert gravels and sand form the beds of the regional streams, and a high percentage of chert is found in the residual soils of the uplands and the alluvial soils of the valleys.

The intermediate area between the uplands and the floodplain of the Current River and its major tributaries consists of a high and a much dissected terrace (Bridge 1930:31; Price et al. 1984:229-239). A lower terrace is also present in some areas along the major streams. Low hills are present near Rocky Creek and in the Van Buren vicinity. The high and intermediate terraces exhibit abandoned stream channels (Price et al. 1984:239). The floodplain along the Current River and its main tributaries consists of a narrow, discontinuous strip which generally alternates sides of the stream opposite the meander bend.

The Current River meanders its way throughout most of its entrenched valley (Bridge 1930:33; Tarr 1924). Saucier (Price et al. 1984:245) disagrees with this traditional assessment of the Current River. From his study of the valley geomorphology, he depicts the stream pattern of the Current River as straight rather meandering. He describes the typical type of channel migration as a simple lateral shift rather than sinuous meanders (Bridge 1930:33; Tarr 1924).

Besides the erosive action of surface water, the dolomite/limestone formations are subject to solution by percolating groundwater (Rafferty 1980:9,1983:5-6). This region of the Ozarks is noted for its maturely developed karst topography. Along the Current River and its tributary, the Jacks Fork, there are numerous large springs, sinkholes, solution valleys, and caves. Large springs in the region are the mouths of subterranean rivers which have surfaced. These springs provide a permanent low volume source of water for the Current River even during dry periods.

Geology and Soils

The geology of the Ozark National Scenic Riverways is characterized by sedimentary and igneous rocks (Bridge 1930). The region consists of nearly horizontal strata of dolomites, sandstones, and conglomerates of upper Cambrian and lower Ordovician age overlying pre-Cambrian rhyolite porphyry and associated tuffs and agglomerates of the dome. Some isolated

strata of Mississippian and Pennsylvanian age remain although the vast majority has undergone erosion during the Cenozoic era. Except for the outcrops of the Paleozoic and Proterozoic eras, the region is mantled with residual soil and alluvium of the Cenozoic era (Bridge 1930:57).

The oldest rocks in the geologic profile along the Current River consists of a series of rhyolites and associated igneous rocks of the Algonkian (?) period. These occasionally outcrop along the Current River (Bridge 1930:57). Some volcanic activity in the region during this period is represented by pryoclastic rocks consisting of volcanic ash and tuff found in mines of the region (Bridge 1930:61). These Proterozoic formations are overlain by Paleozoic sedimentary rocks which formed when this region of Missouri was submerged under a great inland sea. Geological periods of the Paleozoic era are represented by Cambrian, Ordovician, Mississippian, and Pennsylvanian strata. A basal conglomerate separates the pre-Cambrian igneous rocks from the Cambrian sedimentary rocks. This formation has resulted from the erosion of pre-Cambrian formations and subsequent cementation as the Cambrian seas covered the region (Bridge 1930-64).

Three geologic formations of the Cambrian period overlie the pre-Cambrian rocks and the Paleozoic basal conglomerate. Bonneterre dolomite forms the lowest stratum of the Cambrian series. This formation consists of a light gray, coarsely crystalline dolomite approximately 60 feet thick. The dolomite is non-cherty. It is the principal lead bearing formation in the state. A single outcrop is noted along the right bank of the Current River in Shannon county (Bridge 1930:57,67). The second stratum in the Cambrian series is the Potosi dolomite. It consists of a dark gray or brown, finely crystalline crusty dolomite. The Potosi dolomite formation is approximately 50 to 60 feet thick in exposures along the Current River (Bridge 1930:57,70). The final stratum of the Cambrian series is the Eminence dolomite which occurs in numerous exposures throughout the region. The dolomite is massive, gray crystalline, and poorly-bedded. This magnesium limestone formation also contains small amounts of sandstone and shale. The porous white chert located in the dolomite is massive, hard, and vitreous. It weathers to a rusty colored, porous chert. Besides large masses of porous white chert, this dolomite contains small amounts of oolite (Bridge 1930:57,75).

The Cambrian series are overlain by four formations of the Ordovician period. The lowest stratum is the Gunter sandstone. The occurrence of this formation is at the Cambrian/Ordovician interface. It consists of massive sandstones or sandstone and dolomite. In the Eminence and Cardareva Quadrangles, it varies in thickness from 15 to 20 feet (Bridge 1930:57). The next formation is the Van Buren dolomite. It is a gray, crystalline dolomite which contains hard, white chert in a thin layer at its base. Its depth in the region is approximately 60 feet (Bridge 1930:55,98). The Van Buren formation is overlain by the

Gasconade dolomite (Bridge 1930:57,109). It is a well-bedded, light gray crystalline, cherty dolomite. The dolomite is profusely cherty with a hard, china-white chert. The formation varies in thickness from 200 to 220 feet and contains a cryptozoon reef. The final formation of the Ordovician series is the Ronbidoux formation. In the Eminence and Cardareva Quadrangles, this formation consists of Cutter and Jefferson strata. These are interbedded sandstones and dolomites. The dolomites are extremely cherty. The Roubidoux formation is approximately 50 feet thick (Bridge 1930:57,117).

The Mississippian and Pennsylvanian periods of the Paleozoic era are represented by eroded remnants which indicate their former existence. The Mississippian system consists of a few isolated areas of Burlington/Keokuk residual chert boulders of the Osage series. These boulders are comprised of a white fossiliferous chert. The formation is approximately five feet thick (Bridge 1930:57,129). The final Pennsylvanian period of the Paleozoic era is comprised of the Cherokee formation of the Des Moines series. This eroded, isolated formation consists of red, yellow, black, and white clays with some sandstone boulders and chert fragments. The Cherokee formation is approximately 50 to 75 feet thick in its only known occurrence in the region around Bartlett (Bridge 1930:57,131).

The abundance of chert in the local dolomite formations represents an important resource during the prehistoric period in this region. The availability of the chert resource in the area provides an important criteria for the selection of camp or village sites (Lynott 1981a:23). The availability of high grade chert is not consistent throughout the eastern United States, especially along the Mississippi River lowlands. Lynott (1981a:27) states the possibility of excursions by the prehistoric inhabitants of the Mississippi valley into the highlands or of trade with highland groups to obtain high quality chert.

The superficial sediments of the region consists of residual soils and alluvium (Gilbert 1971; Gott 1975; Hutton and Krusekopf 1917; Watkins et el. 1919) which formed during the recent epoch of the Quaternary period of the Cenozoic era. The Mesozoic era is not represented by any geologic formations since Triassic and Jurassic seas did not cover this region (Rafferty 1983:12). The residual soils are the result of weathering of the various Paleozoic formations. Most of the soils have formed on Ordovician dolomites. In numerous locations, residual chert covers the landscape or is incorporated into the soil. Alluvium in the valley bottoms of larger creeks and rivers consists of a mantle of boulders, gravel, sand and silt derived from weathered rocks of the region. The alluvial soils overlying the gravel and sand beds in the valley bottoms constitute the most fertile farmlands along the Current River (Bridge 1930:133). This is also true for the prehistoric farmers of the plateau region.

The residual soils of the region have developed from the weathering of the local geologic formations. They tend to be

shallow and very cherty on the ridges, hills, and slopes. Contact between rock formations commonly mark sharp differences between soil series. These cherty limestone and dolomite soils commonly contain large amounts of residual chert. These soils are generally clays or clay loams (Sauer 1968:36). They are best suited for timber. Agriculture is ineffective in most areas although some areas are suited for grazing. The alluvial soils of the valleys are deeper and more fertile. They are areas where early historic settlements were concentrated and were also important to the prehistoric agriculturists of the region (Lynott 1981a:23).

Ultisols comprise the major soils of the dissected Ozark Plateau (Foth and Schafer 1980:195). These soils have formed in the middle to low latitudes over an extremely long period. As a result, these soils have a strongly developed argillitic horizon and a low base saturation. Soil temperature regimes range from mesic or warmer. Soil moisture regimes may be udic, aquic, ustic, or xeric depending upon the topography, parent material, and climate of the region. The native vegetation consists primarily of forest species. Other soil orders present in the region include Alisols, Entisols, and Inceptisols. These soils tend to be located in the stream valleys or on the slopes. Although these soils occur less frequently than the Ultisols, they constitute some of the more fertile soils, especially on more level areas of the stream valleys.

Upland soils along the ridgetops and upper side slopes are primarily Ultisols. On the broader ridgetops with moderate to steep side slopes, Nixa soils have developed from residuum of cherty dolomite and sandstone. Macedonia soils have developed from cherty dolomite. On the narrower ridgetops with steep side slopes, Clarksville, Doniphan, and Poynor soils have developed from residuum of cherty dolomite while Coulstone soils developed from mixed residuum of cherty dolomite and sandstone. Along with these Ultisols, two Alifsols, Hobson and Lebanon, are found associated together in restricted areas. The Hobson series occur in ancient upland depressions which have filled with eroded materials weathered from the sandstone ridgetop. Lebanon soils have developed from cherty dolomite and sandstone on broader ridgetops.

Along some of the lower slopes, where colluvium has been deposited, Viraton soils have formed. These Alfisols are located along the foot of steep slopes and at ridge ends in long, narrow or irregular shaped areas. This area may also have a high correlation for prehistoric and historic habitation sites (Gott, personal communications 1985).

Alluvial deposits in the stream valleys consist of cherty alluvium, alluvium, and recent alluvial deposits. Midco and Razort soils have developed in cherty alluvium. The Midco soil is an Inceptisol found on the first bottoms along narrow stream valleys. The Razort soil is an Alfisol found on the low terraces above the bottomlands. The Ashton and Secesh soil series are

Alfisols which are derived from alluvium on low terraces above the floodplain and near drainageways, respectively. These terrace soils may also have a high occurrence of prehistoric and historic habitation sites (Gott, personal communications 1985). Other alluvial soils include the Gladden and Newark series. Gladden soils are Inceptisols which developed on the first bottoms along stream tributaries in narrow valleys while the Newark soils represent Entisols which formed on the first and second bottoms near drainageways. Newark soils are especially subject to annual flooding.

The remaining soils present in the project area include the Elash, Sharon, and Westerville soil series. Elash (Entisol) and Sharon (Inceptisol) soils have formed from recent alluvium. Elash series are present in narrow stream valleys while Sharon series are found on the bottomlands along large and small creeks. Sharon soils are often flooded during the spring season. The remaining soil series is the Westerville. This Inceptisol is found in bottomland depressions and is often quite wet during the spring.

Ridgetop and upper slope soils of the upland sector have a very low agricultural potential. Before Euro-American activities in the region, these soils supported forest vegetation with an occasional open park land or prairie on the broader ridgetops. Alluvial soils represent the more fertile soils in the region. In areas where the stream valleys widen, these soils are capable of supporting agricultural activities. Ashton and Razort soils are well suited for corn growing. This represents an important agricultural activity to both late prehistoric and historic populations in the region (Price et al. 1981:65-67).

Hydrology

Two types of drainage systems occur in the Ozark Plateau: 1) underground and 2) surface. One of the most conspicuous characteristics of the Ozark National Scenic Riverways and the Ozark Plateau, in general, is the numerous springs which issue from the underground drainage system. The massive dolomite and limestone formations in the Ozark Plateau provide a large underground water storage system. The karst conditions which are characteristic of this region permit the formation of the spring network. The Ozark springs are part of an underground drainage network which moves water along faults, fractures, and solution channels in the dolomite (Lynott 1981a:20). The springs represent one of the major water sources in the Ozarks. Their output sustains the flow of numerous streams including the Current River. The springs also provide scenic and recreational areas (Rafferty 1983:37). The Ozark National Scenic Riverways park includes some of the largest springs in Missouri on the basis of daily output. Vinegard and Feder (1974) provide detailed information concerning the individual springs located in the park as well as the rest of Missouri.

In addition to the underground drainage network, numerous surface streams have formed in the Ozarks. The Current River represents the largest stream in the project area. It is classified as a perennial, entrenched meander for the majority of its length (Douthit 1979:36). The drainage pattern of the Current River and its tributaries is typically dendritic (Bridge 1930:36). Both the Current River and its principal tributary, the Jacks Fork, derive a great portion of their annual flow from the several large springs in the region. The streams are clear and swift flowing with beds floored with chert gravel and sand. Prior to the logging activities these streams contained a higher proportion of clayey bottoms. Precipitation, generally in the form of rain, is usually absorbed by the highly porous soil. Excessively high water level in the streams occur after prolonged rainy spells. Streams may rise quickly after heavy rains but generally subside rapidly. Flooding along the streams may occur quickly under the forementioned conditions.

Annual availability of clean water is the result of a complex relationship between surface and subsurface drainage systems. Clean water is an important aspect in the selection of a site for human occupation. Provided by numerous streams and springs in the region, the prehistoric and historic human settlement of the region is dependent upon the regularity of available clean water. Water is also an important resource for plant and animal life.

Climate

The climate of the Ozark Plateau is determined by its mid-continental location in the middle latitudes (Rafferty 1980:24, 1983:15; Sauer 1968:27). The climate of the region is not sufficiently altered by altitude of relief. The weather is very susceptible to seasonal variation from year to year. Trewartha and Horn (1980:299-302) classify the climate of this region as the warm-summer subtype of the temperate humid climate (Dca). It is characterized by warm-to-hot summers and cool winters. The summers generally are quite hot; however, periods of cool, dry weather occasionally occur. Day-to-day fluctuations in temperature, precipitation, and humidity determine the regional weather while the regional climate is comprised of long-term averages and extremes of these elements. Human adaptation to the region is affected by these and other climatic conditions (Lynott 1981a:19).

The meteorological data for the region is compiled from two weather stations; one located at Doniphan, Missouri, and the second near Birch Tree, Missouri (Moxom 1941:947). The average annual temperature is approximately 56.8 F. The average daily high temperature for the summer taken in July is 79.3 F while the average daily high temperature for the winter taken in January is 35 F. Considerable annual variation in temperature

has been noted: the maximum temperature of 114 F was recorded at Doniphan while the minimum temperature of -32 F was recorded at Birch Tree. Winter temperatures are typically variable resulting from polar storm systems and upper air patterns (Lynott 1981a:18).

The prevailing winds are largely cyclonic and the weather is considerably variable (Rafferty 1980:24; Sauer 1968:27). Their maximum frequency is southerly or southeasterly, although there is a slight increase in the frequency of northerly or westerly winds during the winter. Winter storm winds are prevailingly from the northwest while summer storm winds are prevailingly from the southwest. Tornadoes occasionally occur with their highest frequency during the spring and early summer. The probability of tornadoes in any one area is very slight.

The average annual precipitation is about 43 to 48 inches for the region (Moxom 1941:947). Most precipitation falls as rain; however, snow is not uncommon in the winter months. Snow accumulations generally do not stay on the ground for more than a few days. Most of the rain falls during the spring and early summer. Summer rains frequently occur in the form of thunderstorms with occasional severe hail and high winds. Local rains may be excessive, creating flood conditions along tributary streams. Spring floods along the Current River are also common. Droughts are also occasionally experienced in the region. Drought periods have generally created more damage that periods of excessive rain (Sauer 1968:31).

The area enjoys approximately 190 frost free days. The average date for the last killing frost in the spring is April 13th while the first killing frost in the fall generally occurs around October 20th. Unseasonal frost depends upon the topographic setting, especially on north-facing slopes and in secluded draws and hollows. The growing season is sufficient for numerous horticultural and agricultural crops including corn, a major staple in late prehistoric and historic diets. Generally, precipitation is adequate to support local agriculture although droughts and irregular summer rainfall may severely limit yields during some years.

The microclimate in the project area may vary widely from the prevailing climatic conditions (Rafferty 1980:29). Temperatures vary with slope orientation, surface materials, relief, and the presence of water. South and west facing slopes receive more sunlight than other areas. As a result, they also have the highest evaporation rate. These areas contain the purest stands of oak and hickory forest in the region. The north-facing slopes usually have more undergrowth. Wildflowers, ferns, and mosses are commonly located on these slopes. Air drainage is the cause of the most noticeable summer temperature variation. Nights are noted for cool breezes in the valleys which drain down the slopes around sunset. Early mornings in the valleys are often foggy resulting from the drainage of cool air downslope during the night or from surface air cooled during the night by the springs. By mid-morning, the valleys are generally

clear. The hot summer temperatures in the valleys are also moderated by shade and cool spring water.

Vegetation

The regional vegetation is part of the Carolinian biotic province of the eastern Untied States (Dice 1943:16-18). In the Ozark Plateau, the Carolinian province is characterized by an oak-hickory climax association; however, this hardwood forest contains a rich diversity of tree species. The oak-hickory climax is characteristic of the western part of the province (Braun 1938:517). This climax association consists of trees with lower moisture requirements and is typically found in southern and lowland areas of the lowest effective rainfall within the eastern deciduous forest biome (Braun 1938:517; Shelford 1963:19).

The Missouri Ozark region is characterized by a diversity of species (Steyermark 1963). The various plant assemblages are determined by the microenvironments within the topographic setting (Huber and Rapp 1983). The regional flora consist of pine-oak and oak-hickory woodlands. The forest flora along with its herbaceous components have a slight dominance of southern species. Upland herbaceous species consist of plants which range from the Appalachian Plateau to the interior plains of the United States (Steyermark 1963).

Shannon and Carter counties lie in the Interior Highlands which contains the bulk of the Ozark Oak-Hickory forest. The area contains oaks which co-dominate the region with yellow or shortleaf pine (Braun 1950). This was especially true prior to the logging practices of the late 1800s and early 1900s.

Steyermark (1940) has divided the Oak-Hickory forest of the Ozarks into five edaphic associations. These consist of 1) the Sugar Maple - Bitternut Hickory Association, 2) the Sugar Maple - White Oak Association, 3) the Oak - Hickory Association, 4) the Oak - Pine Association, and 5) the White Oak - Red Maple Association. Each of these associations occur within the national park area of Shannon and Carter counties. The oak-hickory and oak-pine associations occupy the more xeric higher elevations while the more mesic species occur in the stream valleys.

Steyermark (1940,1959,1963) has compiled a detailed study of the edaphic plant associations within the relatively undisturbed of the Ozark forest. These five associations and their developmental stages are summarized below. These associations are also outlined in Garrison et al. (1976), Geier (1975), Price et al. (1975,1976), and Redfearn et al. (1970).

1. Sugar Maple - Bitternut Hickory Association
   This floodplain forest association occurs on

gravel bars, river terraces, and high bottomland. Ward's willow and witch hazel dominate the stream margins and gravel bars. Other species associated with these include sycamore, alder, sand grape, water willow, and bulrush. Silver maple and cottonwoods are found on river bottoms subjected to flooding, along with birch, willow, sycamore, button-brush, and rushes. Elm and green ash dominate the richer, later developed bottom land. Shumard and bur oaks, box elder, sweetgum, cut and barnyard grasses along with cane are also associated with these forest species. The final developmental bottomland stage is dominated by sugar maple and bitternut hickory associated with buckbrush, flowering dogwood, greenbriar, horneam, and pawpaw.

2. Sugar Maple - White Oak Association
This forest and associated prairie occurs on the limestone bluffs above stream valleys. The initial prairie stage consists of herbaceous plants (grasses and blackeyed susan) which occur continuously along exposed northern and eastern oriented slopes. Subsequent development includes the growth of various fruit bearing shrubs and trees, hackberry, persimmon, possum haw, sugarberry, and sumac. Cedar followed by white ash dominate the forest association. Other forest species include chittam wood, greenbriar, supplyjack, and winged elm. Eventually, the southern and western oriented slopes are dominated by chinquapin oak and white ash while the northern and eastern oriented slopes along with areas of greater soil development are dominated by sugar maple and white oak. The upper northern oriented slopes are dominated by white and northern red oak while the lower portion of these slopes also include basswood among the dominate oak species. Bitternut hickory, butternut, buckbrush, pawpaw, and spicebush frequently occur on richer developed soils.

3. Oak - Hickory Association
This forest association occurs on ridges, uplands, plateaus, and upper slopes of hills where the soil substratum is acidic. It is the most extensive forest association in the Ozarks. The initial developmental stage consists of prairie with sassafras, winged sumac, grasses, and sedges followed by blackjack and post oaks. These oaks form an open park land associated with broom-sedge and

panic grass. The final stage consists of the climax black oak - Ozark hickory association. This final developmental association is complex and several variations may occur dependent upon the microenvironmental setting.

4. Oak - Pine Association (including pure pine)
This forest association occupies the upper portion of the ridgetops and slopes. Pines usually occur on narrow ridges where acidic soils have developed from residuum of sandstone, chert, granite, or porphyritic trachyte.

5. White Oak - Red Maple Association
This forest association is limited to drainages in acidic soils, i.e. heads of tributaries, slight draws, and upper slopes of hills and ravines. Dogwood, sassafras, and sorghum initially dominate these areas. Red maple and mockernut hickory species associated with smooth sumac, serviceberry, and winged elm dominate the more severely eroded areas. White oak and red maple eventually dominate these topographic settings. Dogwood, farkleberry, greenbriar, fragrant sumac, huckleberry, and sassafras are also associated with this final forest association.

Small isolated stands of virgin Ozark vegetation occur infrequently in the region due to the logging practices of the late eighteenth and early nineteenth centuries (Douthit 1979:38; C. Price 1976). The remaining virgin forest associations consist of either oak-hickory of oak-pine forest. Regenerated forest vegetation belongs to the oak-hickory association which extends from the valley floor to the upland ridges in some areas. In the bottomlands suitable for cultivation, the native vegetation has been replaced by a variety of cash and/or forage crops. Within the park boundaries of the Ozark National Scenic Riverways, several previously farmed areas are returning to the initial developmental stages summarized in the descriptions of the regional forest associations.

The edaphic plant associations of the region supply a wide variety of nuts, fruits, berries, seeds, leaves, and plants which have contributed to prehistoric and historic human subsistence patterns. Phillips (1979) an inventory of wild edible flora common to Missouri. Several of these species are also found in the Current River drainage. Besides the edaphic plant associations, the springs, spring branches, and streams of the region also contain numerous floristic species. Arrowhead, American lotus, cattail, bittercress, and watercress are just a few species which have been utilized Native and Euro-Americans for food. The extent to which the prehistoric humans utilized the aquatic flora resources is uncertain although it is not unrealistic for these resources to have been a part of the

prehistoric subsistence strategies.

Fauna

Fauna of a biotic community is largely dependent upon the local flora. A variety of mammals, birds, and insects utilize the various nuts, berries, seeds, and other plant material as food sources (Sutton and Sutton 1985:77). These faunal species also serve as food sources for predatory mammals, birds, reptiles, and amphibians. The aquatic resources provide food sources for a variety of fish and mussels. The transitional zones between diverse biotic communities provide an increased variety and diversity of species resulting from the overlapping ecotones along their edges (Odum 1971:157). The oak-hickory forest of the Ozark Plateau, as in all ecosystems, provides for numerous interrelated food chains including the human inhabitants of the region.

A study of the faunal resources in the eastern Ozarks, including the park, has never been fully conducted. Shelford (1963) and Sutton and Sutton (1985) provide a general description of the fauna in the oak-hickory forests of the Eastern Woodlands. Schwartz and Schwartz (1959) provide a detailed description of the wild mammals of Missouri. Pflieger (1971) and Sauer (1968) describe the fish resources present in the Ozark streams, and Buchanan (1980) describes the fresh-water mussels present in the streams in the northern portion of the Ozarks. Smith (1974,1975) and Mick (1982) have discussed the animal resources exploited by the prehistoric human inhabitants of southeastern Missouri including the project area. The brief description of the faunal resources in the Ozark National Scenic Riverways is derived from these sources. It should be noted that disagreements between these sources are the result of the alteration of the native ecotones during the historic Euro-American period due to logging and agriculture.

The largest extant mammal in the Ozarks in the white-tailed deer. The white-tailed deer represents the single most important animal to human subsistence strategies from the Early Archaic Dalton period to the Early Historic period in the eastern Ozarks (Lynott 1981a:27). The rich diversity of the plant communities in the oak-hickory forest provides the food sources to support a relatively high density white-tailed deer population.

In early historic times, bear, bison, and elk inhabited the prairies and forest of the region. Their extinction in the region resulted from increased Euro-American activity in the late eighteenth century. Although not as populous as the white-tailed deer, they also formed an integral part of the prehistoric subsistence pattern.

A variety of small mammals is also common to the region. The most noticeable of these is the various squirrel species

including the eastern gray, the eastern fox, and the southern flying squirrel common throughout the forests (Sauer 1968:59; Schwartz and Schwartz 1959:8). Raccoons, opossums, and striped skunks range from the stream margins to the uplands while beaver, otter, mink, and muskrats inhabit the stream banks. The cotton-tailed rabbit prefers areas of dense underbrush along the forest edge. Some of the predatory mammals found in the region include the red wolf, coyote, cougar, red fox, gray fox, and the bob cat (Sauer 1968:59). Mammals common to the low lands include the rice rat, swamp rabbit, and cotton mouse (Schwartz and Schwartz 1959:8). Bats inhabit the caves of the region while the eastern chipmunk may be found in the forested areas.

Numerous avifauna were present before Euro-American activity in the region. Turkey were plentiful in the understory of the mature oak-hickory forest. Passenger pigeons, now extinct, were common in the wooded areas along with grouse. Several species of hawks and owls preyed upon a variety of rodents and other animals. Some migratory waterfowl (ducks, geese, and swans) made sporadic stops in the lowland portions of the region (Price et al. 1976:24). A variety of woodpeckers, songbirds, and other birds inhabited the region. Many of these species continue to be present in the region.

The Current River and its tributaries provide one of the most obvious faunal resources. The streams are stocked with numerous species of fish and fresh-water mussels (Pfleiger 1971; Buchanan 1980). Typically, a stream in this region contains shoals and pools lined with rock ledges or driftwood. Fed by numerous springs, the water is cool and clear. In the main channel, the stream flows over gravel bottoms while back water areas may contain silty bottoms. The variety of aquatic ecotones posses a large and diverse population of fish. Jack salmon and stone cat are common in the main channel while sunfish and suckers are common in quiet pools. Hog suckers are found along rocky ledges. The shoals are frequently inhabited by schools of minnows. Along the lower stretches where the channel is sluggish and the bottoms muddy, channel cat, bullheads, buffalo, crappie, short-nose gar, and eels are numerous (Pfleiger 1971; Sauer 1968). Bass, bluegill, paddlefish, and carp are somewhat less common (Garrison et al. 1976:10). Besides fish, the streams provide abundant varieties of fresh-water mussels (Buchanan 1980). Turtles, including the soft-shelled and common snapping turtles, are also present in the aquatic environment. The common bullfrog may have also served as a potential food source from the riverine biotic setting.

Several of the forementioned animals provided a major resource for protein utilized by the prehistoric human inhabitants of the region. Besides food, various mammals provided fur and hide for clothing and shelter, birds provided feathers for personal adornment, and the various animals provided bone and teeth for tools and/or personal adornment. Other reptilian, amphibian, and insect species were quite numerous in the region although they are not recognized as

potential food sources. Snakes in the region were represented by both venomous and nonvenomous species (Mick 1982:17). A variety of terrestrial and aquatic turtles were present including those previously mentioned. A variety of amphibians were found along the streams and in caves in the vicinity of the project area (Gardner and Taft 1983).

