ARCHAEOLOGICAL INVESTIGATIONS OF THE EARLY AND LATE FORT ANCIENT HOWARD SITE (15MA427), MADISON COUNTY, KENTUCKY

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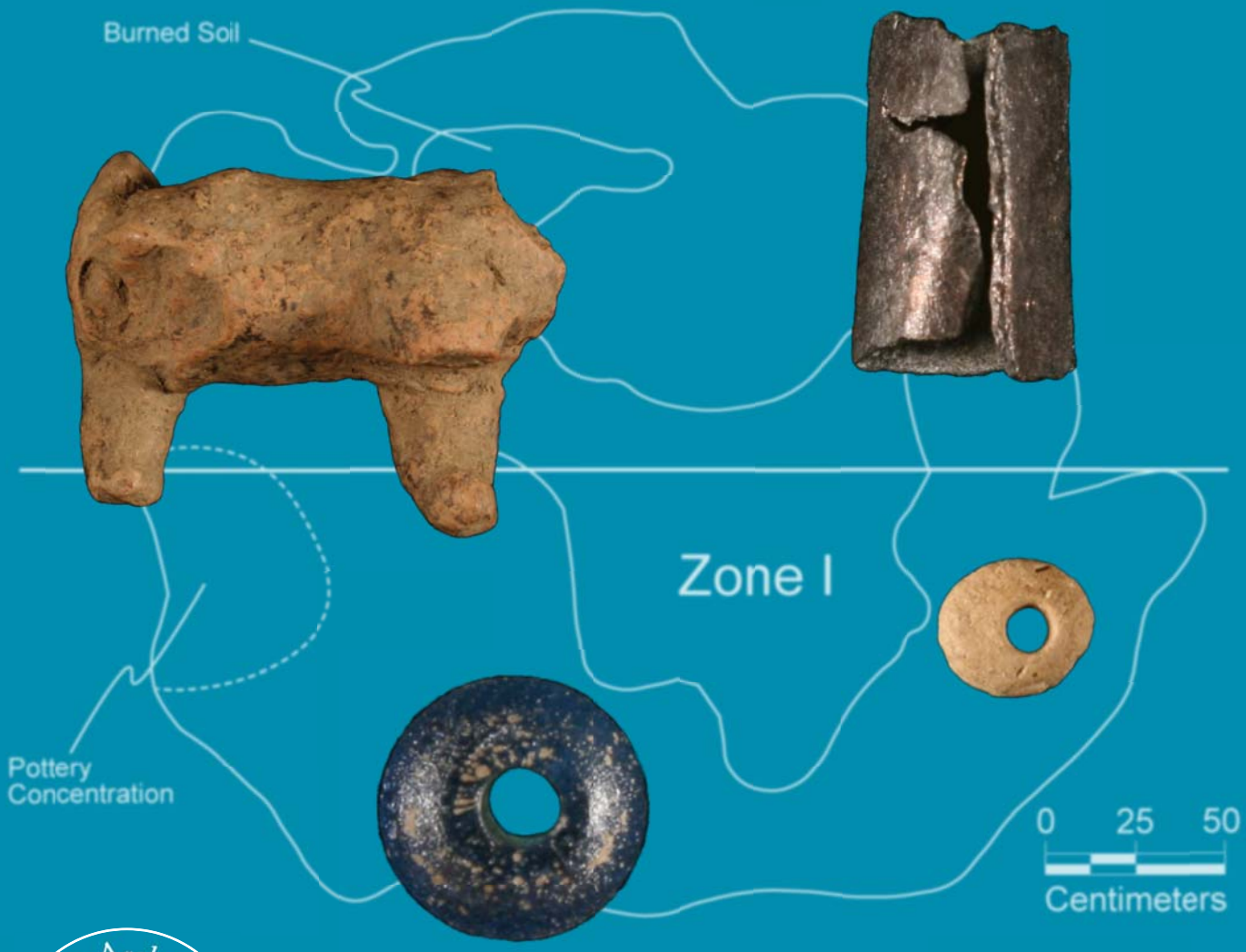

