PENNSYLVANIA ARCHAEOLOGICAL DATA SYNTHESIS: The Beaver Creek Watershed

(Watershed B of the Ohio River Subbasin 20)

S.R. 0224, Section L02
State Street Bridge Replacement Project
Mahoning Township, Lawrence County, Pennsylvania

ER #1999-6092-073

Prepared for:

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July 2011

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ACKNOWLEDGEMENTS

This project resulted from the hard work and coordination provided by Ken Siebert (Project Manager) and Joe Verbka (Qualified Professional Archaeologist) of Pennsylvania Department of Transportation (PennDOT) Engineering District 11-0, Kira Presler of the Pennsylvania Historical and Museum Commission, Bureau for Historic Preservation (PHMC-BHP), and Ken Stockert (Project Manager) of A.D. Marble & Company.

Ken Stockert was the Project Manager and Richard White was the Archaeological Principal Investigator and primary author of this report, with sections contributed by Brooke Blades. Frank Dunsmore conducted background research at the State Museum in Harrisburg and produced the majority of the graphics for the report. Bryan Butina conducted research at the Carnegie Museum in Pittsburgh. Special thanks are extended to Judson Kratzer of A.D. Marble & Company for his technical review and overall guidance throughout this undertaking.

The author of this report would like to express his gratitude to all the hard-working individuals that make up the field crews, technical staff, and researchers who make studies like this possible by going out there and doing the work.

I. Introduction and Project Summary

CHAPTER I
INTRODUCTION AND PROJECT SUMMARY

A. Introduction

The purpose of this document is to present a precontact archaeological data synthesis for the Beaver Creek Watershed (Watershed B) of the Ohio River Subbasin 20 (Figures 1 and 2). This document was prepared by A.D. Marble & Company for the Pennsylvania Department of Transportation (PennDOT) Engineering District 11-0 as an alternative to conducting mitigation of the Ashton Cemetery Site (36LR0165) in Mahoning Township, Lawrence County, Pennsylvania. A second purpose of this document is to provide contextual information and research questions for reviewers of archaeological projects at PennDOT and the Pennsylvania Historical Museum Commission, Bureau for Historic Preservation (PHMC-BHP) for assessing the significance of identified sites. It is A.D. Marble & Company's sincere hope that this document can be used to guide future archaeological research within the watershed.

This precontact data synthesis was undertaken under a Memorandum of Agreement (MOA) between PennDOT Engineering District 11-0 and PHMC for project ER #1999-6092-073. The synthesis was derived primarily from records on archaeological sites that have been maintained by the PHMC within the Pennsylvania Archaeological Site Survey (PASS) files in Harrisburg, Pennsylvania. Previous archaeological studies that focused on western Pennsylvania were used to enhance this study as well.

B. Project Setting

The Ohio River Subbasin 20 encompasses 154,185 square miles, of which 15,164 square miles are located within Pennsylvania. The dominant features in Watershed B are the lower portions of the Mahoning and Shenango rivers and the upper portion of the Beaver River. Watershed B (of the Ohio River Subbasin) is located within portions of the Glaciated Pittsburgh Plateau and Pittsburgh Low Plateau Sections of the Appalachian Plateaus Physiographic Province of Pennsylvania, and it encompasses the southwestern quarter of Lawrence County and the northwestern quarter of Beaver County (Figure 1).

The Beaver River is a tributary of the Ohio River in Western Pennsylvania with a length of approximately 21 miles. It flows through a historically important coal-producing region north of Pittsburgh. The Mahoning and Shenango rivers come together in Lawrence County, approximately 3 miles southwest of the town of New Castle, to form the Beaver River (Photograph 1). It flows gently south past the towns of West Pittsburg and Homewood and runs roughly parallel to the Ohio border. The river is joined by Connoquenessing Creek just west of Ellwood City and flows past the towns of Beaver Falls and New Brighton before it joins the Ohio River at the downstream end of a sharp bend in the Ohio River, 21 miles northwest of Pittsburgh.

As previously mentioned, the Beaver River is formed southwest of the town of New Castle at the confluence of the Mahoning and Shenango rivers. The Mahoning River begins near Winona in Columbiana County, Ohio, a few miles southeast of Alliance, and flows through five counties of

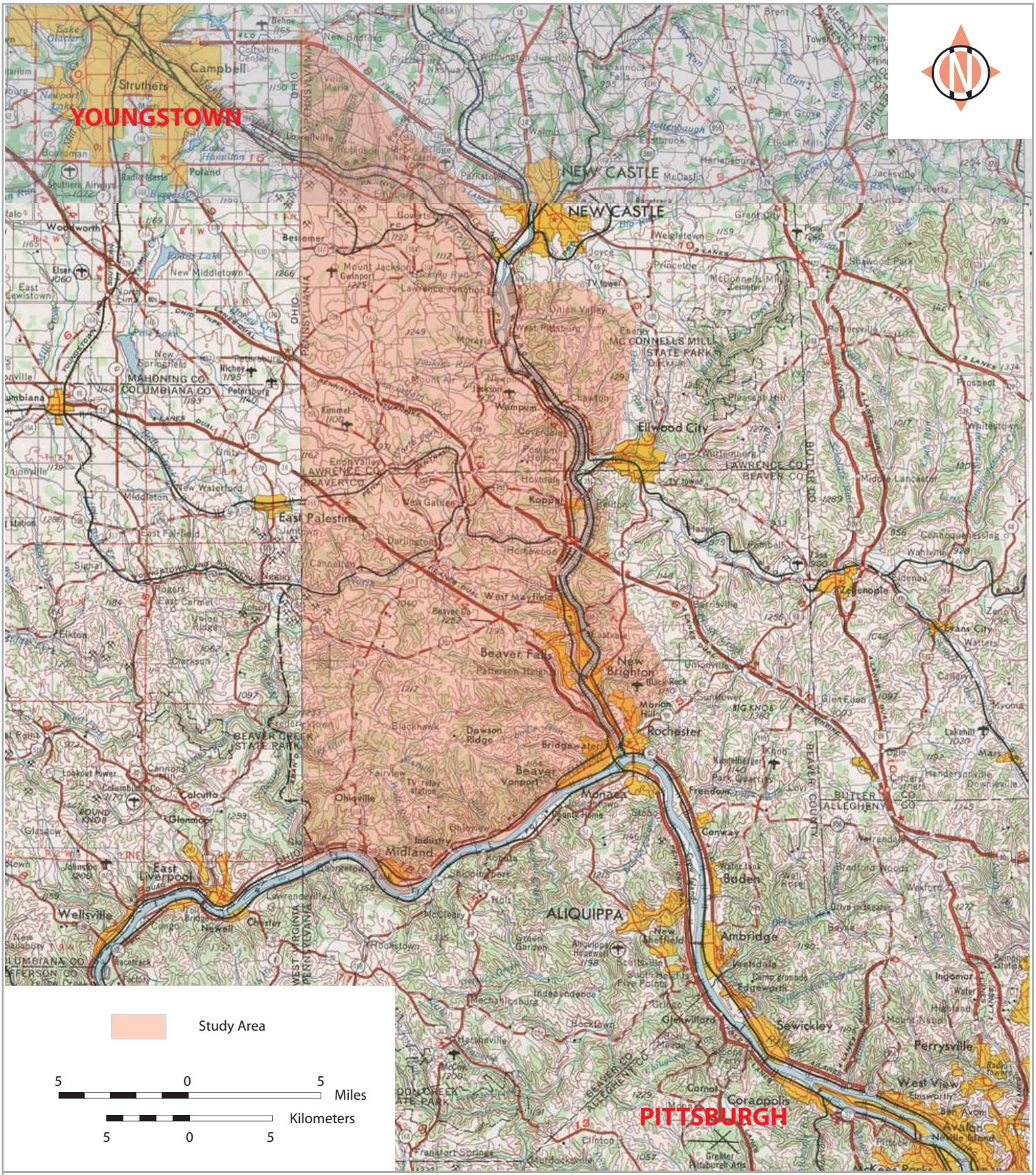


Figure 1
Study Area Location

Beaver Creek Watershed (Watershed B of the Ohio River Subbasin 20)
Beaver and Lawrence Counties, Pennsylvania

Map Document X: Graphics\Projects\P1018\Mapping\archaeology\Topo Locaton.ai

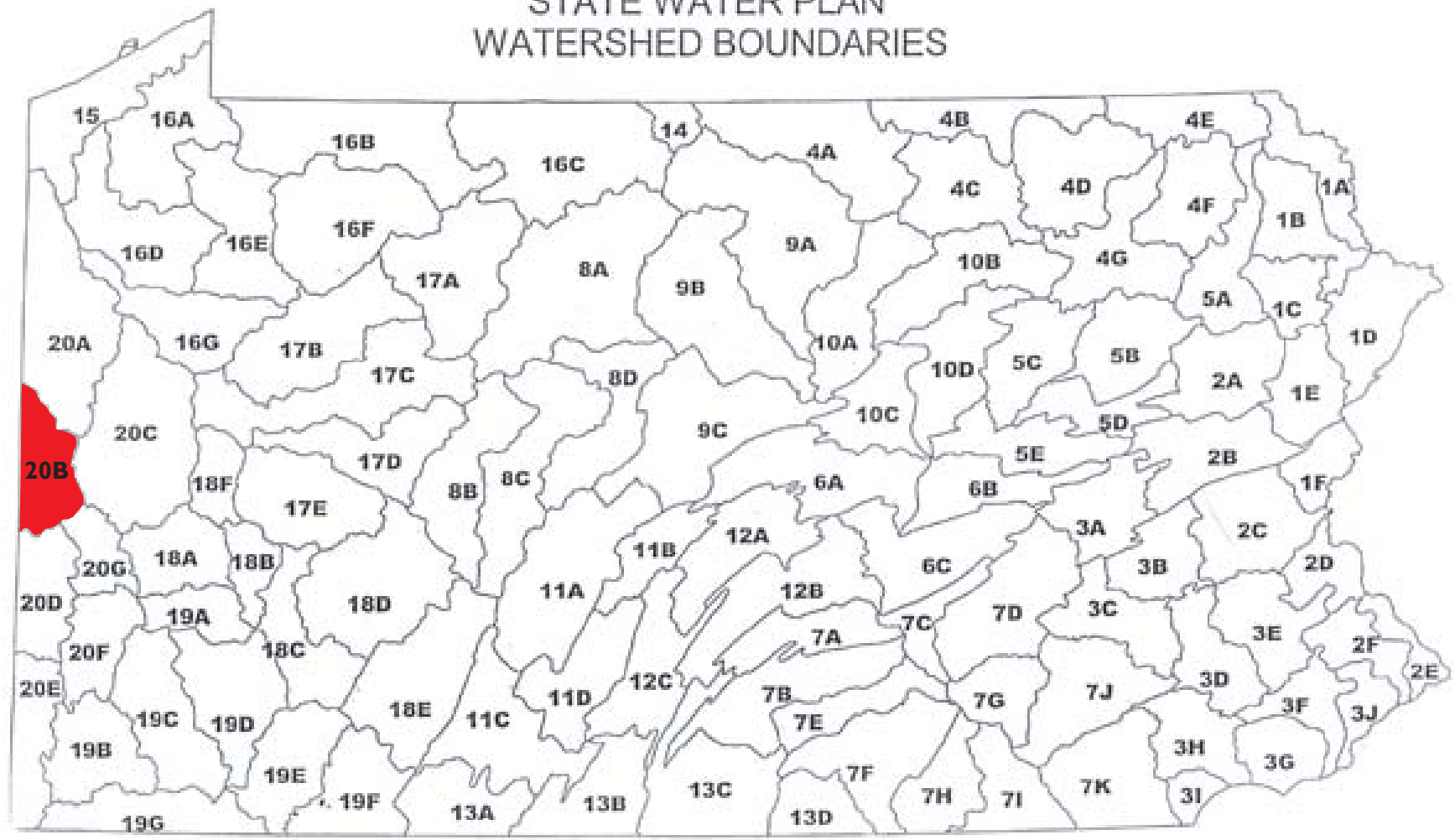


Figure 2
Watershed Boundaries Map
Beaver Creek Watershed (Watershed B of the Ohio River Subbasin 20)
Beaver and Lawrence Counties, Pennsylvania

Map Document X:\Graphics\Projects\P-1018A Watershed Map.ai

Photograph 1: The confluence of the Mahoning River and the Shenango River where they form the Beaver River. Photograph was taken from the west shore, facing east (May 2011).

eastern Ohio (Columbiana, Stark, Portage, Mahoning, and Trumbull) and one county in western Pennsylvania (Lawrence) before joining the Shenango River. The Shenango River begins in Crawford County, Pennsylvania, and flows approximately 92 miles before it meets with the confluence of the Mahoning River to form the Beaver River.

The climate in Watershed B is characterized by cold winters and moderately warm summers, with an average temperature of 70 degrees. Precipitation is evenly distributed throughout the year, with higher elevations witnessing the heaviest snowfalls and west-facing slopes receiving the heaviest rainfall. The average growing season lasts approximately 119 days and begins in mid-May (Smith 1982).

C. Prehistory of Watershed B

Following the example set by MacDonald in the synthesis of Watershed D of Subbasin 20 (2003) the cultural historical chronology used in this report will present the traditional Pennsylvania chronology as established by Raber in *A Comprehensive State Plan for the Conservation of Archaeological Resources* (1985). In this sequence, the Upper Ohio Valley "Late Prehistoric Period" is subsumed in the larger Late Woodland period. The purpose of this decision is to better maintain consistency with the chronology used in the PASS files.

Watershed B of the Ohio River Subbasin 20 has a rich prehistory, which is partly due to the watershed's abundant natural resources. Proximity to a number of high quality cryptocrystalline chert sources made this part of the country a particularly attractive location for aboriginal occupation. Native American occupation of the watershed can be traced back to at least the last 12,000 years. A total of 187 precontact sites with components that span over seven different time periods have been recorded within the glaciated and unglaciated portions of the watershed. Of the 187 precontact sites, 92 can be attributed to a specific temporally identified cultural period. Table 1 presents the number of sites attributed to each time period. The remaining sites not listed in the table are those sites present within the PASS files that had no temporal affiliation information, as well as sites that were listed only as belonging to a broad interpretation of a specific cultural period. For example, 20 sites are listed only as Archaic.

Table 1. Archaeological Sites by Time Period in Watershed B, Subbasin 20.

Period	Temporal Period (B.P.*)	Site Component in Watershed
Paleoindian	16,000-10,000	7
Early Archaic	10,000-8000	13
Middle Archaic	8000-5300	9
Late Archaic	5300-3000	16
Early Woodland	3000-2100	14
Middle Woodland	2100-1200	21
Late Woodland	1200-400	24
Total	**-**	**92**

* B.P. = years before present

Review of the PASS files provided additional information regarding settlement patterns, lithic raw material types, topographic settings, and drainage information. All this information was compiled to develop a synthesis of site characteristics that can be used by future researchers to predict the location of archaeological sites.

The earliest human habitation first occurred in Pennsylvania during the Paleoindian period as the Pleistocene glaciers receded. The date of the earliest colonization of the Mid-Atlantic region is a matter of ongoing discussion. The generally recognized inception of human habitation is attributed to the Clovis period (perhaps as old as 12,000 years before present [B.P.]); however, work undertaken at Meadowcroft Rockshelter in Watershed D of the Ohio Subbasin (south of the current project area) over the last 25+ years has yielded evidence of archaeological deposits that pre-date the Clovis era, perhaps as early as 14,500 B.P. (Adovasio et al. 1978; Adovasio et al. 1980; Bower 2000). Paleoindians were likely organized into small, nomadic hunting bands that placed a high priority on the use of high quality lithic material (Goodyear 1989) and concentrated on exploiting large faunal resources for subsistence (Carr and Adovasio 2002:35). However, ongoing study suggests that now-extinct megafauna were not the primary resources targeted by Paleoindian hunters; instead, it appears that caribou may have been heavily relied upon, and white-tailed deer would have been hunted in more temperate areas (Custer 1996).

Temperate woodlands became the dominant ecosystem within Watershed B as the late Wisconsian glaciers retreated at the end of the Pleistocene epoch. This post-Pleistocene environment supported a greater variety of plant and animal resources that could be exploited by human populations. Precontact populations responded to the new environmental shift by modifying their subsistence strategies during the Archaic period (Custer 1996). Although continuity with the Paleoindian period is evident in the Early Archaic lithic toolkit, an evolution of projectile points and knives can also be seen to accommodate a wider variety of applications (Johnson and Siemon 1991). The lithic toolkit for the region underwent an evolution of projectile points, with Palmer and Kirk stemmed and notched forms replacing the ornate points associated with the Paleoindian period (Fogelman 1988). Changes in subsistence priorities from hunting large herd animals to targeting deer and elk as the climate grew warmer may have brought about the change in the projectile point forms (Neusius and Neusius 1989). Also during this period, foraging may have contributed to a substantially larger part of Early Archaic subsistence priorities as a wider variety of floral species became available (Neusius 1987).

The Middle Archaic period brought about further changes to the Native Americans toolkit. The introduction of new stone working techniques separates the Early from the Middle and Late Archaic periods. The implementation of ground stone tools such as celts, axes, and atlatl weights is indicative of Middle Archaic occupation. Changes also occurred to their projectile point types. Bifurcate points are considered by many to be manifestations of the early Middle Archaic (Broyles 1971; Carr 1998:79; Chapman 1975). Stemmed points, including Stanly and Otter Creek, are also associated with the late Middle Archaic period. The collection of seasonally available resources in upland areas and along smaller tributaries within the watershed was conducted by Middle Archaic peoples occupying seasonal base camps on terraces of major rivers.

Transition into the Late Archaic period occurred approximately 5,200 to 4000 years ago and is marked by a dramatic population increase and the presence of Brewerton side- and corner-notched projectile points. “Panhandle Archaic” identified to the west in the Panhandle of northern West Virginia and eastward into Pennsylvania suggests increased population and riverine subsistence along the Ohio River. Mayer-Oakes (1955:140, 144) contended that grooved axes, crescent-shaped atlatls, and two point forms (Steubenville stemmed and Steubenville

Lanceolate points) were indicative of Panhandle Archaic occupation. The Late Archaic period is characterized by large sites, increased populations, and ceremonialism. Those characteristics and the first evidence of vessels made of steatite (soapstone) provide the foundation for the Woodland period that follows (Cinquino et al. 1985).

The adoption of ceramic vessels by Late Archaic/Transitional Archaic groups marks the arbitrary transition into the Woodland Cultural period. Greater tendency toward territorial permanence and increasingly more elaborate ceremonial exchange and burial rituals appears to characterize the cultural expansion of the Late Archaic expansion into the Woodland period. Dragoo (1976a:16) argues that traits once considered innately Woodland are now known to have originated during the late stages of the Archaic period. Griffin suggests that burial practices that formed the core of Woodland mortuary complexes evolved and were extant during the Late Archaic period (1978).

Adena culture is associated with the first produced pottery and the incorporation of domesticated foods into diets in the Upper Ohio River Valley (MacDonald 2000:4). The generally small, scattered villages of the Adena complex are often located along streams that provided access to transportation and more diverse food resources. Evidence of Early Woodland sites located in rockshelters is present within the Ohio River Valley and provides evidence of pottery use and plant domestication (MacDonald 2000:4). The presence of large burial mounds with associated burial goods along the major rivers in the watershed provide evidence for increased sedentism and ceremonialism during the Woodland period. There are two Early Woodland village sites recorded in Watershed B.

The Middle Woodland period witnessed the continued elaboration of mortuary practices, including burial mounds and elaborate, exotic, ceremonial grave goods related to the Adena culture (Griffin 1967). These grave practices and goods not only indicate a shift from a band level of social organization to complex ranked societies, they also indicate extensive trade activities. Following the end of the Adena-related ceremonialism, the Hopewell Complex flourished in western Pennsylvania. Middle Woodland settlement patterns in the Upper Ohio Valley consisted of large, multi-seasonal base camps and extraction loci. The Chamber's Mound site is a significant Woodland period site located on the floodplain of the Mahoning River in Lawrence County.

The emergence of sedentary village life based on intensive cultivation of maize and the development of complex tribal and chiefdom-level political forms mark the beginning of the Late Woodland period. Predominant ceramics of the Middle and early Late Woodland periods include undecorated limestone-tempered pottery referred to as Watson Ware and igneous grit-tempered cord-marked pottery, or Mahoning Ware, first described by Mayer-Oakes (1955). Raccoon-notched spear points have often been found in conjunction with Watson Ware and Mahoning Ware ceramics throughout southwestern Pennsylvania (MacDonald et al. 2003).

Following the departure of Late Woodland occupants, members of the Turkey and Wolf Tribes of the Delaware Indians settled several major villages on the Mahoning and Shenango rivers; the most notable village was that of Kuskusky. The Kuskusky village is located near present-day Edinburg and became an important location for trade between 1755 and 1773. Donehoo states that prior to the French and Indian War, the village along the Mahoning River known as

Kuskusky rivaled the largest villages of the time. Between the British occupation of Fort Duquesne and the final departure of native populations from Pennsylvania, the Kuskusky village became one of the most important native settlements in the western part of the state.

II. Project Location and Environmental Setting

CHAPTER II
PROJECT LOCATION AND ENVIRONMENTAL SETTING

A. Drainage

The Ohio River Subbasin 20 begins at the confluence of the Allegheny and Monongahela rivers near Pittsburgh, is joined by the Beaver River just north of Aliquippa, and flows northwesterly before it drains into the Mississippi River and eventually into the Gulf of Mexico. Subbasin 20 is divided into seven watersheds listed from north to south: Shenango River, Beaver River, Slippery Rock Creek, Raccoon Creek, Wheeling and Buffalo Creek, Chartiers Creek, and Upper Ohio River. Watershed B along Beaver River is the focus of this project (Figure 2).

The primary drainage in Watershed B is the Beaver River (Figure 3). The Beaver River Corridor extends from the confluence of the Shenango and Mahoning rivers in Lawrence County to its mouth at the Ohio River in Beaver County (Photograph 2). The corridor extends from 1 mile east from the river's east bank to 1 mile west from the river's west bank, composing an area of approximately 90.62 square miles. Secondary drainages include the southeastern terminus of the Mahoning River and the southern terminus of the Shenango River; both come together to form the Beaver River.

The drainage pattern within the watershed can be described as dendritic, in that stream branching occurs irregularly, with tributaries joining the main stream at all angles. The bedrock, which is largely covered by glacial deposits, consists of a variety of sandstones, siltstones, and shales, as well as some conglomerates and coal. Many of these rocks are relatively soft and were easily eroded into linear landforms by the continental glaciers.

Floodplain and older terrace landforms along all three rivers would have been attractive locations for Native American occupation from the earliest precontact period and eventually became settings for burial mounds and villages of the Woodland period.

B. Physiography and Landforms

Subbasin 20B is located within the Appalachian Plateaus Province, with portions located in the Glaciated Pittsburgh Plateau Section and the Pittsburgh Low Plateau Section of the Province. All of Lawrence County and the northwestern part of Beaver County were covered by major glaciers during all three glacial episodes. These glaciers formed the modern-day landscape. As they moved southward, they scoured hilltops and filled the valleys with large amounts of clay, siltstone, sand, gravel, and cobbles. Following the recession of the last glaciation, melted water carried additional material and deposited it in layers, or pockets, called outwash. The Kent Till, deposited during the Wisconsinan Glaciation, covers approximately 75 percent of the ground surface of the glaciated uplands of the county (Sevon et al. 1999). Thick deposits of sands and gravels were deposited within esker and kame formations and in outwash terraces across valley floors. Fine-textured lakebed deposits accumulated where ice jams blocked drainage outlets and created lakes for extended periods. After the close of the Pleistocene and the recession of the ice, streams and rivers eroded and incised down into these glacial deposits, resulting in the topography and drainage patterns of the present day (Sams 2010).