Resource Exploitation

A variety of natural resources are available for human exploitation in the vicinity of the Current River. The preceding discussion describes the floral, faunal, geological, pedological, and hydrological resources in the region. Table 1 briefly summarizes these resources found in the various micro-environmental settings of the region. Figure 2 shows a generalized cross-section of the micro-environments within the topographic setting of the Current River and other similar streams in the eastern Ozarks.

The uplands, upland slopes, bottomlands, and aquatic environments supplied not only food resources but various mineral and other natural resources for the manufacture of tools, clothing, and shelters. The availability of these resources in the region indicates the area along the Current River and its tributaries was well suited for the acquisition of many potential resources by the human inhabitants of the region.

Climatic Reconstructions within the Region

Climatic studies in the eastern Ozarks are extremely limited. Research concerning geomorphology (Price et al 1984:226-265), fossil pollen (Huber 1985; Huber and Rapp 1983; Price et al. 1984:266-278), and plant phytolith remains (Huber 1985; Huber and Rapp 1983) has been sponsored by the Midwest Archeological Center. The results of the research data from these projects offers a preliminary view of the paleoenvironment in the region. Dendrochronological studies (Guyette 1981) also offer potential interpretations of the regional paleoenvironmental setting.

Data from these projects combined with extensive paleoenvironmental studies in the western Ozarks from the Pomme de Terre River valley (Wood and McMillan 1976) provide a view of the paleoenvironment in the eastern Ozarks. At the end of the Wisconsin glaciation, 14,000 to 10,000 years before the present (BP), the Ozarks are presumably covered with a mixed spruce and deciduous forest inhabited by megafaunal assemblages including mastodon, tapir, ground sloth, deer, giant beaver, and horse. Between 10,000 and 6,000 years BP, vegetation shifted to more open grasslands. After 6,000 years BP, the inferred dominate

Table 1. Natural Resources Available for Human Exploitation in the Micro-environments along the Current River.

SETTING	FLORA	FAUNA	LITHIC/ SOILS	OTHER
Upland Barren	oaks, knotweed, grasses	bison, elk, deer, small mammals		
Upland Pine Stand	pines, grasses, huckleberry			
Upland Mixed-Oak-Hickory Forest	oaks, hickory, butternut, plums wild strawberry, huckleberry, sumac, grapes, sassafras, grasses	opossum, fox, badger, deer, bear, wolf, mountain lion, squirrel, bob-cat, turkey, passenger pigeon, birds	nodular and angular, cherts, quartzite, gelana, sandstone, hematite, limestone, dolomite, other lithic sources	
Valley (stream terraces, levees, bottom-land, gravel bar, stream bank)	oaks, hickory, walnut, maple, persimmon, sassafras, paw-paw, sumac, grape, catbriar, cherry, elm, plums, birch, cane, cotton-wood, basswood, grasses, sycamore	raccoon, skunk, opossum, otter, rabbit, mink, woodchuck, fox, badger, beaver, deer, muskrat	fertile, easily tilled soils	
Valley (springs, streams)	waterlily, watercress, bittercrest	fish, waterfowl, turtles, mussels, amphibians, otter, beaver, muskrat, mink	stream cobbles	water
Rock Cliffs and Ledges	mosses, lichens,	birds, reptiles, bats	lithic outcrops	

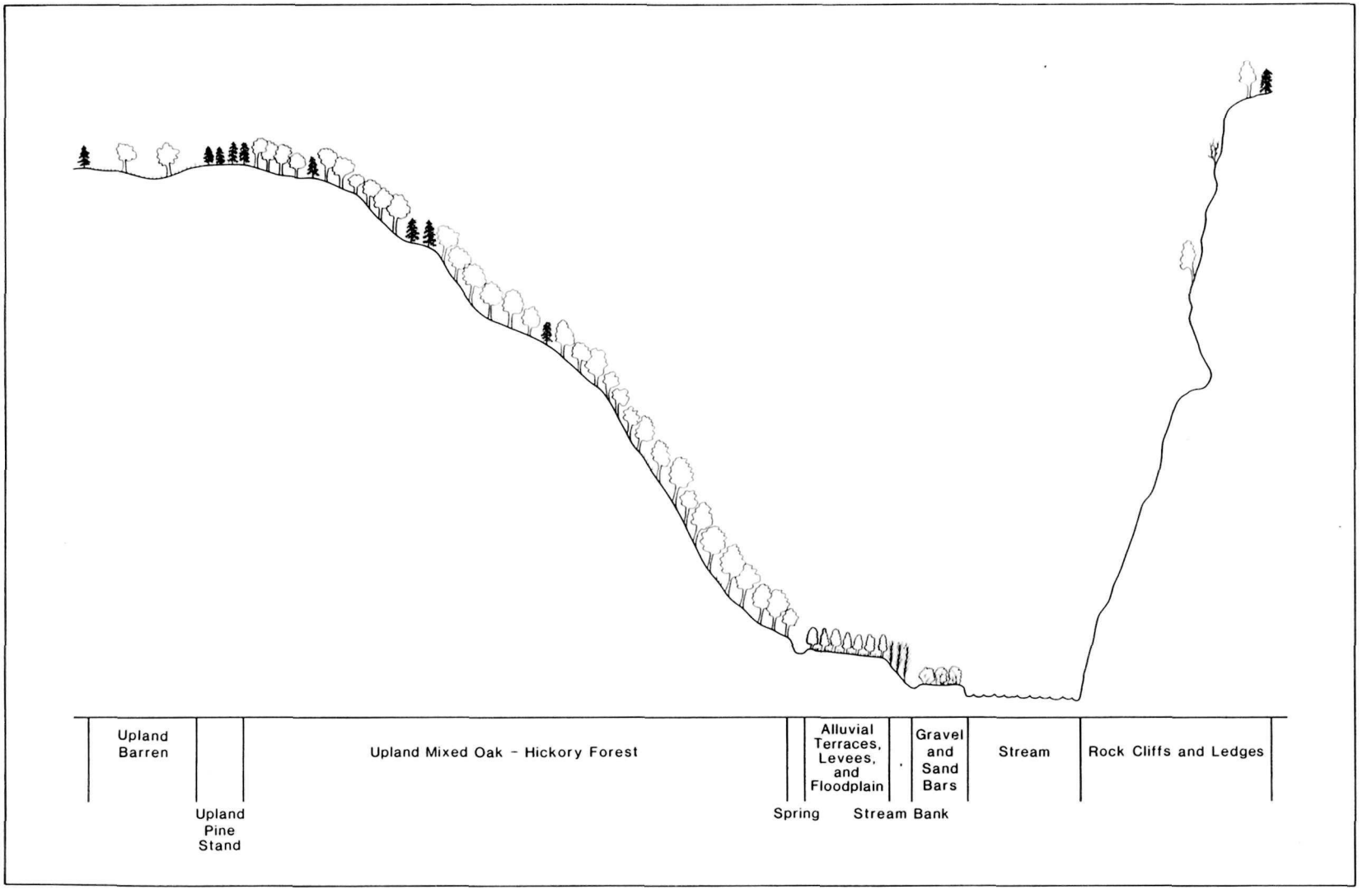


Figure 2. Generalized Topographic Cross-section along the Current River.

vegetation of the region consisted of the oak-hickory and/or oak-hickory-pine forests common to the region prior to Euro-American logging activities in the late 1800s and early 1900s.

Accordance between this general model for the Ozarks and the actual paleoenvironmental sequence in the eastern Ozarks has yet to be positively demonstrated. Bryson, Baerreis, and Wendland (1970:53) suggest climatic changes are not the same everywhere within the Plains and peripheral areas. An area may be drier during the same period while adjacent areas are wetter. The opposite is also true. Research data (Price et al. 1984:274-276) from Cupola Pond, Ripley county, Missouri, indicates a slightly different paleovegetational sequence. While the decrease of spruce occurs around 12,000 years BP, the vegetational shift is to a mixed temperate deciduous forest composed of oak, hickory, ash, and hornbeam instead of the more open grasslands. By 7,000 years BP, the pollen assemblage from Cupola Pound is characterized by oak-hickory forest vegetation. This period corresponds to the warmer, drier Hypsithermal Interval of the mid-Holocene (Price et al. 1984:275). Approximately 5,000 years BP, shortleaf pine becomes established in the uplands along with the oak-hickory forest associations. Although minor fluctuations in the areal extent of the major oak-hickory and/or oak-hickory-pine associations have occurred during the past 5,000 years, these forest associations have been present in the region until modern Euro-American logging activities decimated the extant forest. Data compiled by Huber (1985) from Buttonbush Bog, in Shannon county, indicate little vegetational change has occurred in the region over the past 3,100 years. Oak is the dominate forest species with pine and hickory representing minor but consistent components of the eastern Ozark forest.

Chapman (1975) combined the archeological periods with the tentative chronology and terminology for climatic episodes of Bryson, Baerreis, and Wendland (1970) and Bryson and Wendland (1967). This proposed chronological interpretation (Chapman 1975:28) provides a framework for the discussion of Missouri archeology. The sites investigated in this report generally fall within the Sub-Boreal to the Scandic periods, roughly 3,000 years BP to 900 years BP. Bryson and Wendland (1967) indicates the climatic conditions during these periods were warmer and then cooler than the present. An increase in moisture also occurs creating more mesic condition until a major drought cycle occurs during the Neo-Atlantic period approximately 850 years BP.

Regional climatic oscillations are common throughout these periods. There is a tendency for the prairie-forest border to shift in response to these fluctuations (McMillan 1976b:20). Changes in the composition and distribution of the vegetation and associated fauna affects the subsistence strategies of the human populations dependent upon these natural resources. Knowledge of the paleoenvironment is important to the archeological interpretation of the material culture left by human populations. These materials represent a cultural response of the human groups to their natural environment.

THE CULTURE-HISTORICAL SETTING

Archeological evidence from the Ozark National Scenic Riverways park indicates extensive utilization of the region by several distinctive cultural traditions since the end of the Pleistocene, 14,000 to 12,000 years before the present (BP). While gaps exist in the archeological record, it is apparent the region has been occupied by humans for several millennia. The major cultural affiliations for Missouri, as outlined by Chapman (1975,1980) and Chapman and Chapman (1964), are employed for the present discussion. Regional cultural sequences compiled by Douthit (1979), Lynott (1981a), and Price et al. (1983) provide detailed descriptions of each cultural stage in the eastern Ozarks. The present discussion is a brief summary of these sources. The regional summary of the cultural stages is also presented as it applies to the more generalized temporal models of North American prehistory (Griffin 1967,1978; Jennings 1974; Stoltman 1978; Stoltman and Baerreis 1983; Willey 1966).

The present discussion is divided into three temporal occupations of the eastern Ozarks: 1) the prehistoric, 2) the ethnohistoric, and 3) the historic. The prehistoric occupation of the region includes the Paleo-Indian stage, the Archaic stage, the Woodland stage, and the Mississippian stage. The ethnohistoric occupation is concerned with the protohistoric and historic Native American Indian tribes. The final historic occupation involves the Euro-American settlement of the eastern Ozarks.

The Prehistoric Occupation of the Region

Missouri occupies a significant geographic location in regard to the cultural areas in North America (Chapman and Chapman 1964:15). It lies in the midst of the continent's great waterway system comprised of the Mississippi and Missouri Rivers. The Mississippi River forms the eastern boundary of the State while the Missouri flows through the northern portion bordering the Ozark Plateau. The White River and its tributaries, including the Current River, drain the southern part of the State. These rivers along with others provide water-routes to and from Missouri. Located in the center of the continent, Missouri also provides a variety of animal and plant life. The midcontinent location of Missouri results in a mild climate. The variety of fauna and flora combined with a mild climate and numerous sources of water provide highly favorable conditions for human habitation.

Paleo-Indian Stage, 12,000-8,000 B.C.

The only evidence for the occurrence of the Paleo-Indian period in the Ozark National Scenic Riverways consists of isolated finds of fluted projectile points attributed to the Clovis complex (14,000-12,000 BP). The Clovis complex is most often defined by Clovis points found in association with mammoth or mastodon remains in other regions of North America (Jennings 1974:83). Four fluted Clovis points have been found in the Riverways (Price et al. 1983:256). Chapman (1975:67) also indicates three fluted Clovis points have been found in Carter county.

Stoltman and Baerreis (1983:253-255) describe the human ecosystem during this period as the Pioneering Ecosystem Type (PET). It represents the initial cultural substratum from which all indigenous traditions ultimately develop. It is a period of technological continuity over virtually all of the eastern United States. Big-game hunting characterizes the PET subsistence patterns. Interpretation of population and social organization data during the PET offers only meager speculation concerning these highly mobile family units or small multifamily units characterized by band level social organization.

It is postulated that the Clovis culture consisted of highly nomadic hunters subsisting on large Pleistocene animals. It is also probable foraging of wild plants played an important role in their subsistence strategies (Griffin 1967:176). Besides the lithic tools, speculation about the Paleo-Indian life style has been inferred from the behavioral studies of Pleistocene herbivores.

A few projectile points, similar to those of the Plano complex, are also known in the region (Price et al. 1983:259). In Indians of the Upper Current River, the author, Alan Banks (1978), illustrates one such point. Other projectile points attributed to this cultural manifestation have been noted in the collections of local amateurs (Price et al. 1983:259). The Plano cultural complex has been associated with extinct forms of bison.

Termination of the Paleo-Indian period coincides with the extinction of the Pleistocene megafauna. Two major explanations for these extinctions are 1) a trend towards a warmer, drier climate and 2) overkill by human predators. It is possible this extinction is a result of a combination of these two factors. Whatever the causes, the end of the Paleo-Indian period is marked by a switch in the subsistence strategies to smaller modern fauna, increasing human populations, increasing social organization, and more sedentary life styles (Douthit 1979:79).

Archaic Stage, 8,000-1,000 B.C.

The Archaic period is divided into four substages: Dalton, Early, Middle, and Late. Each substage is defined by characteristic artifacts and a trend towards more specialized foraging subsistence strategies. Social organization changes from small family-based units to larger multi-family units living in semi-permanent villages by the end of the period.

Dalton Substage, 8,000-7,000 B.C.

The Dalton occupation of the southern Midwest and southeastern United States represents the first abundant evidence of human habitation in the eastern Ozark region. Chapman (1975:95) describes the Dalton period as a transitional stage between the Paleo-Indian cultures and Archaic cultures of eastern North America. It is the first archeological complex associated with the "woodland adaptive strategies" in the eastern United States (Lynott 1981a:37). Subsistence patterns during the Dalton period emphasize deer hunting and foraging strategies.

The Dalton complex is characterized by lanceolate or pentagonal projectile points with basal grinding and thinning, burins, gravers, backed blades, and steep-edge scrapers. Increasing reliance on plant food is reflected in the use of mortars, pestles, manos, grinding slabs, cupstones, and adzes. Bone needles and awls are also present. Dalton burials have also been identified which include the ritual placement of burial ornaments.

While the early portion of the Dalton substage is characterized by the termination of the Pioneer Ecosystem Type (PET), the major portion of the Dalton substage is characterized by the Foraging Ecosystem Type (FET) of Stoltman and Baerreis (1983:255-257). More diversified and/or balanced subsistence strategies develop during the FET since human populations subsisted on basically solitary animals and could not move into uninhabited areas (Stoltman and Baerreis 1983:255). In the eastern Ozarks, white-tailed deer represents the primary prey mammal. More intensified exploitation of other local resources such as small game, nuts, berries, fish, and mussels increases during this period. Technologic additions during the FET includes milling/nutting stones and fishing equipment, i.e. harpoons, net weights, and fishhooks. As regional exploitation intensifies, group territories become established. Social organization is still at the egalitarian band level. The settlement pattern in the region is represented by a few large semi-permanent base camps which were intensively occupied, exhibiting a wide range of cultural activities. Hunting camps and other resource extraction stations exhibit selected activities (Lynott 1981a:39).

Several Dalton points have been documented in the Current-Eleven Point Locality (Chapman 1975:99; Price et al. 1983:259).

Dalton adzes have also been found in the Van Buren vicinity (Price et al. 1983:259). Scraper forms similar to ones associated with the Dalton components at Arnold Research Cave (Chapman 1975:118). and Graham Cave (Chapman 1975:109) are quite common along the Current River. It is highly probable these artifacts also date to the Dalton temporal setting (Price et al. 1983:260).

Early Archaic Substage, 7,000-5,000 B.C.

The Early Archaic represents a major broadening of the subsistence strategies from those of the Dalton period. A greater variety of ecological setting are exploited. Hunting and gathering continue as the major subsistence activities; however, more emphasis is placed on fishing, represented by nets, spears, traps, and weirs, and on the collection of fresh-water mussels. Reliance on vegetable foods continues to increase during this period.

The settlement patterns start to modify from nomadism to seminomadism. The prehistoric foragers consistently return to their base camps after hunting and gathering excursions. The Foraging Ecosystem (FET) is expanding throughout the eastern United States. Caldwell (1958) describes the full use of the environment by Archaic subsistence/settlement patterns as part of the "primary forest efficiency." It begins in the Early Archaic and continues until the Late Archaic.

Several Early Archaic projectile point/knife forms are common in the region. The most frequently reported forms are the Searcy, Rice Lobed, and Graham Cave Sidenotched points (Price et al. 1983:260). Numerous specimens of these points have been found at various sites in the region. Rarer Hardin Barbed points are also illustrated by Banks (1978:58).

Middle Archaic Substage, 5,000-3,000 B.C.

During the Middle Archaic period, the climatic fluctuations result in the drying out of the central United States; however, these climatic changes may be regional or very localized. Cultural alterations occurring in the Foraging Ecosystem (FET) continues as human populations adjust to different environmental and regional settings. Most of the cultural systems and technological tool kits of the previous period are retained. Subsistence strategies include hunting and trapping of small animals, fishing, collecting fresh-water mussels, and the gathering of vegetal foods, especially nuts and seeds. Seasonal exploitation within a well defined area continues with the presence of archeological identified base camps and smaller hunting and food procurement stations located in a variety of ecological niches. Social organization continues at the egalitarian band level.

Diagnostic projectile points of this period found in the Riverways include Big Sandy Notched and Jakie Stemmed points (Banks 1978:9-10; Born and Chapman 1972:46-47; Chapman 1975:165; Garrison et al. 1976:57; Price et al. 1983:261). Other projectile points from this period are similar to Late Archaic forms in surrounding regions, including Table Rock Stemmed (Chapman 1975:257), Stone Square Stemmed (Chapman 1975:187), and Afton (Banks 1978:10) points.

New tool forms appearing in the Middle Archaic include groundstone celts and grooved axes. Twined fabric bags and sandals, braided cordage, and twisted cordage are evidenced for the first time in the region. Graham Cave, in the Lower Missouri Valley II Locality, offers the best material culture assemblage for the Middle Archaic in the Ozark region (Chapman 1975:175).

Late Archaic Substage, 3,000-1,000 B.C.

The Foraging Ecosystem (Stoltman and Baerreis 1983:255-257) continues to exhibit an effective exploitation of the woodland environment. During the Late Archaic period, climatic changes result in the expansion of the prairies to the east as warmer, drier weather prevails (Cleland 1966:20-28). In the eastern Ozarks, the Late Archaic represents a period of increased population expansion (Lynott 1981a:42). Sites are numerous and frequently extensive. The Chubb Hollow (23CT104) and Pulltite (23SH94) sites represent Late Archaic sites investigated during this project.

A shift in subsistence strategies is reflected in the material culture of the Late Archaic. Gathering activities involving a variety of plant foods are emphasized by the presence of numerous pecked and ground stone axes, stone mortars, manos, and pitted cobbles from Late Archaic sites in the Riverways park. Projectile points are characterized by a change in style and the utilization of rhyolite and quartzite. Projectile points of this period are represented by many forms of stemmed and broad corner-notched dart points, including Smith Basal Notched and Afton Corner Notched points. Other points include Stone Square Stemmed and Table Rock Stemmed points. Projectile points of rhyolite and quartzite often appear crudely manufactured. Several bannerstones have also been found along the Current River from this period. The mixture of animal and plant procurement tools suggest mixed hunting and gathering subsistence strategies with an increased emphasis on plant food procurement. In addition to these strategies, there is an substantial increase in the exploitation of fresh-water mussels during the Late Archaic (McMillan 1976a:225-226; Price et al. 1975:50).

Cultural adaptations during the period are not fully understood. Social organization appears to have become complex as indicated by the presence of numerous large site. In addition to the increase in the number of sites, a diversification of site location also occurs (C. Price 1979).

During the Late Archaic, the trend towards food production as opposed to food gathering also occurs. The Late Archaic also marks the end of the Foraging Ecosystem through much of the eastern United States. The presence of cultigens, especially tropical cucurbits (squashes and gourds), in the western Ozarks (Chomko and Crawford 1978) indicate the beginnings of the Cultivating Ecosystem Type (Stoltman and Baerreis 1983:257-259) which continues into the Woodland period of eastern North America.

Woodland Stage, 1,000 B.C.-A.D. 900

The Woodland period is differentiated from the Archaic period in the eastern United States by technological and social changes. The period is defined by the widespread appearance of ceramics, burial mounds, the bow and arrow, and horticulture. Stoltman and Baerreis (1983:257-259) characterize this period as the Cultivating Ecosystem Type (CET) in their model of human ecosystem evolution. CET is marked by deliberate gardening in which a number of native seed plants (goosefoot, knotweed, maygrass, sunflower, and sumpweed) and tropical cultigens (maize or corn, gourds, and squashes) were cultivated. A noticeable increase in the size and complexity of sites occurs during the CET. Social organization component of the CET is reconstructed from data based on burials and the varied complexity of numerous sites. At least some of the social systems during the CET attained the level of chiefdoms with ranked rather than egalitarian societies (Stoltman and Baerreis 1983:258). Widespread interregional interaction is evidenced during this stage of human development with the sharing or trade of specific artifact types and source specific raw materials (Stoltman and Baerreis 1983:259).

The Woodland period represents a continuation of the adaptive strategies from the preceding Archaic period despite numerous economic, social, and technological innovations. The Woodland period is divided into three substages, including an Early, Middle, and Late period.

Early Woodland Substage, 1,000-200 B.C.

The Early Woodland period is marked by the first widespread appearance of ceramics and burial mounds in the eastern United States. The extent of the Early Woodland along the Current River is poorly understood.

Ozark Border Gary projectile points associated with the Grimes Phase (Price et al. 1981) are present in Carter and Shannon counties. The earliest pottery present in the lower Current River valley is sand-tempered with the decorative treatment typical of the Tchula period. Sand-tempered pottery has been identified within the Riverways and probably dates to

the Early Woodland period (Price et al. 1983:263-265). During the National Park Service sponsored archeological survey of the Riverways in 1981 and 1982 (Price et al. 1983:265), some grooved axes and groundstone celts, apparently of the Early Woodland period, have been also identified in various private collections.

Middle Woodland Substage, 200 B.C.-A.D. 400

The Middle Woodland period in much of the eastern United States is characterized by the Hopewell complex. The Hopewell complex incorporates a ceremonial and exchange network associated with exotic mortuary offerings related to a well developed mortuary cult and connected mound building activities. Hopewellian influence occurring in the Ozark Highlands is limited to finds of a few pottery sherds with dentate stamping. A single dentate stamped sherd has been discovered in a cave in Shannon county (Banks 1978). Although tempered with quartz grains, it appears to represent a true Hopewell artifact (Price et al. 1983:266). The Riverways region has also produced Snyders-like projectile points indicative of the Middle Woodland period. Several styles of gorgets, associated with the Middle Woodland in other areas, are found in the Ozark National Scenic Riverways (Banks 1978; Chapman 1980; Price et al. 1983:266).

Non-Hopewellian artifacts are also present in the Riverways. Middle Woodland ceramics of the upper portion of the Riverways are probably Maramec Spring pottery while the ceramics in the lower portion of the park is sand-tempered (Price et al. 1983:266). This dichotomous ceramic distribution is apparently established during the Middle Woodland period. Some celts and three-quarter grooved axes are noted in the private collections from the Riverways region.

Archeological evidence for Middle Woodland sites in the Ozarks indicate they are smaller than their counterparts to the east, and they are relatively isolated from one another. The terrain and environment may have prevented the full development of the Middle Woodland culture in this region of the Ozarks. Hunting and gathering are the major components of the subsistence strategies with horticulture representing a minor role (Price et al. 1975).

Late Woodland Substage, A.D. 400-900

The Late Woodland period follows the decline of the Hopewell complex. This period is characterized by increased diversity of the local subsistence base and technological adaptations. The bow and arrow replace the dart and atlatl as the principal hunting and warfare weapons. The period also represents a continuation of the Cultivating Ecosystem although there is a shift away from the gardening and specialized resource exploitation to more generalized hunting and gathering strategies. Previous unpopulated areas are utilized by Late

Woodland people on a semipermanent basis. Territorial units are larger in response to the more diversified subsistence pattern. Seasonal base camps are selected on the basis of exploitation of different vegetal and animal resources. Some trade contacts, especially with the Gulf Coast, continue into this period, probably remnants of the Hopewellian Interaction Sphere (Caldwell 1964:137).

There is a paucity of evidence for the Late Woodland period in the Ozark National Scenic Riverways; however, it is more clearly definable than the Middle Woodland period in the region, particularly in the upper portion of the park. Maramec Springs ceramics have been found at midden sites in the Park (Lynott 1981a:82; Price et al. 1983:267). The ceramics are mostly cord-marked with slightly inverted rims and conical bases. Smaller coconut-shaped Late Woodland vessels found in the park are similar to the Moreau Cordmarked ceramics of the Boone Phase illustrated by Chapman (1980:115). One Late Woodland projectile point/knife type, Rice Sidenotched, commonly occurs in quantity in the Riverways (Price et al. 1983:268). A biconcave discoidal, commonly found in the region, is also probably diagnostic of the Late Woodland in the park (Price et al. 1983:269) but continues into the Developmental Mississippian period. Contemporary with the late Late Woodland in the Riverways is the Emergent or Developmental Mississippian culture.

Mississippian Stage, A.D. 600/900-1700

The Mississippian culture occurs in a broad geographic area of the eastern United States along the Mississippi River drainage. The Mississippian culture is characterized by maize (corn) agriculture, shell-tempered ceramics, complex socio-political organization affiliated with the chiefdom and in some instances verging on the state. The social organization during the Mississippian period is complex. At the center of the socio-political system is a ruler-priest in a highly stratified society. The system is composed of a hierarchy of rulers, nobles, commoners, and slaves with formalized religious and social regulations. The settlement pattern is based upon ceremonial centers and/or sedentary villages or hamlets frequently located along the rivers. Subsistence strategies incorporate agriculture, hunting, and gathering activities. The major subsistence base centers around maize agriculture with the maize-bean-squash triad, first domesticated in central Mexico. A broad-based meat diet consists of white-tailed deer, along with several smaller mammals, and several riverine fauna including a variety of fish, mussels, turtles, and migratory waterfowl.