Kentucky Archaeological Survey
Jointly Administered By:
University of Kentucky
Kentucky Heritage Council
KAS Report No. 151

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ABSTRACT

The Howard site contains the remains of an early Fort Ancient hamlet and a late Fort Ancient/Contact period village. The early Fort Ancient component is represented by Jessamine Series ceramic and Type 2 Fine Triangular projectile points, while the late Fort Ancient component is represented by Madisonville series ceramics, Type 4 and Type 6 Fine Triangular projectile points, and unifacial and bifacial endscrapers. The presence of a marginella shell bead and mica fragments reflect long distance interaction with groups living to the south, and the recovery of a glass bead and a copper bead points to interaction with Europeans. Based on the presence of intact subplowzone deposits associated with both components, and the recovery of human remains, the Howard site is eligible for listing in the National Register of Historic Places. Additional archaeological research at this site has the potential to address a variety of research questions relating to Fort Ancient settlement and subsistence patterns, and interactions between Native Americans and the earliest European settlers. In order to preserve the Howard site, the Richmond Industrial Development Corporation fenced off a 2.2 ha area and designated it as green space within their industrial park. Should project plans change and it become necessary to impact the Howard site, the Richmond Industrial Development Corporation should consult with the Kentucky Heritage Council to determine the nature and extent of any additional work that will be needed.

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CHAPTER 1:
INTRODUCTION

Between April 26 and May 23, 2006, archaeologists from the Kentucky Archaeological Survey (KAS) conducted test excavations to evaluate the significance of the Howard site (15Ma427) in Madison County, Kentucky (Figure 1.1). This work was conducted on behalf of the City of Richmond, at the request of Mr. James Howard of the Richmond Industrial Development Corporation. The site is located on an 80.8 ha (200 acre) parcel of land that was to be acquired as part of the proposed expansion of the Duncannon Road Industrial Park.

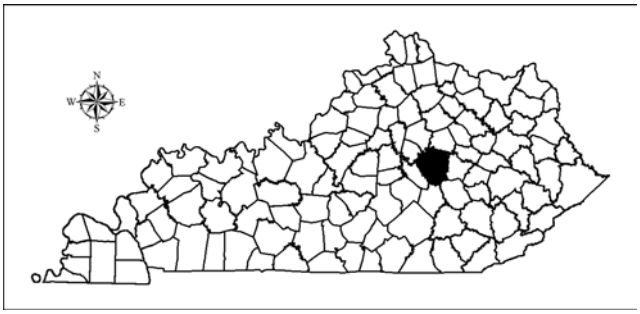

Figure 1.1. Location of Madison County, Kentucky.

The Howard site was originally identified by Cultural Resource Analysts (CRA) in 2006 (Arnold 2006). It covers 9.4 ha and is situated on a low south trending ridge spur, sideslope, and bench system located 300 m north of the confluence of Harts Fork and an unnamed tributary (Figure 1.2). Based on the initial reconnaissance of materials collected from plow strip furrows, Arnold (2006:93) characterized the Howard site as a multicomponent open habitation site with possible occupations ranging from the Woodland through Historic periods. The recovery of four shell tempered sherds and two small triangular projectile points indicated that the site contained a Fort Ancient component. Based on the presence of the Fort Ancient ceramics and Historic materials, Arnold concluded that the site was potentially eligible for listing in the National Register of Historic Places and warranted additional work.