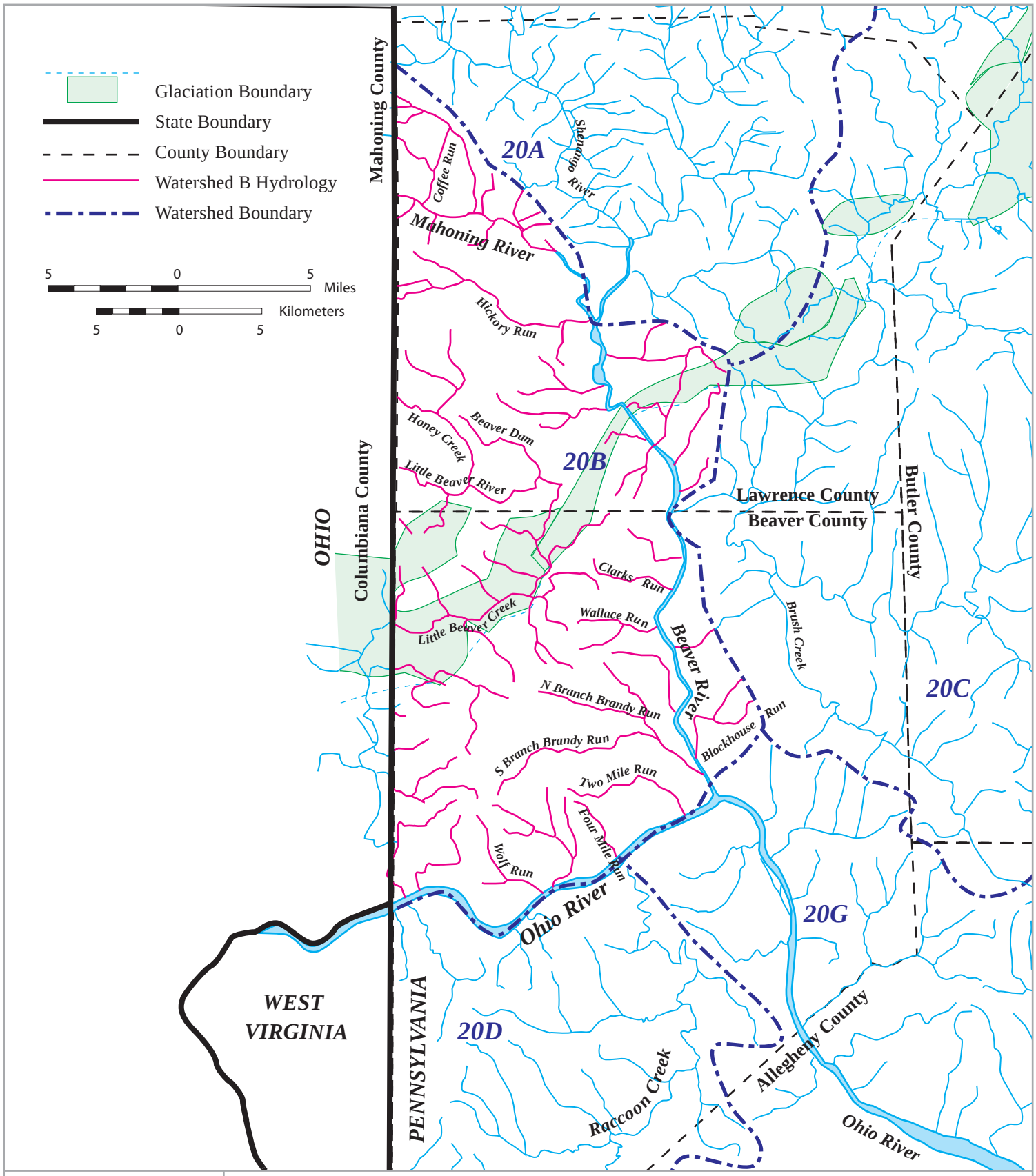


Figure 3
Hydrology within Watershed B, Subbasin 20
Beaver Creek Watershed (Watershed B of the Ohio River Subbasin 20)
Beaver and Lawrence Counties, Pennsylvania

Map Document X: Graphics\Projects\P-1018A\mapping\ Hydro base.ai

Photograph 2: View of the Beaver River taken from a railroad bridge. View is facing in the town of Beaver and positioned at the northwest corner of the confluence of the Beaver River and the Ohio River in Bridgewater Park, Beaver County (May 2011).

Principal Landforms

It is relatively well known that general culture traditions are influenced by the geomorphic, topographical, and ecological conditions in the Glaciated Pittsburgh Plateau and the Unglaciated Pittsburgh Low Plateaus sections. These characteristics have a direct correlation to settlement and land use. Although isolated or unusual events did occur, the probability of locating precontact sites today is directly correlated with these variables, and therefore survey strategies and effort must respond to these potentials.

Within Lawrence and Beaver counties, soil drainage, slope conditions, and water resources have always been dominant factors influencing food resources, transportation routes, and demography. Most of the archaeological sites in this area are located along the terraced valley bottom of the major streams/rivers or along gently sloping fans, flat structural benches, strath terraces, or on uplands overlooking stream valleys. Significant predictors as it relates to archaeological site location in this portion of Watershed B include the various settings noted in the following sections.

Valley Bottom Zone. Aside from the Beaver, Mahoning, and Shenango rivers, the valley floors of most of the streams are relatively narrow and have been significantly impacted by high sediment yields and large floods resulting from historic deforestation. An examination of the valley bottom along most of these streams indicates a low-lying floodplain zone that consists of Late Holocene to recent vertical accretion deposits less than 5 feet thick. Archaeological sites in close proximity to these first and second order streams are likely to be found on the footslopes of fans, at spring heads along the valley slopes, and on uplands overlooking the generally narrow valley bottom zones.

Upland Areas. The upland areas in the project area include ridge tops, divides, structural benches, and strath terraces. These landforms are common features within the study area and have a high potential for the occurrence of precontact cultural resources, especially in those areas where favorable soil drainage conditions, slope, and available potable water access occurs (Photograph 3). Given the absence of any Holocene depositional processes, aside from minor colluviation acting on these landforms, precontact cultural material should be confined to the upper soil horizons. The soils on these landforms have formed residually from the *in situ* weathering of bedrock or in colluvium washed from the uplands. In these types of topographic settings, stratigraphic sequences tend to be relatively thin, thereby increasing the potential for the mixing of diagnostic artifacts from different cultural periods (Vento and Robbins 1989).

Quarry Sites. There is a single local bedrock unit recorded within Subbasin 20B that has the potential to contain lithic raw material suitable for flaked stone manufacture. The Sky Hill chert is likely derived from outwash from the Hiram Till as well as float blocks from the underlying Pottsville bedrock. The Pottsville formation contains at least one layer of limestone that could have produced lithic raw material usable by precontact Native Americans (Adovasio et al. 1974). In addition to this locally available chert, raw materials found at sites within the basin have been procured from glacial pebbles and cobbles originating from glacial till deposits. In addition, raw materials found at sites in the basin were procured while precontact populations were operating on a seasonal round or from trade and exchange networks. There is a single quarry site recorded in Watershed B.

Photograph 3: Typical upland setting in the Glaciated Plateau along S.R. 0422 in Lawrence County. Facing southeast (May 2011).

Rockshelters. The occurrence of rockshelters in Subbasin 20B is typically associated with steep valley slopes where bedrock units crop out. In this area, most of the overhangs have reformed from more effective and aggressive weathering of shale interbeds in massive bedded sandstone units. In some cases, these large blocks have been dislodged from their outcrop along joint sets and are now moving downslope by mass wasting processes (i.e., creep, etc.). These rock overhangs would have served as temporary seasonal hunting camps. There are a total of nine rockshelter sites recorded in Watershed B. Photographs 4 and 5 show the mouth of the Mesing Rockshelter located in southern Beaver County.

C. Geology

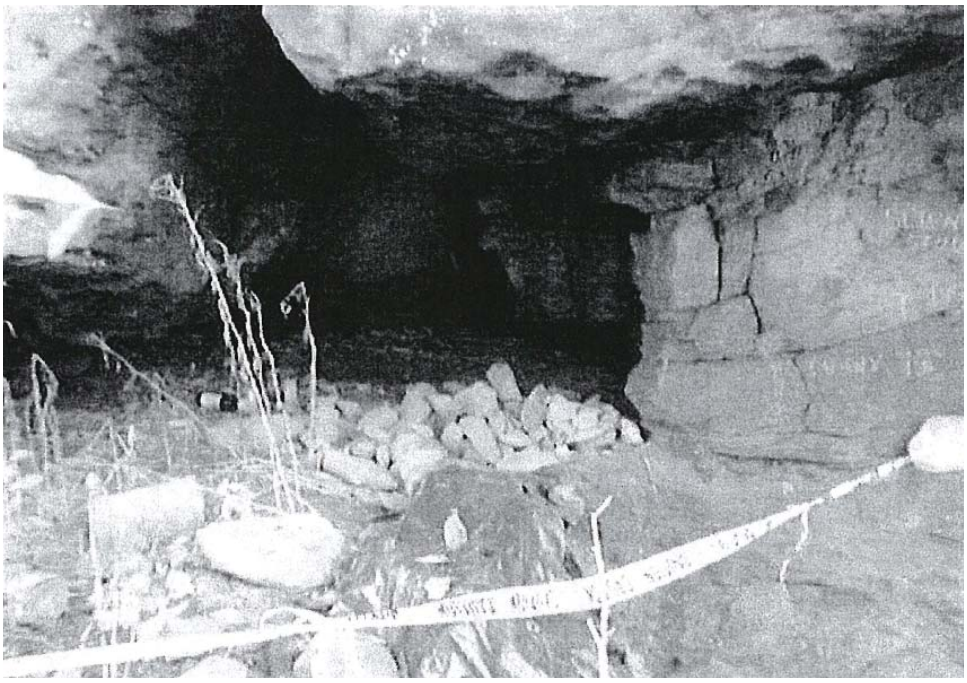
Approximately 300 million years ago, the study area was part of a freshwater inland sea during which time layers of sandy, silty, clayey, and limey sediment were deposited. Sandstone, siltstone, shale, limestone, and coal were formed as organic material accumulated during the deposition. The area was raised to its approximately current elevation over a long period of time, causing extreme pressure that form what is referred to as the Allegheny Plateau. Millions of years of geological erosion, seismic activity, and stream cutting the nearly level surface left the plateau as highly dissected, rolling, and hilly (Smith 1982).

The underlying bedrock in Watershed B is divided into three major groups: Pocono, Pottsville, and Allegheny. The Pocono Group is the oldest and least prevalent formation that was formed 310 to 350 million years ago during the Mississippian period. These rocks are massive, hard gray sandstone, and conglomerates were exposed along the slopes of the Shenango and Mahoning river valleys.

Soils Information

Five soil associations dominate the glaciated portions of the watershed, including the northwestern part of Beaver County and all but the southeastern part of Lawrence County. The five associations comprise approximately 44 percent of the total land area. The soils are formed mainly in glacial till and outwash and well as in alluvium derived from those materials and are dominantly nearly level to moderately steep. The potential for these soils for farming use is good to poor and fair to good for wildlife habitat. Seasonal wetness, rapid or slow permeability, flooding, low available water capacity, and slope are some of the major limitations of the associated soils (Smith 1982).

The five soil associations of the glaciated low plateau are: Ravenna-Canfield-Frenchtown association, Canfield-Ravenna-Loudonville association, Conotton-Chili-Holly association, Canadice-Frenchtown-Holly association, and the Udorthents-Canfield-Ravenna association. The Ravenna-Canfield-Frenchtown association is nearly level to moderately steep, deep, moderately well-drained to poorly drained soils formed in glacial till. Soils of this association have a fragipan, are prone to a high water level during the wet season, and occupy smooth to rolling uplands and associated depressions and drainageways (Smith 1982).



Photograph 4: View of the mouth of the Mesing Site rockshelter. Photograph was taken from the PASS form on file at the PHMC-BHP.

Photograph 5: View of Dr. James Adovasio investigating the Mesing Site rockshelter. Photograph was taken from the PASS form on file at the PHMC-BHP.

The Canfield-Ravenna-Loudonville association is nearly level to very steep, moderately deep and deep, well-drained to somewhat poorly drained soils formed in glacial till. This association occupies smooth to hilly uplands and associated drainageways in the northeastern parts of Beaver County and throughout most of Lawrence County. The Conotton-Chili-Holly association occupies undulating to hilly uplands and adjacent floodplains. It occurs primarily along the North Fork Little Beaver Creek in Beaver County and along the Mahoning and Shenango rivers in Lawrence County. Soils from this association are nearly level to very steep; deep; somewhat excessively drained, well drained or poorly drained; and formed in glacial outwash and alluvium. The Canadice-Frenchtown-Holly association is found only in the northwest corner of Beaver County and the northeastern part of Lawrence County. This association is nearly level and gently sloping, deep, poorly drained soil that is formed in glacial lake sediment, glacial till, and alluvium found in smooth lowlands and hummocky areas along major drainages. Occupying hummocky and hilly areas and smooth to rolling uplands and associated drainageways, the Udorthents-Canfield-Ravenna association occurs in the northwestern part of Beaver County and is scattered areas throughout Lawrence County. This association is nearly level to very steep, deep, excessively drained to somewhat poorly drained, and formed in material from strip mines and in glacial till (Smith 1982:6-10).

The portions of the watershed within the Upland Plateau province are dominated by shallow to deep soils formed in residual material and make up approximately 56 percent of the total land in Beaver County and only the southeastern corner of Lawrence County. Soils in this part of the study area are formed on uplands from shale, siltstone, and sandstone bedrock, and are formed on floodplains and terraces in alluvium derived mainly from those materials. These gently sloping to very steep soils are prone to limitations such as slope, shallowness over bedrock, seasonal wetness, slow permeability, flooding, clayey material, and landslides (Smith 1982). The soil associations within the Upland Plateau portions of Watershed B consist of Urban land-Monongahela-Tyler association, the Gilpin-Wharton-Weikert association, the Gilpin-Upshur-Weikert association, the Gilpin-Guernsey Culleoka association, and the Gilpin Weikert association (Smith 1982).

D. Precontact Lithic Sources

Chert or flint (hereafter referred to only as chert) is found in many limestones and dolomites that crop out in eastern Ohio, western New York, northern West Virginia, and Pennsylvania. These principally secondary replacement cherts usually occur as nodules, discontinuous lenses, or areally extensive beds. The cherts utilized by the precontact populations that once occupied Watershed B were generally procured in one of three ways: 1) directly from the outcrop trace, 2) from reworked nodules found in glacial valley train deposits along the primary rivers and their small tributaries, and 3) by trade and exchange networks.

In examining the available literature for sites that have been excavated within the Upper Ohio River watershed, principal chert types from both local and exotic sources were the principal raw materials used in flaked stone manufacture. The following is a discussion of these raw material types extrapolated from the Deer Creek Watershed Study (Blades et al. 2007). Figure 4 provides the location of recorded lithic quarry sites that would have presented high quality lithic material for exploitation by Native American groups.

Figure 4
Recorded Lithic Resource Locations
Beaver Creek Watershed (Watershed B of the Ohio River Subbasin 20)
Beaver and Lawrence Counties, Pennsylvania

Map Document X: Graphics\Projects\P-1018A\Recorded Lithic Resources.ai

Onondaga Chert

The chert-bearing Onondaga Limestone is of Middle Devonian age. The line of outcrop trends east-west along the Mohawk Valley from Buffalo to Albany, New York, and then swings south-southwest along the Hudson Valley. Outcrops are found in central to eastern Pennsylvania within the Valley and Ridge Province and are mapped to the Old Port/Onondaga Formation. The outcrop pattern for both the eastern and western facies of the chert are relatively far from the Watershed B area. It should be noted, however, that Onondaga chert nodules and fragments are comparatively common within glacial deposits in the Upper Ohio River Valley. The nearest occurrence of the western facies is near Buffalo, New York, while the nearest mapped occurrence of the eastern facies occurs along Penn's Creek near Selinsgrove, Pennsylvania.

Chert zones within the Onondaga Limestone occur both as discrete nodules and as continuous, parallel layers up to 5 inches in thickness. Colors of Onondaga chert range from dark gray, medium gray, blue, and mottled blue-brown gray to tan (Wray 1948). Upon weathering, Onondaga chert does not take on the distinctive patina that is common in many other chert types. The chert tends to be lighter in color where it contains recognizable fossils in the form of sponge spicules. Fossils are often encountered in Onondaga chert. These include brachiopods, echinoderms, corals and Bryozoa. Fossil abundance in this chert increases in eastern New York (Wray 1948). The presence of silicified fossils, coupled with a nodular or discontinuous nature and the presence of carbonate clasts, indicate that it is a secondary or replacement chert.

As mentioned above, chert nodules are relatively common in Pleistocene outwash deposits and along major glacial sluice ways. Thus, native occupants could easily have obtained Onondaga chert pebbles from valley train terraces or point bar deposits along the major rivers within the watershed, as well as from ice-contact stratified drift deposits within the Wisconsin glacial boundary.

Upper Mercer Chert

The Upper Mercer limestone is a member of the Pottsville Group (Lower Pennsylvanian). This limestone is chert-bearing where it crops out in central and southeastern Ohio. The chert most commonly occurs as a continuous layer of variable thickness overlying a basal cherty limestone. It also can occur as discontinuous lenses or as nodules within the limestone. Color is generally black or grayish black due to ferric oxides and carbon content. Silicified fossils are often present. The Upper Mercer chert typically displays a smooth conchoidal fracture and has a semi-vitreous luster on fresh surfaces (Lamborn 1951). The chert appears to have a secondary or replacement origin.

Like the western facies chert of the Onondaga Formation, Upper Mercer chert could have been found in outwash deposits along the Allegheny River or from ice contact stratified drift deposits within the terminal Wisconsin moraine (north of Portersville, Pennsylvania).

Ten Mile Chert

The Ten Mile chert occurs at the contact between the lower member of the Greene Formation and the upper member of the Washington Formation units of Permian age in southwestern Pennsylvania. The unit was named by Herbstritt (1981) for chert outcrops along the Ten Mile Creek drainage in Greene County, Pennsylvania.

This chert occurs as thin, discontinuous lenses and beds that grade laterally and vertically into calcareous shale. Average chert thickness is between 2 and 6 inches, but lenses as thick as 1 foot are common. Color ranges from dark grayish brown through olive brown to grayish blue. When weathered, a patina often develops that is a pale greenish gray to grayish white.

Kanawha Chert

The Kanawha chert (Lower Pennsylvanian) is present in a basin that measures roughly 70 miles northeast to southwest and 40 miles northwest to southeast in Webster, Nicholas, Clay, Kanawha, Boone, and Fayette counties, West Virginia (Reppert 1979:109).

Three lithofacies are recognizable in the basin of deposition. These include a chert facies composed of a dark gray marine chert that ranges up to 10 feet. The chert facies is divided by cross-beds that range in thickness from 10 to 30 inches where it is well developed. The Kanawha chert breaks irregularly without evidence of separation along bedding planes (Reppert 1979:109).

Boulder, cobble, and pebble detritus of Kanawha chert is commonly found as bedload material in streams and rivers (e.g., the Ohio and Kanawha rivers) that have downcut or are currently downcutting areas where the chert facies is present (Reppert 1979:109). The resistant nature of the Kanawha chert enables it to be transported considerable distances with minimal fragmentation.

On polished specimens of Kanawha chert, the presence of silt and sand-sized quartz arranged in parallel zones clearly indicates that some detrital sediment was syndepositionally supplied to the chert facies. Polished samples of the chert facies are most often opaque even on extremely thin edges (Reppert 1979:109).

The Kanawha chert facies is limited to a restricted portion of the basin defined above, which widens to the southwest. The chert grades laterally into a sandy chert or shale, earlier termed the “silty phase” (Reger 1921). According to Reppert (1979:109), the “silty phase” weathers to a red hematitic color and is pyritiferous. It is proposed here that this sequence was deposited during the late stages of a subsiding deltaic basin. The red color may be due to partial subaerial deposition and the subsequent weathering of the chert.

Deposition of the Kanawha chert may have occurred in shallow waters where local relief of only a few meters could have resulted in areas of no deposition, especially over the Warfield Anticline. Silica removed by intense lateritic weathering of well-drained material in the nearby delta was precipitated in this shallow marine basin to form a thin chert bed (Reppert 1979:109). William (1960) has described the leaching of silica from paleosols in Pennsylvania. In order to free silica, the proposed leaching process requires well-drained clays and intense lateritic weathering conditions. Lateritic weathering in the well-drained portion of the delta complex surrounding the depositional basin would clearly provide a source of free silica for the Kanawha chert facies (Reppert 1979:109). Marine water, acting as an electrolyte, could have precipitated the silica from solution (Tarr 1917). In addition to this possible mode of formation, the Kanawha chert may have originated in part by the dissolution of siliceous spicules, which releases large quantities of free silica during chemical weathering.

Vanport Chert (Flint Ridge)
The Vanport Limestone is an important member of the Allegheny Group (Pennsylvania age) that crops out in numerous southeast and central Ohio counties. The Vanport consists of two phases: a lower phase of marine limestones and shales ranging from 5 to 20 feet in thickness, and a directly overlying upper phase that consists primarily of marine limestones and chert ranging from 1 to 10 feet in thickness (Stout 1927:154). Often, only one phase is present; however, both phases occur in the Flint Ridge area.

In Ohio, the most extensive deposits of Vanport Limestone extend from the Ohio River through western Gallia, western Lawrence, eastern Scioto, and eastern Jackson counties to central Vinton County. Here, the Vanport is a rather pure, fossiliferous limestone with discontinuous lenses of chert in the upper portion. The beds vary from 4 to 20 feet in thickness. In the center of the state (Perry, Hocking, Muskinghum, Licking, Coshocton, Holmes, Tuscarawas, and Stark counties), the deposits are thinner than those to the southeast and have a higher percentage of shaly chert and chert (Stout and Schoenlaub 1945:71). In some areas, the chert is present in areally extensive beds.

On the basis of petrographic analysis and field observation, the Vanport chert appears to be a primary, bedded chert. This observation is based upon its exceedingly thick depositional form, the presence of silica-replaced fusiline microfossils, and the low percentage of carbonate minerals in chert. The presence of carbonate grains, either as individual crystals or as carbonate rock fragments within a chert, is often syndepositional emplacement within the chert, or they are diagenetic in origin. In the Flint Ridge area, fuseline microfossils are most common where the chert overlies fossiliferous shale. Whether the Vanport chert was formed by the deposition of a colloidal silica gel on the sea floor or by the post-depositional alteration of microcryptocrystalline quartz has not been established fully. At the present time, a tentative primary origin seems to be justified based on field observations and laboratory methods. The excellent conchoidal fracture quality of the Vanport chert is due to its 98.9 percent silicon content, as measured in the Flint Ridge area (Stout and Schoenlaub 1945:82).

Like the Kanawha chert, procurement of the Vanport chert would have been by groups operating on a seasonal round or from trade and exchange. There is a poorer quality, variably colored facies of the Vanport that occurs in Mercer County, Pennsylvania; however, this chert is rather impure (high carbonate content), highly fractured, contains numerous inclusions, and generally exhibits poor conchoidal fracture.

Brush Creek Chert
The Brush Creek limestone member of the Conemaugh Group is of Pennsylvania age. The cherty facies of the member crops out in central and southeastern Ohio, northern West Virginia, western Pennsylvania, and eastern Kentucky.

In Ohio, the Brush Creek limestone crops out in a thin belt that extends across southeastern Ohio from Columbiana and Jefferson counties on the east to eastern Lawrence and western Gallia counties on the south. The Brush Creek limestone has a wide distribution in the outcrop but varies considerably from one locality to another in both physical appearance and chemical composition (Lamborn 1951:29).

The Brush Creek limestone attains its maximum thickness and greatest aerial extent in Ohio. The chert facies of this member occurs in Muskingum, Morgan, Perry, Athens, Meigs, Vinton, Gallia, and Lawrence counties. According to Stout (1927:357), the member can be represented by dark, carbonaceous shales; nodules of dark gray limestone; dark gray limes; gray calcareous shales; black flint; gray, shaly flint; and by various combinations of these characteristics.

In central Ohio, the Brush Creek limestone is composed of two beds of fossiliferous limestone or chert separated by 10 to 30 feet of shale. In southern Ohio, the member is either a chert or a dark gray fossiliferous limestone. The member thickens to the south, measuring from 5 feet in eastern Ohio to 22 feet or more in southern Ohio (Stout 1927:357-358). The cherty facies of this member in Ohio is usually a gray color and breaks with imperfect conchoidal fracture (Stout and Schoenlaub 1945), probably related to the abundance of inclusions and/or the often high carbonate content of this chert. Buff, olive-brown, and light green varieties are common.

Uniontown Chert

The Uniontown Formation is a member of the Monongahela Group (Upper Pennsylvania). In northeastern Washington County, Pennsylvania, fresh to brackish water marine limestones within the Uniontown Formation are locally cherty. The chert is present as "tuberous" nodular bodies that range from yellow streaks, medium to light gray, to dark yellowish brown in color (Eisert 1974). Upon weathering, the chert is yellowish brown to gray. Fossils are commonly abundant and consistent entirely of non-marine ostracods, commonly arranged *en echelon*. The chert also typically contains a high percentage of micrite and microcrystalline sparite and is probably secondary in origin.

Replacement of the limestone may have taken place by the percolating silica rich groundwater or possibly by silica enrichment of hypersaline lake waters precipitating silica out as a colloidal silica gel. The Uniontown and Monongahela cherts are the nearest cherts to Subbasin 18A.

Monongahela Chert

The Uniontown member of the Monongahela Group is often cherty in Washington County, Pennsylvania. In order to distinguish it from the Uniontown chert already described above, which exhibits a different lithology, it is termed the Monongahela chert. The chert varies from a dark to light gray, with limonite staining commonly present on weathered surfaces and bedding planes. It occurs as discontinuous lenses and nodules within calcareous shale and non-marine limestone. The Monongahela chert does not contain any fossils. It is interpreted as a secondary or replacement chert because of this lens-like and nodular distribution.

Sky Hill Chert (Mahoning Chert)

Sky Hill chert has been identified near the confluence of Coffee Creek and the Mahoning River in Lawrence County, Pennsylvania. Several types of glacial drift cover parts of Lawrence County. Of the recorded types, only the Hiram Till deposited during the final stage of the Wisconsin Glaciation is recorded on the surface. Sedimentary rocks of the Pennsylvania, Allegheny, and Pottsville series are present below the glacial deposits. At least one marine limestone horizon is present within the Pottsville series, through which both Coffee Creek and the Mahoning River are downcutting. This limestone horizon would have been available for exploitation by aboriginal populations as surface float (Adovasio et al. 1974:34-35).

Sky Hill chert varies in color from black to very pale brown, with gray as the most common color. Donahue in Adovasio et al. states that this chert is homogenous, fine-grained, and lacks voids and fracture fills of crystalline quartz. He also states that the higher quality Sky Hill chert is apparently scarcer and the lower grades are difficult to work without thermal altering. Heated specimens of Sky Hill are readily distinguishable by their lustrous appearance and almost chalcedony-like texture (Adovasio et al. 1974:34).

Over 50 percent of the lithic assemblage recovered at the Boarts Site (36LR0036) was thermally altered. There was no evidence of thermal altering of the "exotic" cherts recovered at the site.

Based upon the hand sample identification of both debitage and formed tools from sites within the central Ohio River drainage basin, the following generalizations can be drawn about the lithic raw material assemblage:

- Most of the raw materials utilized in the region were locally derived from valley train and outwash deposits, which contain pebbles of the Onondaga and Upper Mercer cherts. In addition, raw material was collected from the relatively nearby outcrop occurrence of the Uniontown, Monongahela, and Ten Mile cherts, with an emphasis on the collection of Sky Hill chert found in present-day Lawrence County.