The period is characterized by Stoltman and Baerreis (1983:259-261) as part of the Agricultural Ecosystem Type (AET) in their model of evolving human ecosystems. This stage in human development is characterized by improved methods of certain food-extraction tasks, namely agriculture, and the introduction of the

bow and arrow, and the hoe. The AET probably has its basis in the Hopwellian complex of the Middle Woodland but the AET does not flourish until the Mississippian period. Agricultural ecosystems exist throughout much of the eastern and midwestern United States until contact with Euro-Americans between the seventeenth and the nineteenth centuries. In marginal areas of the Upper Great Lakes, the Northeast, and the Southeast (Gulf Coast), the Foraging (FET) and the Cultivating (CET) ecosystems persisted until contact with the Euro-Americans.

Traditionally, the model of Mississippian origins involved the development of a specific adaptive pattern within the central Mississippi River valley in which settlement and subsistence patterns were based on the exploitation of the natural environment (Smith 1974,1975). The eastern Ozarks, in the traditional model, represented an area where temporary Mississippian excursions from the main valley were conducted for exploitation of specific resources. Recent archeological investigations within the eastern Ozarks and the Ozark National Scenic Riverways, in particular, tend to refute this generalized model of Mississippian adaptive strategies (Banks 1984; Lynott 1980a,1981b,1982b; Lynott et al. 1983,1984,1985; Price et al. 1975; Smith 1971). It is apparent from these investigations that the Mississippian culture adapted to a wide diversity of environmental settings, and there is strong evidence for an extremely early development of the Mississippian culture (Lynott 1981b,1982b) within the Ozark Highlands which is contemporaneous with the Late Woodland cultures in the region. The discussion of the Mississippian period in the eastern Ozarks is divided into three substages: 1) Emergent or Developmental Mississippian, 2) Expansion or Middle Mississippian, and 3) Late Mississippian.

Emergent or Developmental Mississippian, A.D. 600-1000

The Current River valley, after A.D. 600, is populated by Mississippian people making shell-tempered ceramics and utilizing small cornernotched, serrated projectile points. It is postulated that shell-tempering in the region began as early as the Middle Woodland period (Price et al. 1983:270). There is considerable variation in rim profile, surface treatment, and thickness of the shell-tempered ceramics found in the Riverways during the Emergent Mississippian period. Besides shell, some of the ceramics also contain other tempering agents, i.e. sand and grit. Habitation sites, hamlets or small villages, represent sedentary or semi-sedentary occupation for some duration based upon midden deposits. The Gooseneck site (23CT54) and the Owls Bend site (23SH10) are typical small Mississippian villages or hamlets found in the region during this period. The Owls Bend site also has associated burials located in the midden deposit. These sites occur as early as A.D. 650 along the terraces of the Current River. A Mississippian ceremonial center is represented by Pigman Mound (Anderson n.d.) on the Eleven Point River. The site is apparently a temple mound with associated village debris. A third type of Emergent Mississippian site found in the region

represent temporary intermittent extraction stations located in close proximity to exploited natural resources (Lynott 1981a:50).

Midden deposits at small village or hamlet sites, such as Gooseneck and Owls Bend, contain large amounts of fire cracked rock and other lithic debris in addition to the shell-tempered ceramics and small serrated arrowpoints. Other bifacial and unifacial chipped stone tools, bone awls and pins, and pottery discs have been recovered from these sites. Faunal and floral ecofacts indicate the Mississippian inhabitants exploited a wide diversity of animal and plant life (Potter 1973; Smith 1974, 1975; Voight 1985; Volman 1980). House structures have also been identified at the Gooseneck hamlet (Lynott 1981b).

Expansion or Middle Mississippian Substage, A.D. 1000-1350

The Expansion Mississippian period in the Riverways is represented by a decrease in the high density of Mississippian sites from the previous emergent period. Shell-tempered ceramics typical of this period have been found at various locations within then Riverways (Price et al. 1983:276). The Round Spring site (23SH19) has produced shell-tempered ceramics and a shell-tempered elbow pipe (Banks 1978:33) associated with Mississippian extended, supine burials.

This period is also associated with the Powers Phase (Price and Griffin 1979; Smith 1975) in the Ozark border and the Western Lowlands of southeastern Missouri. The Powers Phase is an apparent attempt at colonization by Mississippian people in the region during the late 1200s and early 1300s. Termination of this phase is represented by abandonment and burning of the fortified villages between A.D. 1320 and A.D. 1350 (Price et al. 1975:60). Mill Creek chert hoes and shell-tempered ceramics, common to the Powers Phase, are present in the upper Current River region (Banks 1978; Lynott 1981a:51; Price et al. 1983:276).

Late Mississippian Substage, A.D. 1350-1700

There is little known archeological evidence of Late Mississippian occupation of the Riverways until A.D. 1600. The area of Southeast Missouri is apparently abandoned by aboriginal people after A.D. 1350 (Price et al. 1976:50). The region is reoccupied during the Armorel Phase after A.D. 1600. The Armorel Phase is a late Mississippian/protohistoric manifestation in southeastern Missouri and northeastern Arkansas (Williams 1980). This occupation appears to be limited to hunting parties searching for game in the Riverways. The main archeological evidence for this very late Mississippian foray into the Riverways is the occurrence of willow leaf arrowpoints.

The Ethnohistoric Occupation of the Region

The ethnohistoric occupation of the eastern Ozarks is concerned with the aboriginal protohistoric and the Native American historic periods prior to the Euro-American settlement of the region. The Mississippian cultural complex has already declined before aboriginal contact with the Euro-Americans. Final decimation of the Mississippian culture may have resulted from DeSoto's 1540 expedition up the Mississippi River (Chapman 1960:34; Chapman and Chapman 1964:81). Besides disrupting the socio-political structure of large Mississippian centers by deposing the ruling class, new diseases brought by his men reduced the aboriginal populations who lacked immunity to these diseases. The probable reorganization of the aboriginal populations after initial contact with the Euro-Americans resulted in the formation of the historic groups and socio-political structures recorded by the later Euro-American explorers and traders.

The Armorel Phase (Williams 1980), located in southeast Missouri and northeast Arkansas, occurs during the protohistoric and early historic period, ca. A.D. 1550 to 1650-1700 (Chapman and Anderson 1955:105). The willow leaf arrowpoints or Nodena points are associated with this cultural phase. These points have been found in the Current River and Jack Forks valleys (Price et al. 1983:277). The Campbell site (Chapman and Anderson 1955), an Armorel Phase site, has produced a few European trade items including blue glass beads and iron fragments, possibly a knife blade. A shell-tempered ceramic sherd with notched applique from a private collection in the Riverways region has a decorative motif similar to the fish effigy bowls found at Armorel sites like the Campbell site (Price et al. 1983:281). From the archeological evidence, it appears that the Riverways were sporadically occupied during the protohistoric period; however, no apparent villages are presently known in the region. Activities represent limited hunting forays into the region or the passing of groups through the area during the protohistoric or early historic periods.

The indigenous historic aboriginal group found in the Missouri Ozarks were the Osage. After the decline of the Mississippian cultures, reorganization of the aboriginal groups resulted in the formation of the historically identified groups such as the Quapaw, Kansa, Omaha, and the Osage, ca. A.D. 1500 (Chapman and Chapman 1964:81). Du Tisne made the first recorded European visit to an Osage village in A.D. 1719 although Marquette and Jolliet had learned of their presence from other Native American groups in A.D. 1673 (Chapman and Chapman 1964:94).

By A.D. 1700, the Osage had been strongly influenced by Euro-American contacts. Known Osage sites dating to this time period contained many Euro-American trade items. Osage material

culture was quickly replaced by Euro-American iron tools, crockery, beads, buttons, and bells (Douthit 1979:111). The Osage settled in permanent villages organized according to socio-political and ceremonial functions with each clan assuming its proper place according to rank and function (Chapman and Chapman 1964:99). Agriculture, gathering wild plant foods, and scheduled spring and fall hunting forays represented the subsistence strategies of the Osage. At the time of Euro-American contact, the Osage permanent villages were located in western Missouri; however, they claimed the area between the Missouri and Arkansas Rivers from the Mississippi River to the Rocky Mountains (Boyd 1975:21; Mathews 1961:88,1968:345). The Osage probably utilized the eastern Ozarks as a hunting range (Lynott 1981a:52). By 1806, the Osage were confined to southwest Missouri and northeast Oklahoma. Continued movement south and west resulted with the Osage ceding their holdings in Mississippi to the State in 1823 (Meyer 1970:765).

The westward expansion of the Euro-American settlements constantly pushed Native American tribes to the west. Indian territories were established and lasted until Euro-American pressure forced the Native Americans farther west. Transient tribes in the Ozark region included the Kickapoo, Shawnee, and Delaware. The Shawnee and Delaware were invited by the Spanish government to serve as a buffer between the Spanish settlements along the Mississippi River and the hostile Osage to the west in 1789. In 1806, a Shawnee-Delaware village was reported on the Current River (Houck 1908:218). In 1829, the Shawnee and Delaware ceded their Missouri lands to the State and moved farther west. The Kickapoo entered Missouri after the War of 1812. They ceded their lands in southwest Missouri to the State in 1823. It is reported that the Kickapoo hunted as far east as the Current and Gasconade Rivers (Houck 1908). Local histories also report the presence of the Choctaw along with the Shawnee and Delaware at several locations in Carter and Shannon counties during the first quarter of the nineteenth century (Pennington 1971:10-13).

The ethnohistory of the Native Americans in the Ozark Highlands was a record of westward movement resulting from the pressures of Euro-American settlement. The Osage represented the indigenous Native Americans in the region. Transient tribes from the east moved through the area. They settled in the region for a short time and then moved farther west. They lived in villages and subsisted on food from their gardens and hunting-gathering activities. These transient tribes had already acquired Euro-American material possessions and mairtained a life style similar to the Euro-American settlers. Similarities with Euro-American settlers make archeological identifications of the transient groups extremely difficult.

The Historic Occupation of the Region

Euro-American settlement of the Ozarks progressed from the eastern border along the Mississippi River to the lead and iron mines of the eastern interior and finally over the entire region by 1850. Three settlement phases have been defined by Flanders (1977). The French were the first to settle in the eastern Ozarks. The Americans started settling in the Ozarks prior to the Louisiana Purchase of 1803; however, the vast majority of American activity in the Ozarks occurred afterwards. In the eastern Ozarks, the first permanent settlements were established soon after the Louisiana Purchase occurred.

Early historic Ozark settlement patterns have been intensively studied in recent years (Douthit 1979; C. Price 1977,1979,1981a,1981b; C. Price and J. Price 1978; J. Price and C. Price 1979; Price et al. 1983,1984). Nucleated settlements and towns served as trading centers with goods brought into the Ozarks from the trading centers located along the Mississippi River. They were frequently located near major streams where the roads crossed the streams. Beneath the nucleated settlement patterns were the mobile hunter-squatters who stayed in the region for a short while, the small family farmstead, and the larger plantations (C. Price and J. Price 1978).

Roads and rivers formed the main lines of communication during the early historic period. The roads often followed old aboriginal trails. These roads were the only consistent means of travel, transportation of goods, and communications in the Ozark region (Lynott 1981a:54).

Grist mills and saw mills were a vital aspect of the early historic community in the eastern Ozarks. The mills were in operation in numerous areas in the upper Current River valley (Lynott 1981a:54; Pottenger 1945; Price et al. 1983:63-80). Powder mills for the manufacture of gun powder were also present in the eastern Ozarks due to the presence of saltpeter in numerous local caves (Sauer 1968:153-154). Mining of natural resources also contributed to the local economy of the eastern Ozarks during this period (Lynott 1981a:55). Stores or trading posts were present in the Riverways where they were often associated with towns, nucleated settlements, and mills (Price et al. 1983:94-99).

The Civil War marked the end of the early historic period in the eastern Ozarks (Price et al. 1983:103-124). Prior to the war, frontier conditions existed over much of the area. The major economic activities were centered around the family farmstead. Subsistence crops were mainly raised although some cash crops were marked. Swine husbandry provided an important Ozark export. Hunting supplemented the early historic subsistence strategies.

The second phase of historic occupation in the Ozarks occurred during the national expansion following the Civil War. Railroad construction spread the elements of modernization to the Ozarks. Commercial agriculture, corporate mining, and lumbering brought prosperity, energy, and money to the region (Rafferty 1980:39). Economic, cultural, and environmental changes marked this period for more than half a century.

Population growth remained slow in the immediate years following the Civil War. The economy was largely based upon agriculture. The family farmstead remained the basic settlement pattern; however, towns were becoming increasingly important.

During the construction of the national railroad system in the 1870s and 1880s, the railroads were brought to the Ozarks. Along with the railroads, the lumber industry grew in the Ozarks (Lynott 1981a:58-61). Several logging camps in addition to the major saw mill towns became the centers for economic growth in the eastern Ozarks during the latter part of the nineteenth century.

The vast oak and yellow pine forests were harvested by eastern lumber companies. The presence of low cost timberland, local labor, and a good railroad system along with a mild climate made the logging industry a major economic, political, and social power in the eastern Ozarks. When the forests were gone, the lumber companies moved on to the vast forests in the Rocky Mountains. The cash economy of the Ozarks disappeared leaving the eastern Ozarks in social and economic disruption. The traditional patterns deteriorated as farming was abandoned in exchange for railroad and logging jobs. When the logging industry left the region, the jobs as well as the forests were gone.

The third phase in the Ozark historic period began with World War I and continues to the present. The draft, industrialization, and modern agricultural activities continued to reach farther in the Ozark highlands during this period. Termination of the logging era disrupted Ozark economic and social patterns. When the lumber industry left the region, the jobs were gone along with the forests and the soil. The depression era of the 1930s hit the Ozarks extremely hard. Poverty was the main economic condition. The federal government implemented several programs which brought jobs and social programs to the Ozark region. The federal government became the chief landholder, employer, and socio-political power in the Ozarks following the Depression. National parks and national forests were established in the region. Tourism and the population explosions connected with second homes following World War II now form part of the Ozark economic and social patterns.

ARCHEOLOGICAL INVESTIGATIONS AND EXCAVATIONS

Archeological investigations, conducted by the Midwest Archeological Center, are in response to Federal Land Highway Program (FLHP) plans to improve park roads at five locations within the Ozark National Scenic Riverways. The five locations include the Chubb Hollow picnic area at Big Spring, the Gooseneck/Hawes Memorial campgrounds, the Pulltite campgrounds, the Round Spring recreational facility, and the Powder Mill campgrounds at Owls Bend. Since archeological surveys have already been completed at these locations (Lynott 1981a), the nature of the present investigations vary with each component of the project. The present archeological investigations at the Gooseneck/Hawes Memorial campgrounds will not be discussed in this report. The material from all the archeological investigations at the Gooseneck site (23CT54) is presently being analyzed and a report concerning the Emergent Mississippian occupation at the site is scheduled for a future date. The entire project is conducted in association with the ongoing inventory and site evaluations within the Ozark National Scenic Riverways. Individual project descriptions, relating to the proposed FLHP park improvements, are presented in terms of the previous archeological investigations and present archeological investigations at each project location.

Chubb Hollow

Previous Investigations

The Chubb Hollow site (23CT104) is located on both sides of Chubb Creek near the confluence of the creek and the Current River at Big Spring. The site is originally known from the 1972 University of Missouri archeological investigations (Garrison et al. 1976:41-51) which were conducted in part to determine the impact of proposed construction at three locations in the Current River portion of the Riverways: Big Spring (Chubb Hollow), Powder Mill Ferry, and Round Spring. The legal description of the Chubb Hollow site is the NE 1/4, SE 1/4, of Section 6, T26N, R1E in Carter county, Missouri (U.S. Geological Survey 1968).

Testing conducted by the University of Missouri (Garrison et al. 1976:50) indicated the site extends 125 meters back from the Current River along both sides of Chubb Creek between the 440 and 460 foot contour intervals (U.S. Geological Survey 1968) with an areal extent of approximately one acre. Five 1x1 meter excavation units, as well as subsurface testing with post-hole diggers, were excavated. The University of Missouri crew utilized a Random Transverses procedure for the placement of the post-holes and the excavation units (Garrison et al. 1976:21).

The meter square units were placed at points where two transects intersected while the post-hole tests were placed at five meter intervals along each transverse. Both the excavation units and the post-hole tests were excavated in arbitrary 10 cm levels with the soil matrix screened through 1/4" hardware mesh. Post-hole tests were excavated to over one meter while the one excavation unit was completely excavated to a depth of 70 cm below the surface (BS). The remaining units were completely excavated to 50 or 60 cm BS with post-hole tests in the center of each unit conducted to a depth of over one meter. Cultural material was detected in the post-hole tests from the surface to a depth of one meter or greater.

Analyses of the recovered cultural material indicate the aboriginal occupation extends from the Late Archaic period to historic times (Garrison et al. 1976:51). A total of 3,494 prehistoric and historic artifacts make up the cultural debris recovered during the 1972 University of Missouri field season at the site. Chipped stone tools from the site include contracting stemmed, lobed, corner-notched, and small triangular projectile points, bifaces, scrapers, notches, and unifacial tools. Groundstone tools, present in the cultural debris, are sand stone abraders, a retouched cobble, and a hammerstone. The high percentages of flakes and shatter, interpreted as primary refuse, indicate tool modification and/or manufacture was practiced at the site (Garrison et al. 1976:50). Although no faunal or floral remains are present in the 1972 material, it is apparent from the variety of lithic forms and functional interpretations that diversified subsistence strategies were utilized for resource exploitation. Historic camping and/or recreational artifacts are also present, i.e. bottle glass fragments, "coke" bottle caps, "pop-tops," coins, and plastic utensils (Garrison et al. 1976:49-50).

The Chubb Hollow site (23CT104) was also investigated by the Midwest Archeological Center (MWAC) in 1981 during a park-wide survey of existing development areas (Lynott 1981a). The site was investigated by systematic pedestrian survey and shovel testing. The MWAC field crew examined the site for evidence of surface archeological remains. Transects were spaced at 15-20 meter intervals. In areas obscured by vegetation, systematic shovel tests were conducted in a series of transects with the shovel tests placed at 10-15 meter intervals. The shovel tests were excavated to 30 cm BS with each shovel test approximately 25 cm in diameter. The soil matrix from each test was troweled to determine the presence of cultural material. The 1981 MWAC investigations indicated that the site was primarily limited to the high ground or toe slopes surrounding Chubb Creek. This additional delineation of the site also suggested the site was smaller than previously described by the University of Missouri.

Present Investigations

The present archeological investigations (Figure 3) at the Chubb Hollow site (23CT104) were conducted in response to the proposed parking lot improvement at Chubb Hollow. The FLHP project plans call for the modification of the existing gravel road in the vicinity of the loop turn-around and the addition of parallel parking spaces along the southern and eastern edges of the loop.

Test excavations consisted of four 1x1 meter excavation units and one 1x.5 meter excavation unit. Each unit was excavated in 10 cm arbitrary levels by shovel skimming. The soil matrix was screened through 1/4" hardware mesh. Three excavation units were located on the toe slope adjacent to the loop turn-around and two units were located on the low ground or bottoms in the vicinity of the proposed parking lot extension. An additional series of shovel tests were placed in the locality proposed for the parallel RV/bus parking area along the southern portion of the loop.

The artifactual material from the two excavation units and the shovel tests located on the low ground above Chubb Creek indicated the presence of a very light scatter of lithic debitage in the immediate vicinity of the proposed construction. No diagnostic materials were recovered from this area. There was also no indication of any subsurface features in the immediate vicinity of the parking lot expansion.

In addition to testing the immediate area surrounding the loop turn-around, testing was also conducted with the intent of collecting data which could be utilized in the interpretation of the temporal and functional position of the site within the regional chronology and research design. Three excavation units were positioned on the toe slope in order to collect data concerning the cultural activities at the site and extent of the cultural deposit. A single unit (XU-2) was excavated to a depth of 135 cm BS. The excavation of the unit was discontinued when lithic contact with decomposing dolomitic residuum was encountered. Artifactual material was concentrated in the upper 75 cm of the unit although cultural material was found at a depth of over one meter. The remaining two units (XU-1, XU-3) contained the only cultural feature (Feature A) identified at the site.

The feature appeared to be a shallow, circular basin (Figure 4). The feature, first exposed in XU-1, extended from the north half of XU-1 through the north half of XU-3 (Figure 5). Feature A was approximately 158 cm in diameter and does not contain as dense of a concentration of cultural materials found in Feature A.

XU-4 is located on the first bottom next to Chubb Creek. The unit is in the immediate vicinity of the proposed parking lot

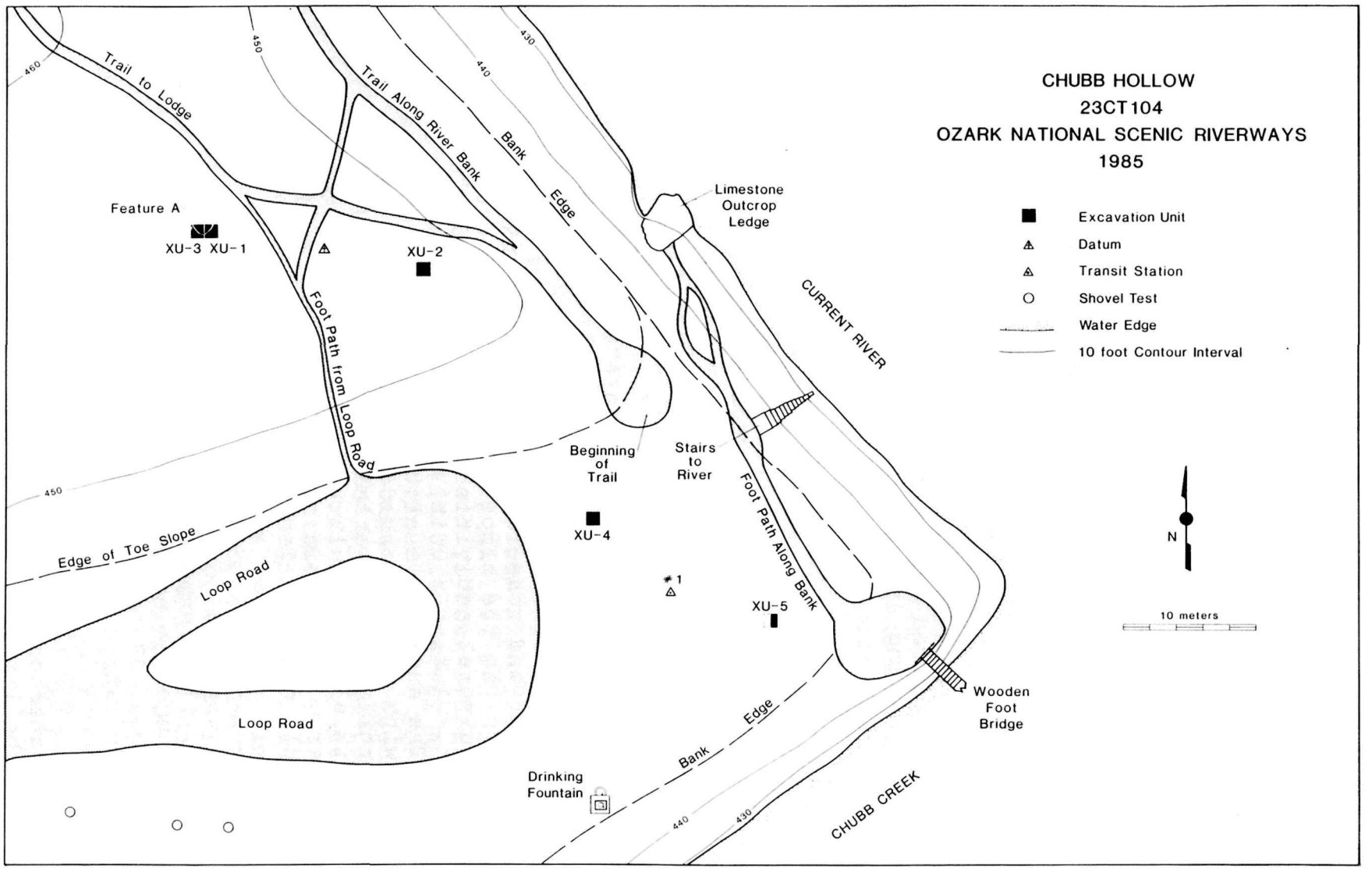


Figure 3. Archeological Investigations and Excavations, Chubb Hollow Site (23CT104), 1985.

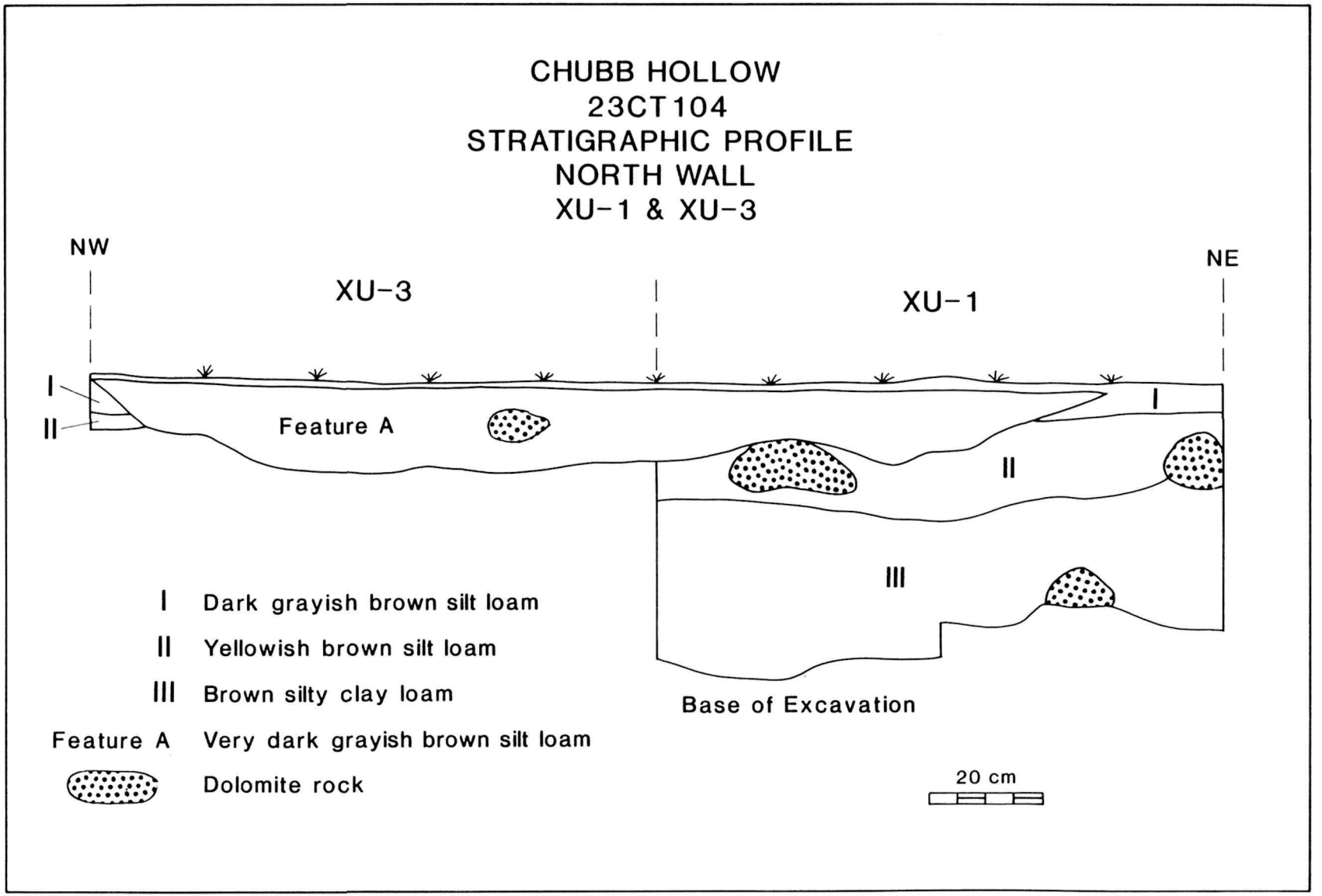


Figure 4. The Vertical Profile of Feature A, Chubb Hollow Site (23CT104), 1985.