- Raw materials obtained from greater distances, such as Coshocton, Upper Mercer, and Flint Ridge cherts occur in fewer instances than locally available chert types. The interpretation of these materials as reflections of seasonal/annual movements, direct procurement expeditions, and/or socially oriented exchanges must await further technological and quantitative analyses of existing collections and recently excavated assemblages.

E. Paleoenvironments

The major expansion of the Laurentide ice sheet took place beginning in the Late Wisconsinan Stage at about 23,000 years ago and culminated in a maximum ice advance at approximately 18,000 B.P. The ice sheet began a gradual stepped retreat once again by ca. 16,500 B.P. Earlier glacial advances existed within the study area. The Illinoian Stage glaciation persisted until ca. 130,000 to 120,000 B.P. and was followed by the long Sangamon Stage interglacial, which lasted until the next major glacial ice advance at the beginning of the Early Wisconsin Substage, ca. 80,000 to 75,000 B.P.

A number of late Wisconsinan-age fossil pollen localities in Pennsylvania (e.g., Rose Lake, Crider's Pond, Longswamp, Tannersville Bog, and Corry Bog) have provided important information on the tentative reconstruction of the probable floral community present in the general project area during the full-glacial Late Wisconsinan-Olean interval, as well as during the final retreat of the Laurentide ice sheet.

At approximately 13,000 B.P., the principal floral taxa present at Crider's Pond in south-central Pennsylvania included *Pinus banksiana* (jack pine), *Abies* sp. (fir), *Betula* sp. (birch) and *Alnus rugosa* (alder). These taxa replaced the species-poor *Picea* sp. (spruce) woodland recorded for the full glacial (ca. 18,000 B.P.). A similar flora assemblage gradually replaced the *Picea-Betula*

glandulosa (spruce-dwarf birch) association at Longswamp in eastern Pennsylvania (Watts 1979:439-440), where *B. populifolia* (gray birch) was also present (Watts 1983:306). Significantly, Longswamp is located along the outer edge of the Great Valley section. Additionally, recent investigations at Corry Bog in northwestern Pennsylvania by Cotter (1983), Cotter and Crowl (1984), and Karrow et al. (1984) indicate that the spruce pollen zone was present on the glaciated Allegheny Plateau of northwestern Pennsylvania between 14,250 to 11,250 B.P. Cotter (1983) and Cotter et al. (1984) argued that the earlier herb pollen zone at the Corry Bog lasted from 18,500 to 14,250 B.P. and that the basal age of the spruce pollen zone of sites near the Late Wisconsinan drift border in Pennsylvania is approximately 14,250 B.P., rather than the 12,600 B.P. as suggested by Karrow et al. (1984).

Watts (1979:444-445; 1983:307) noted that clear differences exist between the floral history of the periglacial region to the south (i.e., Longswamp and Crider's Pond) and that of the region which had been recently ice covered (i.e., Tannersville and Corry bogs). The grass-dominated tundra flora at unglaciated Longswamp is paralleled by a sedge-dominated pollen flora at Tannersville Bog. The Longswamp pollen sequence, however, was truncated shortly after the deposit of a sample C^{14} dated at 7800 B.C. $\pm$ 100, anomalously before the appearance of *Pinus strobus* pollen. The occurrence of *Pinus strobus* (white pine) pollen elsewhere in eastern Pennsylvania (e.g. at Tannersville Bog) manifests peaks at approximately 10,300 B.P. *Tsuga* sp. (hemlock) pollen and macrofossils are documented at Tannersville Bog by ca. 9,600 B.P. (Watts 1979:440, 446). This suggests that the sequence at Longswamp may have terminated earlier during the tenth millennium B.P., perhaps as a response to the harsh cold and dry climatic conditions of the Younger Dryas episode.

At the end of the Pleistocene at Tannersville Bog, the demise of sedge, *Populus tremuloides* (aspen), *Alnus crispa* (green alder) and the invasion of trees in the following sequence**,** *Picea* sp. (spruce), *Abies* sp. (fir), jack pine, gray birch, and *Pinus rigida* (pitch pine) can be demonstrated to have occurred between 13,000 and 9,000 B.P. (Watts 1983:307).

An in-depth review of tree invasion has been discussed extensively in the recent literature (Davis 1976; Watts 1979, 1983) and it has been demonstrated that the population of each tree species behaved independently of other taxa in response to climatic change (Watts 1983:307). Davis (1969) noted that the invasion of the Northeast by forest was a relatively slow process. At Rodger's Lake, Connecticut, glacial ice had retreated and tundra was present for over 2,000 years before the invasion of spruce took place, although spruce was already present in unglaciated Pennsylvania as the ice withdrew (Davis 1969).

In summation, following the retreat of the late Wisconsinan ice ca. 15,000 B.P., tundra plants colonized the landscape in much of northeastern Pennsylvania. Tundra pollen assemblages from late-glacial deposits in the eastern United States contain high percentages (up to 40 percent) of sedge pollen. At this time (ca. 15,000 B.P.), forests of spruce and pine in the South were replaced by deciduous trees (Davis 1983:179). In approximately 12,000 B.P., spruce woodland replaced tundra in western Maryland, western and central New York, and southern New England. The appearance of spruce over such a wide area indicates 1) the rapid migratory speed of spruce, and 2) a climatic amelioration at 12,000 B.P. that allowed spruce to grow in regions where it was previously limited by climate (Davis 1983:179). This amelioration is likely time equivalent to the mild Allerod interval of northern Europe.

After the recovery from the catastrophic climatic decline of the succeeding Younger Dryas episode at about 10,000 B.P., forests of variable composition developed in the Northeast. These forests underwent a series of successive changes with the arrival of new northward migrating taxa. By 5,000 B.P., a number of taxa indicative of warmth and dryness declined in abundance in the Northeast. This occurrence suggests the end of the Middle Holocene-age Hypsithermal/Altithermal climatic event. According to Davis (1983:179), boreal elements of floral and faunal communities began to increase in abundance at about 2,000 B.P., which appears to be suggestive of the onset of cooler climatic conditions.

Late Pleistocene and Holocene Paleofauna. The Pleistocene fauna of the United States were characterized by a combination of 1) extinct megavertebrates and 2) extant temperate megavertebrates and microvertebrates in association with 3) now disjunctive large and small northern species (Semken 1983:192). The Holocene fauna of the Allegheny River Valley are generally composed of the second category. Semken (1983) states that this reduction in the number of species has led a number of authors (Martin 1967; Martin and Webb 1974; Semken 1983) to regard the Holocene biotic record as impoverished or depauperate as compared to the high species densities characteristic of the late Pleistocene (Graham 1979). This change in faunal communities was used to define the Pleistocene/Holocene transition. Discontinuities in the vertebrate record appear at roughly 12,500, 10,500, 8,500, and 5,000 B.P.

Within the general project area, the response time of various vertebrate species to deglaciation and subsequent climatic change was highly variable from one species to another. However, in a fashion similar to the pollen record for the northeast, the concept of a vertebrate transition within a few hundred years after deglaciation appears valid (Semken 1983).

Holocene Paleofauna. The mammalian vertebrate fauna from Hosterman's Pit, Pennsylvania, dated at 9,240 B.P., may be the best guide for inferring the Holocene fauna for the region, and according to Guilday (1967) it is modern in every aspect. This is in direct contrast to the 11,300 B.P. fauna from Unit B of New Paris Sinkhole No. 4, which lies ca. 65 miles to the southwest and contains a strong boreal component represented by the *Synatomys borealis* (northern bog lemming), *Dicrostonyn hudsonius* (collared lemming), *Phenacomys intermdius* (yellow-cheeked vole), and the *Sonex arcticus* (arctic shrew). A similar boreal fauna occurs at Bootlegger Sink, York County, Pennsylvania. Based on the above dates of 9,240 B.P. and 11,300 B.P., the change from a boreal fauna to a recent community structure must have occurred within this 2,000-year interval in central Pennsylvania (Guilday 1971). This statement is supported by the fact that the Unit A fauna at New Paris Sinkhole No. 4 contains a large number of temperate species and overlies the strong boreal taxa-dominated Unit B fauna at the site.

Guilday (1967:232) notes that all zooarchaeological faunas from the east during the last 8,000 years contain faunas that are essentially modern. This statement is based on a number of sites. The longevity of the eastern woodlands' Holocene record is confirmed by 11 superimposed strata (11,300 B.P. to 685 B.P.) at Meadowcroft Rockshelter in southwestern Pennsylvania (Adovasio et al. 1977) and the Archaic through Late Woodland periods (8,920 B.P. to 490 B.P.) faunal succession at Sheep Rock Shelter, Huntingdon County, in south-central Pennsylvania (Guilday and Parmalee 1965).

The only evidence in the archaeofaunal record for the "climatic optimum" or a hypsithermal-like climatic event between 5,500 and 3,500 B.P. in the eastern forests is noted by Guilday and Parmalee (1965) at the Lamoka Lake Site, New York. Guilday's evidence for warming at the Lamoka Lake Site is based on the presence of *Sciurus niger* (fox squirrel) and *Terrapene carolina* (box turtle), each of which reflects a warming trend and perhaps a reduction of the closed-canopy deciduous forest at that time (Vento and Rollins 1989).

Fur-bearing animals are relatively abundant throughout the study area and are found in nearly all regions and on most soil types in the watershed. These principal fur-bearing taxa include: *Procyon lotor* (raccoon), *Didephis marsupialis* (opossum), *Mephitis mephitis* (striped skunk), *Spilogale putorius* (eastern spotted skunk), *Marmota monax* (woodchuck), *Sciurus niger* (red squirrel), *Sciurus carolinenis* (gray squirrel), *Ondatra zibethicus* (muskrat), *Urocyton cineroargenteus* (gray fox), *Vulpes fulva* (red fox), *Sylvilagus floridanus* (eastern cottontail), and *Castor canadensis* (beaver).

Game fish species (both natural and introduced) that can be found in the county include: *Salvelinus fontinalis* (brook trout), *Salmo gairdneri* (rainbow trout), *Salmo trutta* (brown trout), *Lepomis macrochirus* (bluegill), *Lepomis megalotis* (sunfish), *Micropterus salomoides* (largemouth bass), *Micropterus dolomicui* (smallmouth bass), *Ictalurus punctatus* (channel catfish), and various species of suckers, minnows, and chubs. The riverine fauna presently supported by the numerous rivers within the watershed has rebounded immensely over the last 20 years, primarily in response to better water treatment and the closing of numerous large riverside mills. In general, pollution from steel mill, oil, brine, agricultural fertilizers, coal mining, and lumbering operations have unfavorable effects on native riverine species, but today many of the major tributaries in Lawrence and Beaver counties as well as surrounding counties continue to support a viable, balanced fish community.

Most of the avifauna in the study area consists of songbirds rather than game birds. However, several types of game birds are native or present in the study area on either a permanent or seasonal basis. These species include *Melagris gallopavo* (wild turkey), *Philohela minor* (American woodcock), *Bonasa umbellus* (ruffed grouse) and *Branta* sp. (Canada geese), as well as a large number of *Anas* sp. (ducks) which stop to rest and feed on lakes, ponds, and rivers during their annual fall/spring migrations. During pre-Columbian times, wild turkey densities were probably about 8 to 13 individuals per square mile. Ideal habitats for turkey were those containing mature *Quercus* sp. (oak) forests, with *Quercus alba* (white oak) predominating. These conditions were found mainly on valley floors and lower valley slopes.

The contemporary fauna of the general project area, though diverse, do not necessarily represent the full range of species available for exploitation by aboriginal populations during the late Pleistocene or Holocene. When compared to the proposed late Wisconsinan faunal list prepared for Pennsylvania, the Holocene faunal data are much more limited. A cursory examination of late Pleistocene through recent (12,500 B.P. to present) faunal remains represented state-wide indicates that considerably more species would have been available for aboriginal exploitation in the past than are now present.

III. Background and Key Projects

CHAPTER III
BACKGROUND AND KEY PROJECTS

A. PASS File Data

Examination of PASS file data began with consultation of the PHMC-BHP's Cultural Resources Global Information System (CRGIS) website for information regarding all the recorded sites within Watershed B. Following the initial consultation, researchers visited the PASS file repository in Harrisburg to develop an understanding of the prehistory of the study area and the 187 precontact sites recorded within the watershed. Typical information used to develop this study included site type, location, temporal affiliation, lithic raw materials, and artifacts.

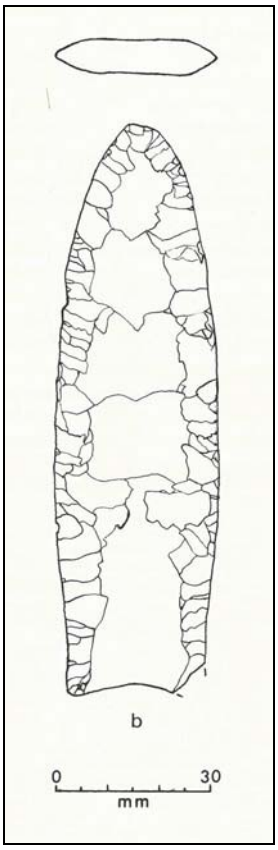
Additional site file information review was conducted at the Carnegie Museum, where researchers were allowed to review site files, significant site reports, and curated artifacts, when available. Special thanks is extended to museum staff member Amy Covell for her assistance.

B. Key Projects and Sites

There are several key projects and site locations recorded within Watershed B. The list of sites discussed in this chapter is in no way comprehensive; the seven sites discussed were chosen for their importance to the prehistory of the watershed, and an attempt was made to cover the broad range of temporal occupation. Figure 5 presents the locations of the sites discussed in this chapter.

The Mesing Site (36BV0349)
The Mesing Site (36BV0349) is a stratified rockshelter site located on an eastern bluff overlooking the Beaver River at 820 feet above sea level. This site was identified and partially excavated by an avocational archaeologist and reevaluated by James Adovasio and Mark McConaughy in 2000. The Mesing Site is a multicomponent site with diagnostic artifacts representing the Late Archaic through the Late Woodland periods. Diagnostic Archaic artifacts include several Brewerton points, a large Genessee point, and an Osceola point. Woodland artifacts include Raccoon-notched points, Chesser-notched points, and a Norton point. Also representative of the Woodland period at the site are a number of pottery sherds, including Mahoning cord-marked sherds, a possible Monongahela sherd, Watson cord-marked sherds, and a Half-Moon sherd. The Early Woodland period is also represented by a single Adena Ovate-based point. Keith Jerome, the amateur excavator of the site, collected a number of charcoal samples from which he obtained a number of C^{14} dates. The earliest date recorded at the site was taken from an intact soil horizon below the artifact-bearing horizons at the site and dated to 11,440 ± 90 B.P. (Paleoindian period). Additional dates included an Early Archaic date of 9,220 ± 80 B.P., a Middle Archaic date of 7,940 ± 100 B.P., and a Late Archaic date of 5,380 ± 40 B.P. Following their visit in 2000, Adovasio and McConaughy recommended that this stratified site with excellent bone preservation be scientifically excavated and that a high potential for the presence of Paleoindian material (Figure 6) exists below some of the larger roof falls.

Figure 6
Paleolithic Clovis Point



(Justice 1987:19)

Boarts Site (36LR0036)

The Boarts Site (36LR0036) is a lithic workshop site located along the north side of the Mahoning River near Hillville, Pennsylvania. Drs. G.F. Fry and J.M Adovasio of Youngstown University conducted field studies at the site throughout 1971 and 1972. During the field studies and documented within a private collection recovered for many years prior to the study, a total of 2,696 flaked stone artifacts and 41,972 pieces of debitage were recovered from the site. Recovered projectile points numbered 261, with 18 defined and five unnamed types. Clearly, diagnostic projectile points recovered at the site span from the Early Archaic, with few Middle Archaic examples, into the Late Archaic and possibly the Early Woodland. Seven probable fire pits were examined at the site: three were determined to be modern and two were too leached out to present any charcoal for radiocarbon dating. The two fire pits that did provide dates proved to be from the Late Woodland period (A.D. 1240 ± 90). It is important to note that the significant amount of the assemblage about this site was recovered within the first 30 to 35 centimeters from a partially disturbed plowzone context. The amount of artifacts that were recovered from potentially more intact contexts did not provide enough evidence for chronological dating (Adovasio et al. 1974).

The Chambers Site, or Kuskusky Village (36LR0011)

The Chambers Site (36LR0011), perhaps one of the most significant sites professionally investigated within Watershed B, is a burial mound site located on the terrace on the west bank of the Mahoning River in present-day Lawrence County. The site sits at approximately 794 feet above sea level. The Chambers Site was first excavated by John Zakucia under the direction of Dr. Don Dragoo for the Carnegie Museum between 1959 and 1960. The site was brought to the attention of Mr. Zakucia as a result of his quest to locate the historic Kuskusky village and burial ground (Zakucia, unknown date). Despite many attempts by landowners to level the mound for agricultural purposes, a total of 18 features were uncovered at the site. Features included cist burials of the Middle Woodland period and historical burials attributed to the Kuskusky village. Three cist burials and five historic burials were uncovered at the Chambers Site. Artifacts recovered from the mound site include 42 whole and fragmentary chipped stone tools consisting of four blades, 23 projectile points, one drill, two scrapers and 12 bladelets of Flint Ridge material. Also represented in the assemblage was local black chert of glacial outwash origin. Of the 23 projectile points recovered at the site, eight were stemmed, five were corner-notched, and seven were of the expanded stem variety. Fifteen sherds of grit-tempered, cord-marked pottery were recovered at the site, with 12 sherds representing a single vessel. Both Mahoning cord-marked and Half-Moon cord-marked pottery types were recovered.

Below the mound, a dark 2- to 4-inch thick layer of soil contained a number of broadspear points, drills, roughed-out blanks, steatite bowl sherds, and hundreds of pieces of lithic debitage.

At the time of excavation at the site, mounds were few in number and lacked the size and elaborate construction associated with Hopewell Mounds in Ohio. As was the case at the Chambers Mound, the elaborate grave goods that are so often associated with this period were conspicuously absent. The Middle Woodland period at the site is well represented by the stemmed points and the Half-Moon, Mahoning, and Watson pottery types, but lacks the traditional type associated with Hopewell occupation.

During the excavation of the Chambers Mound by the Carnegie Museum, 70 historic burials were uncovered and have been associated with the Kuskusky village. The burials were located in direct proximity to the Chambers Mound and in some instances truncated the earlier burials. In most instances, the historic burials were in fairly good states of preservation and were found in wooden boxes with hand-cut nails. Burial goods included trade beads, metal trinkets, brass bells, cloth and material, gun flints, musket balls, and many other artifacts typically found in association with Contact period burials.

An additional examination of the area surrounding the Chambers Site was undertaken in 1990 by the Center for Cultural Resources Management Department of Anthropology, University of Cincinnati, Ohio. A Phase I study was conducted on the Upper and Lower Terraces in the vicinity of the Chambers Site, which included surface collection, systematic shovel testing, and geomorphological evaluation. During the investigation, significant archaeological evidence of Late Woodland occupation was identified. Surface examinations identified a dense lithic scatter and produced 12 triangular points (Bennett 1990).

The Coverts Crossing Site (36LR0075)
The Coverts Crossing Site (36LR0075) is one of two multi-component sites identified during the Coverts Crossing Bridge Replacement Project. The site was identified by a collector in 1969 when he collected a number of Late Woodland triangular points and shell and grit-tempered pottery. Between 1998 and 2000, GAI Consultants, Inc., of Monroeville, Pennsylvania, conducted archaeological investigations at the location of this site under the direction of Dr. Douglas H. MacDonald. Dr. MacDonald reported that a total of 65 lithic artifacts were recovered during the Phase I survey of the property. Phase II studies uncovered four precontact features and 1,088 precontact artifacts, including Mahoning Ware pottery and a number of triangular projectile points dating to the Late Woodland period. A single Late Archaic Lamoka point was recovered during surface collections at the site. Phase III mitigation studies at the site revealed two distinct and stratified cultural components. Four small hearths and a low density lithic scatter dating to the Late Archaic period were uncovered in the lower stratum. The upper stratum yielded fragments of Mahoning Ware pottery, triangular points, three hearths, and two food processing features dating to the Late Woodland period.

Radiocarbon dates taken from features at the site support the premise that occupation at the site took place during the Late Archaic and Late Woodland periods. Charcoal removed from a feature during test unit (TU) excavation yielded a Late Archaic date of 3,740 ± 70 B.P., and a date of 3,580 ± B.P. was recovered from a second feature. Both features were uncovered in conjunction with the lower artifact densities. Radiocarbon dates for the Late Woodland period were derived from six features with dates of 1,090 ± 70 B.P. from a hearth feature, 840 ± 50 B.P. from a food processing pit feature, and another feature presented a date that likely post-dated A.D. 1275 (MacDonald 2000).

The Coverts Bridge Site (36LR0228)
In 1998, GAI Consultants, Inc., conducted Phase I through Phase III subsurface archaeological investigations on the Coverts Bridge Site (36LR0228), a Late Woodland period site located on the floodplain of the Mahoning River.

Six features and over 850 artifacts were recovered, including ground stone tools, grit-tempered pottery, Mahoning Ware pottery, and two triangular points. Flaked stone artifacts consisted of predominantly local cherts: Mahoning chert, Onondaga chert, and Gull River chert; the latter two were from secondary cobbles. Exotic Ten-Mile, Uniontown, Flint Ridge, and Upper Mercer cherts comprised less than 5 percent of the lithic artifacts, suggesting trade occurred with Monongahela elements to the south rather than Proto-Iroquois to the north.

Two storage pits, a nut-processing pit, a burned corncob with a calibrated Accelerator Mass Spectrometry (AMS) date of A.D. 1430 to 1645, and a precontact hearth with a calibrated AMS date of A.D. 1530 to 1690 were identified. Trace residue analysis suggests corn, hickory, wild fruit, and rabbit processing occurred on-site. The preponderance of data suggests the site was utilized as a short-term microband processing/procurement station in the late summer or early fall. The presence of corn, previously undocumented in the Mahoning Valley, suggests the existence of farm villages.

Feyke Field Site (36BV0195)

The Feyke Field Site (36BV0195) is a multi-component village site located on the floodplain 650 feet from an unnamed tributary of the Beaver River, upstream from the confluence between two water sources. The site sits at 880 feet above mean sea level. This multi-component site spans the Archaic through the Late Woodland periods. Kirk (Early Archaic), Brewerton, Steubenville (Late Archaic), and several Late Archaic stemmed points represent the Archaic occupation at the site. Forest- and Raccoon-notched types represent the Middle Woodland occupation, and Madison and Levanna triangles represent the Late Woodland period. Additional items recovered at the village site included side and end scrapers, hafted scrapers, and drills. Ground stone tools included celts, hammerstones, pitted stones, and choppers. The lithic material listed for the site is 5 to 10 percent Flint Ridge, and the remaining material is listed as chert. Unfortunately, no specific information is presented for individual diagnostic artifacts and chert type. Following the removal of the plowzone, upwards of 40 storage pits and more than 20 feet of a palisade wall were exposed at the site. Five of the storage pits were excavated, and the palisade included an entranceway.

The Ohioview (or Industry) Site (36BV0009)

The Ohioview Site (36BV0009) was examined in November 1959 and reported as a Monongahela village site where 16 human burials were uncovered. The site is located on the north bank of the Ohio River near the town of Ohioview in Beaver County. The site covered approximately 0.5 mile of bottomland and sits on the floodplain approximately 5 to 6 feet above the river. Salvage operations at the site became necessary after flood waters caused a large portion of the bank to fall into the river, thereby exposing a number of burials. Erosion and sand and gravel extraction had partially destroyed the site prior to the systematic investigations reported by Emil Alam (1961). A number of cultural features (aside from the burials) were identified at the site; evidence of a double stockade, post mold, numerous storage and fire pits, and a number of Late Archaic hearths were discovered near the base of the excavations. Pottery was the most numerous and significant artifact type found at the site and consisted of Monongahela type, Mahoning type, and Half-Moon type ceramics. Additional artifacts recovered at the site included 33 triangular points, six side-notched points, seven corner-notched points, and three narrow stemmed points, as well as a number of other chipped stone tools and many ground stone tools. Alam (1961) reported that many thousands of artifacts had been collected at the site and were in the possession of private citizens at the time of the excavations.

Sixteen burials were investigated at the site and included a fetus, children, and adults. Grave goods consisted mostly of Monongahela pot sherds and, in a few burials, beads accompanied the remains. A number of the burials displayed an unusual practice in that finger bones were discovered in the mouths of the skeletons. An examination of nine of the 16 human skeletal remains from the Ohioview Site was conducted by Faingnaert and Doyle (1977) from the Department of Anthropology at the University of Pittsburgh. The remains provided information regarding their ages, sex, statures, and other aspects. The results of their study concluded that the nine burials were similar to other burials from this period across the northeastern United States. The site population does not stand out as being any different than the other resident population studied to this date. The occupants of the Ohioview Site suffered from arthritis and cavities similar to occupants at previously recorded sites.

C. Summary and Introduction to Prehistory Chapters

The following chapters will present an overview of the research conducted at the PASS files located at the PHMC-BHP museum in Harrisburg. The chapters are organized chronologically by period of occupation within Watershed B of the Ohio River Subbasin. The periods covered in the following chapters include: Paleoindian, Early Archaic, Middle Archaic, Late Archaic, Early Woodland, Middle Woodland, Late Woodland, and Historic periods. As noted, the cultural sequence presented here is consistent with those presented by Raber (1985). The review of the PASS file information encompasses 14,000 years of prehistory in Watershed B in order to better understand Native American subsistence, demography, settlement patterns, site types, stone tool manufacture, and lithic raw material use.

IV. Paleoindian Period

CHAPTER IV
PALEOINDIAN PERIOD

A. Paleoindian Overview

The Paleoindian period characterizes the beginning of human habitation in the Mid-Atlantic region. Radiocarbon dates from Meadowcroft Rockshelter near Avella in Washington County, Pennsylvania, in association with polyhedral-core and blade-based lithic technology, recovered some compelling evidence for a possible pre-Paleoindian occupation as early as 14,000 B.C. (Adovasio 1993:207). Archaeological investigations of Paleoindian sites in the Mid-Atlantic region such as the Shawnee-Minisink Site along the Delaware River (McNett 1985) and the Thunderbird Site in the Shenandoah Valley (Gardner 1974), have offered a new understanding of Paleoindian subsistence, technology, and settlement in Pennsylvania. Traditional theories suggest that Paleoindians hunted Late Pleistocene megafauna such as mastodon and elk; these theories are based on the finds of large fluted stone points at megafaunal kill sites (Willey 1966). However, evidence from recent archaeological excavations of Mid-Atlantic region Paleoindian sites indicates that aboriginal diets may have included small game like hare and arctic fox and plant foods such as wild grape, black walnut, and blackberry (Dent 1995). The Higgins Site along the Kitten Branch in Anne Arundel County, Maryland, produced turkey fibers from several features, indicating the consumption of wild fowl (Ebright 1989). In New Jersey and the Central Pennsylvania region, it is suggested that white-tailed deer were the main game for Paleoindian hunters (Gardner 1980:19-20). Evidence from the Shawnee-Minisink Site indicated that Paleoindians might have begun to utilize fish as a food source as well (Dent 1985; McNett 1985). Excavations conducted at the Brook Run Jasper Quarry (44CU122) in Culpepper County, Virginia, provide an interesting view that early man intentionally quarried high-quality jasper from a seam and also collected jasper nodules from surrounding surface deposits (Virginia Department of Transportation [VDOT] 2005).

B. Paleoindian Material Culture, Chronology, and Subsistence

Given the broad range of food sources available, the toolkits of Paleoindians reflect hunting as the major focus of the diet. Most notably, the fluted point is the diagnostic trait of the Paleoindian toolkit. Other tools produced from Paleoindian period sites include scrapers, burins, gravers, utilized flakes, knives, and hammerstones (Custer 1984a; Funk 1972; Gardner 1980). Cryptocrystalline quartz such as chert, as well as quartz and quartzite, are typical materials used in the toolkit (Dent 1995).

The dependency on area game and plant sources and the depletion of area resources likely required Paleoindian peoples to migrate with seasonal changes. Archaeological evidence suggests Paleoindian sites can be divided into several types based on artifact assemblage and stone tool/debitage distribution. “Base camps” are identified by the artifact variety of the site assemblage, the indication of discrete activity areas based on the distribution of stone tools and debitage, and the presence of storage pits and post molds (Gardner 1974, 1980). An example of a base camp is the Thunderbird Site in Virginia. Smaller specialized sites, such as quarries and areas for lithic reduction, were used for brief periods. These specialized sites were utilized by smaller groups than evidenced at base camps (Dent 1995).

C. Paleoindian Sites

A total of seven archaeological sites that have yielded Paleoindian points, fluted and unfluted, have been recorded in Watershed B (Table 2). Three of the sites are recorded in the Glaciated Plateau portion of Lawrence County (Figure 7), and four are recorded in the unglaciated portion of Beaver County. Topographically, three sites are recorded on stream benches less than 330 feet to water, one site is recorded on the floodplain less than 200 feet from the Mahoning River, and a single site is recorded on a terrace 1,181 feet from a perennial stream. Three sites are recorded on flat uplands, including a single rockshelter site on a bluff overlooking the Ohio River, a historic and precontact site on a saddle, and an open habitation site located 656 feet from an unnamed tributary of the Beaver River.

Table 2. Paleoindian Sites in Watershed B (PASS Files).

County	Site Name	Site Number	Topography	Site Type	Distance to Water (meters)
Lawrence	Butch Farm	36LR0078	Stream Bench	Unknown	60
	Palen Farm	36LR0077	Floodplain	Unknown	60
	Miller	36LR0193	Saddle	Historic & Precontact	0
Beaver	Prosnic # 1	36BV0200	Terrace	Open	360
	Funckhouser	36BV0225	Hill Ridge/Toe	Open	200
	Mesing	36BV0348	Bluff	Rockshelter	100
	Sambol	36BV0201	Stream Bench	Open	0

The Butch Farm Site (36LR0078) is an open site located on a stream bench 196 feet from the Mahoning River. The recorded portions of this site located in Pennsylvania likely represent only a portion of a much larger open site that extends west into Ohio. The Butch Farm Site is a multi-component site that produced evidence of cord-marked, shell-tempered pottery, a Saint Albans Type "A" projectile point, and Plano-convex end scrapers. Evidence of Paleoindian occupation within the artifact assemblage includes the presence of the basal fragment of a fluted point of unknown origin. Little information regarding the Palen Farm Site (93LR0077) is available other than that it has been recorded near a natural pond on the floodplain of the Mahoning River, and the presence of artifact(s) from the Paleoindian period were reported by an informant. The Miller Site (36LR0193) is a multi-component site that dates from the Late Paleoindian period through historic times. This site is located on a saddle near an unnamed tributary of the Mahoning River more than 1 mile north of the Miller Site. Diagnostic material representing the Paleoindian period from the Miller Site (36LR0193) includes two fluted points, a Plano Complex Lanceolate point, and a stemmed Lanceolate spear point. Documented materials include Sky Hill chert, Upper Mercer chert, Coshocton, and Flint Ridge chert. However, the chert information is not specific to the point types, nor is it temporally diagnostic.

Three sites within the unglaciated portion of Beaver County at the southern end of the watershed have been recorded as containing artifacts that date to the Paleoindian period. The Sambol Site (36BV0201) is recorded as an open habitation site located on a small peninsula between two branches of Five Mile Run. This site was recorded by an informant who reported that a fluted point was discovered along with two chalcedony flakes, a chalcedony point tip, and a possible

Paleo scraper. The lithic material of the fluted point is described as glossy chalcedony of grayish black with a brownish cast, mottled with blotches and short bands of various gray colors. The Funckhouser Site (36BV0225) is recorded as a Paleoindian and Archaic site located on hilltop and ridges overlooking the Beaver River. A single Paleoindian artifact recorded as a fluted point was found in proximity to "archaic material." The PASS form states that the raw material of the fluted point is similar to that of the Archaic material, but not the same as Flint Ridge chalcedony. The Mesing Site (36BV0348) is a stratified rockshelter site with diagnostic artifacts from the Archaic through the Woodland periods within Watershed B. No diagnostic artifacts dating to the Paleoindian period were recovered at the Mesing Site; however, C^{14} samples taken from an undisturbed context below artifact-bearing layers were consistent with dates assigned to the Paleoindian period. This rockshelter sits on a bluff overlooking the Beaver River and was excavated by an amateur archaeologist; it was later visited by James Adovasio and Mark McConaughy on behalf of the PHMC-BHP.

The single site recorded in the glaciated portion of present-day Beaver County, the Prosnic #1 Site (36BV0200), was reported by an informant as a multi-component site on a terrace of the Beaver River with material from the Paleoindian through Woodland periods. The site assemblage included ground stone tools as well as diagnostic points, including a single fluted point, a Snyders point, a Kirk corner-notched point and a Hardaway point reported by Stan Lantz. No detailed information regarding material type was provided in the PASS files for this site.

D. Paleoindian Settlement Patterns and Lithic Raw Material Use

Meltzer argued that northeastern groups occupied open habitats and pursued mobile game such as caribou, while southeastern groups in boreal forests exploited more diverse faunal and floral resources. Lithic procurement patterns thus reflected the varying scales of subsistence territories and the different degrees of movement within those territories. Custer and Stewart (1990) have criticized this model, citing paleoenvironmental data that suggest boreal forests extended throughout much of the northeastern United States, replacing open tundra and parkland habitats.

Carr and Adovasio (2002:35-36) propose a Pennsylvania settlement pattern model based on more regionally oriented paleoenvironmental interpretations. They suggest that deciduous environments on the Unglaciated Plateau and in glaciated forests would have promoted more diversified subsistence foraging patterns. The Glaciated Plateau would have been covered by coniferous forests and more open habitats considered to favor mixed foraging with some caribou hunting.

Gardner (1974, 1977) argued that Paleoindian groups were often tethered to sources of high-quality raw materials, with elements of the settlement system conditioned by the availability of such materials. Group movements and catchment areas in the resulting "cyclical" pattern were centered on specific raw material sources. The issue is complicated by the general absence of faunal and floral data from most eastern Paleoindian sites and by the fact that many, but again not all, southeastern Paleoindian sites are located at or very near raw material sources and thus contain materials predominantly from those sources.

Carr and Adovasio (2002:31) indicate that Paleoindian sites in Pennsylvania may be categorized as small reduction and hunting stations ("isolated" fluted points that were probably once associated with other tools and flakes) and larger sites. The Shoop Site and other larger sites contain at least five fluted points with flake endscrapers, a high tool-to-flake ratio, and elevated percentages of distant materials. The Big Bend Site (36ME0024), located in nearby Mercer County produced at least eight fluted points from surface collections (Lantz 1986; Mayer-Oakes 1953:120).

Carr and Adovasio (2002:42) evaluate the Ohio drainage as consisting primarily of small Paleoindian loci that rarely have large numbers of tools or points. Assuming that deciduous vegetation was as common as suggested by Lepper (1988), they follow Lantz (1984) and Gramly (1988) in interpreting lithic raw material patterns as indicating cyclical use of the Coshocton formation to the west in Ohio and possibly another pattern of movement reflected in Onondaga cherts from western New York or Ontario.

A dominance of higher-quality cryptocrystalline materials in Paleoindian lithic assemblages has long been noted. Goodyear (1989) argued these materials reflected the technological needs of mobile populations. Meltzer (1989) built upon this idea in suggesting a latitudinal distinction in raw material procurement patterns ca. 11,500 to 10,000 B.P. Paleoindian sites in the northeastern United States are often, but not always, dominated by materials transported distances in excess of 60 miles, while those in the southeastern United States are generally dominated by locally available lithics. The Shoop Site in the Ridge and Valley Physiographic Province of Dauphin County provides a classic example of the northeastern pattern: the fluted points, endscrapers, and other artifacts have long been thought to have been made on Onondaga chert from the Great Lakes region of New York.

There are currently 61 Cultural Resource Survey Reports on file at the PHMC-BHP documenting the results of as many archaeological studies. Of all the documents reviewable in the PASS files, not a single one provides any information regarding Paleoindian lithic raw material use. In fact, the only information regarding Paleoindian lithic raw material use within Watershed B is derived from multi-component sites that do not differentiate the type of material used for specific projectile points. Table 3 presents the raw material types recorded at each of the Paleoindian sites recorded in Watershed B.

Table 3. Lithic Raw Material Listed at Paleoindian Sites in Watershed B.

Site	Onondaga	Flint Ridge	Upper Mercer	Coshocton	Chalcedony	Sky Hill	No Information
Butch Farm	-	-	-	-	-	-	X
Palen Farm	-	-	-	-	-	-	X
Miller	-	X	X	X	-	X	-
Prosnic #1	-	-	-	-	X	-	-
Funckhouser	-	X	-	-	-	-	-
Mesing	-	-	-	-	-	-	X
Sambol	-	-	-	-	-	-	X

As Table 3 shows, only a single site within the watershed is attached to a known Western Pennsylvania chert source, Sky Hill chert identified in Lawrence County. Current information shows that Paleoindian period occupants preferred the higher quality cryptocrystalline cherts

from sources in Ohio. chert obtained from the above-mentioned sources include Flint Ridge, Upper Mercer, and Coshocton. Lithic material was described at the Sambol Site as glossy chalcedony, grayish black with brownish cast with mottled blotches and short bands of various shades of gray and definitely appears heat treated; these characteristics certainly fits the description of Sky Hill chert as described by Adovasio et al. (1974).

Each of the sites has been recorded as multi-component, and in five of the seven cases only a single Paleoindian projectile point was identified. A single site was identified by a C^{14} sample taken below a stratum that produced lithic debitage. Based on the available information, the sites identified with a Paleoindian component closely follow Carr and Adovasio's proposed settlement pattern for Paleoindian occupation (2002:31).

Considering the limited information provided in the PASS files, one can discern little information regarding this period when it comes to settlement patterns. Available information suggests that Paleoindian populations within Watershed B used floodplains, upper terraces along tributaries, and flat upland areas overlooking major waterways as locations for small short-term campsites. Despite the fact that limited information regarding the Paleoindian occupation exists at each of the site locations, the fact that they have all been occupied during a number of latter components does suggest that they are prime locations for the collection of natural resources by aboriginal peoples.

Unfortunately, another downfall of the PASS file information available for this period is the limited data regarding lithic raw material as it pertains to diagnostic Paleoindian artifacts. Lithic raw material data is an important piece of information that can be useful for interpreting settlement patterns and trade between individuals and groups. As stated earlier, there is no specific information regarding lithic raw material types and the Paleoindian components within Watershed B.

E. Research Issues

Based on the gathered information, it is obvious that little is known about the earliest occupation of the watershed by aboriginal groups. More significant sites that date to this period are located further to the north and south of Watershed B including Meadowcroft Rockshelter (36WH0297) in Washington County and the Big Bend Site (36ME0024) in Mercer County. There are a number of issues that must be taken into consideration regarding the Paleoindian period when conducting archaeological investigations within Watershed B of Subbasin 20:

1. When did the first aboriginal occupants settle in Watershed B?

2. Were they utilizing locally available chert such as Sky Hill?

3. What were the defining factors that lead Paleoindians to choose their sites for hunting and/or settlement within the watershed?

4. What types of features define Paleoindian occupation in the watershed and where are they located?

5. What environmental or social characteristics were driving Paleoindians to choose locations such as the Meadowcroft and Big Bend sites over areas in Watershed B?

6. Besides fluted and unfluted spearpoints, what other types of lithic tools were utilized by Paleoindian occupants of the watershed?

7. What were the food types exploited by Paleoindians within the watershed?

8. What does the presence of exotic raw materials on Paleoindian sites tell us about the travel and settlement patterns of the first inhabitants of the watershed?

These questions are not comprehensive for the entire Paleoindian cultural component within Watershed B. They are simply a starting point for future research. In the event that sites dating to this period are identified and any of the above questions can be addressed, they will be eligible for the National Register of Historic Places under Criterion D.

V. Early Archaic Period (7500 B.C. to 6000 B.C.)

CHAPTER V
EARLY ARCHAIC PERIOD (7500 B.C. to 6000 B.C.)

A. Early Archaic Material Culture and Chronology

The Early Archaic peoples continued the traditions of those from the Paleoindian period. Settlements expanded into more diverse environments and utilized a wide variety of shellfish, fish, game, and other plant food resources such as nuts, berries, and roots (Dent 1995). The appearance of the corner-notched tradition (7500 to 6800 B.C.) and the Bifurcate Tradition (6800 to 6000 B.C.) represent tool style changes that are characteristic of the Early Archaic period. Early Archaic projectile point diagnostics include types identified at locations further south in the Ohio Valley. These projectile point types included Kirk corner-notched and Kirk stemmed points as well as LeCroy bifurcate base points and Kanawha stemmed points (Raber et al. 1998). Figure 8 presents an idea of how typical Kirk corner-notched point may appear.

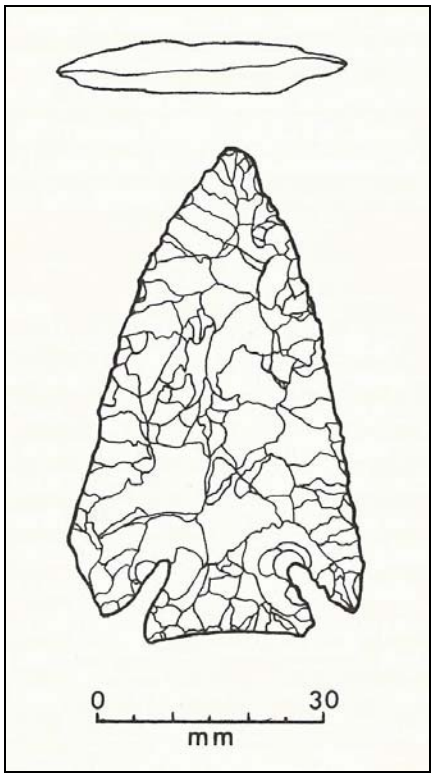
The transition from the terminal Pleistocene to the emerging Holocene interglacial has been correlated by Watts (1983) with the appearance of oak and hemlock in the pollen spectrum ca. 10,000 B.P. to 9,500 B.P. These environmental changes are frequently associated with an increasing transition to an interglacial deciduous forest during the Preboreal and Boreal climates in the early Holocene. However, Carr (1998) and McWeeney and Kellogg (2001) emphasize the latitudinal nature of environmental change between 10,000 B.P. and 8,000 B.P. An oak-pine-hemlock forest emerged in the Northeast by 9,000 B.P. as a *Quercus-Carya* (oak-hickory) forest setting was present in the warmer Southeast. By 8,000 B.P., the *Quercus-Carya-Castanea* (oak-hickory-chestnut) forest was established in the Northeast (McWeeney and Kellogg 2001).

The Early Archaic has been combined by Gardner (1989) and others (Custer 1994, 1996) with the Paleoindian period into a broad late Pleistocene-early Holocene adaptational continuum. The postulate changes in projectile point form and an increasing focus on locally available raw materials are also indicted early in the Archaic, although Gardner argued that the raw material change was more of a Middle Archaic phenomenon. Johnson (in Rudolph et al. 1996:17) has suggested that a change in projectile point design during the Early Archaic may be related to presumed pursuit of white-tailed deer in the deciduous forests, but agreed with others who perceive little material change from the preceding Paleoindian period.

B. Early Archaic Archaeological Sites

There are 13 sites with evidence of Early Archaic occupation recorded within Watershed B on file at the BHP (Table 4). Overall, six of the recorded 13 sites are located within the glaciated portion of the subbasin: four in Lawrence County and two in Beaver County (Figure 9). Of the recorded Early Archaic sites, more than half (eight of 12) are multi-component sites with material that represents temporal affiliations from the Paleoindian to the Late Woodland periods. Only four sites, represented by diagnostic projectile points, date specifically to the Early Archaic period.

Figure 8
Early Archaic Kirk Corner-Notched Point



(Justice 1987:74)

Table 4. Early Archaic Sites in Watershed B (PASS Files).

County	Site Name	Site Number	Topography	Site Type	Distance to Water (m)
Lawrence	Boarts Site	36LR0036	Terrace	Lithic Workshop	150
	Kaufman Rockshelter	36LR0164	Stream Bench	Rockshelter	20
	Boyer B-1	36LR0234	Terrace	Lithic Reduction	76
	Boyer D	36LR0236	Terrace	Lithic Reduction	183
	Boyer G-1	36BV0238	Hilltop	Lithic Reduction	457
Beaver	Caylor's Ferry	36BV0194	Stream Bench	Rockshelter	0
	Coble Farm	36BV0068	Terrace	Unknown	60
	C-4	36BV0236	Hilltop	Open	160
	Feyke Field	36BV0195	Floodplain	Village	220
	Graleski	36BV0255	Floodplain	Unknown	80
	Mesing	36BV0349	Bluff/Cliff	Rockshelter	100
	Prosnic #1	36BV0200	Terrace	Open	360
	44 Acres	36BV0301	Stream Bench	Open	200

Three sites were identified by R. Christopher Goodwin & Associates, Inc., during a pipeline survey in 1999: the Boyer Reroute B-1, Locus 2 Site (36LR0234); the Boyer Reroute D, Locus 1 Site (36LR0236); and the Boyer Reroute G-1, Locus 1 Site (36LR0238). All three sites produced a single diagnostic Early Archaic projectile point. The Boyer Reroute B-1, Locus 2 Site is located on a terrace 250 feet from an unnamed tributary of Beaverdam Run in an agricultural field at 1,060 feet above mean sea level. A total of 14 precontact artifacts were recovered from the site, including a single Saint Charles type point. The remaining artifacts consisted of eight non-cortex chert flakes, three utilized chert flakes, a single piece of chert shatter, and an unidentified chert biface. The Boyer G-1 Site is located in an apple orchard on a hilltop 1,500 feet from an unnamed tributary of Beaverdam Run. This site, by far the most productive of the three, produced a total of 65 precontact artifacts, including 44 non-cortex chert flakes, nine pieces of chert shatter, nine utilized chert flakes, two chert bifaces, and a single chert core. The diagnostic artifacts include a single Kirk point/knife and a resharpened possible Kirk corner-notched point/knife.

Several important multi-component sites containing evidence of Early Archaic occupation are recorded within the watershed, including three rockshelters and a fortified village site, as well as an extensive open habitation site. The following portion of this chapter presents information regarding those sites.

Boarts Site (36BV0036)
The Boarts Site (36BV0036) is a lithic workshop site discussed in the previous chapter.

Kaufman Rockshelter Site (36LR0164)
PASS file information suggests that the Kaufman Rockshelter Site (36LR0164) is the only significant Early Archaic site located within Lawrence County and one of three recorded within the Glaciated Plateau. The Kaufman Rockshelter Site is recorded as being located on a stream gully near Small Spring Run at 1,040 feet above mean sea level. The site was excavated by the landowner in 1969 for whom the site is named, only to find out that previous excavations had occurred prior to his investigations. This site is listed in the PASS files as a multi-component site. However, the PASS form only lists the presence of five Vanport chert artifacts and three Upper Mercer artifacts, along with the fragment of a Kirk stemmed and most of a Kirk corner-notched projectile point. Both diagnostic artifacts are constructed from Coshocton chert.

Caylor's Ferry Shelter (36BV0194)
The Caylor's Ferry Shelter Site (36BV0194) is a rockshelter site with diagnostic artifacts from the Early Archaic through the Late Woodland periods. The shelter is located on a stream bench of an extinct stream, west of a second extinct stream 2,300 feet from the Beaver River. The site sits at 840 feet above mean sea level. Early Archaic occupation is represented by a single Kirk corner-notched projectile point of unknown material. Additional artifacts that comprise the assemblage recovered at this site include chipped stone tools, ground stone tools, precontact ceramics, and antler and bone artifacts, as well as a Steubenville/Fox Creek point and a Late Woodland triangular point.

Coble Farm (36BV0068)
The Coble Farm Site (36BV0068) is listed as an unknown function open site greater than 265 feet in radius located on a rolling terrace south of a hill and north of Bieler Run in Beaver County. A spring that flows from the hill and empties into Bieler Run is located within 100 feet of the site. Material recovered at this site by Emil Alam and Stan Lantz in 1975 was found on the highest elevation of the terrace. The PASS form states that a considerable collection from this site represents a strong Middle Woodland and Archaic (Brewerton point) occupation. A Kirk stemmed point was recovered at the site as well as an indication of an Early Archaic occupation at the site. Flint Ridge material was well represented in the site assemblage.

C-4 Site (36BV0236)
The C-4 Site (36BV0236) was identified during a cultural resources survey for the proposed reconstruction of the Pennsylvania Turnpike from Mileposts 1.85 to 9.29 by New Consultants, Inc. This site is located on a hilltop 525 feet from an extinct stream at 1,200 feet above mean sea level. Shovel test pit (STP) excavation at the site produced several pieces of chert debitage and a single "Early Archaic" projectile point. The material is listed as chert with no source information.

Feyke Field Site (36BV0195)
The Feyke Field Site (36BV0195) is discussed in detail in Chapter III.

Graleski Site (36BV0255)
The Graleski Site (36BV0255) is listed as a small camp site located on a stream bench 262 feet from Brandy Run at 1,080 feet above mean sea level. A single Kirk corner-notched point was recovered during a surface collection by an amateur archaeologist. The point is reported as derived from glacial Onondaga chert.

Mesing Site (36BV0349)
The Mesing Site (36BV0349) produced the only Early Archaic radiocarbon dates in Watershed B. No diagnostic artifacts dating to the Early Archaic period were recovered at the Mesing Site; however, a C^{14} date of 9,220 ± 25 B.P. was derived from a charcoal sample taken during test square excavation in the shelter.

Prosnic #1 Site, 36BV0200
The Prosnic #1 Site (36BV0200) was discussed in the previous chapter. Little information regarding this site is presented in the PASS files other than it is a camp site on a stream bench of the Little Beaver Creek and recovered artifacts date to the Paleo, Early Archaic, and Middle Woodland periods. The site was destroyed by strip mining.

44 Acres Site (36BV0301)
The 44 Acres Site (36BV0301) is an open habitation, multi-component site located on a terrace 656 feet from the North Fork of Little Beaver Creek, at 900 feet above mean sea level. Typology of points from the examined personal collection includes Kirk and MacCorkle points representing the Early Archaic occupation at the site. The Middle Archaic occupation is represented by LeCroy and Brewerton types, and Brewerton and Archaic stemmed points represent the Later Archaic. A Snook Kill point is listed as Transitional Archaic. The Woodland

periods are represented by an Adena Ovate Base point (Early Woodland); Snyders points and many cache blades (Middle Woodland); and triangular points and shell-tempered pottery (Late Woodland). The landowner reported the site as a possible burial mound that had been destroyed. The landowner purchased the property on which this site is located because he knew that it was an archaeological site and wanted to excavate it himself. No report was ever prepared. The lithic assemblage is reported as 85 percent locally available chert, 7 percent Coshocton chert, and 8 percent Flint Ridge chert. However, no detailed information is provided regarding which type of material is used for the diagnostic points.

C. Early Archaic Settlement Patterns and Lithic Raw Material Use

There appears to be shift from upland locations preferred during the Paleoindian period to more focused habitation of alluvial settings within Watershed B during the Early Archaic period. MacDonald et al. (2003) and Adovasio (in MacDonald et al. 2003) reported similar changes in site distribution in Watershed D. MacDonald suggested this change in distribution may be a reflection of travel patterns with Early Archaic peoples preferring to travel along river terraces and Paleoindian people travelling along upland ridges. PASS file data provides topographic information for each site where Early Archaic diagnostic artifacts have been recovered. Table 5 provides the number of sites identified within each topographic setting.

Table 5. Early Archaic Site Location Data for Watershed B (PASS Files).