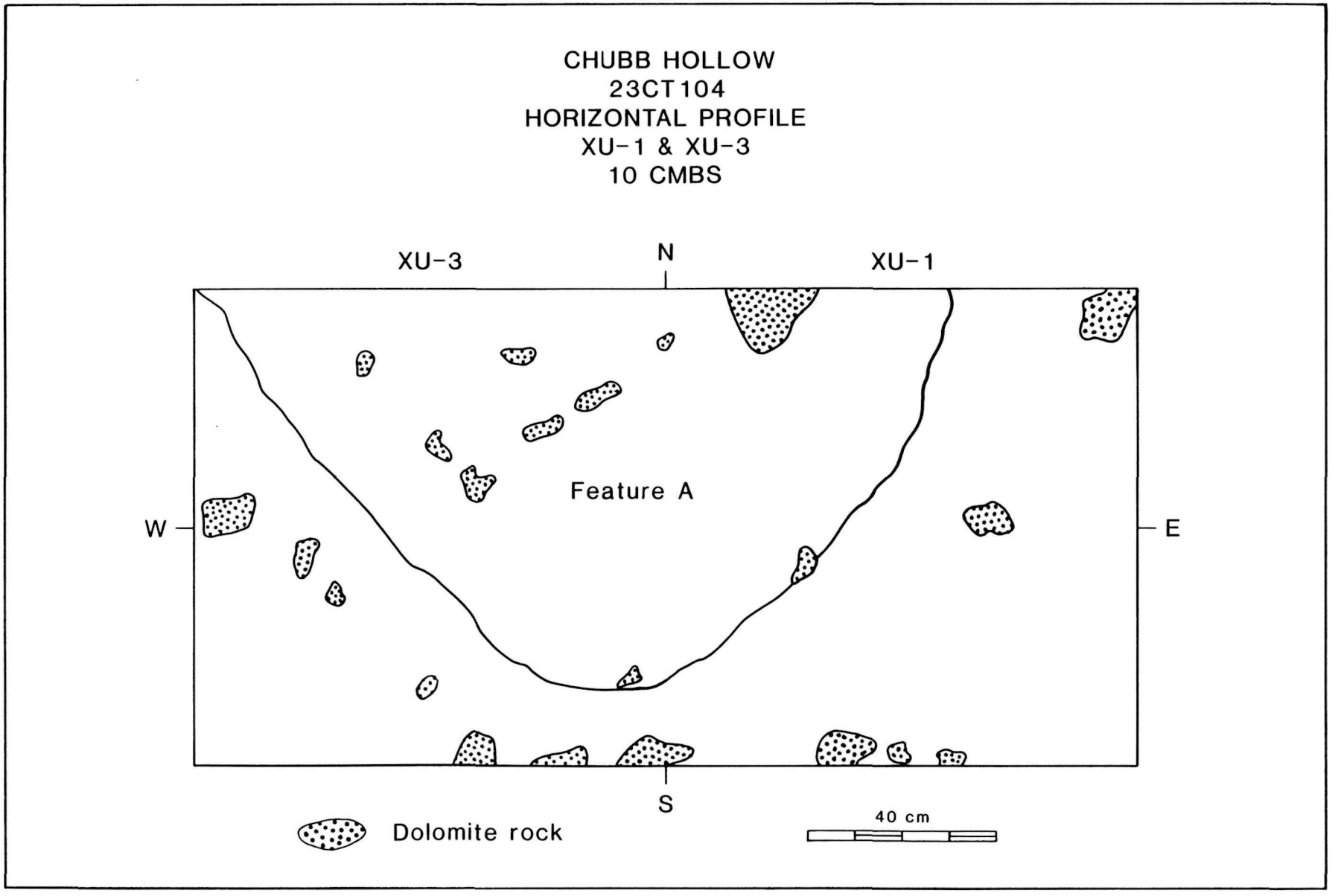


Figure 5. The Horizontal Profile of Feature A, Chubb Hollow Site (23CT104), 1985.

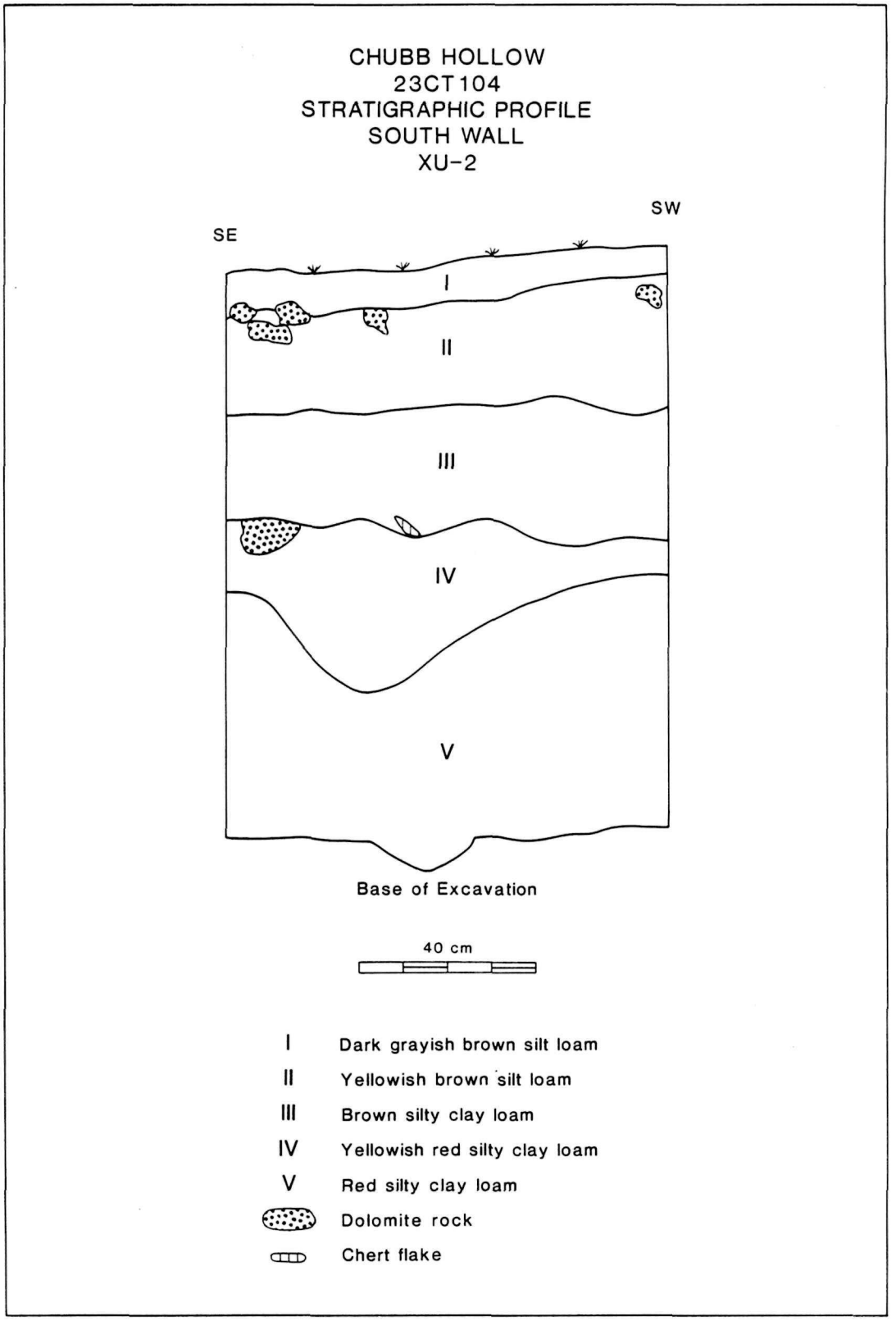


Figure 6. The Stratigraphic Profile from XU-4 on the First Bottom, Chubb Hollow Site (23CT104), 1985.

approximately 13 cm thick. Due to the density of cultural and natural material in the feature, the feature fill was saved for flotation. This method of recovery was selected in order to collect any organic ecofacts present and to provide a complete inventory of the material located in the feature for the analysis of its function. The soil matrix in the southeastern quarter of XU-1 was also saved for flotation. This was an attempt to provide comparative data between the cultural deposit within the feature to the adjacent non-featural deposit. Heavy and light fraction units were separated during the flotation process (Struever 1968:353; Thies 1979:148).

Site Stratigraphy

The general stratigraphy at the Chubb Hollow site is represented by the stratigraphic profile for the colluvial toe slope (Figure 6) and the stratigraphic profile for the first bottom along Chubb Creek (Figure 7). The colluvial deposit on the toe slope is represented in the stratigraphic profile of the south wall of XU-2. The stratigraphic profile of the first bottom is from the east wall of XU-4.

The upper stratigraphic zone (Zone I) in XU-2 is composed of a dark grayish brown silt loam with numerous roots from the vegetative cover. It extends to a depth of 6-8 cm BS. The zone contains decomposing dolomite pebbles and cobbles intermixed with the cultural material. In the upper 2-3 cm of the unit, there are some historic material mixed with the prehistoric material. Zone II is a yellowish-brown silt loam which varies in thickness from 26-28 cm. It is differentiated from the preceding zone by an abrupt boundary. Decomposing dolomite and a high density of cultural material is present in Zone II. Beneath Zone II, Zone III is composed of a brown silty clay loam with yellowish-red mottles and extends to a varying depth of 56 to 66 cm. The cultural material is decreasing in this level. Some roots are still present, and the decomposing dolomite is still prevalent. The fourth zone (Zone IV) extends to 74-96 cm BS. It is a yellowish-red silty clay loam with a few faint yellowish- red mottles. Some cultural material is present; however, it is not nearly as dense as the preceding zone. The amount of decomposing dolomite is increasing. The final zone in the excavation unit is composed of a red silty clay loam which has a high density of decomposing dolomitic residuum at the base of the excavation from 130-135 cm BS. Cultural material apparently extends to a depth of approximately one meter; however, most of the material is present above 75cm BS.

The stratigraphic profile from XU-1 and XU-3 (Figure 4) is similar to the profile described for XU-2. The major difference is the presence of a shallow, basin-shaped feature (Feature A) in these two adjacent units. The feature fill consisted of a dark brown humic soil matrix with a large amount of cultural material, decomposing dolomite, and charcoal. The surrounding soil matrix

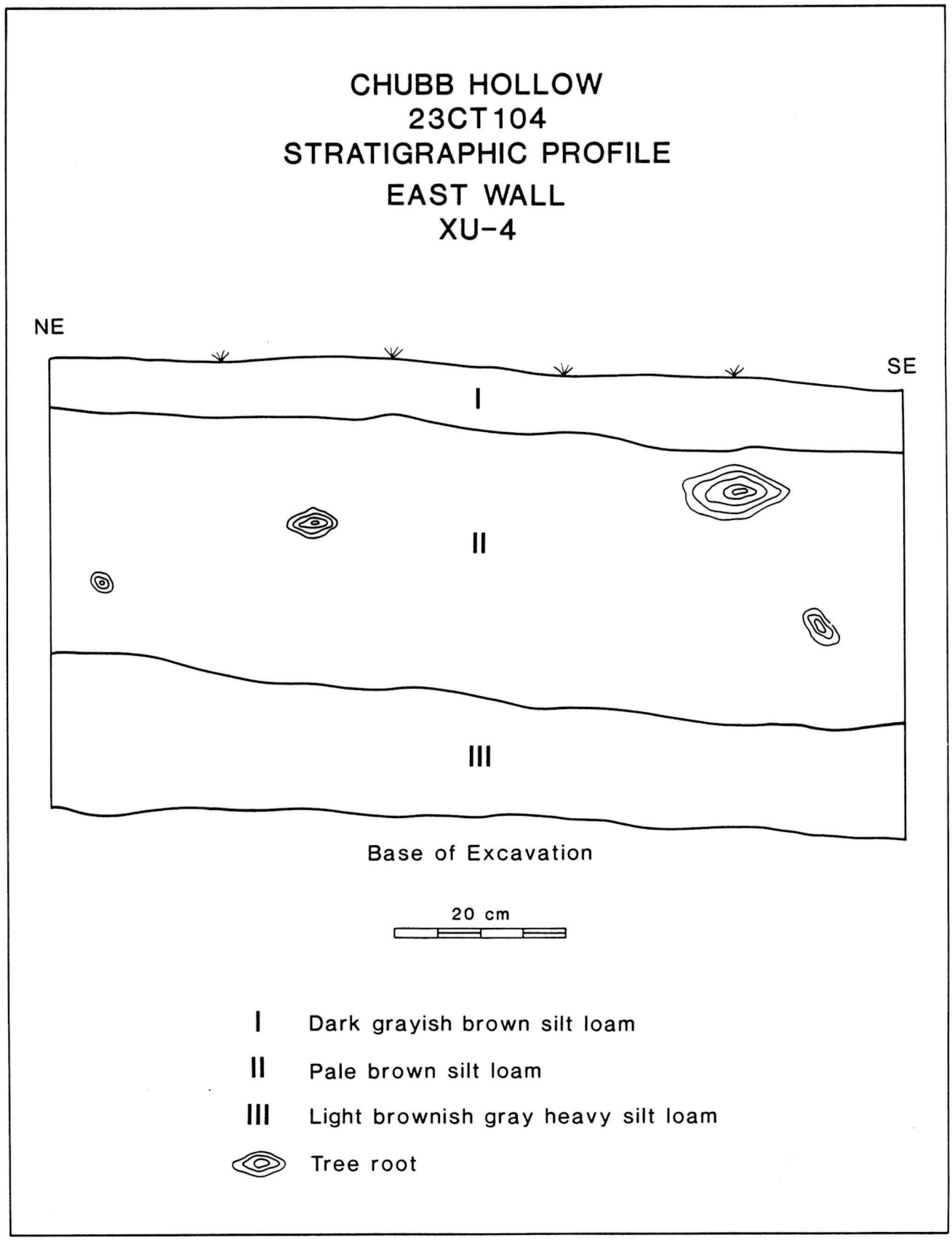


Figure 7. The Stratigraphic Profile from XU-4 on the First Bottom, Chubb Hollow Site (23CT104), 1985.

expansion. The upper zone (Zone I) consists of a dark grayish-brown silt loam with numerous roots from the vegetative cover. The zone is approximately 6-7 cm thick. Zone II is comprised of a pale brown silt loam with some dark reddish-brown mottles located at the bottom of the zone. Several large tree roots are present in this zone. The zone is approximately 29-31 cm thick. Beneath Zone II, Zone III extends to the base of the excavation at 50 cm BS. Zone III is a light brownish-gray heavy silt loam with a few prominent yellowish-red mottles. A very light density of cultural material, mainly lithic debitage, is present in the soil matrix of XU-4. The majority of the flakes are found above 30 cm BS.

Powder Mill

The Powder Mill campground and park facilities are located in the Owls Bend area of the Ozark National Scenic Riverways within the Powder Mill Ferry quadrangle (U.S. Geological Survey 1965). The campground and visitor center are on the left side of the Current River along Old Highway 106. Highway 106 presently crosses the Current River north of the campground and visitor center. The National Park Service also maintains interpretive and maintenance facilities along with employee residences on the right side of the Current River at Powder Mill Ferry (Lynott 1981a:71).

Previous Investigations

The Powder Mill/Owls Bend vicinity was originally surveyed by the University of Missouri in 1972 (Garrison et al. 1976). Several sites were recorded in the area: 23SH74, 23SH75, 23SH77, 23SH78, 23SH79, 23SH80, and 23SH81. The Owls Bend site, 23SH10, was reported to the Archaeological Survey of Missouri by an amateur archeologist; it is part of an extensive site incorporating 23SH80 and 23SH81 northwest of the Powder Mill campground on the right side of the Current River.

During the park-wide survey of existing development areas (Lynott 1981a:71), the Midwest Archeological Center also investigated the Powder Mill/Owls Bend vicinity. Site 23SH105 was located during this survey (Lynott 1981a:71,122).

The area was also investigated during a food plot and historic archeological survey in 1982 (Price et al. 1983:195-225). The Powder Mill Campground site (23SH164) was discovered on the terrace overlooking the left bank of the Powder Mill Creek. The site is adjacent to the east side of Old Highway 106 (now the campground road). The site is located outside the immediate vicinity of the proposed FLHP road construction and improvement.

Present Investigations

Preconstruction archeological survey was conducted at the Powder Mill campground because oral histories from the area indicated the presence of a powder mill near the mouth of Powder Mill Creek during the Civil War (Pennington 1971). The proposed FLHP road construction and modification at the Powder Mill campground was intensively surveyed through interval shovel tests and pedestrian survey (Figure 8).

At the point where road construction will reroute the existing parking lot road east of Powder Mill Creek, two transects were placed five meters apart. Shovel tests were conducted every 10 meters along both transects from the edge of the campground road to the Blue Spring parking lot road on top of the terrace. No cultural materials were recovered.

The campground road west of Powder Mill Creek was visually inspected for cultural material along the grader cut which varied in depth from 5-10 cm at the end of the loop road to almost one meter at the boat access to the Current River. Pedestrian survey of the campground road and the river access was utilized since the proposed road modifications in this area involved the use of a different type of road surface (gravel vs. sand) rather than the redirection of the road orientation. No cultural materials were visible. The campground road on the east side of Powder Mill was not inspected since it was highly disturbed by the construction of Old Highway 106.

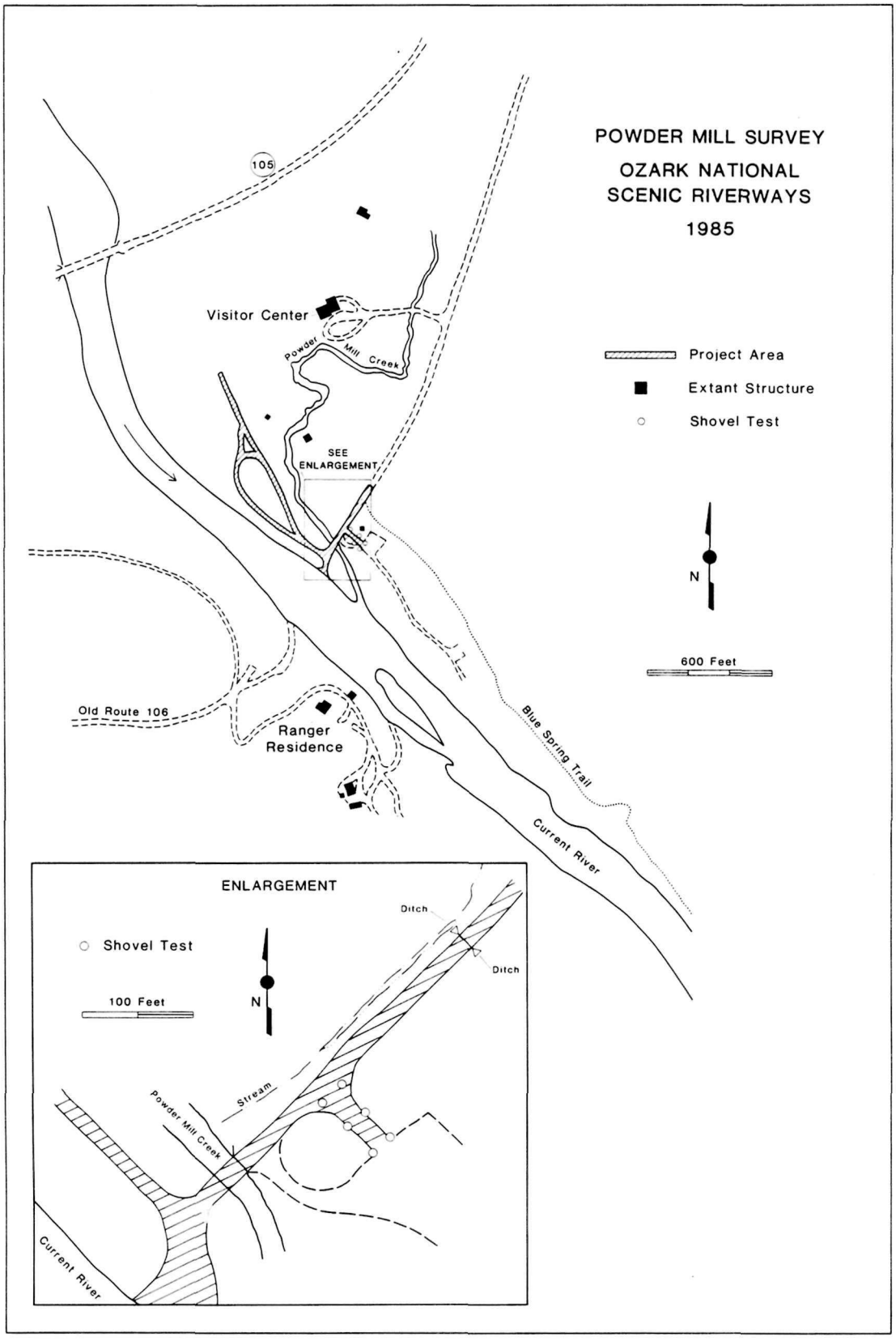


Figure 8. Archeological Survey, Powder Mill Campgrounds, 1985.

Pulltite

The Pulltite campground is located in the northern portion of the Ozark National Scenic Riverways along the left bank of the Current River. Access to the campground is on County Road EE from State Highway 19. Proposed FLHP road improvements include plans to upgrade the access road from the National Park Service boundary to the river access and through the campground. Proposed construction in Group Campsite 3 involves the modification of the campground road and the addition of parking spaces within the vicinity of the Pulltite site (23SH94).

Previous Investigations

Initial archeological survey of the Pulltite campground was conducted in 1978 by the Midwest Archeological Center (Lynott 1981a:68-69,1982a:69). The survey involved a preconstruction survey of potential vault toilet locations within the campground. The Pulltite site (23SH94) was located during the survey in Group Campsite 3.

The site is located on a gently sloping bench on the left side of the Current River. The site is bounded on the south side by an intermittent spring branch. The legal provenience of the site is the NW 1/4, NE 1/4, NE 1/4 of Section 4, T30N, R5W, Shannon county, Missouri. The site has been altered by an existing campground road and footpaths, and by former pit toilets. The site is exposed along the gravel road and in the footpaths (Lynott 1982a:69).

During 1978, the Midwest Archeological Center conducted a shovel test survey at the site and excavated three 1x1 meter excavation units. Research goals at the site involved the determination of the site size, location, and depth of the cultural deposit. A total of 29 shovel tests were excavated to an approximate depth of 30 cm BS. The soil matrix was screened through 1/4" hardware mesh. Based on the shovel tests, three areas were selected for further investigation by 1x1 meter excavation units. The units were excavated in arbitrary 10 cm levels to a depth of 30 cm BS. The soil matrix was shovel skimmed and screened through a 1/4" hardware mesh (Lynott 1982a:73).

Artifacts collected during the 1978 field investigations consist of chipped stone tools and lithic debitage (Lynott 1982a:73-82). The lithic debitage consists of flakes, proximal flakes, blades, and non-diagnostic shatter. Fire-cracked rock is scattered throughout the site. The chipped stone tools include seven fragmentary projectile points.

The Pulltite Groupcamp 3 site (23SH122) was also recorded during the 1978 Midwest Archeological Center survey. The site was located south of the Pulltite site across the intermittent spring branch. It consisted of a lithic scatter located in the picnic and camping area. Lithic debitage and a base of a corner-notched projectile point were recovered from the limited exposed areas during the campground survey.

In 1983, the Pulltite campground was also investigated during a food plot and historic archeological survey of the Ozark National Scenic Riverways (Price et al. 1984:176). During the survey, four sites were designated at the Pulltite campground: 23SH201, 23SH202, 23SH204, and 23SH205.

The Grouse Habitation site (23SH201) is a small lithic scatter on the edge of the terrace south of 23SH122 and 23SH94. Cultural materials collected from the site include a projectile point/knife tip and lithic debitage. The Bulldozed site (23SH202) is a small prehistoric site located next to the campground road north of 23SH94. The site is situated on the east side of the road to Group Campsite 3. Cultural material from the site consists of lithic debitage. The Pulltite Tram site (23SH204) is a section of a historic tram bed located in Group Campsite 3 along the terrace below 23SH122. The tram was originally built by the Missouri Mining and Lumber Co. shortly before 1900; it continued in use until ca. 1920. The Weese Cemetery (23SH205) is a historic small family/community or neighborhood cemetery located on a bluff above the Current River along the access road.

Present Investigations

The archeological investigations at the Pulltite campground involved the excavation and mitigation activities at the Pulltite site (23SH94), the systematic survey of the campground road from Group Campsite 3 to the terrace edge overlooking the main campground, and the systematic survey of the access road from the end of the pavement associated with County Road EE to the entrance of the Pulltite campground next to the Ranger's Residence. The main campground, located on the floodplain of the Current River has previously been intensively surveyed (Lynott 1981a,1982a) and is not included in the present survey. The floodplain contains a significantly lower distribution of archeological remains in comparison to the stream terrace during both the prehistoric and historic periods.

Pulltite Site (23SH94)

The 1985 archeological investigations at 23SH94 (Figure 9) were conducted in response to the proposed FLHP modification of the campground road and the addition of parking facilities at

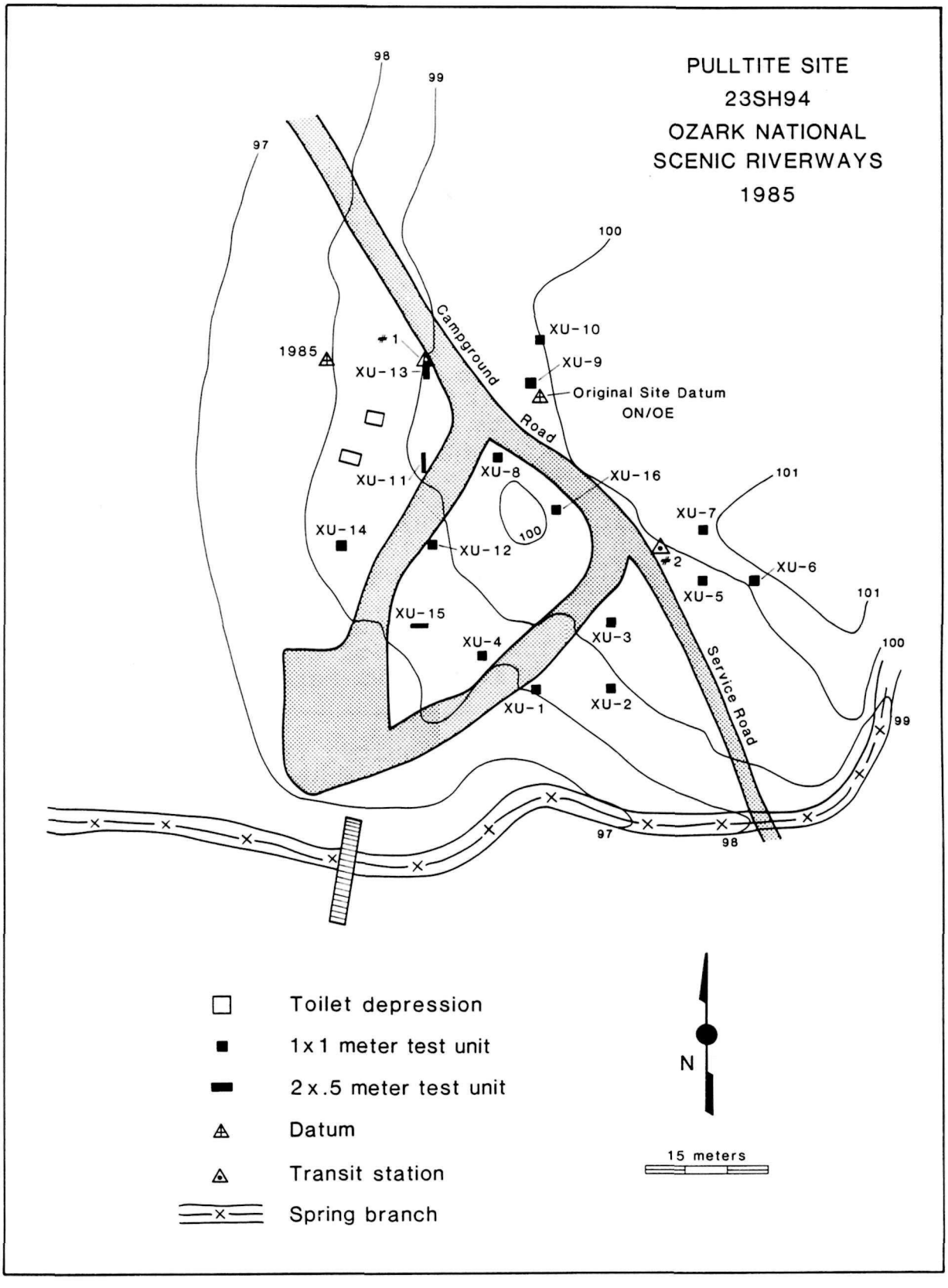


Figure 9. Archeological Investigations and Excavations, Pulltite Site (23SH94), 1985.

Group Campsite 3. Proposed construction at the site is limited to areas which will have the least impact to the intact archeological remains at the site. The major disturbance will be on the east and south periphery of the site and along the existing campground road and loop turn-around.

The grid system was re-established at the site, based on the previous 1979 investigations. A total of thirteen 1x1 meter and three 2x.5 meter excavation units were excavated in arbitrary 10 cm levels. The individual levels were shovel skimmed and/or troweled with the soil matrix screened through 1/4" hardware mesh. The excavation units were placed in areas of the site which would suffer the most adverse impact from the proposed FLHP construction.

Previous investigations at the site (Lynott 1982a) indicated the archeological deposit was shallow and apparently limited to the upper 20-25 cm. In order to evaluate the cultural deposit more thoroughly, the units were excavated to varying depths below those previously described. Two 1x1 meter units (XU-2 and XU-12) were excavated to a depth of 50 cm BS. Five units, including four 1x1 meter units (XU-1, XU-3, XU-8, and XU-9) and one 2x.5 meter unit (XU-11), were excavated to a depth of 40 cm BS. A total of two 1x1 meter units (XU-4 and XU-14) and two 2x.5 meter units (XU-13 and XU-15) was excavated to a depth of 30 cm BS. Four 1x1 meter units (XU-5, XU-6, XU-7, and XU-16) were excavated to a depth of 20 cm BS. These four excavation units contained an extremely low density of cultural material, principally lithic debitage. A single 1x1 meter unit (XU-10) was excavated to a depth of 45 cm BS.

From the data collected in these units, it was apparent the depth of the cultural deposit extended to a depth of 30-45 cm BS over much of the site; however, the area directly east of the service road contained only a shallow, light scatter of lithic debitage. During the 1981 investigations (Lynott 1982a), the major portion of the site appeared to extend west of the campground road and service road, and north of the loop turn-around intersection with the main campground road. The site was principally centered in the loop island. The 1985 investigations indicated the site boundaries extended south of the loop turn-around and west of the service road along the terrace above the spring branch.

No subsurface features were encountered at the site during the 1985 investigation. The lack of subsurface features were also reported by Lynott (1982a). Organic remains were apparently lacking in the cultural deposit due to poor preservation qualities of the soil on this portion of the stream terrace.

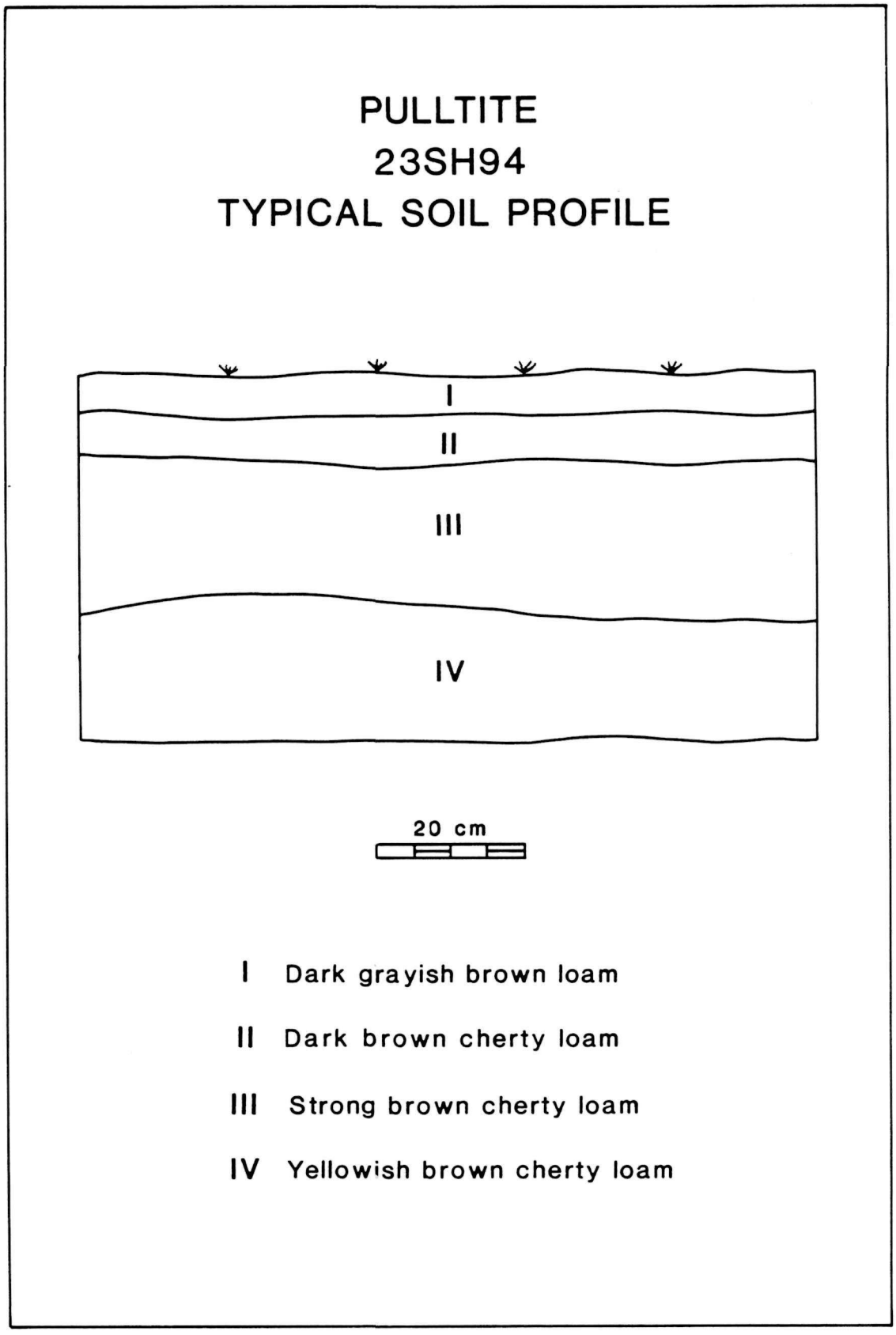


Figure 10. The General Site Stratigraphy, Pulltite Site (23SH94), 1985.

Site Stratigraphy

The general stratigraphy of the Pulltite site (23SH94) is illustrated in Figure 10. The uppermost zone (Zone I) is a dark grayish-brown loam which forms the sod or humic layer over most of the site. It is approximately 5 cm thick. Zone II consists of a dark brown cherty loam which varies in thickness from 6-8 cm. Zone II is a strong brown cherty loam approximately 20 cm thick. The final zone (Zone IV) is a yellowish-brown cherty loam which extends below the level (30-50 cm) of the present excavations. The soil profiles from three units (XU-5, XU-6, and XU-7) indicate the area immediately east of the service road has undergone recent erosion since the upper two zones are entirely absent and only a small portion of Zone III is still present. The upper three zones contain the majority of the prehistoric artifacts, while Zone I contains the vast majority of the historic artifacts with the exception of a metal toy wagon located at 18 cm BS in XU-12. The apparent depth of the toy wagon may have resulted from the addition of overburden associated with the grading of the campground loop turn-around. Significant quantities of prehistoric lithic materials are found in the upper 10 cm of Zone III although some cultural material appears to extend beneath 45 cm BS in XU-2, XU-10, and XU-12. The data suggest the cultural deposit at 23SH94 extends deeper (30-45 cm BS) than the previously described depth of 20-25 cm BS (Lynott 1982a:72-73).

Pulltite Campground Survey

Additional survey of the campground road from Group Campsite 3 to the edge of the terrace overlooking the main campground on the Current River floodplain was also conducted during the present investigations at Pulltite. The systematic survey of the campground road consisted of interval shovel tests. The shovel tests were placed every 10 meters alternating sides of the road at one meter from the road edge (Figure 11). The shovel tests were approximately 25 cm in diameter and excavated to a depth of 30 cm BS. The soil matrix was troweled for artifacts which were collected for analysis.

A proposed parking area near the comfort stations north of the Group Campsite 3 had additional shovel tests placed at five meter intervals on both sides of the road. Near the comfort stations at the edge of the stream terrace overlooking the main campground, cultural material was recovered from two shovel tests. Additional shovel tests were located five meters on either side of the positive tests. One shovel test, five meters south of the positive test on the west side of the campground road also yielded cultural material.

The site, designated 23SH254 by the Archaeological Survey of Missouri, is situated on the edge of the terrace near an intermittent drainageway. The area surrounding the site is

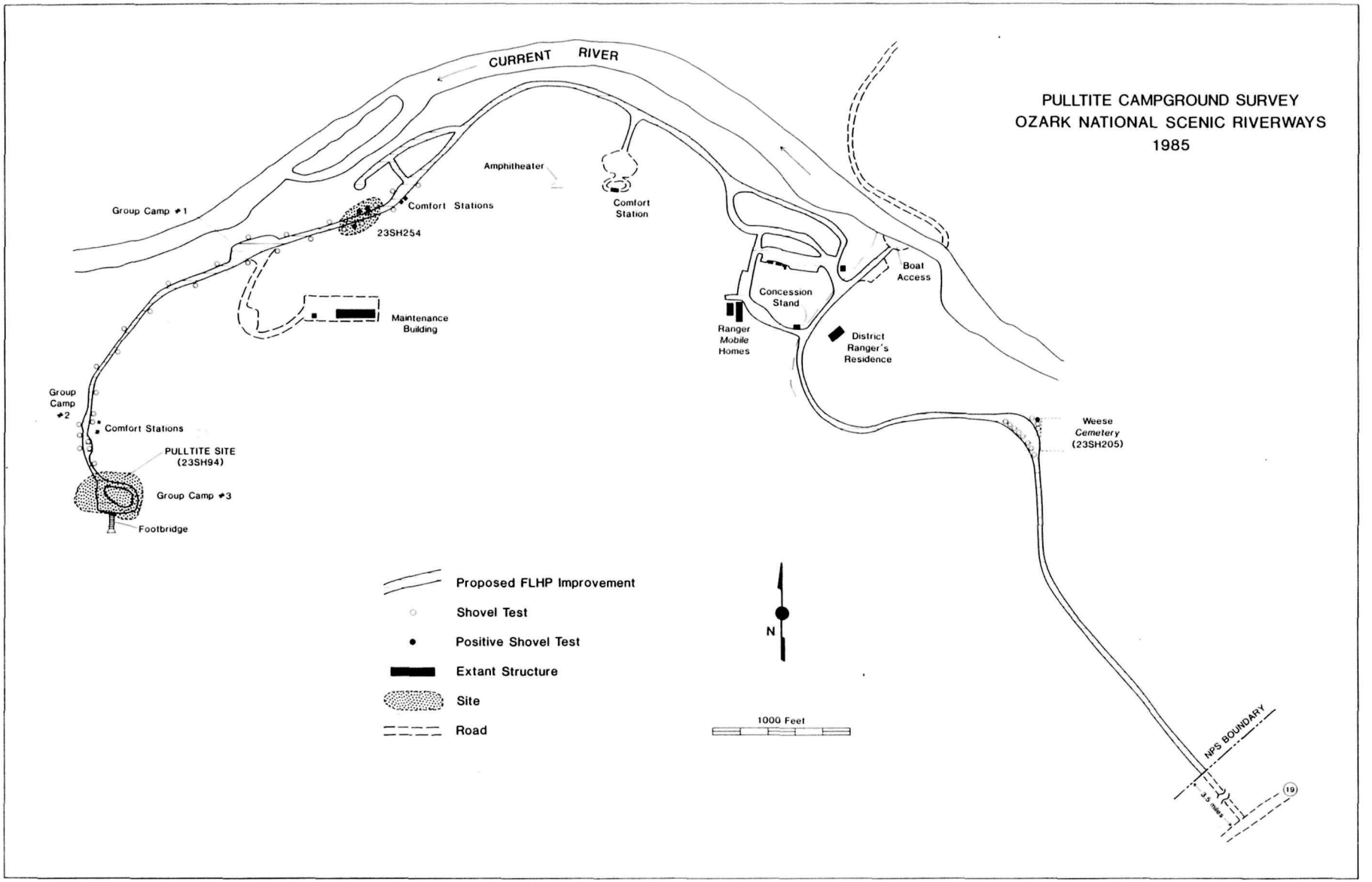


Figure 11. The Campground Survey, Pulltite, 1985.

covered with forest undergrowth and grass along the edge of the road which resulted in extremely poor ground visibility. The areal extent of the site is undetermined at the present time; however, testing indicates it extends approximately 20x10 meters. The cultural deposit does not appear to extend below 20-25 cm BS. The legal provenience of Site 23SH254 is the NE 1/4, SE 1/4, SE 1/4 of Section 33, T31N, R5W, of Shannon county, Missouri (U.S. Geological Survey 1967). Artifacts from the site consists of a biface fragment, a retouched flake, a utilized flake, and lithic debitage.

Pulltite Access Road Survey

The majority of the access road is bounded by steep slopes except in the vicinity of the Weese Cemetery (23SH205). A series of shovel tests were placed along the edge of the western side of the cemetery. FLHP project plans call for the construction of a parking lot in this area. Transects were conducted at five meter intervals with one line extending west of the northwest corner of the cemetery and another line parallel to the west side of the cemetery at a five meter interval. The shovel tests were conducted at five meter intervals along both transects. The shovel tests were approximately 25 cm in diameter and were excavated to a depth of 30 cm BS. The soil matrix was troweled for artifacts which were saved for analysis. A single biface fragment was recovered from a shovel test located five meters west of the northwest corner of the Weese Cemetery. No other cultural materials were found in the vicinity of the cemetery.

The existing road at the corner of the Weese Cemetery is to be rerouted to the west in order to make room for the planned parking lot and to reduce the sharpness of the corner for vehicular traffic. A series of shovel tests were placed along the centerline of the proposed FLHP road construction at 10 meter intervals. The shovel tests were approximately 25 cm in diameter and excavated to a depth of 30 cm BS. The dense forest vegetation and undergrowth obscured the ground surface in the area. No apparent cultural material was present in the shovel tests.

The cut bank along the access road from the Weese Cemetery (23SH205) to the Ranger's Residence was also surveyed. The cut bank provided good visibility. No cultural material was evident during the pedestrian survey to this portion of the access road.

Round Spring

The Round Spring campground and picnic area is a major park development focused around a large spring which surfaces in a

sinkhole. The Round Spring portion of the Ozark National Scenic Riverways is located in the Round Spring Quadrangle (U.S. Geological Survey 1967). Present FLHP road improvements at Round Spring call for the construction of a new entrance to the floaters campground north of the spring. The existing parking lot and portions of the present campground road will also be eliminated during the construction project.

Previous Investigations

The Round Spring site (23SH19) has been known as a prehistoric habitation and cemetery site for several years. The site, located next to the spring, was first identified during construction activities at the campground in 1959 (Haslag 1959:7). A cache of eight blades were discovered by one of the workmen. The University of Missouri was called to investigate the find. During the investigations at Round Spring, a partially exposed Mississippian burial was excavated (Haslag 1959:8). Another burial, reported by Alan Banks, was investigated at 23SH19 in 1964 by the University of Missouri (Bray n.d.).

In 1972, archeological investigations were conducted at Round Spring by the University of Missouri (Garrison et al. 1976:26-43). Four sites were identified in the Round Spring vicinity: 23SH70, 23SH71, 23SH72, and 23SH73. Site 23SH82 was also located during these investigations although it was not included in the final report (Garrison et al. 1976). An inundation study (Carrell et al. 1980) at Round Spring reported a submerged prehistoric site (23SH96) in the grotto area of the spring.

During 1981, the Midwest Archeological Center conducted a park-wide survey of existing development areas in the Riverways including Round Spring (Lynott 1981a:69-70). Testing at Round Spring during 1981 suggested that 23SH70 and 23SH96 were components of 23SH19 (Lynott 1981a:70).

Present Investigations

Proposed FLHP construction of a new access road at Round Spring necessitated the current archeological survey (Figure 12). Starting at the eastern edge of the existing campground road, two transects were established along the proposed road right-a-way. Shovel tests were placed at 10 meter intervals alternating between the two transects. The shovel tests were approximately 25 cm in diameter and were excavated to a depth of 30 cm BS. The soil matrix was troweled for artifacts which were collected for analysis.

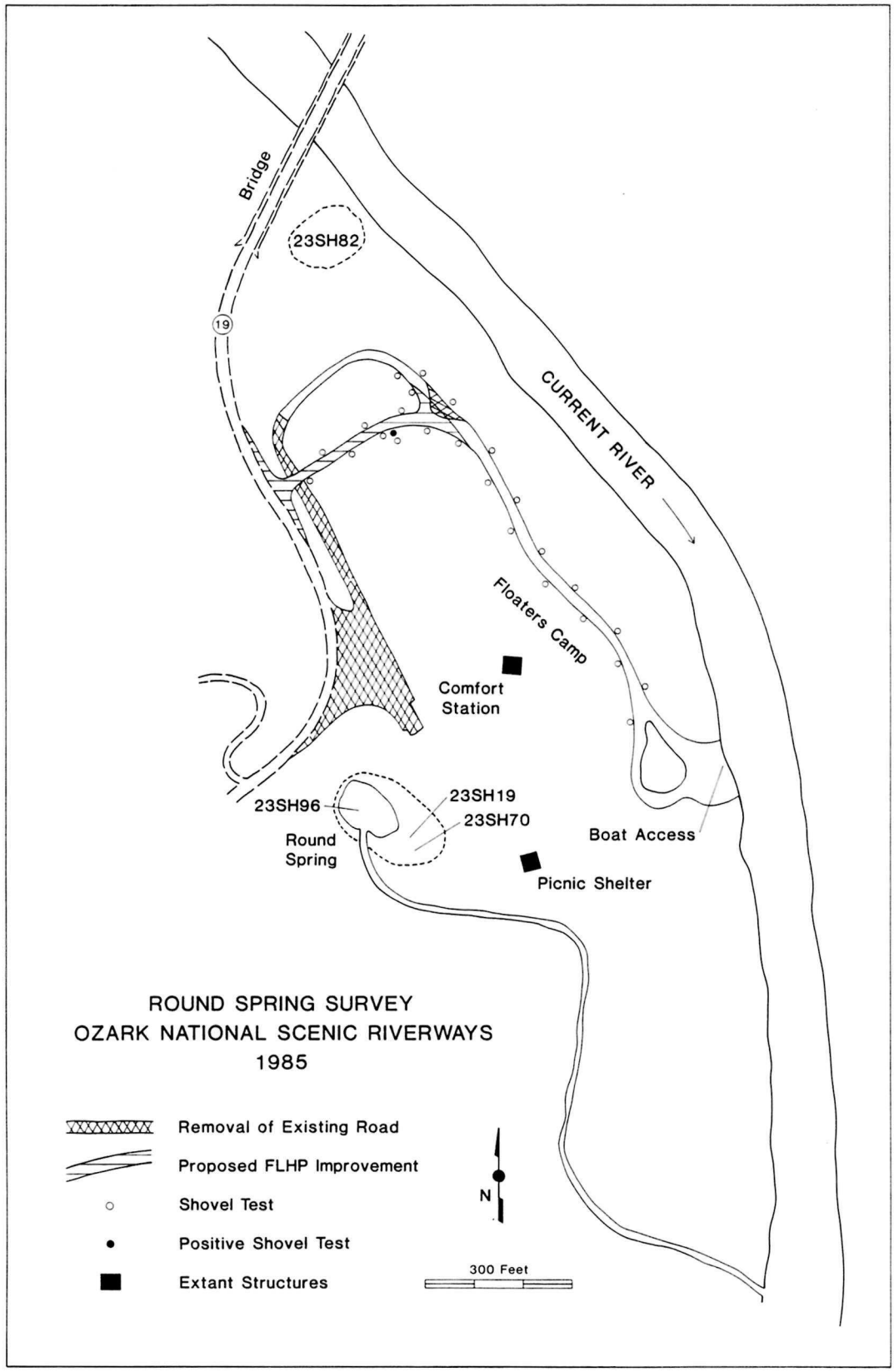


Figure 12. The Archeological Survey, Round Spring, 1985.

The shovel tests failed to produce any cultural material except at the head of an erosional gully at the edge of the terrace above the floaters camping area on the floodplain of the Current River. A single chert flake was recovered along with some apparent natural chert shatter. Shovel tests placed five meters west and south of this positive test did not reveal any further cultural material. The chert flake found in the single positive shovel test apparently eroded from 23SH19 upslope of its present position at the head of the gully.

Shovel tests were also conducted along the campground road and boat access located on the floodplain. The shovel tests were placed at 10 meter intervals alternating each side of the road at a distance of one meter from the road edge. No cultural material was identified during this portion of the archeological investigations at Round Spring.

ANALYSIS OF THE EXCAVATED DATA

Introduction

The classification system, utilized for the analysis of the archeological material recovered during the 1985 FLHP project in the Ozark National Scenic Riverways, is rather general in nature. It is similar the "positivist" model for classification systems (Hill and Evans 1972) rather than the traditional "empiricist" approach. The "positivist" model is based on the assumption that no single "best" or standardized sorting procedure exists for categorizing archeological material. The appropriate classification system for any collection depends upon the content of the collection as well as the research problems under consideration. A cursory knowledge of the general artifact materials, shapes, and modifications forms an integral part in the formation of parameters of an accurate and replicable taxonomy (Price et el. 1981:529).

Taxonomy

Development of a taxonomy along with the establishment of sorting criteria within a given range of attributes for any single taxon forms the basis for replicability and standardization of classification systems utilized by archeologists within a given region. The system needs to be general in order to avoid being overwhelmed by minutiae (Price et al. 1981:530); however, it should be capable of detecting variation in the archeological assemblage composition. The taxonomy selected for the lithic analysis of material from the 1985 FLHP project in the Riverways is patterned after those devised for the Brand site (Goodyear 1974), for the Cache River Archeological Project (House 1975:55-70), for the Fourche Creek Watershed Archeological Project (Price et al. 1981:529-562), and for the Snyder site (White 1963:1-70).

The typology is intended to establish a standardized analytical framework for the archeological materials from the 1985 FLHP project in the Riverways. The typology involves the systematic sorting of the data base, the determination of cultural affiliations based on diagnostic artifacts, the assessement of the range of variation of type and frequency of materials at each site, and the assignment of tentative function(s) to the sites when applicable. The typology is also intended to be replicable by other investigators with an acceptable high level of accuracy.

The typology for the lithic materials follows a procedure established by John House (1975:55-73) and elaborated by James Price (Price et al. 1981:529-562). The system depicts a generalized and partially hypothetical sequence of lithic reduction from raw source material into artifacts and lithic debitage. The sequence starts with unmodified cobbles and proceeds through tested cobbles, decortification flakes, and cores to bifacial and unifacial tools. These lithic artifacts precede other lithic tools in the definitions, i.e. hammerstones and anvil stones which are employed in lithic tool manufacturing. These tool descriptions are followed by other lithic tools not necessarily involved in the lithic tool manufacturing process, i.e. pitted cobbles and ground stone including milling stones and manos. Burned and fire-cracked rock, and miscellaneous rock comprise the final categories of lithic materials recovered during the 1985 FLHP project in the Riverways. Non-lithic materials recovered during the archeological investigations at the Ozark National Scenic Riverways include daub, and charcoal.

Unmodified Cobbles

Definition. Cobbles of hard sandstone, quartzite, dolomite, or chert without observable modification.
Potential errors. Modification is hard to distinguish between natural and human alteration.
Hypothetical systemic function. They may represent raw source materials transported to site for later modification and use. They might also represent cobbles which were used without resultant observable modification.
Cultural-historical position. They probably occur throughout the prehistoric period.
Research value. The presence of these should be interpreted in combination with other cobble tools since they probably represent source materials. The highest densities of these should occur at settlements rather than most specialized extraction stations.

Tested Cobbles

Definition. Cobbles of hard sandstone, chert, or quartzite which have from one to a few marginal flakes removed with no other modification.
Potential errors. Recognizable but sometimes sufficient flakes have been removed along the margin resulting in a bifacial edge. This gives the cobble the appearance of a chopper although there is seldom any edge use modification.
Hypothetical systemic function. Probably represents raw materials which have sufficient flakes removed from the cobble to test the knapping potential of the cobble. Believed to be discarded if knapping quality was poor.

Cultural-historical position. These are probably produced throughout the prehistoric period.
Research value. Potentially could reveal raw material sources and the potential quality of lithic materials utilized by the prehistoric human occupants in the region.

Unmodified Cobble Fragments

Definition. Fragments of sandstone or nonconchoidally fractured quartzite cobbles which lack observable modification. There are also no signs of firing present.
Potential errors. Modification may be difficult to distinguish.
Hypothetical systemic function. Might represent breakage of cobble tools resulting from some kind of hammering or pounding task.
Cultural-historical position. Probably occurred throughout the prehistoric period.
Research value. Should view the presence of these in conjunction with other cobble tools from the site.