Topographic Setting	**Number of Sites**
Floodplain	2
Hilltop	2
Terrace	5
Stream Bench	3
Bluff/Cliff	1
Total	**13**

Of the 13 Early Archaic sites, only two are recorded on floodplain settings, two are located on hill ridges/toes, three are located on stream benches, and a single site was identified on a bluff or cliff overlooking the Ohio River. Terrace locations for Early Archaic sites dominate the information provided by the PASS files. The provided data set suggests that settlement patterns during this period are less focused on floodplains with more emphasis on terraces and upland areas as resources became more readily available. For the Early Archaic period, site placement in relation to water access is a defining element. Of the 13 sites, six are located within 330 feet of the nearest water source, five are located within 985 feet, and only two are recorded as 985 feet or more. The mean distance from water for the designated Early Archaic sites is 521.39 feet.

One hundred percent of the material represented at the Boyer Site was listed in the PASS files as chert. No origin of the raw material was provided. Precontact populations which occupied Watershed B during the Early Archaic period utilized not only locally abundant Sky Hill chert but also a wide variety of imported or “exotic” materials that included Flint Ridge, Coshocton, Plum Run, and Onondaga chert types. Table 6 presents the chert types recorded for the Early Archaic sites recorded in the PASS files. The PASS files include only one Early Archaic site listed as a single component site. As a data set of such a small number of single component sites exists for the watershed, there is little information that is useful for evaluating lithic raw material

use. Unfortunately, as is often the case on multi-component sites, no raw material information is provided for individual tools.

Table 6. Early Archaic Sites in Relation to Chert Types for Watershed B (PASS Files).

Site Name	Sky Hill	Flint Ridge	Coshocton	Onondaga	Chalcedony	"Chert" Present	No Information
Boarts	X	-	-	-	-	-	-
Kaufman Rockshelter	-	X	X	-	-	-	-
Boyer B-1	-	-	-	-	-	X	-
Boyer D	-	-	-	-	-	X	-
Boyer G-1	-	-	-	-	-	X	-
Caylor's Ferry	-	-	-	-	-	X	-
Coble Farm	-	X	-	-	-	X	-
C-4	-	-	-	-	-	-	X
Feyke Farm	-	X	-	-	-	-	-
Graleski	-	-	-	X	-	X	-
Mesing	-	-	-	-	-	-	X
Prosnic #1	-	-	-	-	X	-	-
44 Acres	X	X	X	-	-	-	-

Changes in projectile point form and an increasing focus on locally available raw materials are also indicated early in the Archaic period. Table 7 provides evidence that locally available chert is beginning to become more extensively used by Native American populations within the watershed. Of the 13 sites within the watershed, the presence of chert is recorded at more than half (six), and locally available Sky Hill chert is recorded at two sites.

Table 7. Early Archaic Diagnostic Artifacts in Watershed B (PASS Files).

Site Name	Diagnostic Artifact
Boarts	Kirk corner-notched
Kaufman Rockshelter	Kirk corner-notched and Kirk stemmed
Boyer B-1	St. Charles corner-notched
Boyer D	Kirk
Boyer G-1	Kirk, Kirk corner-notched
Caylor's Ferry	Kirk
Coble Farm	Kirk stemmed
C-4	Archaic listed
Feyke Farm	Kirk corner-notched
Graleski	Kirk corner-notched
Mesing	No diagnostic point recovered
Prosnic #1	Kirk
44 Acres	Kirk, MacCorkle

As presented in Table 7, Kirk corner-notched points are the predominant diagnostic artifacts and appear at five of the 13 sites, and some form of Kirk point is listed at ten of the 13 sites. A Saint Charles corner-notched point represents the only other Early Archaic point type. A single site was simply listed as Archaic being present, and no diagnostic artifacts from the Early Archaic were recovered at the third site.

D. Early Archaic Summary and Research Questions

There are 13 Early Archaic sites listed in Watershed B. The number of sites has nearly doubled from those listed for the Paleoindian period (seven). The increase is a significant one if the number of sites is averaged by decade of the period. The Paleoindian period lasted approximately 250 decades, and seven Paleoindian sites were identified, or 0.03 sites per decade. In comparison, the Early Archaic period averaged 120 decades, and 13 sites were identified, or 0.11 sites per decade. In all likelihood, population densities during the Paleoindian period were extremely low, resulting in a lower site count; obvious occupation increases during the Early Archaic period are represented by an increased number of identified sites.

A significant difference between Paleoindian and Early Archaic periods is the distribution of the recorded sites. Whereas the Paleoindian sites were widely distributed throughout the watershed, the Early Archaic sites are more centrally located on either side of the glaciation boundary (Figures 7 and 9). The sites are nearly evenly distributed on either side of the boundary, with seven sites recorded north of the glaciation boundary and eight recorded south of the boundary. Mean distances to water during the Early Archaic period increased from 365.55 feet during the Paleoindian period to 521.39 feet for the Early Archaic. This number appears to be misleading, in that some information regarding the sites' distances to water is absent for several of the Paleoindian sites. More informative is the number of Early Archaic sites located on landforms closer to water sources. Of the 13 recorded sites, only three have been identified on upland landforms, with the remaining ten located on terraces, stream benches, and floodplains. The difference in number of upland versus bottomland sites confirms the movement away from upland to alluvial settings and provides evidence of expanding resource exploitation.

Based on the data derived from the study of the sites listed in the PASS files as having Early Archaic material for Watershed B, it appears that distinct changes occurred following the Paleoindian occupation. The Early Archaic period is marked by increased populations, movement from upland areas to alluvial settings, and changes in projectile point typology. Projectile point assemblages from this period seem to suggest wide-ranging travel and trade throughout southwestern Pennsylvania, Ohio, and northern West Virginia, as evidenced by the presence of exotic raw materials at a few site locations.

In summation, the research into the Early Archaic period archaeological data for Watershed B has raised a number of questions that should be taken into consideration when conducting archaeological research in that area. These questions are not comprehensive for the entire Early Archaic cultural component within Watershed B; they are simply a starting point for future research. In the event that sites dating to this period are identified and any of the questions below can be addressed, they will be eligible for the National Register of Historic Places under Criterion D:

1. Does the Early Archaic period truly represent an "Adaptational Continuum" with the late Paleoindian period? Or, does it represent a cultural transition?

2. What precipitated the move from upland site locations during the Paleoindian period to alluvial settings during the Early Archaic period?

3. What types of lithic raw material was used during the Early Archaic period?

4. What precipitated the change in projectile point technology?

5. What precipitated the change in settlement pattern from wide spread distribution during the Paleoindian period to the localization around the glacial boundary during the Early Archaic period?

VI. Middle Archaic Period (6000 B.C. to 4000 B.C.)

CHAPTER VI
MIDDLE ARCHAIC PERIOD (6000 B.C. to 4000 B.C.)

A. Middle Archaic Overview

Similar to the Early Archaic period, little is known about the Middle Archaic period in the glaciated Appalachian Plateau (Stewart and Kratzer 1989). Environmental fluctuations diminished in the Middle Archaic as the climate warmed to an average temperature near that of the present day. An increase in precipitation also occurred during the Middle Archaic period. These stable and favorable environmental factors and diversification of the resource base caused the aboriginal population to expand over a larger geographic area. Middle Archaic groups utilized a diverse range of topographic settings, including upland swamps, interior ridgetops, springheads, and estuarine margins. An oak-hemlock-hickory forest characterized the Mid-Atlantic landscape and yielded bountiful mast crops that provided food for humans and the increasing woodland faunal populations, especially deer. The populace became more sedentary with the stability and availability of these resources, encouraging a sense of territoriality based on the resources located within a physiographic province or drainage basin (Custer 1984a).

The Middle Archaic is generally correlated with the Atlantic climatic phase at about 8,000 B.P. Interpretations of environmental conditions during the Middle Archaic vary. Custer (1996:34) argued for warm and wet climates between 8,500 B.P. and 5,000 B.P. (6500 to 3000 B.C.). However, Johnson (in Rudolph et al. 1996:24-26) suggested the Xerothermic maximum may have occurred ca. 6,500 B.P. to 6,000 B.P. More recent interpretations correlate the Atlantic phase, with the dry Hypsithermal commencing about 8,500 B.P. (McWeeney and Kellogg 2001) or 7,500 B.P. (Anderson 2001) and ending at the Subboreal phase about 5,000 B.P. (Anderson 2001). Deciduous forests, at least in New England, began an overall decline until ca. 5,000 B.P. during the Hypsithermal (McWeeney and Kellogg 2001).

The Middle Archaic occupation at the stratified West Water Street Site on the West Branch of the Susquehanna River was defined as a non-contemporaneous series of small individual base camps due to the wide range of artifacts and the small, discrete clusters in which those artifacts were found (Custer et al. 1996:36). Stewart and Cavallo (1991:31) similarly argued that the stratified Area D at the Abbott Farm complex near the Delaware River consisted of non-contemporaneous small clusters of lithics around hearths, perhaps created by individual families. Carr (1998:81) observed that Stewart and Cavallo defined a Middle Archaic base camp based on tool variation and feature presence but not necessarily large size, and that such base camps differ from those proposed by Gardner (1989) for either Paleoindian/Early Archaic or Late Archaic occupations.

B. Middle Archaic Material Culture and Chronology

While Middle Archaic toolkits continued to resemble those of previous periods, several types of ground stone tools were developed to process an expanded resource base. The variety of grinding tools such as mortars and pestles that are found on Middle Archaic sites indicate the increased reliance on plants in the diet.

Bifurcate-based points (MacCorkle, St. Albans, and LeCroy) are considered by many to be manifestations of the early Middle Archaic (Figure 10). The earliest bifurcate level at the Fifty Site (Carr 1992) near Thunderbird was dated to 8,900 B.P. St Albans points date to ca. 8,800 B.P., while LeCroy points are slightly more recent at ca. 8,300 B.P. (Broyles 1971, Chapman 1975). Broyles (1971) observed some evidence of overlap between LeCroy and Kanawha points, with both disappearing from the archaeological record by 8,100 B.P. The Middle Archaic, in some scenarios, ends about 5,500 B.P. (Carr 1998:79). The later Middle Archaic is indicated by various stemmed point types: Kanawha, Stanly/Neville, and Otter Creek.

C. Middle Archaic Archaeological Sites and Locations

There are only nine sites listed in the PASS files dating to the Middle Archaic period. Of the nine sites, only a single site is located in a floodplain setting. There are three sites located on stream benches, two recorded on terrace settings, and a single site on a saddle and one on a ridge top. Figure 11 and Table 8 provide the information regarding the location and setting of the dateable Middle Archaic sites in Watershed B.

Table 8. Middle Archaic Sites in Watershed B (PASS Files).

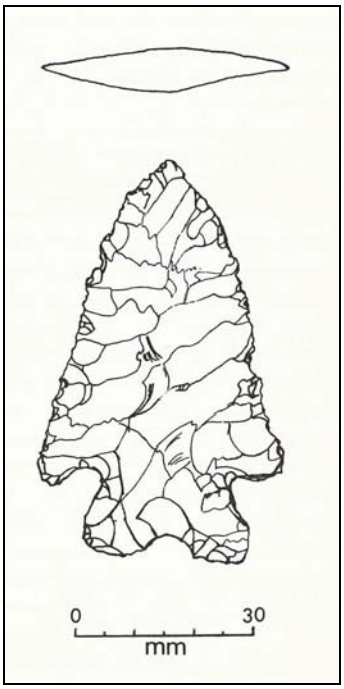
County	Site Name	Site Number	Topography	Site Type	Distance to Water (m)
Lawrence	Boyer B, Locus 1	36LR0232	Stream Bench	Lithic Reduction	31
	Boyer D, Locus 1	36LR0236	Terrace	Lithic Reduction	183
	Miller	36LR0193	Saddle	Historic & Precontact	0
Beaver	B-2 (Heifer)	36BV0233	Floodplain	Open Habitation	40
	Darlington Lake	36BV0077	Hill Ridge/Toe	Unknown	70
	Johnson Farm	36BV0252	Ridgetop	Open Habitation	140
	Mott Pit #2	36BV0228	Terrace	Open Precontact	140
	Novakovic	36BV0127	Stream Bench	Open Precontact	120
	44 Acres	36BV0301	Stream Bench	Open Precontact	200

Boyer B, Locus 1 (36LR0232)
The Boyer B, Locus 1 Site (36LR0232) is recorded as a multi-component lithic reduction site located on a western slope of 5 degrees on the terrace of an unnamed tributary to Beaverdam Run. The site was identified as part of a cultural resources survey by R. Christopher Goodwin & Associates, Inc. The site sits at approximately 1,040 feet above mean sea level. The assemblage recovered at the site includes 11 pieces of chert shatter, 49 non-cortex chert flakes, two chert scrapers, one bifurcate fragment (Kanawha type), one stemmed Savannah River-like point, one corner-notched point, and one quartzite non-cortex flake. Lithic raw material is listed as 99 percent local chert and 1 percent quartzite.

Boyer D, Locus 1 (36LR0236)
The Boyer D, Locus 1 Site (36LR0236) is a multi-component site discussed in the previous chapter. A single diagnostic Middle Archaic projectile point (bifurcate) was recovered at this site.

Miller Site (36LR0193)
The Miller Site (36LR0193) is a multi-component site discussed in Chapter IV.

Figure 10
Middle Archaic MacCorkle Stemmed Point



(Justice 1987:87)

B-2, or Heifer Site (36BV0233)
The B-2 Site (36BV0233) is an open air site located on the floodplain of an unnamed tributary of Wallace Run at 950 feet above mean sea level. A single chert MacCorkle point was recovered at this site. Additional information provided by the PASS files states that chert was present and that Archaic material was recovered at the site.

Darlington Lake Site (36BV0077)
The Darlington Lake Site (36BV0077) is a multi-component site located on a hill ridge/toe 230 feet northwest of an unnamed perennial stream, at 900 feet above sea level. The site is located on a western-facing slope. Artifacts recovered at this location include bifurcated points, Brewerton points, and a few Late Archaic projectile points. The assemblage is part of a personal collection that was reviewed by Stan Lantz, who suggested that the site has a strong Middle Woodland component with Flint Ridge present. He also noted the presence of several late triangular points and some Garvers Ferry points.

Johnson Farm Site (36BV0252)
The Johnson Farm Site (36BV0252) is an open camp site identified by Emil Alam. The site is located on a hilltop 460 feet from Wolf Run and Dry Run, at 1,180 feet above mean sea level. The site spans the entire Archaic period into the Early Woodland period. Recorded artifacts in Mr. Alam's collection from this site include Snyders, Fox Creek, Adena, Forest-notched, Rossville, Brewerton, Big Sandy, and a cache of MacCorkle points. Additionally, numerous ground stone tools were recovered at the site. Stan Lantz recorded this site and noted that the

bifurcated points from this site in Mr. Alam's collection make this an important Middle Archaic site. Lithic materials at this site include Vanport, Glacial Onondaga, and Zaleski cherts.

Mott Pit #2 Site (36BV0228)
The Mott Pit #2 Site (36BV0228) is listed as a Middle Archaic site based on unknown factors. A single distal fragment of a non-diagnostic spear point was discovered at the site. The remaining portion of the recovered assemblage includes two chert flakes and one chert chunk. The chert material is listed as Sky Hill.

Novakovic Site (36BV0127)
The Novakovic Site (36BV0127) is an open habitation site located 394 feet southeast of a perennial stream, at 1,000 feet above mean sea level. This multi-component site contained artifacts that dated from the Middle Archaic to the Late Woodland periods. The assemblage consisted of eight bifurcate points and one of each unidentified points from the Late Archaic, Early Woodland, Middle Woodland, Late Woodland, and Prehistoric periods. A single Otter Creek point was also present. The site lithic material is listed as 81 to 90 percent chert and 0 to 10 percent unknown. Portions of this site were destroyed by highway construction in the 1960s.

44 Acres Site (36BV0301)
The 44 Acres Site (36BV0301) is a multi-component site with artifacts representing the Early Archaic through the Late Woodland periods. Middle Archaic diagnostic artifacts include a Lecroy/Brewerton style point.

D. Middle Archaic Settlement Patterns and Lithic Raw Material Use

During the Middle Archaic period, as the climate changed from the drier and cool conditions of the Early Holocene to a warmer and wetter regime during the Middle Holocene, populations adapted to the changing environment and specialized subsistence strategies developed. Most notably, with the spread of mast-bearing trees into interior areas, it appears that Middle Archaic groups relied more heavily on inland areas for subsistence, as indicated by the occurrence of small procurement and base camps associated with the period in interior settings (Custer 1996). The settlement model for the period includes base camps/staging areas associated with small, transient camps and individual activity areas. During the period, quarry sites appear not to have been as important a focus as during the earlier times due to the exploitation of a broader, locally available variety of lithic materials. The reuse of sites suggests increased territoriality and/or a better-defined subsistence strategy adapted to local resources (Stewart and Cavallo 1991). There is one site listed as a single-component Middle Archaic site. As was the case with the data set for the Early Archaic period, no significant information regarding lithic raw material procurement is available for the Middle Archaic period. Table 9 presents the chert sources during the Middle Archaic period.

Table 9. Chert Sources Identified at Middle Archaic Sites in Watershed B (PASS Files).

Site Name	Sky Hill	Flint Ridge	Coshocton	Onondaga	Chalcedony	"Chert" Present	Other	No Information
Boyer B	-	-	-	-	-	**X**	**Quartzite**	-
Boyer D	-	-	-	-	-	-	-	-
Miller	-	-	-	-	-	-	-	-
B-2 (Heifer)	-	-	-	-	-	**X**	-	-
Darlington Lake	-	**X**	-	-	-	**X**	-	-
Johnson Farm	-	**X**	-	**X**	-	-	-	-
Mott Pit #2	**X**	-	-	-	-	**X**	-	-
Novakovic	-	-	-	-	-	-	-	-
44 Acres	-	-	-	-	-	-	-	**X**

Settlement within the watershed appears to continue in the same manner as during the Early Archaic period. Table 10 provides the topographic setting of all the recorded Middle Archaic site locations. Sites are located predominately near readily available water sources in alluvial settings, with few sites located in upland areas. In every instance, the upland sites with Middle Archaic material identified in upland settings are multi-component sites. Little information regarding settlement patterns is available due to such a small data set.

Table 10. Middle Archaic Site Location Data for Watershed B (PASS Files).

Topographic Setting	Number of Sites
Floodplain	1
Hilltop/Ridge/Middle Slope	2
Terrace	2
Stream Bench	3
Saddle	1
Total	9

The mean distance from water decreased during the Middle Archaic period. In comparison to the Early Archaic period (mean distance 521.39 feet), the Middle Archaic mean distance is 336.84 feet from water. When making comparisons to the number of sites by average of sites per decade, occupation of the area decreased significantly. The Early Archaic averaged 13 sites in 120 decades, or 0.11 sites per decade, in comparison to the Middle Archaic period's average of 9 sites in 350 decades, or 0.03 per decade; this marks a considerable decline. This low number of identified sites is closer to the average number of sites recorded during the Paleoindian period.

E. Middle Archaic Summary and Research Questions

The Middle Archaic period in Watershed B is poorly represented in comparison to Watershed D of the same subbasin. MacDonald et al. reported that 45 Middle Archaic sites are recorded in Watershed D (2003:47) in comparison to nine sites recorded in Watershed B. Settlement patterns and site locations differ from the Early Archaic to the Middle Archaic. Early Archaic site locations were focused on either side of the glaciation boundary, whereas Middle Archaic sites tended to be more broadly distributed.

The data set for this time period is limiting and does not present very significant information regarding Middle Archaic occupation within Watershed B. The lack of available information raises a number of questions when considering archaeological investigation within this area. These questions are not comprehensive for the entire Early Archaic cultural component within Watershed B; they are simply a starting point for future research. In the event that sites dating to this period are identified and any of the questions below can be addressed, they will be eligible for the National Register of Historic Places under Criterion D.

1. What factors caused the decrease in Middle Archaic occupation in Watershed B?

2. Is there evidence of a distinct cultural change from the Early Archaic to the Middle Archaic period?

3. What lithic material was used predominately throughout the Middle Archaic period?

4. What brought about the change in lithic technology, from notched and stemmed points to bifurcate point types?

5. What other types of tools comprised the toolkits of the Middle Archaic occupants of Watershed B?

6. Did a shift in food resource procurement occur during the Middle Archaic, or can that be attributed to an earlier period?

7. What caused Middle Archaic peoples to populate areas away from glaciation boundary when Early Archaic occupation was primarily focused in that area?

VII. Late Archaic Period (4000 B.C. t 1000 B.C.)

CHAPTER VII
LATE ARCHAIC PERIOD (4000 B.C. to 1000 B.C.)

A. Late Archaic Overview

The Late Archaic period is marked by a greater emphasis on local resource exploitation. Settlement patterns tend to focus more along interior drainages of first-order streams and have larger social groupings and increased sedentism (Mouer 1990). The embayment of the Susquehanna drainage facilitated the development of more riverine and estuarine environments. Oyster beds developed as estuarine areas stabilized, providing Late Archaic Native Americans with an abundant food source. Very large shell midden sites along the bay, tidal rivers, and estuarine areas testify to the exploitation of shellfish during this time.

The Late Archaic period was a time of increased population across the Mid-Atlantic region and Pennsylvania (Custer 1988). Environmental changes due to warming trends may have led to the increased availability of estuarine resources. According to Custer (1988) and Turnbaugh (1977), the availability of an increased biomass resulted in the increase in population, subsistence availability, and likely contributed to the widespread establishment of regional exchange networks.

Evidence for permanent housing began to appear in the region at this time (Griffin 1978:231). Carved, lug-handled steatite bowls are one of the most noted types of artifacts to be introduced during the Late Archaic period, and the use of these heavy bowls appears to indicate a more sedentary pattern of existence (Dent 1995; Tuck 1978:38).The establishment of extensive trade networks and the introduction of complex mortuary practices are also characteristics of this period (Thomas 1980).

B. Late Archaic Material Culture and Chronology

Two sites produced radiocarbon dates reflecting Late Archaic occupation in Watershed B. Radiocarbon dates were recovered at the Chambers Mound Site (36LR011) with a date of 3,070 ± 150 B.P., or 1120 B.C., which places the earliest occupations on the site during the Late/Terminal Archaic. A Late Archaic date was recovered from charred material discovered in a pit feature at the Ashton Cemetery Site. The date (3,730 ± 40 B.P.) suggests a Late Archaic occupation at the site. The Radiocarbon date, in conjunction with a pit feature, is the only one recorded within Watershed B.

An intensification of resource utilization is reflected in various manners during the Late and Terminal Archaic (Dent 1995:188, 200-208). The technological component reflects an expanded use of ground stone tools, the appearance of steatite (soapstone) vessels, and, in riverine and coastal areas, fishing implements in the form of notched cobble netsinkers. The presence of storage features is noted, although not on the scale seen later in the Woodland periods. Such storage features have been viewed as strategies for minimizing risk, reflections of collector-forager settlement systems (*sensu* Binford 1980), and perhaps evidence of incipient social inequality, although reflections of status differentiation are virtually absent in the Archaic in Pennsylvania (Raber et al. 1998:129).

One manifestation of diversity in resource exploitation is reflected in the "Panhandle Archaic" identified to the west in the Panhandle of northern West Virginia and eastward into Pennsylvania. Mayer-Oakes (1955:140, 144) contended that grooved axes, crescent-shaped atlatls, and two point forms (Steubenville stemmed and Steubenville Lanceolate points) were indicative of Panhandle Archaic occupation. A well-known shell midden site at East Steubenville (46BR0031) on a hillside shelf above the Ohio River yielded a wide range of faunal remains, including fish, turkey and other birds, deer, elk, and turtle, in addition to shellfish. The midden also yielded one flexed human burial and two apparent dog burials (Mayer-Oakes 1955:138). Subsequent excavations by GAI Consultants (MacDonald et al. 2003) have provided important new information on this cultural phase. A Steubenville flared base "Gennesse" point was recovered at the Mesing Site (36BV0349), which is a multi-component site with Archaic to Woodland materials.

Diagnostic artifacts most associated with later Archaic sites in western Pennsylvania include Laurentian point types (Dragoo 1959; Kinsey 1972:403-408; MacDonald et al. 2003; Ritchie 1965). Typical point types include Brewerton (Figure 12) and Otter Creek points.

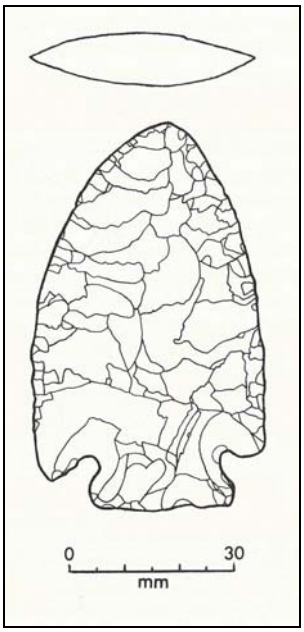
C. Late Archaic Archaeological Sites and Locations

Table 11 presents the information for the Late Archaic sites listed in the PASS files for Watershed B, and Figure 13 presents their approximate location. Many of the sites are multi-component sites and range from open precontact sites to a minor component at a Late Woodland burial mound site.

Table 11. Late Archaic Sites in Watershed B (PASS Files).