Decortication Flakes

Definition. Chert or quartzite flakes which exhibit evidence of cobble or nodule cortex on the dorsal surface. Primary decortication flakes are completely covered with cortex on the dorsal surface. Secondary decortication flakes have dorsal cortex which covers only a portion of the surface. Cortex often represents a water-worn surface.
Potential errors. Quite recognizable and represent no sorting problems.
Hypothetical systemic function. These represent flakes removed from a cobble or nodule in the initial knapping reduction stage of natural materials. Although decortication flakes were utilized, no apparent preference is demonstrated for these over other types of flakes.
Cultural-historical position. All prehistoric periods.
Research value. Indicative of initial reduction of lithic source materials. Should be plentiful on lithic workshop sites and less abundant at other types of sites where artifacts were sharpened or further reduced.

Non-decortication Flakes

Definition. Chert and quartzite flakes which exhibit bulbs of percussion or force lines and compression rings indicating they were struck from a larger piece of material.
Potential errors. May be confused with fragments of blades.
Hypothetical systemic function. These represent interior flakes removed after decortication flakes in the bifacial or core

reduction sequences. Many reveal utilization resulting in the removal of small flakes along the flake margins. Apparently, these flakes were either selected for cutting and scraping tools or were discarded.
Cultural-historical position. All prehistoric periods.
Research value. These tend to be numerous and quite common on most sites since collectors are least likely to pick up these materials. The ratio of these flakes to bifacial thinning flakes indicates the relative amount of bifacial manufacture present at the site. The ratio of modified to unmodified flakes reflects the amount of flake utilization at the site.

Bifacial Thinning Flakes

Definition. Flakes which can be identified as being removed during the process of thinning a chert or quartzite biface. The striking platform is part of the biface edge. This edge often exhibits grinding or smoothing in preparation of the striking platform. The platform angle is relatively low. The back of the flake usually exhibits wide, shallow flake scars which were part of the original biface surface.
Potential errors. Most specimens are readily recognized.
Hypothetical systemic function. These are the byproducts of biface manufacture, resharpening, and modification.
Cultural-historical position. All prehistoric periods.
Research value. These indicate the practice and location of biface manufacture, resharpening and modification at a site. The ratio of these to other flakes is an indication of the relative amount of such practices at a site.

Non-descriptive Shatter (NDS)

Definition. This is an "other" class consisting of chips, shatter, and flakes which lack the diagostic features of blades, bifacial thinning flakes, decortication flakes, and non-decortication flakes or are fragments of these flakes.
Potential errors. These are usually easily recognizable.
Hypothetical systemic function. These are the by-products of all processes involved in the manufacture of chipped-stone tools.
Cultural-historical position. All prehistoric periods.
Research value. They tend to be extremely numerous and indicate the relative occurrence of bifacial manufacture, primary chipping, and flake tool maunfacture when compared to the entire flake assemblage.

Cores

Definition. Pieces of chert and quartzite with good concoidal fracturing qualities. Knapping activities have removed much of the original surface. They are often quite crude and very thick in comparision to bifacial tools. Cores may exhibit various amounts of step fracturing and appaer to have been aborted once they could no longer produce flakes or be further reduced.
Potential errors. Difficult to distinguish extreme limits of cores with tested cobbles at one end and with bifaces at the other end. Larger cores may be recycled as hammerstones and choppers.
Hypothetical systemic function. These apparently represent an interrupted or an aborted stage in the manufacturing of bifaces or flake tools.
Cultural-historical position. These were produced during all prehistoric periods.
Research value. Lithic workshop sites would be expected to have a greater number of specimens than general maintenance types of sites. The presence of these at a site might also indicate the manufacture and use of flake tools.

Bifacial Blanks and Aborted Preforms

Definition. Crudely worked bifacial pieces without well defined working edges and/or areas of utilization on edges or faces. These tend to be thick and irregular in shape with obvious flaws in the material which prevented the completion of the tool. Flaws are evidenced by thick areas on the specimen surrounded by numerous step fractures.
Potential errors. These may be confused with cores at one extreme and crudely maufactured biface tools, such as choppers and cleavers at the other extreme. Bifacial preforms may have been recycled as choppers or knives.
Hypothetical systemic function. These presumably represent the end stage of an aborted attempt to manufacture bifacial tools.
Cultural-historical position. They were produced throughout all prehistoric periods; however, they were not as common during the Mississippian period due to the utilization of a flake tool industry.
Research value. A large number of bifacial blanks and aborted preforms in a localized area would indicate a specialized workshop for biface preform manufacture.

Bifaces

Inclusion of subclasses. Specimens of circular, oval, ovate, rectanguloid, and trianguloid bifaces. This includes fragments which do not represent recognizable tool forms.

Definition. Bifaces with well defined working edges but which were apparently not hafted. This represents an "other" category for bifacial tools.
Potential errors. May be difficult to distinguish from bifacial preforms. The category may also include aborted preforms which have been recycled as knives.
Hypothetical systemic function. Hand-held cutting sawing and light duty chopping or cleaving tools. They might also represent potential preforms which have been utilized before further reduction.
Cultural-historical position. Occur throughout the prehistoric period.
Research value. Most likely to occur at habitation and extraction sites where cutting, sawing and cleaving activities take place.

Projectile Points/Hafted Cutting Tools

Inclusion of subclasses. Functional dart and arrow points, symmetrical hafted knives, hafted drill-like forms without rotational wear on the tip, asymmetrical specimens of the forementioned artifacts, and recognizable fragments of these categories.
Definition. Any symmetrical or asymmetrical pointed bifacial tool with modifications intended to facilitate hafting, and fragments not modified subsequent to breakage.
Potential errors. Usually these are easy to distinguish.
Hypothetical systemic function. General class of tool apparently utilized for extremely varied functions which include projectiles, cutting, sawing, drilling, and other activities. They were often resharpened, sometimes until they were exhausted.
Cultural-historical position. The general class of artifacts were utilized throughout the prehistoric period. Dart points were apparently not manufactured during the Mississippian period. Arrow points mark the introduction of the bow and arrow during the Late Woodland and Mississippian periods.
Research value. These artifacts quite often represent the most diagnostic lithic specimens for the determination of cultural affiliation at a site. Removal from sites by collectors often creates significant biases in frequency data.

Biface Tips

Inclusion of subclasses. Tips from broken projectile points/hafted cutting tools and/or tips from broken thinned bifaces.
Definition. The distal end or pointed tip of a thinned biface which has not been modified subsequent to breakage.

Potential errors. Usually these are easy to distinguish.
Hypothetical systemic function. These are tips broken from hafted tools or bifaces during usage and discarded at that location; however, some tips may have resulted from nonsystemic functions, such as modern cultivation practices.
Cultural-historical position. Very difficult to determine cultural affiliation.
Research value. Ratio of tips to bases could represent recycling of the bases. The ratio might also represent the removal strategy of broken projectile points whether at the site of breakage or at another location. Differences in the surface material may represent collector activities at the site.

Unifacial Steeply Retouched End Scraper

Definition. A lamellar, thick flake of chert or quartzite with the distal end usually unifacially chipped to produce a convex to straight working edge which frequently exhibits polish. The lateral edges may be chipped and/or ground.
Potential errors. Usually easily recognizable.
Hypothetical systemic function. Utilized for scraping activities, such as hide preparation, woodworking or bone working.
Cultural-historical position. Probably occurs throughout the prehistoric period.
Research value. These are indicators of bone, hide, and/or wood-working activities.

Other Steeply Retouched Unifaces

Inclusion of classes. Sidescrapers and irregular-shaped unifacial tools with marginal areas of steep retouch.
Definition. Any unifacial tool, usually a flake, with steep marginal retouch along one or more edges. The retouch can form a straight, convex, or slightly concave working surface.
Potential errors. Generally easily identified.
Hypothetical systemic function. Apparently used for scraping raw materials, such as bone, hide, and/or wood.
Cultural-historical position. Throughout the prehistoric period.
Research value. These represent indicators of functionally specific scraping activities at a site.

Spokeshaves

Definition. Any flake and occasionally a biface with steep unifacial retouch working edge which is markedly concave. The edge appears to be suitable for scraping or shaving a narrow convex surface. The size and shape of the concave

working edge is extremely variable.
Potential errors. Easily recognized although can be confused with notches made in flakes by modern agricultural machinery. They may also intergrade into sidescrapers with slightly concave working edges.
Hypothetical systemic function. Probably functioned as tools for shaping hafts, shafts, and other wood or bone tool elements.
Cultural-historical position. Throughout the prehistoric period.
Research value. Indicate the manufacture of bone and/or wood tools, generally of a cylindrical shape.

Gravers

Definition. Presence of a small pointed unifacially flaked spur on a flake margin which exhibits straight rather than rotational motion. The tip may be a spur formed by chipping the edge away on either side or it may be a projecting sharp corner.
Potential errors. The type of directional motion may be difficult to determine on the spur. The second type of modification, i.e. a sharp corner, may be difficult to detect.
Hypothetical systemic function. These may have been used for scoring bone in the manufacture of tool blanks. They may have also functioned as engraving tools for hard materials or the slotting of bone needle eyes.
Cultural-historical position. All prehistoric periods.
Research value. The occurrence of these artifacts at a site would represent bone working and reduction activities.

Perforators and Drills

Definition. The presence of wear on a tip attributed to a circular drilling motion.
Potential errors. Specimens range from obvious tools to no more than angularly pointed fragments, which makes identification difficult.
Hypothetical systemic function. Drilling, perforating, and/or reaming activities.
Cultural-historical position. Apparently utilized throughout the prehistoric period. Certain stylistic forms may be assigned to specific cultural affiliations.
Research value. Indicative of drilling, perforating, and/or reaming activities preformed at a site.

Retouched Flakes

Definition. Any uniface, usually a flake, with marginal retouch along a portion of the edge.

Potential errors. Usually easily recognizable.
Hypothetical systemic function. May have served a variety of activities including cutting, sawing, and scraping.
Cultural-historical position. Occurs throughout all prehistoric periods.
Research value. These represent flakes which were modified for task specific activities or an unfinished step in the tool manufacturing process.

Utilized Flakes

Definition. The presence of slight unifacial chipping or slight, or irregular bifacial chipping produced by utilization rather than by intentional modification. The working edge is less regular and more poorly defined than that of steeply chipped unifaces. Utilization has little effect of the outline and cross-section of the tool.
Potential errors. Tends to intergrade into certain steeply retouched unifaces. Edge modification may be due to natural factors, such as frost activity, rather than cultural modification.
Hypothetical systemic function. These represent easily produced and readily expendable tools for a variety of cutting and scraping activities.
Cultural-historical position. Produced throughout the entire prehistoric period.
Research value. These tools are apparently produced and discarded at the site of their usage. They would help indicate activity areas and are useful for quantitative analysis with other tool classes.

Hammerstones

Definition. Modified cobbles or cobble fragments which exhibit marginal pecking or battering. Most frequently fashioned from hard sandstone and less frequently from chert or quartzite cobbles.
Potential errors. Usually easy to recognize although edge battering on softer sandstone is difficult to distinguish from natural battering from colluvial or stream action. Chert and quartzite hammerstones are easily recognized.
Hypothetical systemic function. Presumed to be hammerstones utilized to remove flakes from chert and quartzite by the percussion techinque.
Cultural-historical position. Present throughout all prehistoric periods.
Research value. These indicate the presence of a lithic workshop when associated with cores, bifacial blanks, aborted preform, and lithic debitage.

Pitted Cobbles

Definition. These cobbles exhibit smooth circular basin-shaped depressions on their flat sufaces.
Potential errors. Usually easy to recognize; however, the depressions may grade into V-shaped pits indicative of the bipolar knapping technique.
Hypothetical systemic function. May have served as finger grips for holding a hammerstone since the margins are often battered. They may also have served as nutting stones.
Cultural-historical position. Probably occur throughout the entire prehistoric period but are apparently most common during the Late Archaic period in the region.
Research value. More research is needed to determine the actual function of these tools.

Ground Cobbles

Definition. Cobble tools which exhibit face and edge grinding. The cobbles are usually hard sandstone or quartzite. The ground area may be polished although grinding striations may not be visible without magnification.
Potential errors. Usually easily recognized.
Hypothetical systemic function. May have been used for a number of grinding and smoothing activities including grinding and pounding plant foods, hide-working, and the preparation of biface edges to form striking platform.
Cultural-historical postion. Probably occurs throughout the entire prehistoric period; however, more prevalent during the Archaic period in the region.
Research value. These tools would indicate the presence of grinding and/or smoothing tacks at a site.

Fire-cracked Rock (FCR)

Definition. Fragments of chert, dolomite, quartzite, and sandstone which exhibit evidence of being subjected to heat. Specimens are often very irregularly fractured. Specimens are usually discolored, tending towards red, black, or gray. They also may exhibit fireclouds or differential areas of oxidation and reduction. Pot-lit fractures are also common (House and Smith 1975:76).
Potential errors. Usually easy to separate fire-cracked rock; however, sometimes it is difficult to determine if the rock has been subjected to heating. Heating may create "false spalls" or "pseudo cores" which resemble flakes and cores.
Hypothetical systemic function. Presumably used for cooking on earth ovens, for stone boiling, or some other similar practice.
Cultural-historical position. Occurs throughout the entire prehistoric period but is most prevalent at Late Archaic and

Woodland sites in the region.
Research value. Quantities of fire-cracked rock would indicate extensive utilization of certain cooking practices, including the use of earth ovens or stone boiling.

Miscellaneous Rock

Definition. Rough fragments of chert, quartzite, hard sandstone, dolomite and limestone which lack observable cultural modification. The specimens exhibit no signs of intentional flaking or burning.
Potential errors. Easily sorted from the lithic collection once cleaned.
Hypothetical systemic function. Natural materials.
Cultural-historical position. Not applicable.
Research value. Represents range of natural occurring lithic materials in the region.

The remaining sections of the chapter contain detailed site-by-site tabulations of all the archeological material recovered from the Chubb Hollow site (23CT104) and the Pulltite site (23SH94). Analysis of the archeological material from the Gooseneck site (23CT54) will be preserved at a future date. A detailed report concerning the archeological investigations at the Gooseneck site and the site's relationship to the Emergent Mississippian culture is planned.

Chubb Hollow Site (23CT104)

Artifacts, recovered from the Chubb Hollow site (23CT104) during the 1985 field season, consist primarily of prehistoric lithic tools and debitage. Some daub and charcoal is also present in the flotation material. A small amount of historic/modern material is also included in the archeological materials collected from the Chubb Hollow site. A single feature (Feature A) was identified during the 1985 field season at 23CT104.

Lithic artifacts from 23CT104 are composed of chipped stone and ground stone tools, flakes, proximal flakes, non-diagnostic shatter (NDS), cores, and fire-cracked rock (FCR). Some daub and charcoal are also present. A small amount of natural occurring rock has been collected. Until the rock has been cleaned, it is often difficult to distinguish between natural chert in the soil matrix and human altered chert. The historic material represents camping and picnic activities at the site. Some of this material may have been washed down the slope from the cabins located at the top of the ridge overlooking the site.

Five excavation units were excavated in 10 cm arbitrary levels to varying depths from 10 cm to 135 cm BS. Three shovel tests were also excavated at the site to a depth of 30 cm BS. Feature A was located in two adjacent excavation units; XU-1 and XU-3. A total of 2.601 cubic meters of soil was excavated from 23CT104 during 1985. A total of 1,376 prehistoric artifacts was analyzed from the Chubb Hollow site (23CT104). Table 2 illustrates the volumetric density of these artifacts. It should be noted that only the tools were removed from the flotation samples from Feature A and from the southeast quarter sections of level 2 (10-20 cm), level 3 (20-30 cm), and level 4 (30-40 cm) of XU-1 for analysis. This will bias the results to some degree although overall activities will still be adequately represented. The mean prehistoric artifact density for the Chubb Hollow site equals 529 artifacts per cubic meter.

Prehistoric Artifacts

The taxonomy described at the begining of the chapter demonstrates a generalized sequence for lithic reduction from raw material to tools and debitage. The lithic categories described in the preceding section will be utilized as they apply to the archeological material recovered from 23CT104 during the 1985 field season.

Raw Source Material

Lithic raw materials from 23CT104 include a tested cobble of cherty dolomite, six chert cores, and one quartzite core. Table 3 illustrates the distribution of raw materials from the site.

The tested cobble may have been utilized as a chopper; however, at the level of the present analysis, it is extremely difficult to determine any usage. The cobble measures 77.7 mm x 51.0 mm x 17.0 mm.

The major category of source material from 23CT104 is comprised of chert and quartzite cores. A total of eight cores are present in the prehistoric artifact inventory. The cores are irregular in shape with the flakes randomly struck from the core. The cores vary in length from 89.8 mm to 42.9 mm with a mean length of 62.3 mm. The widths of the cores range from 62.7 mm to 29.9 mm with a mean width of 42.4 mm. Core thickness varies from 36.5 mm to 13.6 mm with a mean thickness of 25.2 mm.

Lithic Debitage

Lithic debitage from 23CT104 consists of 466 flakes, 454 proximal flakes, and 255 pieces of non-diagnostic shatter (Table 4). Diagnostic flake elements which indicate deliberate human

Table 2. Density of Prehistoric Lithic Artifacts, 23CT104, 1985.

Provenience	Volume of Excavated Soil (cu m)	Tools	Flakes	NDS	FCR	Total	Density of Lithics/ cu m
Fea A	.196	61	17*	*	*	78*	398
XU-1	.416	60	313*	151*	17*	541*	1300
XU-2	1.3	22	250	82	-	354	272
XU-3	.144	41	321	-	-	362	2513
XU-4	.4	-	17	18	-	35	88
XU-5	.1	-	2	4	-	6	60
ST #1	.015	-	-	-	-	-	-
ST #2	.015	-	-	-	-	-	-
ST #3	.015	-	-	-	-	-	-
TOTAL	2.601	184	920	255	17	1376	529

*Flotation materials from Feature A and XU-1 were partially analyzed. Only the tools from the flotation samples were completely analyzed. Unit densities should be considerably higher for Feature A and XU-1 if flotation analysis had been completed.

Table 3. Distribution of Raw Materials, 23CT104, 1985.

Provenience	Tested Cobble	Core	Total
Fea A	-	2	2
XU-1	-	3	3
XU-2	1	3	4
XU-3	-	-	-
XU-4	-	-	-
XU-5	-	-	-
ST #1	-	-	-
ST #2	-	-	-
ST #3	-	-	-
TOTAL	1	8	9

manufacture consist of a bulb of precussion and a striking platform. Table 5 illustrates the flake type and diagnostic flake elements for debitage from 23CT104. NDS may also represent human manufacture but lack the diagnostic elements.

Observation of the cortex on the dorsal surface of the flakes indicates the presence of 19 primary decortication flakes, 87 secondary decortication flakes, and 360 interior flakes. Diagnostic lithis debris includes 175 plain platforms, 100 bulb only platforms, 67 facetted platforms, and 46 cortex platforms. A total of 78 bifacial thinning flakes are present in the flake inventory from 23CT104. Ninety-seven percent (n=454) of the flakes are chert while three percent (n=12) are quartzite. Apparently, 33% (n=169) of the flakes have been subjected to heat-treatment.

Of the 454 proximal flakes from 23CT104, 13 specimens are primary decortication flakes, 55 specimens are secondary decortication flakes, and 386 specimens are interior flakes. Diagnostic proximal flake debris consist of 144 plain platforms, 85 facetted platforms, 66 bulb only platforms, and 24 cortex platforms. A total of 135 specimens represent bifacial thinning flakes. Chert comprises the vast majority of the proximal flakes (n=438) while 16 quartzite flakes are present in the 1985 artifact inventory from 23CT104. Approximately 40% (n=182) of the proximal flakes have been apparently heat-treated.

The NDS from 23CT104 consists of 237 pieces of chert, 17 pieces of quartzite, and one piece of cherty dolomite. The NDS ranges in diameter from less than 5 mm to approximately 80 mm. A total of 22 pieces of NDS is less than 10 mm in diameter. Over 58% (n=148) of the NDS from 23CT104 is between 10 mm and 20 mm in diameter. Sixty-seven pieces of NDS range in size from 20 mm to 30 mm. Eight pieces are between 30 mm and 40 mm in diameter. Another nine pieces are between 40 mm and 50 mm in diameter. One piece is between 75 mm and 80 mm in size.

Chipped Stone Tools

A total of 172 chipped stone tools is present in the prehistoric artifact inventory from 23CT104 (Table 6). This category consists of both bifacial (n=36) and unifacial (n=136) tools. Definitions of the various types of tools from 23CT104 are presented at the begining of the chapter.

A total of three specimens from 23CT104 represent bifacial blanks (Figure 13). Blanks are crudely shaped, percussion flaked bifaces which have sinuous edges, deep flake scars, and remnant platforms. Blanks represent the initial step in the bifacial reduction sequence. All three blanks are composed of chert. The length of the blanks range from 95.7 mm to 66.7 mm with a mean length of 82.7 mm. The width of the blanks from

Table 4. Distribution of Lithic Debitage, 23CT104, 1985.

Provenience	Flake	Proximal Flake	Heat Treated	NDS
Fea A	10*	7*	8*	*
XU-1	162*	151*	125*	151*
XU-2	144	106	84	82
XU-3	140	181	126	-
XU-4	8	9	7	18
XU-5	2	-	1	4
ST #1	-	-	-	-
ST #2	-	-	-	-
ST #3	-	-	-	-
TOTAL	466	454	351	255
PERCENTAGE**	51%	49%	38%	

* Material from flotation samples was not analyzed.
** Percentage applies to the flake and proximal flake inventory only.

Table 5. Distribution of Diagnostic Flake Debris, 23CT104, 1985.

Provenience	Flake Type			Type of Platform				Bifacial
	Pri.	Sec.	Int.	Pla.	Bul.	Fac.	Cor.	Thin. Fk.
Fea A	1	1	15	7	4	2	1	3
XU-1	10	48	255	96	60	51	29	77
XU-2	10	39	201	94	43	38	15	60
XU-3	10	52	259	115	55	59	24	68
XU-4	1	2	14	6	4	2	-	5
XU-5	-	-	2	1	-	-	1	-
ST #1	-	-	-	-	-	-	-	-
ST #2	-	-	-	-	-	-	-	-
ST #3	-	-	-	-	-	-	-	-
TOTAL	32	142	746	319	166	152	70	213
PERCENTAGE	4%	15%	81%	35%	18%	16%	8%	23%

Table 6. Distribution of Chipped Stone Tools, 23CT104, 1985.

Proven Taxon	Fea A	XU-1	XU-2	XU-3	XU-4	XU-5	ST1	ST2	ST3
Blank	1	1	1	-	-	-	-	-	-
Preform	-	4	1	3	-	-	-	-	-
Biface	2	4	1	2	-	-	-	-	-
Biface Tip	1	2	3	3	-	-	-	-	-
Pp/Haf Cut	1	2	1	3	-	-	-	-	-
U St Ret End	1	-	1	-	-	-	-	-	-
Ot St Ret U	36	23	6	21	-	-	-	-	-
Spokeshave	1	2	-	1	-	-	-	-	-
Graver	6	6	-	2	-	-	-	-	-
Perf & Drill	-	2	-	-	-	-	-	-	-
Retouch Fk	9	6	1	1	-	-	-	-	-
Utilized Fk	-	4	2	5	-	-	-	-	-
TOTAL	58	56	17	41	-	-	-	-	-

GRAND TOTAL = 172 Chipped Stone Tools

23CT104 ranges from 46.0 mm to 24.3 mm with a mean width of 38.1 mm. The blank thickness range from 25.0 mm to 18.7 mm with a mean thickness of 22.0 mm.

The second stage in the bifacial reduction sequence is represented by eight preforms at 23CT104. Preforms represent refined blanks which have less cortex and mass. Marginal edges are generally irregular although they are less sinuous than bifacial blanks. A small preform which measures 13.9 mm x 9.2 mm x 2.0 mm apparently represents a projectile point preform. Two of the remaining seven preforms are complete. They measure 65.0 mm x 55.4 mm x 21.2 mm and 56.9 mm x 47.7 mm x 30.3 mm, respectively. One of the preform fragments has apparently been retouched along the hinge fracture.

Nine bifaces and biface fragments are present in the chipped stone tool industry from 23CT104. The entire sample of bifaces and fragments is composed of chert. Only one biface is complete while the rest are bifacial fragments. the complete biface is ovate-shaped and measures 24.0 mm x 11.5 mm x 4.8 mm. One of the biface fragments exhibits wear along the cutting edge which indicates its probable usage as a knife. Another fragment appears to have been subjected to heat after it was discarded.

A total of nine bifacial tips (Figure 13) in among the prehistoric artifacts recovered from 23CT104 during the 1985 field season. These chert bifacial tips apparently represent the broken distal ends of bifaces, hafted cutting tools, or projectile points. One tip exhibits wear along the cutting edge

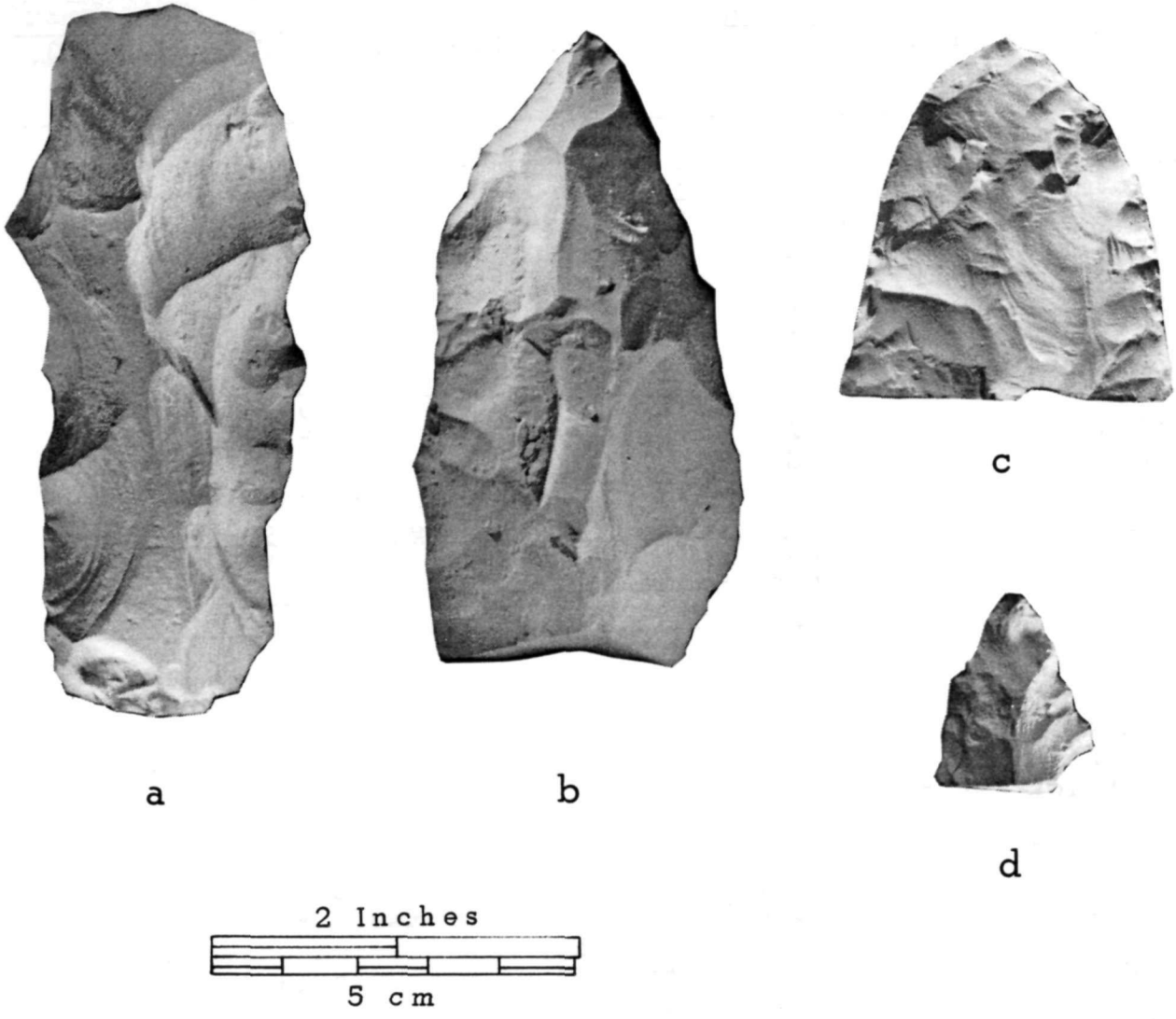


Figure 13. Selected Artifacts, 23CT104, 1985. A,B:Blanks, C,D:Bifacial Tips, E:End Scraper, F:Steeply Retouched Flake, and G,H:Gravers.

which may indicate its usage as a knife. Two of the chert bifacial tips have been heat-treated; however, one appears to have heated after it was discarded.