County	Site Name	Site Number	Topography	Site Type	Distance to Water (m)
Lawrence	Ashton Cemetery	36LR0165	Floodplain	Open	100
	Chambers Mound	36LR0011	Floodplain	Burial Mound	100
	Fullerton	36LR0173	Hill Ridge/Toe	Unknown	260
	GA1 #21	36LR0113	Hill Ridge/Toe	Open Precontact	80
	Kaufman Rockshelter	36LR0164	Stream Bench	Rockshelter	20
	North Edinburg #1	36LR0163	Hill Ridge/Toe	Lithic Reduction	90
	Tony's Lounge	36LR0168	Stream Bench	Lithic Reduction	100
Beaver	Coble Farm	36BV0068	Terrace	Unknown	60
	Frank Mosura Farm	36BV0265	Ridge Top	Open Precontact	100
	Johnson Farm	36BV0252	Ridge Top	Open Precontact	140
	Mesing	36BV0349	Bluff	Rockshelter	100
	Novakovic	36BV0127	Stream Bench	Open Precontact	120
	Onuska Farm	36BV0266	Middle Slopes	Open Precontact	80
	7 Oaks Golf Course	36BV0254	Floodplain	Open Precontact	20
	44 Acres	36BV0301	Stream Bench	Open Precontact	200

Figure 12
Late Archaic Brewerton Corner-Notched Point



(Justice 1987:117)

The Ashton Cemetery Site (36LR0165)

The Ashton Cemetery Site *(36LR0165)* was originally recorded as an open occupation site dating to the Middle Woodland period based on a number of Raccoon-notched projectile points recovered by an avocational archaeologist. Replacement of the bridge that carries S.R. 0224 over the Mahoning River prompted an archaeological survey of the area where the site was identified. From 2007 to 2010, A.D. Marble & Company conducted excavations on the north and south floodplains of the Mahoning River west of the town of Edinburg. The site is located on the south bank of the river on the floodplain approximately 330 feet from the waters edge, at 880 feet above mean sea level. The site is a stratified multi-component procurement camp. A number of C^{14} dates were recovered from stratified deposits and a single pit feature. The predominant artifact type at the site was pottery. The pottery was mostly shell and grit-tempered Mahoning Ware. Stratified, artifact-bearing soil horizons were discovered within 12 TUs. Excavations produced 283 pieces of Mahoning type pottery and 400 lithic artifacts. Recovered diagnostic artifacts at the site included two Brewerton-type corner-notched points, a Levanna-type point, and a Madison-type point.

Chambers Mound Site (36LR0011)

The Chambers Mound Site (36LR0011) was discussed in detail in Chapter III.

Fullerton Site (36LR0173)

The Fullerton Site (36LR0173) is a low density lithic scatter site that produced a number of Lamoka and Brewerton projectile points. The lithic material was primarily Mahoning chert debitage. The site was located on a hill ridge 262 feet from a tributary of Sugar Creek. The assemblage also contained a single hammerstone, a denticulate, and one piece of ocher.

GAI #21 Site (36LR0113)
The GAI #21 Site (36LR0113) was recorded during an archaeological survey for a gas pipeline conducted by GAI in 1984. The GAI #21 Site is an open precontact site located on a hilltop 262 feet from a tributary of Beaver Dam Run, at 1,060 feet above mean sea level. There is no information regarding the artifact types at this site recorded on the PASS form other than the presence of five chert flakes and one chert preform.

North Edinburg #1 Site (36LR0163)
The North Edinburg #1 Site (36LR0163) is a lithic workshop/procurement camp near perennial springs at 830 feet above means sea level on a hill/knoll. The site is recorded as being overshadowed by Sky Hill chert workshop activity. Recovered artifacts consist of large broad leaf-shaped blade fragments, utilized banana-shaped spalls, and utilized rectanguloid spalls. Over 300 spalls of various colors and shades were recovered, along with ground stone tools. Ground stone tools included pitted hammerstones, stone "anvils," and quarry block corners. Several pieces of thick fibrous/clay material that could be burned peat or possibly heavily decayed pottery were also recovered.

Tony's Lounge Site (36LR0168)
The Tony's Lounge Site (36LR0168) is recorded as a lithic block reduction site located on a high terrace 330 feet from an unnamed stream at 840 feet above mean sea level. No diagnostic artifacts were recovered at this site location, which is most likely a result of having been extensively collected prior to recording.

Frank Mosura Farm Site (36BV0265)
The Mosura Farm Site (36BV0265) is a multi-component site recorded as located on stream benches on a hilltop, 330 feet from a number of freshwater springs at 1,100 feet above sea level. The artifacts were reported as being collected from the stream benches above the spring sources and include diagnostic items from the Archaic and Woodland periods. The artifact assemblage includes stemmed, side-notched and corner-notched Brewerton projectile points, a Forest-notched type, four Snyders points, one Chesser point, one Orient Fishtail point, one Otter Creek point, and a Lamoka point. The remainder of the recorded assemblage included a drill, a knife, three hematite celts, seven blank rejects, and 14 undiagnostic projectile points. The lithic raw material at the site is recorded as Upper Mercer, Vanport, (Delaware) Onondaga, and numerous Glacial Onondaga.

Onuska Farm Site (36BV0266)
The Onuska Farm Site (36BV0266) is a multi-component open precontact site located on a hillslope 262 feet from springs feeding the Ohio River at 1,000 feet above sea level. The site is recorded as having produced artifacts from the Late Archaic through Middle Woodland periods. Artifacts include 10 side-notched and five corner-notched Brewerton projectile points, two Forest-notched points, and three Snyders points. The lithic material is recorded as predominately Glacial Onondaga with some Vanport and Upper Mercer present.

7 Oakes Golf Course Site (36BV0266)
The 7 Oakes Gold Course Site (36BV0266) is an open camp site located on the floodplain of the South Branch of Brandy Run, 65 feet from the water's edge at 1,060 feet above mean sea level.

This site is recorded as a Late Archaic Transitional site. Recovered artifacts include Forest-notched, Rossville, and Adena projectile points. Recorded chert types at this site are Upper Mercer, Vanport, and Glacial Onondaga.

Detailed discussions for the Novakovic Site (36BV0127), Johnson Farm Site (36BV0252), the Coble Farm Site (36BV0068), the Mesing Site (36BV0349), 44 Acres Site (36BV0301), and Kaufman Rockshelter Site (36LR0164) were presented in previous chapters. Each site represents a multi-component occupation. Of particular note is the Single Steubenville point recovered at the Mesing Site.

D. Late Archaic Settlement Patterns and Lithic Raw Material Use

Table 12 presents a list of the lithic types identified at each of the Late Archaic sites in Watershed B. Six of the 15 Late Archaic sites are listed as single component sites and can provide important information regarding the lithic raw material usage during this period. As presented in the table, it appears that a wide variety of lithic sources are being exploited during this period, particularly Upper Mercer chert and Vanport chert. Conspicuously absent within the Later Archaic assemblages is the presence of Flint Ridge chert. There does appear to be some use of locally available chert sources such as Sky Hill, and it is likely the chert present represents readily available river cobbles as a local source. Of the single component sites, two are lithic reduction workshop sites comprised totally of locally available Sky Hill chert. Despite the fact that the Tony's Lounge Site does not provide specific information, it is likely it represents Late Archaic exploitation of a locally available source.

A continuation of inferred "family group" occupations seen earlier in the Archaic is noted, but larger riverine sites with lithic reduction areas and platform "hearths" suggest multiple family gatherings or groups oriented to tool production or fish exploitation. A regionalization of lithic raw material use and localized projectile point distributions may reflect reduced population mobility. Evidence of regional interaction and exchange is found in the movement of raw materials such as steatite and perhaps of finished artifacts (Custer 1996:213-216).

Table 12. Chert Sources Identified at Late Archaic Sites in Watershed B (PASS Files).

Site Name	Sky Hill	Flint Ridge	Upper Mercer	Van Port	Coshocton	Plum Run	Onondaga	"Chert" Present	Other	No Information
Ashton Cemetery	-	-	**X**	**X**	-	-	-	X	-	-
Chambers Mound	-	-	-	-	-	-	-	-	-	-
Fullerton	-	-	-	-	-	-	-	**X**	-	-
GA1 #21	-	-	-	-	-	-	-	**X**	-	-
Kaufman Rockshelter	-	-	**X**	-	**X**	-	-	-	-	-
North Edinburg #1	**X**	-	-	-	-	-	-	**X**	-	-
Tony's Lounge	-	-	-	-	-	-	-	-	-	**X**
Coble Farm	-	-	-	-	-	-	-	-	-	-
Frank Mosura Farm	-	-	**X**	**X**	-	-	**X Glacial** **X Delaware**	-	**Hematite**	-
Johnson Farm	-	-	-	-	-	-	-	-	-	-
Mesing	-	-	-	-	-	-	-	-	-	**X**
Novakovic	-	-	-	-	-	-	-	-	-	-
Onuska Farm	-	-	**X**	**X**	-	-	**X Glacial**	-	-	-
7 Oaks Golf Course	-	-	**X**	**X**	-	-	**X Glacial**	-	-	-
44 Acres	-	-	-	-	-	-	-	-	-	-

There are 16 sites recorded as containing Late Archaic diagnostic material in the PASS files at PHMC-BHP. There appears to be an equal balance of topographical site locations during this period. Half of the sites (eight sites) are recorded on alluvial settings, seven sites are recorded in upland settings, and one is listed as unknown (Table 13). Access to water appears to be important during the Late Archaic period. The balance between the upland and alluvial site locations suggest a wider use of landforms during this period.

Table 13. Late Archaic Site Location Data for Watershed B (PASS Files).

Topographic Setting	Number of Sites
Floodplain	3
Hilltop/Ridge/Middle Slope	6
Terrace	1
Stream Bench	4
Bluff/Cliff	1
Unknown	0
Total	**15**

A total of 15 sites in Watershed B have yielded Late Archaic artifacts, which is a notable increase of nearly double the number of sites from the Middle Archaic period (nine sites). This becomes a more significant number when sites per decade are taken into consideration. The Middle Archaic period lasted 350 decades, averaging 0.03 sites per decade, and the Late Archaic period lasted 180 decades, averaging 0.09 sites per decade. Figure 13 shows that a slightly higher number of sites are located north of the glaciation boundary. Both of the lithic workshop sites recorded for this period are located in close proximity in the Glaciated Plateau near the location of the Sky Hill Chert Quarry. They are the only single component sites recorded in the glaciated plateau as well.

E. Sites Associated with Archaic Material

There are currently 34 recorded sites within Watershed B listed on PHMC-BHP's CRGIS website, from which material associated with the Archaic period is present but not assigned to a specific chronological component. Table 14 presents the PASS file information presented on the website. However, there are overlaps of sites that are listed on the website with chronological indicators and therefore they are listed as representative of their specific time periods. As a means of clarifying this information, researchers reviewed the PASS files and eliminated the sites that have assigned temporal affiliation (assigned sites that present diagnostic material to their respective component) and thereby limited the sites listed as "Archaic" to a total of 20.

Table 14. Temporally Unidentified Archaic Sites in Watershed B (PASS File).

County	Site Name	Site Number	Topography	Site Type	Distance to Water (m)
Lawrence	Bollinger	36LR0037	Floodplain	Village	30
	GA1 #43	36LR0131	Stream Bench	Isolated Find	0
	GA1 #55	36LR0132	Stream Bench	Isolated Find	200
	Glenn-Martin	36LR0186	Floodplain	Open	0
	Kaufman Rockshelter	36LR0164	Stream Bench	Rockshelter	20
	Morrow Place	36LR0005	Floodplain	Open	140

County	Site Name	Site Number	Topography	Site Type	Distance to Water (m)
	Sand Bank	36LR0048	Ridge Top	Open	0
	Sky Hill	36LR0039	Open Precontact	Lithic Workshop/Quarry	0
	Ubour Bollinger	36LR0070	Stream Bench	Unknown	60
Beaver	Caylor's Farm	36BV0194	Stream Bench	Rockshelter	0
	Fergeson	36BV0196	Floodplain	Village	140
	Funckhouser	36BV0225	Hill Ridge/Toe	Open	200
	Johnson Farm	36BV0252	Ridgetop	Open	140
	Rossomonie	36BV0070	Stream Bench	Open	40
	Sand & Gravel	36BV0199	Terrace	Open	100
	SMS #27	36BV0243	Floodplain	Open	40
	Spahn	36BV0198	Terrace	Open	60
	Veon	36BV0197	Terrace	Open	50
	44 Acres	36BV0301	Stream Bench	Unknown	200
	7 Oaks Golf Course	36BV0254	Floodplain	Open	20

Figure 14 presents the location of sites listed as Archaic in the PASS files. All the sites on this figure and presented in Table 14 are multi-component sites with an Archaic period component that is not specified in the PASS files. They are evenly distributed throughout the watershed and likely represent small procurement camps that have been disturbed by latter occupations. They unfortunately do not provide any significant information regarding the lifeways of the Archaic period, other than their location and topographic setting.

F. Late Archaic Summary and Research Questions

The Late Archaic period in Watershed B is only moderately represented in comparison to the surrounding watersheds of the same subbasin. MacDonald et al. reported that 69 Late Archaic sites are recorded in Watershed D (2003:3-55) in comparison to only 16 recorded in Watershed B. When the overall number of Archaic sites, dateable and undateable, are compared by watershed, Watershed B presents the lowest number of Archaic sites. There are 109 Archaic period sites recorded in Watershed A, 149 recorded in Watershed C, and 231 recorded in Watershed D. There total of Settlement patterns and site locations differ little from the Middle Archaic to the Late Archaic. Another significant settlement observation is the lack of Steubenville occupation within Watershed B. There is only a single site, a multi-component site, where a Steubenville projectile point was recovered.

Information presented in this chapter was taken from the PASS files and has led to a number of questions regarding the Late Archaic period in Watershed B. These questions are not comprehensive for the entire Early Archaic cultural component within Watershed B; they are simply a starting point for future research. In the event that sites dating to this period are identified and any of the questions below can be addressed, they will be eligible for the National Register of Historic Places under Criterion D.

1. Are local cherts being misidentified at sites within the watershed?

2. What precipitated the increase in the reliance of Sky Hill chert during the Late Archaic period?

3. What reasons are behind the low number of recorded Archaic sites, particularly single component sites, in Watershed B?

4. Why is the Steubenville population so poorly represented in Watershed B?

5. Is there a continuation of the Early and Middle Archaic periods into the Late Archaic period in Watershed B?

6. Why was no evidence of steatite use recorded in Watershed B? Is the identification of sites by avocational archaeologists who only recover projectile points a cause of this phenomenon?

VIII. Early Woodland Period (1000 B.C. to 300 B.C.)

CHAPTER VIII
EARLY WOODLAND PERIOD (1000 B.C. to 300 B.C.)

A. Early Woodland Overview

The Early Woodland period represents an increased sedentary lifestyle for aboriginal peoples and is exemplified by larger, long-term sites being serviced by outlying extraction sites (Mouer 1990). Domesticated cultigens such as corn, beans, and squash; and wild grasses such as amaranth and Chenopodium were gradually incorporated into the daily diet. The flaked tool industry reflects Late Archaic technology with small bifaces, drills, scrapers, and utilized flakes. Antler and bone tools have been recovered as well (Dent 1995). The Early Woodland period also witnessed a rapid rise in ceramic technology. The earliest ceramics are attributed to the Marcey Creek series; they were tempered with crushed steatite and formed in a fashion similar to the steatite bowls of the previous period (Mouer 1990).

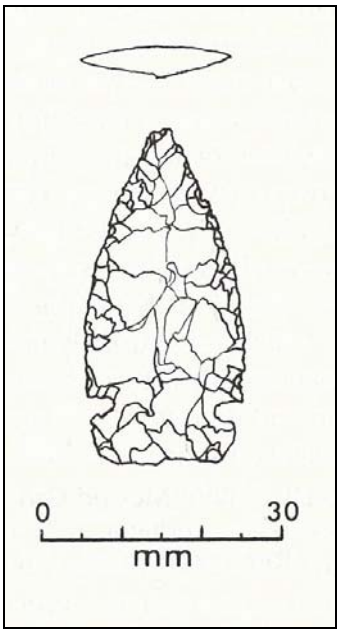
The emergence of the Adena cultural complex in the Ohio River Valley influenced groups throughout the Mid-Atlantic region as far east as New York and New Jersey (Raber 1985). Adena and Adena-related Early Woodland occupations in the Upper Ohio River Valley are reflected by accretional burial mounds and other earthworks (Dragoo 1963). Stewart and Kratzer suggest that seasonal Early Woodland camps were situated on terraces and upland benches above major streams (1989).

The division between the Archaic and Woodland periods is generally drawn at the point when ceramics appear. Adovasio et al. (2003:72) indicated that the earliest indication of ceramics in the upper Ohio Valley was recovered from a large hearth, Feature 60 in upper Stratum III at Meadowcroft Rockshelter. Half-Moon corded ceramics were found in association with *Cucurbita* sp. (squash) seeds from two levels dated 3,065 ± 80 B.P. and 2,815 ± 80 B.P.

Mayer-Oakes (1955:189) stated that Half-Moon cord-marked ceramics represented the basic Early Woodland pottery in the upper Ohio Valley and were associated with Adena burial mounds. The coiled Half-Moon ceramics are distinguished by variable temper materials and are associated with Forest-notched projectile points. Johnson (Rudolph et al. 1996:31) noted that point forms such as Orient Fishtail and Meadowood are "…rare to unreported beyond the terminal Wisconsin moraine in southwestern Pennsylvania" (i.e., south of northern Beaver and northern Butler counties). Other ceramic types such as Watson appeared in the region by ca. 2,700 B.P.

The predominant Early Woodland projectile points recovered at sites in the Upper Ohio Valley include Adena stemmed/ovate points (Figure 15), Meadowood points, and Robbins stemmed points. Early Woodland points are often produced from Flint Ridge chert, suggesting widespread ties to Ohio (MacDonald et al. 2003:70).

Figure 15
Early Woodland Adena Point



(Vento and Rollins 1998:733)

B. Early Woodland Culture and Chronology

The collection of nuts and presumably other plant materials noted during the Late Archaic became increasingly important during the Early Woodland. Hickory and walnut/butternut shells are found in hearths and storage pits on many sites. Oak acorn shells, which are more fragile and therefore less likely to survive, are nonetheless dominant at the Crawford-Grist Site (36FA262) in Fayette County (Rudolph et al. 1996:30, 34). Evidence of plant domestication was indicated in Feature 60 from Meadowcroft Rockshelter (Adovasio and Johnson 1981; Adovasio et al. 2003:72). Squash seeds have been recovered from three dated levels in the feature: 3,065 ± 80 B.P., 2,820 ± 75 B.P., and 2,815 ± 80 B.P. As mentioned above, Half-Moon corded ceramics were recovered in association with two of these levels. Fragments of *Zea mays* (maize) were found in two levels in upper Stratum IV dated to 2,325 ± 75 B.P. and 2,290 ± 90 B.P.

Arbitrary labels such as Archaic, Terminal/Transitional, and Woodland often serve to mask the degree of continuity manifested in, for example, subsistence behavior. The Woodland represented in such aspects amplified resource exploitation already manifested by the Late Archaic. The importance of mast (tree nut) utilization during the later Archaic was emphasized by Dent (1995) in the Chesapeake region and by Raber et al. (1998) for much of Pennsylvania. The question of apparent population decline during the Early Woodland was addressed by Fiedel (2001).

C. Early Woodland Archaeological Sites and Locations

There are 14 sites on file at PHMC-BHP with material that places each site within the Early Woodland period. Table 15 provides a list of each of the sites, their topographic settings, locations in relation to the nearest water source, and the types of sites. There are six open habitation sites, three rockshelter sites, two village sites, a lithic reduction site, and a single site listed as an unknown type. Table 16 illustrates the approximate locations of the sites.

Table 15. Early Woodland Sites in Watershed B (PASS Files).

County	Site Name	Site Number	Topography	Site Type	Distance to Water (m)
Lawrence	Bollinger	36LR0021	Floodplain	Village	30
	Fullerton	36LR0173	Hill Ridge/Toe	Unknown	260
	Kaufman Rockshelter	36LR0164	Stream Bench	Rockshelter	20
	LR 180 (Darlington Site #2)	36LR0180	No information	Open Habitation	0
	Miller	36LR0193	Saddle	Historic & Precontact	0
	MP 215	36LR0203	Stream Bench	Lithic Reduction	
Beaver	Alam's Garden	36BV0272	Stream Bench	Open Habitation	120
	Caylor's Ferry	36BV0194	Stream Bench	Rockshelter	0
	Fergeson	36BV0196	Floodplain	Village	140
	Ohioview (Industry)	36BV0009	Floodplain	Open Habitation	20
	Johnson Farm	36BV0259	Ridge Top	Open Habitation	140
	Lower Beaver	36BV0259	Floodplain	Open Habitation	20
	Mesing	36BV0349	Bluff/Cliff	Rock Shelter	100
	Rossomonie	36BV0070	Stream Bench	Open Habitation	40

Alam's Garden Site (36BV0272)
The Alam's Garden Site (36BV0272) is reported as an open habitation site located on a stream bench near a spring source and a small swamp at 1,100 feet above sea level. The PASS file information includes the presence of a large fire pit at the edge of the garden (approximately 4 feet by 4 feet square) with "a ton" or more of fire-cracked sandstone and a number of fire-altered sandstone slabs recovered below the hearth. No artifacts were recovered in association with the site, and the PASS form simply states that the site may be Early Archaic.

Ohioview (Industry) Site (36BV0009)
The Ohioview Site (36BV0009) is a multi-component, open habitation site with multiple features that date from the Late (Transitional) Archaic through the Woodland period. The site is located at 680 feet above sea level in the floodplain of the Ohio River. Diagnostic artifacts that place this site in the Early Woodland period include heavy grit-tempered pottery sherds, Adena and Hopewell projectile points, and an Adena tablet. A number of burials were discovered at this site, and many contained remnants of Monongahela pottery as grave goods. An extensive discussion of this site and the overall findings was presented in Chapter 1.

Rossomonie Site (36BV0070)
The Rossomonie Site (36BV0070) is an open habitation site located on a stream bench 130 feet from Bealer Run, at 1,130 feet above sea level. The site is based on the personal collection of artifacts recovered from the plowed field of the landowner, and the time periods reported by the

recorder include Archaic, Early Woodland, and Middle Woodland. No information regarding lithic material is provided on the site form.

Lower Beaver Site (36BV0259)
The Lower Beaver Site (36BV0259) is reported on the CRGIS website as an open habitation site located on flat terrace 65 feet from the Ohio River. The site was recorded as it was being destroyed by bulldozers excavating topsoil for use as fill. Numerous large hearths were being exposed during the site's destruction, which Emil Alam believed were Early Woodland fire pits. Artifacts recovered from the site included an unknown knife type, a plain end scraper, a spurred end scraper, a blank, and a blank reject. A single ground stone tool, a celt, was recovered as well. Diagnostic artifacts from the Lower Beaver Site include Half-Moon pottery and "Gazette" thick pottery. Lithic materials listed on the PASS form include Upper Mercer chert, Vanport (Flint Ridge), Glacial Onondaga, and Delaware (Onondaga).

MP 215 Locus 4 Site (36LR0203)
The MP 215 Locus 4 Site (36LR0203) is a lithic reduction site located on a stream bench 150 feet from an intermittent stream/tributary of Beaverdam Run at 850 feet above sea level. This site was identified during a cultural resources survey for a proposed pipeline project. The site was recorded by R.C. Goodwin & Associates, Inc., in 1997. A single chert Snyders dovetail point/knife and a single chert flake were recovered at the site.

Bollinger Site (36LR0021)
The Bollinger Site (36LR0021) is reported as an open village site and classified by Mayer-Oakes as an Early to Late Woodland village based on a mapped location. Little information on this site is presented on the PASS form; however, Adovasio et al. presents a brief description of the salvage work conducted at the site in the Boarts Site report (1974:101). The Bolinger Site is located on the north bank of the Mahoning River in Lawrence County. The site was brought to the attention of the report's author during bulldozer excavations for industrial purposes in 1950. At the time of investigation, 36 intact fire hearths were documented, with an equal amount having already been destroyed. Sherds of Mahoning cord-marked pottery were recovered from around the hearths and numbered in the thousands. In addition to the pottery, several thousand pieces of lithic debitage and a large number of Raccoon-notched projectile points were recovered in direct proximity to the hearths. Charcoal recovered from a hearth that contained a large quantity of Mahoning pottery was submitted and produced a date of 1,140 ± 75 A.D., which places this site at the end of the Woodland period (Adovasio et al. 1974).

D. Early Woodland Settlement Patterns and Lithic Raw Material Use

Indications of Early Woodland social complexity are manifested in an elaboration of burial practices associated with Adena material culture originating in areas currently located in Illinois and Ohio. Adena influence, which was transmitted via the Ohio River corridor, is encountered on a reduced scale at various locations in counties within southwestern Pennsylvania. The influence is reflected on occasion by the presence of lithic materials attributed to Ohio source areas such as Flint Ridge. In other instances, however, marked influences of mortuary ritual are found along the upper Ohio and lower Allegheny Rivers (Table 16). It is interesting to note the absence of Sky Hill chert during this period, as shown on Table 16. However, as suggested by Adovasio et

al. (1974), the Bollinger Site is likely related to the Boarts Site and the procurement of Sky Hill chert.

Of the 14 Early Woodland sites, only two are single component sites. Such a small data set provides little information regarding lithic raw material use. However, the Lower Beaver Site does provide evidence of the use of "exotic" materials for tool production. The other single component site, Alam's Garden Site, unfortunately does not provide any information regarding raw material type.

According to Tables 14 and 16, there is not a remarkable decrease in Early Woodland sites in comparison to Late Archaic sites (16). Sites during this period continue to be reoccupied and occupied on both alluvial and upland settings. There are seven sites located within alluvial settings, four recorded on uplands, and four recorded as unknown (Table 17).

Table 16. Chert Sources Identified at Early Woodland Sites in Watershed B (PASS Files).