Seven projectile points and/or hafted cutting tools (Figure 14) are among the archeological material recovered from 23CT104. Five fragments represent a corner-notched point (apparently, the result of an impact fracture), a stemmed point, an expanding stemmed base, and two side-notched points with their bases missing. One fragment is a projectile point tip while the remaining fragment may represent a hafted knife. All seven fragments are composed of chert.

Two chipped stone chert tools from 23CT104 represent unifacial steeply retouched end scrapers (Figure 13). The single complete end scraper measures 40.2 mm x 25.5 mm x 4.3 mm.

Eighty-six specimens represent other steeply retouched unifaces. These can be divided between sidescrapers (n=15) and other irregular unifacial scraping tools (n=71). The majority of these tools have at least one steeply retouched marginal edge. A few of these unifaces also have utilized margins away from the retouched edge. Eighty specimens are composed of chert including 12 sidescrapers and 68 other unifacial tools. Six specimens are composed of quartzite inculding two sidescrapers and four other unifaces. The lengths of the five complete sidescrapers range from 69.2 mm to 28.7 mm with a mean of 41.3 mm. The width of the sidescrapers varies between 31.4 mm and 10.8 mm with a mean width of 22.4 mm. The thickness ranges from 18.0 mm to 8.6 mm with a mean of 11.3 mm. The remaining complete unifacial scraping tools (n=48) vary in length from 45.8 mm to 13.9 mm with a mean length of 34.8 mm. The width of these tools ranges between 33.8 mm and 9.5 mm with a mean of 20.9 mm. The thickness of these unifaces varies from 15.3 mm to 2.2 mm with a mean thickness of 7.1 mm for the unifacial scraping tools. Three of the sidescrapers are heat-treated and 11 other unifacial scrapers have also been subjected to heat-treatment. This represents 16% of the total inventory of the other steeply retouched unifaces recovered from 23CT104 during the 1985 field season.

Four unifacial tools represent spokeshaves. These tools have at least one steeply retouched concavity along the marginal edge. They apparently have been used for cutting, scraping, or shaving bone or wood. Two specimens are chert, and two specimens are quartzite. They range in length from 55.8 mm to 18.8 mm with a mean length of 43.6 mm. The widths range from 45.5 mm to 12.7 mm with a mean of 29.8 mm. The thickness of the spokeshaves varies between 19.5 mm and 3.6 mm with a mean of 13.2 mm.

A total of 14 gravers (Figure 13) are from the archeological material recovered from the Chubb Hollow site. Three specimens (21%) have been subjected to heat-treatment. These tools represent scoring or engraving tools for bone, shell, antler, or wood. The chert gravers range in length from 42.4 mm to 15.4 mm with a mean of 29.5 mm. Their widths range from 36.3

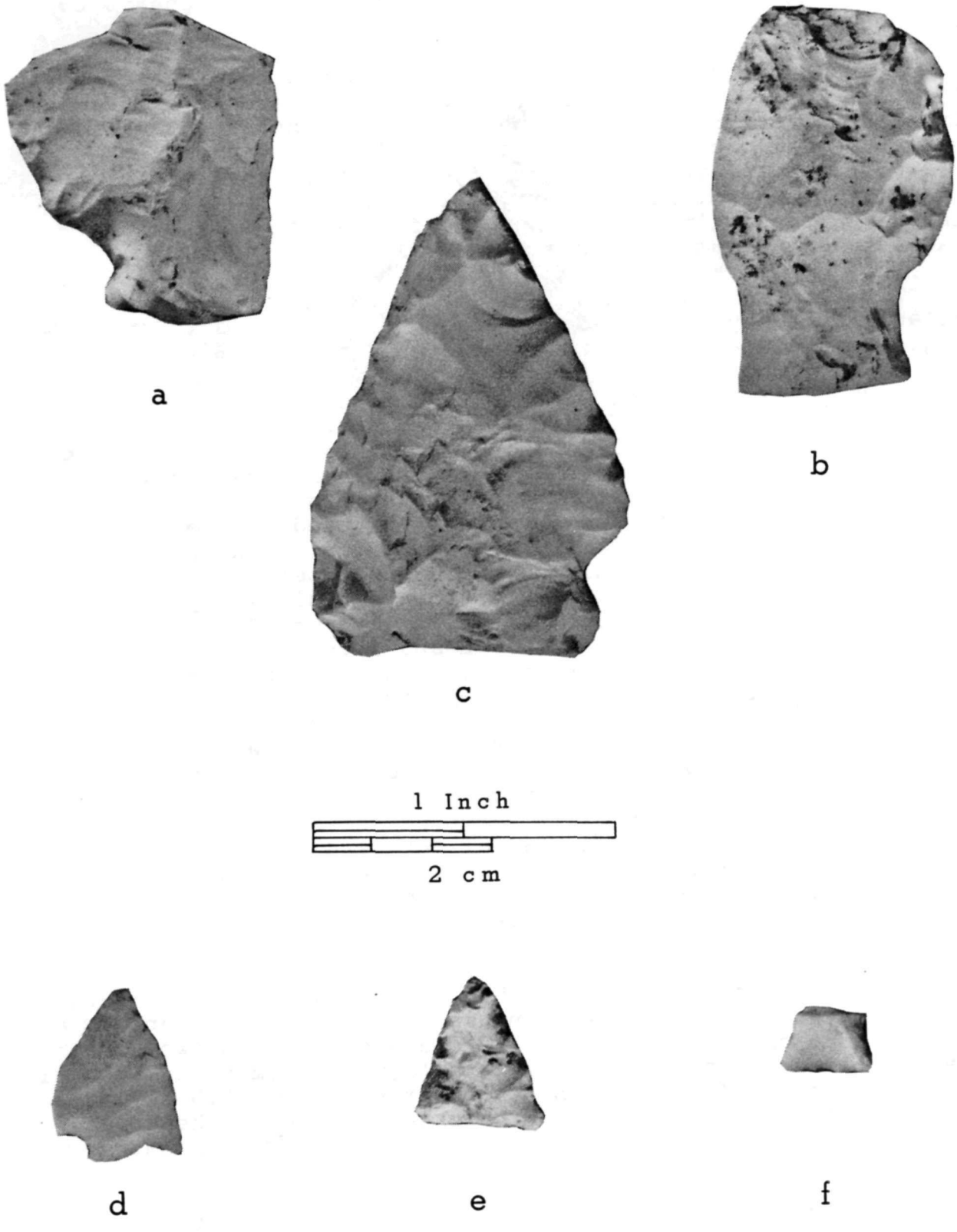


Figure 14. Projectile Points, 23CT104, 1985. A,B: Late Archaic/Early Woodland Points, C: Hafted Knife, and D-F: Late Woodland/Emergent Mississippian Point Fragments.

mm to 13.3 mm with a mean of 22.4 mm. Thicknesses vary between 15.7 mm and 2.6 mm with a mean thickness of 6.4 mm.

Two chert perforators are among the lithic tools recovered from 23CT104. They exhibit rotatory wear along the working tips. They apparently functioned as perforating tools for working with bone, shell, wood, or hides. One perforator measures 31.8 mm x 19.0 mm x 3.3 mm. The other perforator has a utilized edge opposite the tip. This perforator measures 31.9 mm x 24.9 mm x 12.0 mm.

Seventeen retouched flakes and 11 utilized flakes represent "ad hoc" tools from 23CT104. These tools have been utilized for temporary tasks such as cutting or scraping then discarded on the spot. The retouched flakes are modified random flakes which range in length from 41.9 mm to 15.2 mm with a mean length of 28.0 mm. They vary in width from 34.5 mm to 11.2 mm with a mean width of 19.5 mm. The thickness of the retouched flakes varies between 14.8 mm and 2.9 mm with a mean of 6.2 mm. The utilized flakes consist of ten chert flakes and one quartzite flake. Six of the flakes are complete. They range in length from 33.3 mm to 14.9 mm with a mean length of 22.6 mm. The width of the utilized flakes ranges from 20.9 mm to 6.8 mm with a mean of 14.6 mm. Their thicknesses vary between 9.0 mm and 3.2 mm with a mean of 5.5 mm.

Ground Stone Tools

A total of three ground stone tools (Table 7) are represented in the prehistoric artifacts recovered from the Chubb Hollow site. These include a hard sandstone hammerstone, a sandstone pitted cobble, and a sandstone ground cobble. The ground cobble may represent a mano.

A single hammerstone exhibits a pitted surface at one end. The hammerstone measures 86.5 mm x 64.5 mm x 51.4 mm. A flattened cobble represents the single specimen in the pitted cobble category. It may be a nutting stone. Two pitted depressional areas are present on one flattened surface. The cobble measures 145.0 mm x 86.7 mm x 32.0 mm The third cobble is apparently a small hand-held mano which measure 94.8 mm x 56.1 mm x 38.0 mm.

Miscellaneous Materials

Fire-cracked rock (FCR), miscellaneous rock, charcoal, and daub are included in this category of material recovered from 23CT104 during the 1985 field season. Seventeen pieces of FCR

Table 7. Distribution of Ground Stone Tools, 23CT104, 1985.

Provenience	Hammerstone	Pitted Cobble	Ground Cobble
Fea A	1	-	-
XU-1	-	1	-
XU-2	-	-	1
XU-3	-	-	-
XU-4	-	-	-
XU-5	-	-	-
ST #1	-	-	-
ST #2	-	-	-
ST #3	-	-	-
TOTAL	1	1	1

have been recovered from 30-40 cm BS in XU-1. A total of 641 pieces of miscellaneous rock represents natural occurring rock in the soil at 23CT104. Fifty-nine percent (n=378) of the rock is chert, quartzite comprised 34% (n=219) of the sample, and other material, such as sandstone and dolomite, comprise 7% (n=44) of the miscellaneous rock analyzed from the Chubb Hollow site. Charcoal has been identified in the archeological material recovered from Feature A, XU-1, XU-3, XU-4, and XU-5. The charcoal in Feature A and from XU-1 has been identified from the visual inspection of the heavy and light fraction flotation materials. A total of 23 small pieces of apparent daub has been recovered from 30-40 cm BS in XU-1. Two pieces appear to have twig impressions.

Historic Artifacts

A variety of historic/modern materials were collected during the 1985 field season at 23CT104. The majority of these items represent modern camping or picnic activities at the site. Most of the material is from the upper 5 cm on the toe slope while the material from the excavation units on the first bottom of Chubb Creek extnds as deep as 20-30 cm BS.

Glass

Three pieces of bottle glass are from the upperportion of level 1 (0-10 cm BS) of XU-2. Two of the bottle glass fragments are aqua in color and the third fragment is clear.

Metal

A total of 13 specimens are included in the metal category recovered from 23CT104. These include aluminum foil fragments (n=5), an aluminum pop top can tab (n=1), canning jar screw-on-cap fragments (n=3), a crown closure soda pop bottle cap (n=1), washers (n=2), and a miscellaneous lead fragment (n=1). One piece of aluminum foil is from XU-1, and three pieces of foil are from XU-4. The remaining piece of foil is part of a "Kodak" film package wrapper from XU-4. The aluminum pop top tab is from XU-4. The canning jar cap fragments appear to be from a single cap and are from XU-1. The crown cap is from XU-2. A 1/2" split washer is from XU-4. A 5/16" washer is from XU-1. A 1/16" thick piece of curved lead is also from XU-1.

Rubber

A small barbell-shaped tab of black rubber is from XU-4. It measures 16.5 mm in length, 5 mm wide at the belled end and 2.5 mm wide along the shaft, and 2.0 mm thick.

Plastic

A aqua colored two-hole plastic button is among the historic material recovered from XU-1. The remaining plastic items are from XU-4. These include two pieces of clear plastic, one piece of white plastic, a white plastic-coated bread wrapper tie wire, a yellow-coated automotive wire splice crimped over some electrical wire, a red plastic fragment from a possible hair comb with "SUTHERLAND" embossed on one side, and a milky colored two-hole plastic button.

Paper

A single small piece of wax paper is also among the historic material from 23CT104. It is from XU-4.

Pulltite Site (23SH94)

Artifacts, recovered during the 1985 field season at 23SH94, are primarily prehistoric chipped stone tools and lithic debitage. Some historic material has also been collected. This material is primarily camping refuse.

The lithic artifacts from the 1985 archeological investigations are composed of chipped stone and ground stone tools, flakes, proximal flakes, cores, non-diagnostic shatter (NDS), and fire-cracked rock (FCR). Some natural occurring rock is also among the material recovered from the site since field identification was often impaired by soil adhering to the surface of the lithic material. Natural occurring chert, quartzite, sandstone, and dolomite rocks and pebbles have been sorted from the lithic material after laboratory cleaning. These materials comprise the miscellaneous rock category. The historic material represents camping refuse and possibly some farming material which was deposited at the site when the terrace was under cultivation prior to the formation of the Riverways.

Sixteen excavation units were excavated in arbitrary 10 cm levels to varying depths ranging from 20 cm to 50 cm BS. A total of 5.225 cubic meters of soil was excavated from these units. A total of 2,790 prehistoric lithic artifacts was recovered during the 1985 field season at the Pulltite site (23SH94). Table 8 illustrates the volumetric density of these artifacts. The mean prehistoric artifact density for the Pulltite site equals 534 artifacts per cubic meter.

Prehistoric Artifacts

The taxonomy, previously described, demonstrates a generalized sequence of lithic reduction from raw materials into tools and debitage. The taxons defined at the begining of the chapter will be utilized as they apply to the material recovered from the Pulltite site (23SH94).

Raw Source Material

Lithic raw material categories include unmodified cobbles (n=1), tested cobbles (n=2), unmodified cobble fragments (n=1), and cores (n=11). Table 9 illustrates the distribution of the raw materials at 23SH94.

A single unmodified cobble of hard sandstone has been identified among the prehistoric material recovered from 23SH94. The cobble measures 78.8 mm x 57.2 mm x 45.0 mm. Two tested cobbles have also been recovered. The tested chert cobble from XU-8 measures 84.1 mm x 63.0 mm x 44.9 mm, and the hard sandstone tested cobble from XU-13 measures 59.6 mm x 33.5 mm x 22.7 mm. A single sandstone cobble fragment is present in the artifact inventory from 23SH94. It is apparently a truncated cobble without any modification.

The largest category of source material is comprised of cores. A total of six cores and five core fragments is included in the prehistoric lithic assemblage from 23SH94. The cores are irregularly shaped with flakes radomly removed from the main body of the core. The entire group of cores and fragments is composed

Table 8. Density of Prehistoric Lithic Artifacts, 23SH94, 1985.

Provenience	Volume of Excavated Soil (cu m)	Tools	Flakes	NDS	FCR	Total	Density of Lithics/ cu m
XU-1	.4	4	76	98	-	178	445
XU-2	.5	3	44	63	4	114	228
XU-3	.4	2	49	55	-	106	265
XU-4	.3	4	63	78	-	145	483
XU-5	.2	-	3	2	-	5	25
XU-6	.2	-	1	3	-	4	20
XU-7	.2	-	-	-	-	-	-
XU-8	.4	13	144	213	-	370	925
XU-9	.35	2	37	57	-	96	274
XU-10	.375	7	133	227	-	367	979
XU-11	.35	12	113	148	-	273	780
XU-12	.45	9	170	245	-	424	942
XU-13	.3	9	173	287	-	469	1563
XU-14	.3	2	51	28	-	81	270
XU-15	.3	2	56	82	-	140	467
XU-16	.2	-	8	10	-	18	90
TOTAL	5.225	69	1121	1596	4	2790	534

Table 9. Distribution of Raw Materials, 23SH94, 1985.

Provenience	Unmodified Cobble	Tested Cobble	Unmodified Cobble Fragment	Core	Total
XU-1	-	-	-	1	1
XU-2	-	-	-	-	-
XU-3	-	-	-	-	-
XU-4	-	-	-	1	1
XU-5	-	-	-	-	-
XU-6	-	-	-	-	-
XU-7	-	-	-	-	-
XU-8	-	1	-	1	2
XU-9	-	-	-	-	-
XU-10	-	-	1	-	1
XU-11	1	-	-	2	3
XU-12	-	-	-	2	2
XU-13	-	1	-	2	3
XU-14	-	-	-	-	-
XU-15	-	-	-	2	2
XU-16	-	-	-	-	-
TOTAL	1	2	1	11	15

of chert. The core lengths range from 91.9 mm to 28.0 mm with a mean length of 64.2 mm. The width of the cores ranges from 58.2 mm to 27.4 mm with a mean of 38.5 mm. The core thicknesses vary from 51.7 mm to 9.2 mm with a mean thickness of 23.45 mm.

Lithic Debitage

Lithic debitage from 23SH94 consists of 510 flakes, 611 proximal flakes, and 1,590 pieces of non-diagnostic shatter (Table 10). Diagnostic flake elements which indicate deliberate human manufacture consist of a bulb of precussion and a striking platform. Table 11 illustrates flake type and diagnostic flake elements. NDS may also represent human manufacture; however, the diagnostic elements are lacking.

Observation of the cortex on the dorsal surface of the flakes indicates the presence of 15 primary decortication flakes, 81 secondary decortication flakes, and 414 interior flakes. Diagnostic lithic debris include 140 plain platforms, 109 bulb only platforms, 97 facetted platforms, and 41 cortex platforms. A total of 123 flakes represents bifacial thinning flakes. The flakes consist entirely of chert of which 30% (n=151) have apparently heat-treated.

Of the 611 proximal flakes from 23SH94, 13 specimens are primary decortication flakes, 56 specimens are secondary decortication flakes, and 542 specimens are interior flakes. Diagnostic proximal flake debris contain 173 plain platforms, 109 facetted platforms, 102 bulb only platforms, and 29 cortex platforms. A total of 198 proximal flakes represents bifacial thinning flakes. Approximately 26% (n=156) of the proximal flakes have been apparently subjected to heat-treatment. Chert comprises the vast majority of proximal flakes (n=610) while one quartzite proximal flake is present in the 1985 artifact inventory from 23SH94.

The NDS from 23SH94 consists of 1,556 pieces of chert, 22 pieces of quartzite, and 18 pieces of other material including sandstone and dolomite. The NDS ranges in diameter from less than 5 mm to approximately 70 mm. A total of 394 pieces of NDS is less than 10 mm in diameter. Over 58% (n=935) of the NDS is between 10 mm and 20 mm in diameter. A total of 214 pieces of NDS is between 20 mm and 30 mm in diameter. Fifty-one pieces of NDS range in diameter from 30 mm to 40 mm. Nine pieces of NDS from 23SH94 are between 40 mm and 50 mm in diameter. The remaining two pieces are 50 mm to 55 mm and 65 mm to 70 mm in diameter, respectively.

Table 10. Distribution of Lithic Debitage, 23SH94, 1985.

Provenience	Flake	Proximal Flake	Heat Treated	NDS
XU-1	33	41	18	98
XU-2	18	26	10	63
XU-3	17	32	14	55
XU-4	39	24	15	78
XU-5	2	1	-	2
XU-6	-	1	-	3
XU-7	-	-	-	-
XU-8	70	74	39	213
XU-9	28	9	11	57
XU-10	63	70	31	227
XU-11	49	64	35	148
XU-12	83	87	47	245
XU-13	67	106	56	287
XU-14	20	31	21	28
XU-15	17	39	9	82
XU-16	2	6	-	10
TOTAL	510	611	307	1596
PECENTAGE*	45%	55%	27%	

* Percentage applies to the flake and proximal flake inventory only.

Table 11. Distribution of Diagnostic Flake Debris, 23SH94, 1985.

Provenience	Flake Type			Type of Platform				Bifacial
	Pri.	Sec.	Int.	Pla.	Bul.	Fac.	Cor.	Thin. Fk.
XU-1	1	14	61	22	14	15	4	21
XU-2	-	8	36	13	13	9	2	7
XU-3	1	6	42	19	5	9	3	13
XU-4	2	7	54	11	14	20	2	16
XU-5	-	-	3	-	-	1	-	2
XU-6	-	-	1	1	-	-	-	-
XU-7	-	-	-	-	-	-	-	-
XU-8	5	13	126	41	28	27	10	39
XU-9	1	6	30	9	6	10	3	9
XU-10	3	10	120	42	30	24	7	31
XU-11	2	13	98	28	17	18	8	42
XU-12	7	22	141	50	35	24	12	49
XU-13	4	23	146	41	31	30	17	54
XU-14	-	7	44	18	7	7	1	18
XU-15	2	8	46	16	11	9	1	19
XU-16	-	-	8	2	-	3	-	3
TOTAL	28	137	956	313	211	206	70	321
PERCENTAGE	3%	12%	85%	28%	19%	18%	6%	29%

Table 12. Distribution of Chipped Stone Tools, 23SH94, 1985.

Proven Taxon	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Surf
Blank	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
Pref	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-
Biface	-	-	1	1	-	-	-	2	2	2	-	4	2	-	-	-	1
Bi Tip	1	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-
Pp/Haf	-	2	-	-	-	-	-	1	-	-	3	1	-	-	-	-	-
Ot Ret	2	-	1	2	-	-	-	1	-	-	1	-	-	2	-	-	-
Spoke	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Graver	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-
Pre/Dr	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-
Ret Fk	-	-	-	-	-	-	-	1	1	3	-	-	-	-	-	-	-
Ut Fk	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
TOTAL	3	3	2	3	-	-	-	8	4	6	5	7	6	2	-	-	2

Grand Total = 51 Chipped Stone Tools

Chipped Stone Tools

A total of 51 chipped stone tools is present in the artifact inventory from 23SH94 (Table 12). These tools consist of both bifacial (n=31) and unifacial (n=20) tools. Definitions for the various types of tools are presented at the begining of the chapter.

A total of three tool specimens from 23SH94 represents bifacial blanks (Figure 15). Blanks are percussion flaked, crudely shaped bifaces which have sinuous edges, deep flake scars, and remnant platforms. This type of tool is utilized for the manufacture of several different tool types. It represents the initial stage in the bifacial reduction sequence. All three blanks from 23SH94 are composed of chert of which only one specimen appears to have been heat-treated. Each blank apparently snapped before a finished tool was produced.

The next stage in the bifacial reduction sequence is represented by two aborted preforms (Figure 15). Preforms represent refined blanks which have less cortex and mass. Marginal edges are generally irregular; however, they are less sinuous than bifacial blanks. One complete preform measures 58.9 mm x 45.6 mm x 14.7 mm. The other preform appears to have broken during its manufacture.

A total of 15 bifaces and biface fragments is present in the chipped stone inventory from 23SH94 (Figure 15). Two bifaces

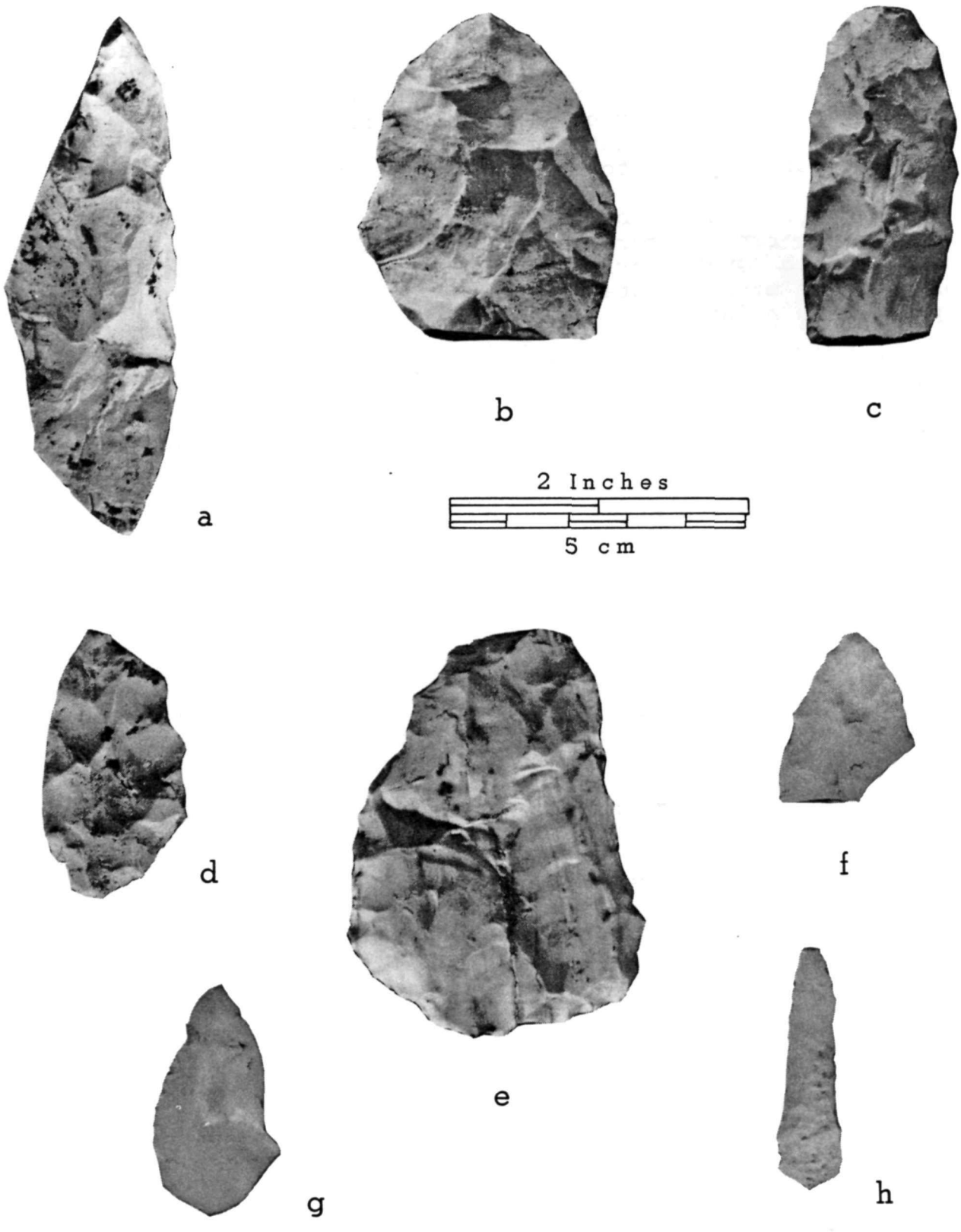


Figure 15. Selected Artifacts, 23SH94, 1985. A,B:Blanks, C:Preform, D,E:Bifaces, F:Bifacial Tip, G:Steeply Retouched Flake, and H:Drill.

are complete while the remaining 13 specimens consist of biface fragments. The bifaces exhibit pressure flaking and are thinner, more finely flaked than preforms. One complete chert biface measures 69.9 mm x 50.0 mm x 13.3 mm, and the other chert biface measures 46.7 mm x 25.5 mm x 8.6 mm. These two speciments apparently represent knives. One biface fragment has been resharpened along the fractured edge. Only one specimen in the biface category appears to have been heat treated.