Site Name	Sky Hill	Flint Ridge	Upper Mercer	Coshocton	Van Port	Onondaga	"Chert" Present	Other	No Information
Bollinger	-	-	-	-	-	-	-	-	**X**
Darlington # 2	-	-	**X**	-	-	-	**X**	-	-
Fullerton	-	-	-	-	-	-	-	-	-
Kaufman Rockshelter	-	-	**X**	**X**	-	-	-	-	-
LR 180	-	-	-	-	-	-	-	-	-
Miller	-	-	-	-	-	-	-	-	-
MP 215	-	-	-	-	-	-	**X**	-	-
Alam's Garden	-	-	-	-	-	-	-	-	-
Caylor's Ferry	-	-	-	-	-	-	**X**	-	-
Fergeson	-	-	-	-	-	-	-	-	-
Ohioview (Industry)	-	**X**	**X**	-	-	-	-	Pebble Chert Unknown Exotic	-
Johnson Farm	-	**X**	-	-	-	**X**	-	-	-
Lower Beaver	-	-	**X**	-	**X**	**X**	-	Delaware Onondaga	-
Mesing	-	-	-	-	-	-	-	-	**X**
Rossomonie	-	-	-	-	-	-	-	-	**X**

Table 17. Early Woodland Site Location Data for Watershed B (PASS Files).

Topographic Setting	Number of Sites
Floodplain	4
Hilltop/Ridge/Middle Slope	2
Saddle	1
Stream Bench	3
Bluff/Cliff	0
Unknown	4
Total	**14**

Mean distance to water recorded during the Early Woodland period (143 feet) is up from the distance recorded during the Late Archaic period (98 feet). This number may be misleading due to the lack of information at a number of the recorded sites and the generally small number of sites and reoccupation of previously recorded sites. However, the close proximity to available water sources and site locations in alluvial settings does suggest that water is a key consideration for site placement.

E. Early Woodland Summary and Research Questions

According to MacDonald et al. (2003), the Early Woodland period is one of the most dynamic in the prehistory of the Upper Ohio River Valley. Early Woodland foragers continued to diversify their resource base and included domesticated plants to their diet. Burial mounds began to appear on the landscape. Grit-tempered pottery replaced steatite as indicators of social organization. The presence of two village sites and a burial mound within the watershed, along with the presence of a number of smaller procurement camps, attest to the diversity of landforms in the watershed. Due to the lack of information regarding lithic raw material and the generally small data set for this period within the watershed, it is difficult to make comparisons between raw material use between the temporal periods.

Information presented in this chapter was taken from the PASS files and has led to a number of questions regarding the Early Woodland period in Watershed B. These questions are not comprehensive for the entire Early Archaic cultural component within Watershed B; they are simply a starting point for future research. In the event that sites dating to this period are identified and any of the questions below can be addressed, they will be eligible for the National Register of Historic Places under Criterion D.

1. Is the Early Woodland an extension of the Late/Terminal Archaic period?

2. Does the flaked tool industry reflect Late Archaic technology, or does an obvious shift to Woodland Technology occur in Watershed B?

3. What influence did the Adena have on the Early Woodland occupation of Watershed B?

4. How extensive was horticulture during the Woodland period?

5. Was there an increase in population within Watershed B? Reflected in the nucleation of sites rather than additional site locations?

IX. Middle Woodland Period (300 B.C. to A.D. 900)

CHAPTER IX
MIDDLE WOODLAND PERIOD (300 B.C. to A.D. 900)

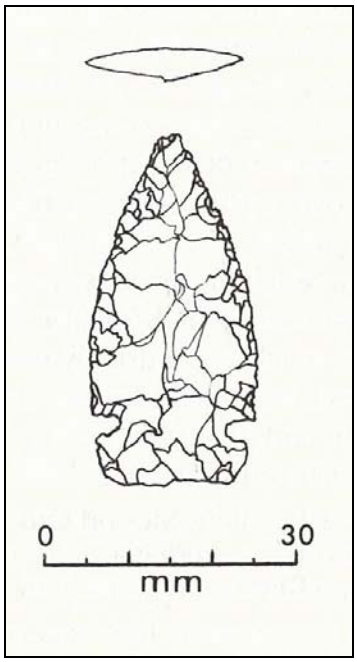
A. Middle Woodland Overview

The Middle Woodland period witnessed the continued elaboration of mortuary practices, including burial mounds and elaborate, exotic, ceremonial grave goods related to the Adena culture (Griffin 1967). These grave practices and goods not only indicate a shift from a band level of social organization to complex rank societies, they also indicate extensive trade associations. Following the end of the Adena-related ceremonialism, the Hopewell Complex flourished and brought their cultural proclivities into western Pennsylvania. Middle Woodland settlement patterns in the Upper Ohio Valley consisted of large, multi-seasonal base camps and extraction loci (MacDonald 2000).

B. Middle Woodland Culture and Chronology

The Middle Woodland period technology represents a continuation of styles used by Early Woodland peoples. Ceramics were constructed better and were more stylistic, with decorations becoming more common (McConaughy 2000 in MacDonald et al. 2003). Projectile point technology included Raccoon-notched (Figure 17) and Snyders type points. Ground stone tools continued to reflect the increasingly diversification of the diet. Manos, metates, pitted cobbles, and adzes reflected diversification of the toolkit to include items necessary to process grains at sites (Mayer-Oakes 1955).

Figure 17
Middle Woodland Raccoon Side-Notched Point



(Justice 1987:218)

The Raccoon-notched projectile point dominated the Middle Woodland sites identified within the watershed. They were most often small and thin with excurvate blades and were both side- and corner-notched (MacDonald et al. 2003). Lantz (1989:5) suggests that the Raccoon Creek Valley is the "Regional Center" for Raccoon-notched points.

Ceramic vessels during the Middle Woodland period were better constructed, with harder and thinner walls. The exteriors of the vessels were often decorated by striking the outside surface with a cord-wrapped paddle. Watson Ware, a crushed limestone cord-marked pottery, is the dominant ceramic type for the Upper Ohio River Valley. Watson Ware is most commonly cord-marked vertically on the exterior, with smoothing on the interior surface. This type of pottery was described by Mayer-Oakes (1955) as primarily utilitarian in function and displays a broad distribution throughout the Ohio River Valley.

Cist burials are formally attributed to the Hopewell Complex of Ohio. Cist burials consist of large tabular stones laid flat on the bottom of the grave, with large flat tabular stones laid on edge and covered again by large flat tabular stones.

C. Middle Woodland Archaeological Sites and Locations

There are 21 sites listed in the PASS files as belonging to the Middle Woodland period. Of the listed sites, there are three villages, two burial mounds, and numerous procurement/hunting camps. Of the 22 sites, two are recorded as single component sites dating to the Middle Woodland period. Table 18 presents the Middle Woodland sites, and Figure 18 provides their approximate location.

Table 18. Middle Woodland Sites in Watershed B (PASS Files).

County	Site Name	Site Number	Topography	Site Type	Distance to Water (m)
Lawrence	Ashton Cemetery	36LR0165	Floodplain	Open	100
	Chambers Mound	36LR0011	Floodplain	Burial Mound	100
	Edinburg Mound	36LR0003	Floodplain	Mound	10
	Glenn-Martin	36LR0186	Stream Terrace	Open Precontact	100
	Kaufman Rockshelter	36LR0164	Stream Bench	Rockshelter	20
	MP 215	36LR0203	No information	Lithic Reduction	0
	Weinschenkes Island	36LR0076	Floodplain	Unknown	170
Beaver	Brick Kiln Overlook	36BV0262	Hilltop	Open Habitation	180
	Coble Farm	36BV0068	Terrace	Unknown	60
	Fergeson	36Bv0196	Floodplain	Village	140
	Feyke Field	36BV0195	Floodplain	Village	220
	Ohioview (Industry)	36BV0009	Floodplain	Village	20
	Mesing	36BV0349	Bluff/Cliff	Rockshelter	100
	Mott Pit #2	36BV0228	Terrace	Open Habitation	140
	Novakovic	36BV0127	Stream Bench	Open Habitation	120
	Onuska Farm	36BV0266	Terrace	Open Habitation	80
	Rossomonie	36BV0070	Stream Bench	Open Habitation	40
	Stone House Mound	36BV0269	Terrace	Earthwork	150
	Veon	36BV0197	Terrace	Open Habitation	50
	W-1	36BV0275	Terrace	Open Habitation	100
	44 Acres	36BV0301	Stream Bench	Open Precontact	200
	Buffalo & Front Street	36BV0341	Terrace	Open Habitation	80

Ashton Cemetery Site (36LR0165)

Raccoon-notched projectile points were recovered at the Ashton Cemetery Site (36LR0165) and discussed in detail in the last chapter. The Ashton Cemetery Site produced the only Middle Woodland C^{14} date recorded within the watershed. A date of 2,080 ± 40 B.P. (90 B.C.) was taken from an organic sediment collected in a lower level of a pit feature at the site.

Chambers Mound Site (36LR0011)

The Chambers Site (36LR0011), perhaps one of the most significant sites professionally investigated within Watershed B, is a burial mound site located on the terrace on the west bank of the Mahoning River in present-day Lawrence County. The site sits at approximately 794 feet above sea level. The Chambers Site was first excavated by John Zakucia under the direction of Dr. Don Dragoo for the Carnegie Museum between 1959 and 1960. The site was brought to the attention of Mr. Zakucia as a result of his quest to locate the historic Kuskusky village and burial ground (Zakucia, unknown date). Despite many attempts by landowners to level the mound for agricultural purposes, a total of 18 features were uncovered at the site. Features included cist burials of the Middle Woodland period and historical burials attributed to the Kuskusky village. Three cist burials and five historic burials were uncovered at the Chambers Site. Artifacts recovered from the mound site include 42 whole and fragmentary chipped stone tools consisting of four blades, 23 projectile points, one drill, two scrapers, and 12 bladelets of Flint Ridge material. Also represented in the assemblage was local black chert of glacial outwash origin. Of the 23 projectile points recovered at the site, eight were stemmed, five were corner-notched, and seven were of the expanded stem variety. Fifteen sherds of grit-tempered, cord-marked pottery were recovered at the site, with 12 sherds representing a single vessel. Both Mahoning cord-marked and Half-Moon cord-marked pottery types were recovered.

Edinburg Site (36LR0003)

Mayer-Oakes discusses the Edinburg Site (36LR0003) in the Prehistory of the Upper Ohio Valley (1955:81) as a mound recorded during the "Annual Report of the Board of Regents" of the Smithsonian Institution in 1877 (Taylor 1878). The report claims that a small mound that contained skeletons, some of which had been placed in cist-type graves, stood at the location where this site is recorded and has provided evidence of occupation. Recovered artifacts include Raccoon-notched type projectile points and grit-tempered pot sherds of Mahoning Ware. Based on those diagnostic artifacts, Mayer-Oakes places this site in the Middle Woodland period, despite the fact that it is listed on the CRGIS website as dating to the Late Woodland period. Subsequent studies have been conducted in close proximity to this site. In 2009 to 2010, A.D. Marble & Company conducted a Phase I survey as part of the S.R. 0224 State Street Bridge Replacement Project in the agricultural field where the Edinburg Site is recorded. Excavation of ten TUs produced evidence of precontact occupation in the upper horizons at the site. No diagnostic material was recovered during the survey. Additional studies in proximity to the site were conducted by Christine Davis Consultants, Inc., in 2001 for the Mahoning Township Sewer Project. A total of three precontact artifacts were recovered near the site location, none of which were diagnostic in nature.

Glenn-Martin Site (36LR0186)

The Glenn-Martin Site *(36LR0186)* is a lithic scatter, open precontact, multi-component site that dates between the Archaic through the Woodland periods. The site is located on a stream terrace

330 feet from Marshall Run, at 956 feet above mean sea level. Artifacts recovered at the site include a possible Brewerton fragment from the Archaic period, a Jacks Reef/Raccoon corner-notched point from the Middle Woodland, and several Levanna and Madison triangular points from the Late Woodland period. The lithic material at this site is listed as 95 percent Coshocton and 5 percent local gray chert.

MP 215 Locus 4 Site (36LR0203)
The MP 215 Locus 4 Site (36LR0203) is a multi-component site and was discussed in the previous chapter. A single Snyders point represents the Middle Woodland occupation at this site.

Weinschenkes Island Site (36LR0076)
Raccoon-notched, wide triangular points and grit-tempered pottery were recovered at the Weinshenkes Island Site (36LR0076). The site of unknown function is located on the floodplain of an island in the Beaver River. No additional information regarding this site is available in the PASS files.

Brick Kiln Overlook Site (36BV0262)
The Brick Kiln Overlook Site (36BV0262) is an open habitation site located 590 feet from extinct stream locations on a hilltop 1,110 feet above sea level. Upper Mercer, Flint Ridge, and Glacial Onondaga chert flakes were recovered at the site. Raccoon-notched and Manker type points were recovered at the site and represent the Middle Woodland period.

Buffalo and Front Street Site (36BV0341)
Ten chert flakes were recovered at the Buffalo and Front Street Site (36BV0341), which is located 260 feet from the Ohio River on a terrace. A singe piece of grit-tempered pottery (Watson Ware) represents the Middle Woodland period at this site, and single Madison triangular point represents the Late Woodland period. A single scraper was also collected at the site. The lithic material was listed as 100 percent Upper Mercer.

Stone House Mound Site (36BV0269)
The Stone House Mound Site (36BV0269) is recorded as a mound site on a terrace 525 feet from the Beaver River at 760 feet above sea level. Artifact information available on the PASS file is listed as Prehistoric, Woodland, and Middle Woodland. No further information is provided.

Veon Site (36BV0197)
The Veon Site (36BV0197) is an open habitation site located on a stream terrace 164 feet from McCautry Run. This multi-component site is 940 feet above sea level and produced Raccoon-notched and Chesser-notched projectile points, as well as a single Perkiomen point. Side scrapers, end scrapers, and blanks comprised the remaining lithic artifacts. A full grooved axe, a celt, pitted stones, and hammerstones make up the remaining assemblage recovered at the site.

D. Middle Woodland Settlement Patterns and Lithic Raw Material Use

Many of the recorded Middle Woodland Sites within Watershed B have been identified by the presence of Raccoon-notched projectile points (Figure 17). Data recorded in the PASS file and

presented in Table 19 suggest that continued use of both locally available chert and a wide variety of lithic raw materials was utilized during the Middle Woodland period in Watershed B.

No evidence of Middle Woodland occupation was identified at lithic procurement locations such as the Boarts Site, the Sky Hill Site, and the Tony's Lounge Site near the location of the Sky Hill Chert Quarry. There are only two single component sites listed for the Middle Woodland period in Watershed B: the Brick Kiln Site is an open precontact site, and the Stone Mound Site is recorded as a burial mound site. Despite the fact that the data set for single component sites is low, the information available in the PASS files does suggest the use of exotic lithic source material.

Table 19. Chert Sources Identified at Middle Woodland Sites in Watershed B (PASS Files).

Site Name	Sky Hill	Flint Ridge	Coshocton	Upper Mercer	Vanport	Onondaga	"Chert" Present	Other	No Information
Ashton Cemetery	-	-	-	-	-	-	**X**	-	-
Chamber's Mound	-	**X**	-	-	-	-	-	Black chert	-
Edinburg	-	-	-	-	-	-	-	-	**X**
Glenn-Martin	-	-	**X**	-	-	-	-	Local Grey	-
Kaufman Rockshelter	-	-	**X**	**X**	-	-	-	-	-
LR 180	-	-	-	-	-	-	-	-	**X**
MP 215	-	-	-	-	-	-	**X**	-	-
Weinschenkes Island	-	-	-	-	-	-	-	-	**X**
Brick Kiln Overlook	-	-	-	**X**	**X**	**X**	-	-	-
Coble Farm	-	**X**	-	-	-	-	**X**	-	-
Fergeson	-	-	-	-	-	-	-	-	**X**
Feyke Field	-	-	-	-	-	-	-	-	
Ohioview (Industry)	-	**X**	-	**X**	-	-	-	Pebble Chert Unknown Exotic	-
Mesing	-	-	-	-	-	-	-	-	**X**
Mott Pit #2	-	-	-	-	-	-	-	-	**X**
Novakovic	-	-	-	-	-	-	-	-	**X**
Onuska Farm	-	-	-	-	-	-	-	-	**X**
Rossomonie	-	-	-	-	-	-	-	-	**X**
Stone House Mound	-	-	-	-	-	-	-	-	**X**
Veon	-	**X**	-	-	-	-	-	-	-
W-1	-	-	-	-	-	-	**X**	-	-
44 Acres	**X**	**X**	**X**	-	-	-	-	-	-
Buffalo & Front St				**X**	-	-	-	-	-

Figure 18 shows that a disparity in site location with regards to location on either side of the glaciation boundary. There are only eight sites recorded within the Glaciated Plateau section of the watershed for the Middle Woodland period. Middle Woodland site locations are more concentrated near the southern edge of the watershed. There is only a single site recorded in an upland setting in Watershed B (Table 20).

Table 20. Middle Woodland Site Location Data for Watershed B (PASS Files).

Topographic Setting	Number of Sites
Floodplain	7
Hilltop/Ridge/Middle Slope	1
Terrace	8
Stream Bench	4
Unknown	2
Total	**22**

There are 22 Middle Woodland sites, or 0.21 sites per decade, in Watershed B. In comparison to the Early Woodland period (0.16 sites per decade), it appears that a noticeable population increase occurred during the Middle Woodland period. Most of the sites recorded for this period in Watershed B are resource procurement sites located in alluvial settings. The exception is the presence of two significant burial mound sites, one of which was subjected to excavation. A third is recorded within the study area, but no information is available other than location. Access to water appears to be a key to site placement during the Middle Woodland period as well. Of the 22 recorded sites, 21 are recorded in alluvial settings and only one site is recorded on an upland setting. The mean distance to water at Middle Woodland sites is 324.8 feet; in comparison to the Early Woodland period mean distance of 469.15 feet, this suggests that proximity to water sources is a key component when determining site location.

E. Middle Woodland Summary and Research Questions

The Middle Woodland period in Watershed B can be characterized as one of increased population and continued subsistence patterns from the Early Woodland period. There appears to be a continued reliance on riverine resources based on the high number of alluvial site settings. Raccoon-notched points recovered at many of the sites suggests hunting and gathering remained an important part of the Middle Woodland subsistence strategy. Three burial mounds contained evidence of ceremonialism and were found in the Glaciated Plateau portion of the watershed. The reoccupation of earlier sites continued throughout the Middle Woodland period, suggesting the rich resources were still available at those locations. The information presented in the last chapter has generated a number of issues that should be considered when conducting archaeological investigations in Watershed B.

Information presented in this chapter was taken from the PASS files and has led to a number of questions regarding the Middle Woodland period in Watershed B. These questions are not comprehensive for the entire Middle Woodland cultural component within Watershed B; they are simply a starting point for future research. In the event that sites dating to this period are identified and any of the questions below can be addressed, they will be eligible for the National Register of Historic Places under Criterion D:

1. What influence did the Hopewell culture have on Middle Woodland occupants?

2. Is there a continuation of Adena culture and Early Woodland into the Middle Woodland period?

3. Why are ceremonial sites more prevalent in Watershed B? Is there a correlation between ceremonial sites and the expansive bottomland available within the watershed?

4. What is the significance of exotic chert at Middle Woodland sites?

5. What significance did agriculture play at Middle Woodland sites in Watershed B?

6. What is the significance of the use of Raccoon-notched points within Watershed B? Does this reflect a Hopewell influence?

7. What is the significance of the perceived population increase during this period?

8. What is the significance of the decreased distance of sites from water sources?

X. Late Woodland Period (A.D. 900 to A.D. 1600)

CHAPTER X
LATE WOODLAND PERIOD (A.D. 900 to A.D. 1600)

A. Late Woodland Overview

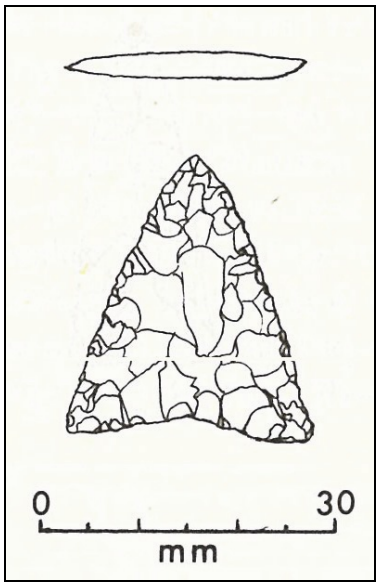
Settlement patterns for the Late Woodland period are reflected in permanent villages with a subsistence base focused on grown foodstuffs such as corn, beans, and squash. Floodplain locales were the favored locations for sites, and was likely due to the availability of fertile bottomland soils for agricultural practices. Stockade fortifications have been found at some Late Woodland period village sites that possibly indicate defensive measures used to protect themselves from attacking parties (Griffin 1967). Smaller base camps and procurement sites tended to serve as specialized function sites with periods of multiple reuse (Custer 1996). Ceramic diversity continued with a variety of motifs likely associated with the borrowing of designs from other societies through established trade networks. Food sources were diverse and plentiful, including shellfish and anadromous fish, nuts, starchy tubers, amaranth, and goosefoot (Dent 1995). Projectile point technology continued to develop, and triangular points such as Levanna (Figure 19) and Madison are a common indicator of Late Woodland period sites, as they were common during this period. Diagnostic ceramics during this period are often thin, cord-marked, grit-tempered, and differ slightly from Middle Woodland types (Mayer-Oakes 1955:87).

There are a number of significant Late Woodland period sites recorded within Watershed B; notably, the Chambers Mound Site (36LR0011), the Covert's Crossing Site (36LR0075), the Edinburg Mound Site (36LR0003), the George Bolinger Site (36LR0021), the Glen-Martin Site (36LR0186), and the Miller Site (36LR0193). The Chambers Mound Site produced some of the first radiocarbon dates associated with Mahoning style pottery and suggests use during the early Late Woodland period. The Covert's Crossing Site and the Chambers Mound Site both produced a number of corn fragments in association with Mahoning style pottery, providing evidence of the correlation of the two during the Late Woodland period. Triangular points were recovered at the George Bollinger Site, the Glen-Martin Site, and the Miller Site.

B. Late Woodland Culture and Chronology

The Late Prehistoric period was a continuation of the Late Woodland period and was dominated by the Monongahela culture in western Pennsylvania. The palisaded Monongahela villages were primarily located on upland settings (Fuller 1980) that were often near high order streams; this afforded access to a wider variety of exploitable resources (Johnson et al. 1989). Monongahela populations continued to rely heavily on hunting, gathering, and fishing, even after maize cultivation became the predominant subsistence strategy (Raber et al. 1998). The Monongahela people hunted game with bows and arrows, abandoning previous cultures' use of spears. Arrows were tipped with small triangular points made of locally available chert and, on rare occasions, bone. Monongahela village sites have been identified on both river terraces and in upland locations. The upland sites are most often found on flat benches or saddles between major river drainages. These upland sites were good for growing eight-row northern flint maize (which requires a 90- to 120-day growing season) because the growing season was longer than in the valleys.

Figure 19
Late Woodland Levanna Point



(Justice 1987:226)

Monongahela people lived mostly in stockaded villages that averaged 200 feet in diameter. The stockades suggest that the dense human population and competition for prime farming land along the rivers intensified intergroup conflict. Mayer-Oakes (1955) suggests the villages were located on hilltops and other commanding positions for defensive purposes. Dragoo believes that the double stockade served two purposes: as a defensive measure and as a means of protecting its inhabitants from the elements (1955:12).

The Monongahela territory contracted at about A.D. 1200 to 1250, with the population concentrating more in stockaded villages in the uplands. The global climate cooled slightly at about this time. There are a number of theories for the cause of this migration to the upland into stockaded villages. The Monongahela people may have been subjected to external pressures from other cultures, as evidenced by a change in pottery styles, and retreated to hilltop forts. Villages were more frequently stockaded after this date (Dragoo 1977 and George 1995). Hart (1993) suggests that increased population densities in the valleys drove people into less productive highlands. Conversely, Hasenstab and Johnson (2001) argue that the highlands were more productive during the period of colder climate than the valleys because of the longer growing season, so people were migrating to more favorable farmland.

The demise of the Monongahela people has been attributed to a decline in their health precipitated by the colder climate and by a predominantly corn diet (Farrow 1986); or warfare and conquest by neighboring Indians, which was aggravated by the competition for furs for European trade (George 1980 and Mayer-Oakes 1955); and/or the spread of European diseases from Atlantic coastal contacts with traders (Mann 2005). It is likely a combination of all these factors was the root cause of the cultural decline.

C. Late Woodland Archaeological Sites and Locations

There are currently 25 Late Woodland archaeological sites located within Watershed B. Figure 20 presents their approximate location, and Table 21 lists the sites, their types, and topographical information. The site type for the Late Woodland period is dominated by open habitation/resource procurement sites. There are only four village sites recorded within the watershed.

Table 21. Late Woodland Sites in Watershed B (PASS Files).

County	Site Name	Site Number	Topography	Site Type	Distance to Water (m)
Lawrence	Ashton Cemetery	36LR0165	Floodplain	Open	100
	Bollinger	36LR0021	Floodplain	Village	30
	Buick Opel	36LR0151	Hill Ridge/Toe	Open	60
	Chambers Mound	36LR0011	Floodplain	Open	100
	Coverts Crossing	36LR0075	Floodplain	Open	140
	Edinburg	36LR0003	Floodplain	Unknown	10
	Glenn-Martin	36LR0186	Floodplain	Open	0
	H-6	36LR0150	Floodplain	Open	60
	Kaufman Rockshelter	36LR0164	Stream Bench	Rockshelter	20
	LR 180	36LR0180	Undefined	Open Habitation	
	Miller	36LR0193	Saddle	Historic & Precontact	0
	Weinschenks Island	36LR0076	Floodplain	Open	170
Beaver	Buffalo & Front Street	36BV0341	Terrace	Open	80
	Caylor's Ferry	36BV0194	Stream Bench	Rockshelter	0
	Darlington Lake	36BV0077	Hill Ridge/Toe	Unknown	70
	Davidson Heights	36BV0261	Floodplain	Open	120
	D-4	36BV0239	Hill Ridge/Toe	Open	80
	Feyke Field	36BV0195	Floodplain	Village	220
	Fergeson	36BV0196	Floodplain	Village	140
	Ohioview (Industry)	36BV0009	Floodplain	Village	20
	Industry #3	36BV0305	Rise in Floodplain	Open	40
	Mesing	36BV0349	Undefined	Rockshelter	100
	Novakovic	36BV0127	Stream Bench	Open	120
	Van Port	36BV0002	Floodplain	Open	10
	44 Acres	36BV0301	Stream Bench	Open	200

Ashton Cemetery Site (36LR0165)

The Ashton Cemetery Site (36LR0165) was discussed in earlier chapters. This site produced a number of Late Woodland C^{14} dates recovered from a pit feature and a buried A-horizon at the site. Two dates were recovered from the pit feature: 1,080 ± 40 B.P. (A.D. 980) and 1,070 ± 40 B.P. (A.D. 980), which dates to the Late Woodland period. An additional date of 1,040 ± 40 B.P. (A.D. 1010) was recovered from the first level of the feature and date of 230 ± 40 B.P. (A.D. 1660) was recovered from an intact A-horizon deposit, suggesting occupation at the site during the later stages of the Late Woodland period.