In addition to the bifaces and biface fragments, a total of four bifacial tips (Figure 15) are among the chipped stone tools recovered from 23SH94 during 1985. These tips apparently represent the broken distal end of a biface, hafted cutting tool, or projectile point.

Seven projectile points and/or hafted cutting tools (Figure 16) are among the prehistoric artifacts recovered from 23SH94. Six of the seven specimens represent basal fragments. The remaining point appears to have broken and then been resharpened. It measures 31.3 mm x 35.0 mm x 5.8 mm. Of the six basal fragments, two are expanding stemmed point bases (one exhibits a convex base), two are stemmed point bases (one exhibits basal thinning), and two are corner-notched point bases.

Nine chert specimens from 23SH94 represent steeply retouched unifaces (Figure 15). The majority of these have at least one steeply retouched marginal edge. These tools appear to represent sidescrapers or other irregular unifacial scraping tools. The unifaces range in length from 51.9 mm to 20.7 mm with a mean length of 35.07 mm. The width of these specimens ranges from 45.0 mm to 13.9 mm with a mean of 21.6 mm. The thickness of these unifacial tools varies from 20.0 mm to 3.8 mm with a mean thickness of 8.7 mm. Two of the sidescrapers also have a utilized edge away from the steeply retouched margin of the flake.

One chert spokeshave represents a composite tool with both a concave cutting/shaving edge and a scraper edge away from the workin concavity of the spokeshave. The tool is from the general surface at the Pulltite site and measures 55.0 mm x 46.2 mm x 10.0 mm.

Two unifacial chert flake tools represent gravers. One graver measures 33.1 mm x 28.6 mm x 9.4 mm and appears to be a composite tool with a steeply retouched edge. The other chert graver measures 26.8 mm x 9.6 mm x 5.5 mm. These tools represent scoring or engraving tools for working bone, shell, or wood.

One chert perforator and one chert drill bit fragment (Figure 15) are among the chipped stone tools from the 1985 season at 23SH94. These tools apparently functioned as drilling or perforating tools for wood, bone, shell, or hide. Rotatory wear is exhibited on the tip of both specimens. The perforator measures 58.8 mm x 27.4 mm x 16.3 mm. The drill is a diamond-shaped bit fragment which measures 43.2 mm x 11.7 mm x 7.8 mm.

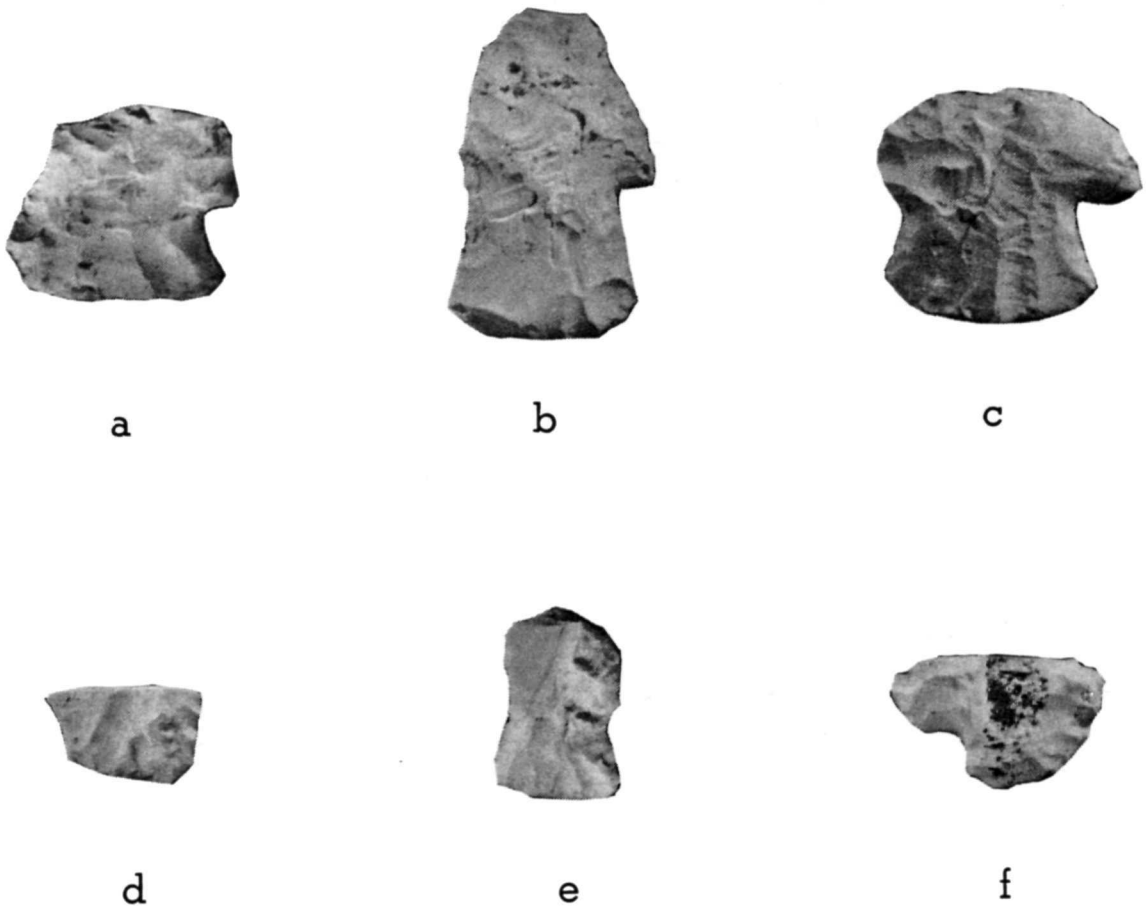


Figure 16. Late Archaic Projectile Points and Point Fragments, 23SH94, 1985.

Five retouched flakes of chert and a single utilized chert flake represent "ad hoc" tools which were utilized for a temporary task such as scraping and/or cutting and then apparently discarded at the place where they were used. The retouched flakes are modified random flakes. Their lengths range between 28.9 mm and 13.3 mm with a mean of 22.04 mm. Their widths range between 19.5 mm and 11.2 mm with a mean of 15.32 mm. The thickness of the retouched flakes varies between 5.7 mm and 3.6 mm with a mean thickness of 4.5 mm. The utilized flake measures 20.7 mm x 19.0 mm x 7.9 mm and has been apparently subjected to heat after it was discarded.

Ground Stone Tools

A total of five ground stone tools (Table 13) are represented in the prehistoric artifact inventory from the Pulltite site. These include one sandstone nutting stone, three sandstone milling stones, and one mano with a pitted end. Two of the milling stones are complete specimens while the third one is a fragmentary piece of a milling stone.

Table 13. Distribution of Ground Stone Tools, 23SH94, 1985.

Provenience	Pitted Cobbles	Ground Cobbles	
	Nutting Stone	Milling Stone	Mano
XU-1	-	-	-
XU-2	-	-	-
XU-3	-	-	-
XU-4	-	-	-
XU-5	-	-	-
XU-6	-	-	-
XU-7	-	-	-
XU-8	1	1	1
XU-9	-	-	-
XU-10	-	1	-
XU-11	-	1	-
XU-12	-	-	-
XU-13	-	-	-
XU-14	-	-	-
XU-15	-	-	-
XU-16	-	-	-
TOTAL	1	3	1

The nutting stone is a pitted cobble of sandstone with a few pitted circular depressions on one flat surface. The cobble measures 90.2 mm x 83.6 mm x 59.3 mm. The three milling stones, including the fragment, each have one smoothly ground surface. The two complete milling stones measure 150.0 mm x 139.0 mm x 56.0 mm and 123.4 mm x 74.5 mm x 36.2 mm, respectively. The mano is a sandstone cobble with a convex ground surface. It measures 102.5 mm x 85.0 mm x 60.8 mm. One end of the mano has a pitted surface. This specimen may have served a dual function as a hammerstone as well as a mano.

Miscellaneous Materials

Fire-cracked rock, miscellaneous rock, and charcoal are included under this heading for material recovered from 23SH94 during the 1985 field season. Four pieces of FCR have been recovered from a single excavation unit (XU-2). A total of 1,303 pieces of miscellaneous naturally occurring rock is among the archeological material recovered at 23SH94. These pieces of rock represent decomposing fragments of native rock in the soil matrix. Eighty-five percent (n=1110) of the miscellaneous rock is chert, another five percent (n=59) is composed of quartzite, and the remaining ten percent (n=134) is comprised of other rock, namely sandstone, dolomite, and/or limestone. Charcoal has been recovered from three excavation units at 23SH94. The sample is relatively small, and the majority of the charcoal is from the upper 20 cm. XU-2, XU-12, and XU-15 each contain some charcoal. The small amount of charcoal and the lack of any features may indicate the charcoal represents historic use of the site.

Historic Artifacts

A variety of historic materials were collected during the 1985 excavations at 23SH94. The majority of the artifacts represent modern camping activities at the campgrounds. Some of the material, i.e. a horseshoe nail, may belong to the period when the terrace was privately cultivated prior to the formation of the park. The majority of the material was found in the upper 20 cm with most of the historic material from the upper 5 cm. Although modern cultivation may be responsible for mixing of some of the historic material to a greater depth than expected, the major displacement of material is the result of pedoturbation, either from wetting and drying of the soil or from faunal activity of burrowing animals and earthworms.

Ceramics

A single stoneware body sherd is among the historic items recovered during the 1985 field season at the Pulltite site. It is from XU-13 at a depth of 0-10 cm BS. The sherd is less than 25 cm in diameter.

Glass

Nine pieces of clear bottle glass, probably from the same vessel, are part of the historic artifact inventory. The glass fragments are from XU-11 at a depth of 0-10 cm BS.

Metal

A total of 14 specimens of metal are among the historic materials recovered from 23SH94. Categories include aluminum foil fragments (n=2), aluminum pop top can tabs (n=4), crown closure pop bottle cap (n=1), nails (n=2), spent cartridge shells (n=2), a toy wagon (n=1), and miscellaneous metal objects (n=2). The aluminum foil fragments are both from XU-12. One aluminum pop top tab is from XU-12 while the remaining three tabs are from XU-15. Two of the three tabs from XU-15 also have crimped rings. The crown closure bottle cap from a soda pop bottle is from XU-14. It also has a plastic interior liner. A wire nail is from XU-12 while a horseshoe is from XU-8. A 12-gauge "WESTERN NEW CHIEF" shotgun shell base is from XU-10 and a "REM-UMC .32 WCF" spent shell casing is from XU-8. A toy wagon, "ARCADE tractor trailer No.289" is from XU-12. A 1/2" paper staple and a flat piece of iron is from XU-12.

Plastic

Plastic items, from the Pulltite site, include plastic tableware fragments (n=7) and a navy blue four-hole plastic button (n=1). The entire sample of plastic material is from XU-15.

CONCLUSIONS

The FLHP project was conducted in response to plans to improve the roads in five locations within the Ozark National Scenic Riverways. These locations include Chubb Hollow, Gooseneck, Powder Mill, Pulltite, and Round Spring. This study has focused on the evaluation of these locations which are to be affected by proposed FLHP construction. The Chubb Hollow site (23CT104), Gooseneck site (23CT54), and Pulltite site (23SH94) have been the main focus of the 1985 archeological investigations in the Riverways. The Powder Mill campgrounds, Pulltite campgrounds, and Round Spring recreation area have also been surveyed during the 1985 field season.

The main emphasis of the present presentation has been on the evaluation of the Chubb Hollow site and the Pulltite site. The evaluation of the 1985 field season at the Gooseneck site will be completed in conjunction with the complete analysis of the archeological materials recovered during the various archeological investigations at the Gooseneck site (23CT54). A new site has also been recorded during the 1985 FLHP field season. Site 23SH254 is located at the edge of the terrace overlooking the main campground at the Pulltite campgrounds. A shovel test survey from Group Campsite 3 along the campground road to the edge of the terrace has yielded the location of 23SH254; however, time did not permit the determination of the site boundaries and the depth of the cultural deposit. The prehistoric cultural affiliation has not been determined due to the lack of diagnostic artifacts.

Chubb Hollow Site (23CT104)

The Chubb Hollow site lies on both sides of Chubb Creek at its confluence with the Current River. The major portion of the site is restricted to the toe slope on either side of the creek. The present investigations are confined to the left site of Chubb Creek. The first bottom along the creek will be affected by planned FLHP road improvement and parking lot construction. Testing in this vicinity indicated the presence of an extremely small amount of cultural material; however, planned construction will cause little disturbance to the major portion of the site located on the toe slope adjacent to the turn-around loop road.

The 1985 excavations produced a variety of lithic materials. Tools included chipped stone bifacial and unifacial tools and ground stone tools. Large quantities of cores and lithic debitage were also recovered. A large shallow basin-shaped feature (Feature A) was identified in XU-1 and XU-3. It may have functioned as a hearth or roasting pit. Some daub was also

recovered from XU-1 which, combined with Feature A, may indicate the possible existence of a structure.

The high frequency of debitage indicates that tool modification and manufacture occurred at the site. Approximately 19% of the flake debitage represented decortication flakes which indicates at least a portion of the waste material is primary refuse. Besides the flakes and NDS, eight cores and a hammerstone were among the prehistoric artifacts recovered from 23CT104.

Tools from 23CT104 indicate a variety of activities related to food processing and procurement in addition to the tool manufacturing activities at the site. A bifacial reduction sequence is represented by crude blanks, aborted preforms, and finished tools. Projectile points represent food procurement tools while bifaces and biface fragments indicate cutting, sawing, and cleaving activities related to food procurement and processing activities. Unifacial tools represent a number of processing activities including scraping, cutting, shaving, scoring, or perforating. A pitted cobble and mano also indicate food processing activities.

Projectile point typology was utilized to determine the site's cultural affiliations since no ceramics were recovered. Projectile point forms indicate the site is multicomponent with at least a Late Archaic/Early Woodland occupation and a Late Woodland/Emergent Mississippian occupation. The modern historic period is also represented. The lack of ceramics would indicate the major occupation of the site is within the Late Archaic/Early Woodland temporal setting. The Late Woodland/Emergent Mississippian occupation is represented by three small projectile point fragments. These are from the upper 0-10 cm of toe slope portion of the site. The 1985 testing at 23CT104 indicates that the cultural deposit is quite deep (70-100 cm) on the toe slope. The site has been initially occupied during the Late Archaic and the intermittently until the Emergent Mississippian period. Modern material indicates utilization of the area for picnics and/or camping. The site is intact and relatively undisturbed. The site contains a relatively high density of prehistoric artifacts (529 artifacts per cubic meter). Apparently, the site served as a temporary camp and resource extraction station.

Pulltite Site (23SH94)

The Pulltite site is located at the campground turn-around loop in the Group Campsite #3 at the Pulltite campgrounds. Testing conducted in 1985 was restricted to areas of the site subject to proposed FLHP road modification and parking lot construction. The 1985 archeological excavations at the site confirms the results of the 1978 testing conducted at the site (Lynott 1981a,1982a). The site is relatively intact except for

the immediate area surrounding the existing campground and turn-around loop road. The major portion of the site lies in the loop island and to the west of the intersection of the campground and loop road. Testing during 1985 indicates that the site boundaries extend farther south towards the spring branch than previously indicated. The depth of the cultural deposit also appears to extend deeper than previously recorded. Archeological material appears to extend to a depth of 30-45 cm BS. Overall, the prehistoric artifacts are relatively dense in the main portion of the site. The mean site density equals 534 prehistoric artifacts per cubic meter. The are east of the service road contains considerably less material than the rest of the site.

A variety of chipped stone tools and lithic debitage has been recovered along with some ground stone tools. Functional categories represented indicate that food procurement and processing occurred at the site along with tool manufacturing. No features have been identified during the 1985 field season at 23SH94 although a limited quantity of FCR was recovered. Due to soil conditions at the site (Lynott 1982a), faunal and floral preservation is extremely poor. No faunal and floral ecofacts have been recovered during 1985. Evaluation of the cultural-historical affiliation of the site is based upon diagnostic lithic artifacts, i.e. projectile point forms.

Seven points/point fragments were recovered from 23SH94 during 1985. This data combined with the 1978 investigations (Lynott 1982a) indicates the site has primarily been occupied during the Late Archaic period. Modern historic materials represent camping activities at the Pulltite campgrounds. The prehistoric artifacts suggest the site served as a temporary, intermittent camp site and resource extraction station. Tools represent food processing and procurement activities. Lithic manufacturing is also represented by the quantity of debitage, cores, bifacial blanks, and aborted preforms.

Significance

As Lynott (1980b) has demonstrated, the determination of significance is a dynamic process subject to changes in the resource base and shifts in research interests. The finite nature of the archeological data base and the irreversible nature of its destruction are important factors when considering significance. With uncontrolled development in the private sector, the archeological data base is rapidly diminishing. Natural processes such as erosion are also destroying sites. The National Park Service system represents as excellent opportunity to preserve a wide range of cultural resources that would not be preserved elsewhere (Lynott 1982a). As sites continue to be destroyed across the nation, and as archeological research interests and techniques evolve, the National Parks may become isolated regions where the archeological record remains relatively intact.

The Pulltite site (23SH94) has been previously deemed significant (Lynott 1982a). The intact, relatively undisturbed nature of the single component Late Archaic site contributes to its significance in the upper Current drainage. The site represents a Late Archaic extractive campsite, one of the few known in the region. The site has been drafted for nomination to the National Register of Historic Places.

The Chubb Hollow site (23CT104) is considered to be potentially significant. The context of the cultural material at the multicomponent site is apparently intact and relatively undisturbed. The site directly reflects the cultural and natural processes which formed the site. The site is likely to yield significant information concerning the interpretation of the Late Archaic/Early Woodland and Late Woodland/Emergent Mississippian periods in the Riverways. Continued research at the site is also likely to clarify various activities of the human occupants, the temporal duration of the site, the extent of the various occupations, and the site's position within the prehistoric settlement patterns in the upper Current region. The Chubb Hollow site represents a significant intact, multicomponent archeological site which should be preserved as a part of our national cultural heritage.

Final Reflections

The 1985 archeological investigations at 23CT104 and 23SH94 have produced additional data concerning the prehistory of the Ozark National Scenic Riverways. This research will contribute to the cumulative data base of regional archeology which will also ultimately increase our understanding of past human adaptive behaviors. This project has potentially added information to the understanding of the past.

The Pulltite site, 23SH94, has been deemed potentially eligible for the National Register (Lynott 1982a:96). The site is presently under consideration for possible nomination to the National Register by the Midwest Archeological Center. It is apparent the site represents a significant intact, single component Late Archaic resource extraction camp. It represents one of the few sites of this type in the region.

The Chubb Hollow site, 23CT104, represents a potentially eligible site for the National Register. The site is a significant intact, multicomponent site with late Archaic to Emergent Mississippian occupations. The site represents a resource extraction camp which has been intermittently occupied for apparent short periods over a long duration of time.

Although the 1985 Midwest Archeological Center's field season was short in duration (three weeks), the data from the archeological investigations has added to our understanding of

small resource extraction stations within the Riverways. These sites are important to the understanding of prehistoric lifeways and adaptations in the eastern Ozarks.



Figure 17. Site 23CT104, the Toe Slope, During the 1985 Field Investigations.



Figure 18. Site 23CT104, the First Bottom, During the 1985 Field Investigations.



Figure 19. Site 23SH205, Shovel Testing Proposed Parking Area During 1985 Field Investigations.



Figure 20. Shovel Testing Proposed Road Modification Near Site 23SH205 During 1985 Field Season.



Figure 21. Site 23SH94, Searching for the 1978 Datum in Sumac Thicket.



Figure 22. Site 23SH94, Setting Up XU-12 along Edge of Loop Island.

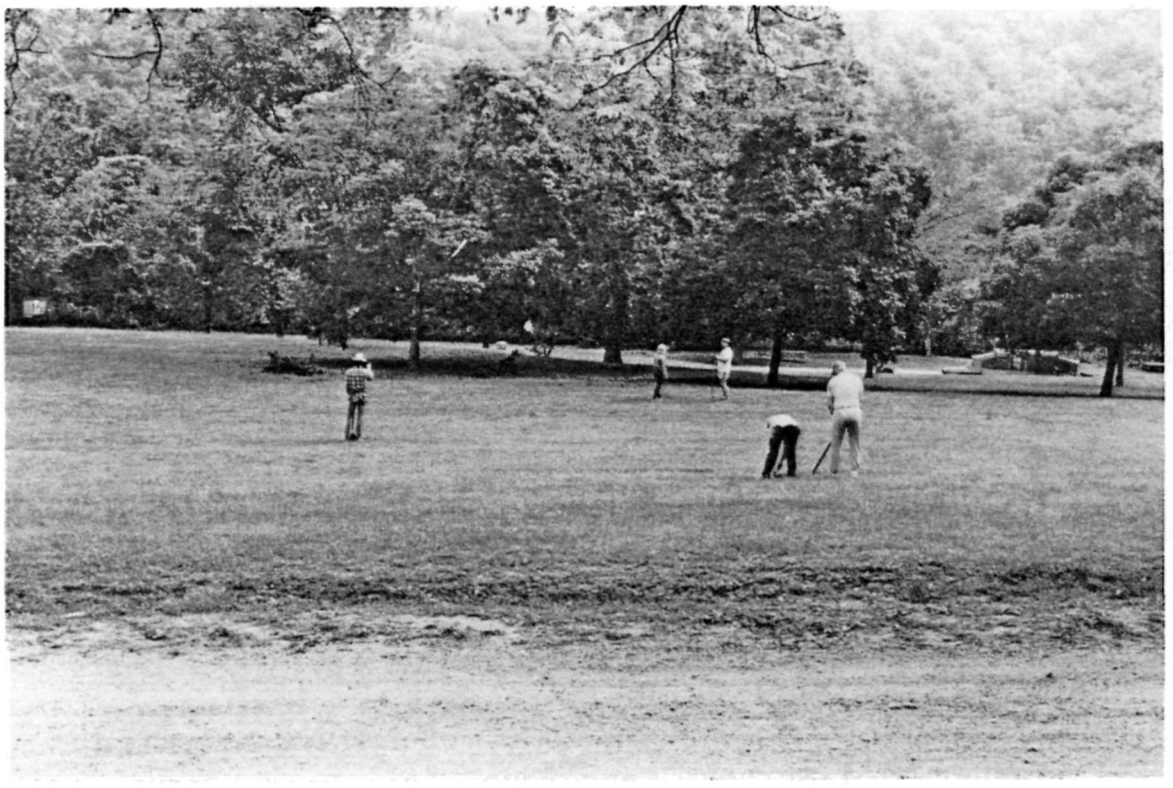


Figure 23. Round Spring Survey along Proposed Road Construction.

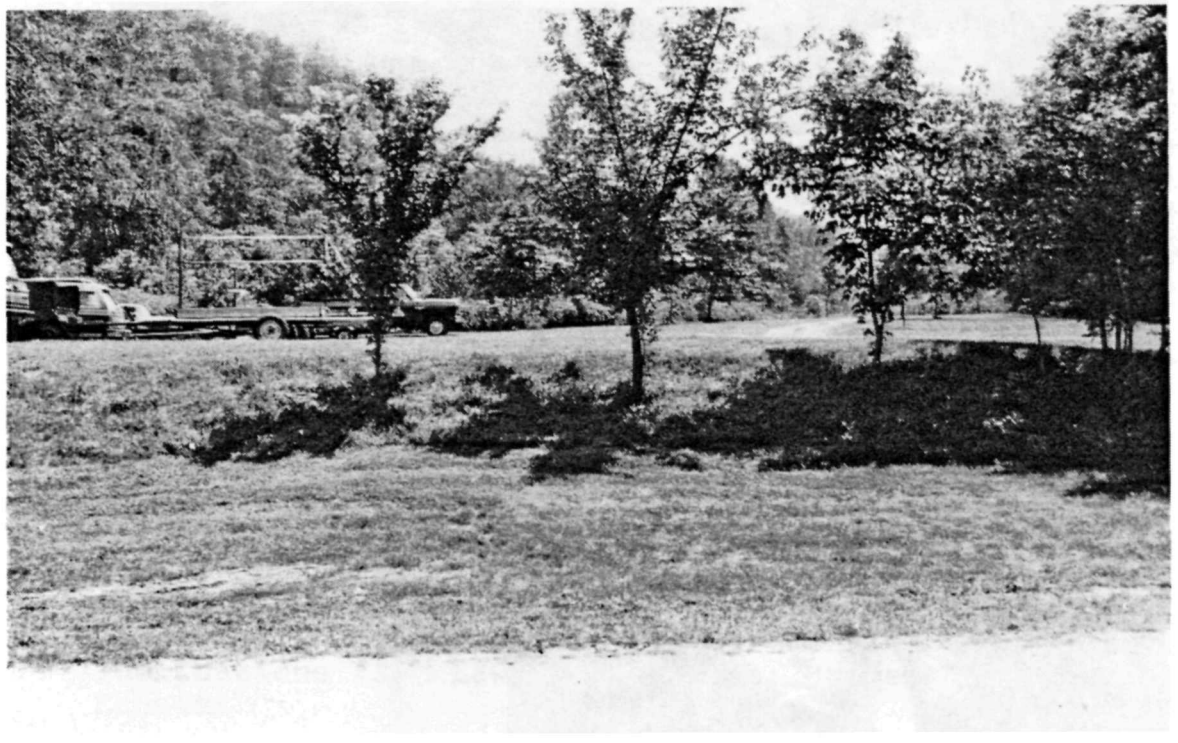


Figure 24. Powder Mill Survey at the Location of the Proposed Road Construction to Blue Spring Parking Lot, 1985 Field Season.



Figure 25. Powder Mill Survey, Campground Loop Road, During 1985 Field Season.



Figure 26. 1985 Midwest Archeological Center's Crew for the Ozarks. Front Row: Cathie Masters, Chris Riddle, Randy Farmer. Back Row: Bill Isenberger, Barry Brenton, Steven De Vore.

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