Bollinger Site (36LR0021)

The Bollinger Site (36LR0021) is reported as an open village site and classified by Mayer-Oakes as an Early to Late Woodland village based on a mapped location. Little information on this site is presented on the PASS form. However, Adovasio et al. presents a brief description of the salvage work conducted at the site in the Boarts Site report (1974:101). The Bolinger Site is located on the north bank of the Mahoning River in Lawrence County. The site was brought to the attention of the report's author during bulldozer excavations for industrial purposes in 1950. At the time of investigation, 36 intact fire hearths were documented, with an equal amount having already been destroyed. Sherds of Mahoning cord-marked pottery were recovered from around the hearths and numbered in the thousands. In addition to the pottery, several thousand pieces of lithic debitage and a large number of Raccoon-notched projectile points were recovered in direct proximity to the hearths. Charcoal recovered from a hearth that contained a large quantity of Mahoning pottery was submitted and produced a date of 1140 ± 75 A.D., which places this site at the end of the Woodland period (Adovasio et al. 1974).

The Coverts Crossing Site (36LR0075)

The Coverts Crossing Site (36LR0075) is one of two multi-component sites identified during the Coverts Crossing Bridge Replacement Project. The site was identified by a collector in 1969 when he collected a number of Late Woodland triangular points and shell- and grit-tempered pottery. Between 1998 and 2000, GAI Consultants, Inc., of Monroeville, Pennsylvania, conducted archaeological investigations at the location of this site under the direction of Dr. Douglas H. MacDonald. Dr. MacDonald reported that a total of 65 lithic artifacts were recovered during the Phase I survey of the property. Phase II studies uncovered four precontact features and 1,088 precontact artifacts, including Mahoning Ware pottery and a number of triangular projectile points dating to the Late Woodland period. Phase III mitigation studies at the site revealed two distinct and stratified cultural components. Four small hearths and a low density lithic scatter dating to the Late Archaic period were uncovered in the lower stratum. The upper stratum yielded fragments of Mahoning Ware pottery, triangular points, three hearths, and two food processing features dating to the Late Woodland period.

Radiocarbon dates taken from features at the site support the premise that occupation at the site took place during the Late Archaic and Late Woodland periods. Charcoal removed from a feature during TU excavation yielded a Late Archaic date of 3,740 ± 70 B.P., and a date of 3,580 ± B.P. was recovered from a second feature. Both features were uncovered in conjunction with the lower artifact densities. Radiocarbon dates for the Late Woodland period were derived from six features with dates of 1,090 ± 70 B.P. from a hearth feature, 840 ± 50 B.P. from a food processing pit feature, and another feature that presented a date that likely post-dated A.D. 1275 (MacDonald 2000).

The Coverts Bridge Site (36LR0228)

In 1998, GAI conducted Phase I through Phase III subsurface archaeological investigations on the Covert's Bridge Site (36LR0228), a Late Woodland period site located on the floodplain of the Mahoning River.

Six features and over 850 artifacts were recovered, including ground stone tools, grit-tempered pottery, Mahoning Ware pottery, and two triangular points. Flaked stone artifacts consisted of

predominantly local cherts: Mahoning chert, Onondaga chert, and Gull River chert, the latter two originating from secondary cobbles. Exotic Ten-Mile, Uniontown, Flint Ridge, and Upper Mercer cherts comprised less than 5 percent of lithic artifacts, suggesting trade occurred with Monongahela elements to the south rather than Proto-Iroquois to the north.

Two storage pits, a nut-processing pit, a burned corncob with a calibrated AMS date of A.D. 1430 to 1645, and a precontact hearth with a calibrated AMS date of A.D. 1530 to 1690 were identified. Trace residue analysis suggests corn, hickory, wild fruit, and rabbit processing occurred on-site. The preponderance of data suggests the site was utilized as a short-term microband processing/procurement station in the late summer or early fall. The presence of corn, previously undocumented in the Mahoning Valley, suggests the existence of farm villages.

Edinburg Site (36LR0003)

Mayer-Oakes discusses this site in the Prehistory of the Upper Ohio Valley (1955:81) as a mound recorded during the "Annual Report of the Board of Regents" of the Smithsonian Institution in 1877 (Taylor 1878). The report claims that a small mound that contained skeletons, some of which had been placed in cist-type graves, stood at the location where this site is recorded and has provided evidence of occupation. Recovered artifacts included Raccoon-notched type projectile points and grit-tempered pot sherds of Mahoning Ware. Based on those diagnostic artifacts, Mayer-Oakes places this site in the Middle Woodland period, despite the fact that it is listed on the CRGIS website as dating to the Late Woodland period. Subsequent studies have been conducted in close proximity to this site. In 2009 to 2010, A.D. Marble & Company conducted a Phase I survey as part of the S.R. 0224 State Street Bridge Replacement Project in the agricultural field where the Edinburg Site is recorded. Excavation of ten TUs produced evidence of precontact occupation in the upper horizons at the site. No diagnostic material was recovered during the survey. Additional studies in proximity to the site were conducted by Christine Davis Consultants, Inc., in 2001 for the Mahoning Township Sewer Project. A total of three precontact artifacts were recovered near the site location, none of which were diagnostic in nature.

Feyke Field Site (36BV0195)

The Feyke Field Site (36BV0195) is a multi-component village site located on the floodplain 200 meters from an unnamed tributary of the Beaver River upstream from the confluence between two water sources. The site sits at 880 feet above mean sea level. This multi-component site spans the Archaic through the Late Woodland periods. Kirk (Early Archaic), Brewerton, Steubenville (Late Archaic), and several Late Archaic stemmed points represent the Archaic occupation at the site. Forest- and Raccoon-notched types represent the Middle Woodland occupation, and Madison and Levanna triangles represent the Late Woodland period. Additional items recovered at the village site included side and end scrapers, hafted scrapers, and drills. Ground stone tools included celts, hammerstones, pitted stones, and choppers. The lithic material listed for the site is 5 to 10 percent Flint Ridge and the remainder is listed as chert. Unfortunately, no specific information is presented for individual diagnostic artifacts and chert type. Following the removal of the plowzone, upwards of 40 pits and more than 20 feet of a palisade wall were exposed at the site. Five of the pits were excavated, and the palisade included an entranceway.

The Ohioview (or Industry) Site (36BV0009)

The Ohioview Site (36BV0009) was examined in November 1959 and reported as a Monongahela village site where 16 human burials were uncovered. The site is located on the north bank of the Ohio River near the town of Ohioview in Beaver County. The site covered approximately 0.5 mile of bottomland and sits on the floodplain approximately 5 to 6 feet above the river. Salvage operations at the site became necessary after flood waters caused a large portion of the bank to fall into the river, thereby exposing a number of burials. Erosion and sand and gravel extraction had partially destroyed the site prior to the systematic investigations reported by Emil Alam. A number of cultural features, aside from the burials, were identified at the site, including evidence of a double stockade, post mold, and numerous storage and fire pits. A number of Late Archaic hearths were discovered near the base of the excavations. Pottery was the most numerous and significant artifact type found at the site and consisted of Monongahela type, Mahoning type, and Half-Moon type ceramics. Additional artifacts recovered at the site included 33 triangular points, six side-notched points, seven corner-notched points, and three narrow stemmed points, as well as a number of other chipped stone tools and many ground stone tools. Alam (1961) reported that many thousands of artifacts had been collected at the site and were in the possession of private citizens at the time of the excavations.

Sixteen burials were investigated at the site and included a fetus, children, and adults. Grave goods consisted mostly of Monongahela pot sherds and, in a few burials, beads accompanied the remains. A number of the burials displayed an unusual practice in that finger bones were discovered in the mouths of the skeletons. An examination of nine of the 16 human skeletal remains from the Ohioview Site was conducted by Faingnaert and Doyle (1977) from the Department of Anthropology at the University of Pittsburgh. The remains provided information regarding their age, sex, stature, and other aspects. The results of their study concluded that the nine burials were similar to other burials from this period across the northeastern United States. The site population does not stand out as being any different than the other resident population studied to this date. The occupants of the Ohioview Site suffered from arthritis and cavities similar to occupants at previously recorded sites.

The remaining sites listed in Table 21 that are not discussed above represent resource procurement locations and consist of artifact assemblages dominated by triangular points and cord-marked ceramics.

D. Late Woodland Settlement Patterns and Lithic Raw Material Use

Compared to Watershed D, a similar trend of a low density of villages and a high number of habitation/camps, in comparison to the rest of southwestern Pennsylvania, occurs in Watershed B. MacDonald suggests that the Raccoon Creek Watershed and the Watershed B may represent the peripheral area of the Monongahela affiliation during the Late Woodland period (MacDonald et al. 2003:95). There are currently four Late Woodland village sites recorded in Watershed D, two of which can be directly associated with Monongahela occupation. The Overview Site produced evidence of mortuary practices, and evidence of a double palisade was exposed at the Feyke Field Site.

Thirteen of the recorded Late Woodland sites are located in floodplain settings, two are located in terrace settings, and four are located on stream benches. The remaining six sites are located in upland settings or no information regarding topographic setting was present in the PASS files. The mean distance to water for sites recorded during the Late Woodland period (228.4 feet) reduced considerably from the Middle Woodland period (324.8 feet), suggesting a conscious move to occupy alluvial settings. Therefore, distance to water and in all likelihood availability of higher quality soil for agricultural practices became a key component for site selection during this period.

Table 22. Late Woodland Site Location Data for Watershed B (PASS Files).

Topographic Setting	Number of Sites
Floodplain	13
Hilltop/Ridge/Middle Slope	3
Terrace	2
Stream Bench	4
Saddle	1
Unknown	2
Total	**25**

As was the case during previous periods, information regarding Late Woodland lithic raw material use is available in the PASS files for Watershed B (Table 23); there appears to be a continued focus on the use of readily available local lithic resources as well as a reliance on exotic cherts from the west and south. Three sites record the presence of Sky Hill chert, with a single site marking it as the sole source. Chert is present at five sites and may represent the use of locally derived raw material.

Table 23. Chert Sources Identified at Late Woodland Sites in Watershed B (PASS Files).

Site Name	Sky Hill	Flint Ridge	Coshocton	Upper Mercer	Vanport	Onondaga	"Chert" Present	Other	No Information
Ashton Cemetery	-	-	-	-	-	-	X	-	-
Bollinger	X	-	-	-	-	-	-	-	-
Buick Opel	-	-	-	X	-	-	-	3 additional cherts described, slate	-
Chamber's Mound	-	X	-	-	-	-	-	Black chert	-
Covert's Crossing	-	-	-	-	-	-	-	-	X
Edinburg	-	-	-	-	-	-	-	-	X
Glenn-Martin	-	-	-	-	-	-	-	-	-
H-6	-	-	-	-	-	-	X	-	-
Kaufman Rockshelter	-	-	X	X	-	-	-	-	-
LR 180	-	-	-	-	-	-	-	-	-
Miller	X	X	X	X	-	-	-	-	-
Weinschenk's Island	-	-	-	-	-	-	-	-	X
Buffalo & Front St	-	-	-	X	-	-	-	-	-
Caylor's Ferry-	-	-	-	-	-	-	X	-	-
Darlington Lake	-	X	-	-	-	-	X	-	-
Davidson Heights	-	-	-	-	-	X	-	-	-
D-4	-	-	-	-	-	-	-	4 cherts described	-
Fergeson	-	-	-	-	-	-	-	-	X
Ohioview (Industry)	-	-	-	-	-	-	-	-	X
Industry #3	-	-	-	X	X	-	-	Monongahela Brush Creek Black chert Gray chert sandstone	-
Mesing	-	-	-	-	-	-	-	-	X
Novakovic	-	-	-	-	-	-	-	-	X
Van Port	-	-	-	-	-	-	-	-	X
44 Acres	X	X	X	-	-	-	-	-	-
SMS #27 (Mott Pit #3)	-	-	-	-	-	-	X	greenstone	-

Unfortunately, the lithic raw material information is somewhat limited, as there are only six single component sites listed for the Late Woodland period in Watershed B. However, lithic information reported for the Industry #3 Site does suggest that some exotic raw materials were being utilized on sites during this period.

E. Proto-Historic Period

The Historic Native American period in Watershed B is dominated by the presence of migrating tribes, mostly Delaware tribes, into the western part of Pennsylvania. Figure 21 presents the location of a number of Historic Native American Settlements, as well as trade routs and paths associated with travel between the towns (Wallace 1971). Several historic native settlements were located in the western part of the state during the eighteenth century, of which the Kuskusky village was perhaps one of the most important. Rivaled only by Logstown in lower Beaver County as a native settlement of historical importance, the Kuskusky village was a center of trade until the final migration by Native Americans out of Pennsylvania.

Additional Historic Native American Settlements in and near Watershed B
Friedensstadt, the German word for "town of peace," was a village in Beaver County likely located near the present town of Darlington. The town was settled in May 1770 by the Moravian Delawares from Friedenshuetten. In 1773, they removed to Gnadenhuetten and Schoenbrunn on the Muskingum.

Beaver Town was a former Delaware, Shawnee, and Mingo village near the mouth of the Beaver River on a high bluff overlooking the Ohio River near the present-day town of Beaver. The village was known by a number of names throughout its history, including Shingas Town, Sawcunk, and King Beaver's Town. Despite whatever name was used for this village, it was known as a popular and important trading post until the British forced the French from Fort Dusquesne. In 1778, British General McIntosh built a fort at the town of Beaver that became the headquarters for the Western Department (Donehoo 1928). The construction of the fort likely destroyed any evidence of the occupation of the historic Native Americans at this location.

Logstown, which was located near the present-day town of Legionsville was inhabited by the Delaware, Shawnee, and Seneca nations from 1743 to 1764 (Kent et al. 1981). Logstown village was located southeast of the Kuskusky village and reached its peak of prominence between 1748 and 1758, at which time it played host to a number of important conferences between the British, French, and Native Americans. The village was burned by pro-British Iroquois and then later rebuilt and governed by the French before it was finally abandoned in 1758 (Mills 1996:11). Despite the fact that the former location of Logstown is not within Watershed B, its prominence as an important historic Native American settlement mandates its discussion.

To date, none of the above-mentioned sites have been formally excavated by professional archaeologists. Advancement of the Colonial period into these prime areas of occupation had a devastating effect on the archaeological record of the last organized native villages of the western part of the state. Further destruction occurred as industry and development expanded, and any remains that survived the initial onslaught was likely wiped away.

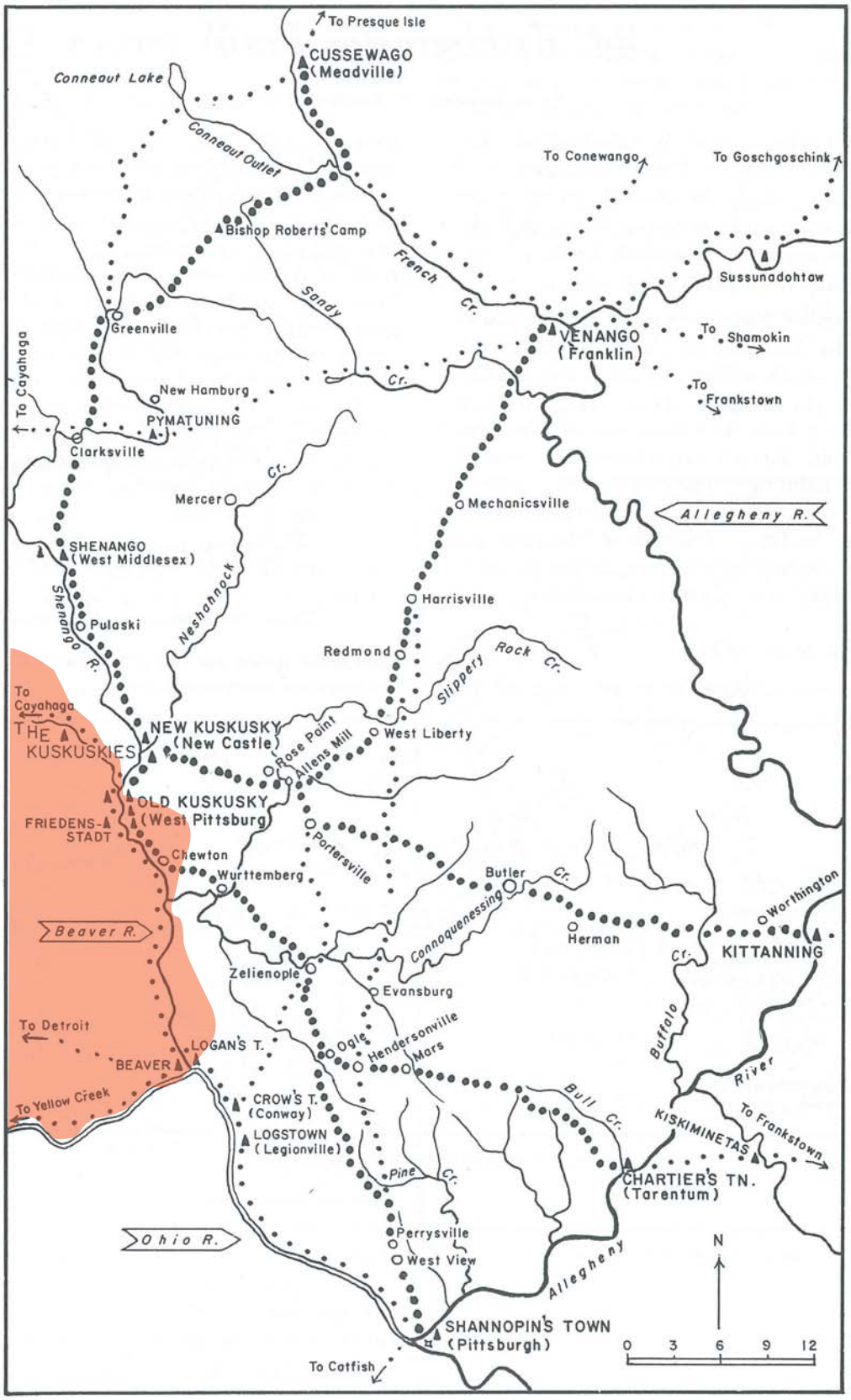


Figure 21
Historic Villages and Kuskusky Paths

Beaver Creek Watershed (Watershed B of the Ohio River Subbasin 20)
Beaver and Lawrence Counties, Pennsylvania

Map Document X:\Graphics\Projects\P-1018A\mapping\Kuskusky Paths.ai

However, some evidence of the Kuskusky village was recovered during excavations of the Chamber's Mound Site (36LR0011) by the Carnegie Museum in the late 1950s and early 1960s. A total of 70 historic burials containing burial goods were recovered at the site. The presence of these burials, along with historical accounts of visits to the village, certainly lend credence to the location of the Kuskusky village where present-day Edinburg stands.

F. Late Woodland Summary and Research Questions

The PASS file information collected for the Late Woodland period suggests that sites dating to this period are located more often in lowland areas, particularly in alluvial settings on floodplains, especially when compared to previous periods. The presence of sites located on floodplains suggests that agriculture played a more important role in village life. This premise does not correspond with Fuller (1980) and Johnson et al. (1989)'s idea that palisaded Monongahela villages are primarily located on upland settings. Evidence provided in the PASS files contradicts this statement for Watershed B. However, MacDonald reports that by the end of the Late Woodland period, villages were placed on hilltops and sideslopes in the southern part of Watershed D.

Information presented in this chapter was taken from the PASS files and has led to a number of questions regarding the Late Woodland period in Watershed B. These questions are not comprehensive for the entire Early Archaic cultural component within Watershed B; they are simply a starting point for future research. In the event that sites dating to this period are identified and any of the questions below can be addressed, they will be eligible for the National Register of Historic Places under Criterion D:

1. What are the significant changes between the Middle and Late Woodland periods?

2. Was the Late Woodland period a continuation of the Middle Woodland, or does the Late Wood period reflect a completely new occupation?

3. Why are Monongahela villages located on floodplains in Watershed B instead of the upland/hilltop locations suggested by Fuller (1980) and Johnson et al. (1989)?

4. Is there a correlation between the Glaciated Plateau and the location of Monongahela villages on floodplains in Watershed B?

5. Were the pressures of reduced resources and the threat of competition for those resources not felt in Watershed B during the Late Woodland period? Or, is the real reason no upland villages are recorded because they have been destroyed before they could be recorded?

6. Why are so many Proto-Historic Native American towns located within Watershed B?

XI. Summary and Conclusions

CHAPTER XI
SUMMARY AND CONCLUSIONS

A. Demography and Settlement

Occupation of Watershed B by Native American peoples can best be characterized as one of reoccupation. As reported in this document, there were very few single component sites identified for each of the Prehistoric periods. The Early Archaic period is not extremely well represented in Watershed B. There appears to be some continuity with the Paleoindian period, but evidence also suggests that changes in Early Archaic toolkits may represent a distinct cultural change from the Paleoindian period. An evolution of projectile points during this period is likely attributed to the different faunal species that were available for exploitation. As climates grew warmer, emphasis on hunting smaller game and increased foraging replaced big game hunting of the Paleoindian period. An increase in population occurred in Watershed B, as evidenced in the increase in Early Archaic sites in comparison to those ascribed as Paleoindian. There appears to be a move toward alluvial settings during the Early Archaic as reliance on a wider variety of resources increased.

Most Archaic sites recorded in the watershed date to the Early and Late Archaic periods. This may be due in part to decreased human population or activity during this period, or it could simply be attributed to the inability to differentiate between sites that date to this period and sites that date to the Late Archaic period.

The Woodland period, particularly the Late Woodland into the Historic period, is the most well represented precontact period in Watershed B. Several major village sites, as well as a number of burial mound sites, have been archaeologically investigated within the watershed.

The location of Woodland period camps in rich resource areas suggests that much larger villages once stood nearby but have either eluded discovery or more likely have been destroyed during historic occupation of the watershed.

B. Lithic Raw Material Use and Settlement Patterns

From the Late Archaic through the Late Woodland periods, it appears that the glaciation boundary was an important procurement area for locally derived Sky Hill chert. Late Archaic individuals were using primary source chert due to its reliable location and quality. Late Woodland forager-farmers were relying on expedient collection of secondary chert sources from along local river drainages, as well as utilizing locally available sources. An increase in Late Archaic lithic procurement sites seems to provide evidence for this summation.

C. Conclusion: Future Research in Watershed B, Subbasin 20

The following temporally specific research directions and problems are offered for consideration during future investigations within Watershed B and in neighboring drainages. It should be recognized that some issues cannot be addressed in the absence of sealed datable contexts or

materials, and all should be evaluated with regard to "regional" perspectives from the Unglaciated Plateau as well as the Glaciated Plateau:

1. Are Paleoindian occupations, as reflected in site types, uniform throughout the watershed or variable by elevation or landform? (Evaluate throughout the Subbasin and the Glaciated and Unglaciated Plateaus).

2. Does the Early Archaic reflect a continuation of Paleoindian occupation, inferred subsistence, and lithic raw material patterns throughout the watershed?

3. Does the suggested early Middle Archaic (bifurcate) "reoccupation" (Carr and Adovasio 2002) indicate movement along major river valleys such as the Ohio and the Allegheny? In the absence of datable contexts, the distribution of MacCorkle and St. Albans points should be compared with that of LeCroy points from south to north.

4. Are later Middle Archaic sites in reality less frequently found on the landscape, or are some Laurentian forms indicative of later Middle Archaic? This question will require more dated and datable contexts.

5. The emergence of the Late Archaic is linked to a more refined definition of the later Middle Archaic and the relationship of Laurentian Tradition sites, and as such will require the same data mentioned in Question 4 for resolution.

6. Resolution of the questions surrounding the timing and duration of the early Holocene Hypsithermal period is needed, given the probable impact such environmental changes exerted on the later Middle Archaic and Late Archaic phases.

7. Are settlement pattern shifts to higher elevations a function of intensification of resource extraction or a continuation of earlier (and later) practices?

8. What effect did Adena and Hopewell occupations of the watershed have on storage practices during the Late Archaic period?

9. The social significance (i.e., beyond mortuary behavior) of Adena/Hopewellian manifestations should be assessed using overall data on the proportional distribution of Ohio cherts and the proximity of Early and Middle Woodland occupation sites to mortuary loci along the Beaver and Ohio rivers.

10. Are Late Woodland "villages" effective year-round occupations of egalitarian hunter-gatherers, or were they subject to seasonal dispersion patterns of family groups rather than resource extraction parties?

11. Do the geographic distinctions in distributions of projectiles point styles (Rudolph et al. 1996) reflect different populations or groups, and do overlaps in these distributions reflect intraregional exchange or possibly kinship residence patterns? (This question may

also be addressed through ceramic analyses, assuming sufficient quantities and distributions exist to support such analyses.)

12. What effect did the glaciation boundary have on precontact people when determining where to settle, particularly during the Paleoindian and Archaic periods?

13. There appears to be a concentration of Woodland occupation along the Mahoning River near present-day Edinburg. What environmental or cultural phenomena made this location so attractive to Late Woodland Native Americans?

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