In April of 2006, Gwynn Henderson, Eric Schlarb, and Wes Stoner revisited the Howard site, and mapped the locations of ceramics and concentrations of material along the same plow strip furrows that had earlier been examined by Arnold (2006). The goal of this work was to identify locations to target for the placement of test units. A field crew consisting of Eric Schlarb, Ed Henry, Greg Maggard, Brian Mabelitini, Gabrielle Paschall, Martin Raymer, Carrell Rush, Wes Stoner, and Emily Swintosky subsequently hand excavated 53 m^2 at this site. Richmond city workers mechanically stripped an additional 184 m^2 of plowzone using a bulldozer. KAS's investigation of the Howard site resulted in the identification of several concentrations of artifacts, the systematic recovery of a sample of Fort Ancient artifacts and subsistence remains, and the excavation of three features.

aboriginal gun flints, Type 4 and Type 6 Fine Triangular projectile points, and late Madisonville Series ceramics. Together the Historic trade goods and the Fort Ancient diagnostics are consistent with the presence of a post-A.D.1550 Fort Ancient/Contact period village.

In addition to the late Fort Ancient component, the Howard site also contains a significant early Fort Ancient (A.D. 1000-1200) component. The materials associated with this component are very similar to those recovered from the Muir site (15Js86) in nearby Jessamine County. Both site assemblages are characterized by Jessamine Series ceramics and Type 2 Fine Triangular projectile points.

The amount and diversity of late Fort Ancient materials recovered from the site, is suggestive of a large village. Based on the presence of several distinct concentrations of late Fort Ancient materials, this community appears to have consisted of several household clusters. Such a distribution is consistent with what has been documented at other late Fort Ancient villages in central and northern Kentucky. In comparison, the early Fort Ancient assemblage is not as diverse as the late Fort Ancient assemblage, and exhibits a much more diffuse distribution. The widespread distribution of these materials coupled with the absence of distinct concentrations of Early Fort Ancient artifacts is suggestive of repeated short-term occupations and the absence of an early Fort Ancient village at the Howard site. Rather, a series of hamlets may have been established at this locality throughout the early Fort Ancient subperiod. These settlements may have been occupied by just a few households.

Based on the presence of intact early Fort Ancient and late Fort Ancient/Contact period deposits, the Howard site is eligible for listing in the National Register of Historic Places. Additional archaeological research at this site has the potential to address a variety of research questions relating to Fort Ancient settlement and subsistence patterns, and interactions between Native Americans and the earliest European settlers. In order to preserve the Howard site, the Richmond Industrial Development Corporation agreed to exclude the most significant portion of this site from development. This resulted in a 2.2 ha area being fenced off and left as green space (Figure 1.3). Should project plans change and it become necessary to impact the Howard site, the Richmond Industrial Development Corporation should consult with the Kentucky Heritage Council to determine the nature and extent of any additional work that will be needed.

CHAPTER 2:
ENVIRONMENTAL AND CULTURAL BACKGROUND

ENVIRONMENTAL

Physiography

Madison County occupies four different physiographic regions: the Inner Bluegrass in the northwest; the Knobs and Eastern Coal Fields in the southeast; and the Outer Bluegrass, which runs directly through the center of the county. Madison County is, therefore, characterized by gently rolling to more hilly terrain, with mountains found in the extreme southeast of the county (McGrain and Currens 1978:52). Elevations are highest in these mountains, with Bear Mountain marking the highest point in the county at an elevation of 506 m AMSL. The lowest elevation in the county is approximately 162 m AMSL in the northeast at the confluence of the Kentucky River and Paint Lick Creek. Average elevations for the northern half of the county range from 274 to 305 m AMSL (McGrain and Currens 1978:52).

The Howard site is situated within the Outer Bluegrass, but it is significant that these other physiographic landscapes would have been easily accessible to its prehistoric and historic inhabitants. The oldest geological formations in Kentucky are found in the Bluegrass Region due to uplift along the Cincinnati Arch and subsequent erosion of more recent rocks. The Outer Bluegrass tends to be more deeply dissected than the Inner Bluegrass. Outer Bluegrass lithology consists of interbedded limestone and shales of Late Ordovician age that are softer and more susceptible to erosion than the earlier Ordovician rocks of the Inner Bluegrass (McGrain 1983:42). As a result, the Outer Bluegrass tends to contain more hilly terrain and few flat areas. Ridgetops tend to be long and finger-shaped with benches commonly forming on hillsides. Drainage bottoms are typically narrow except in the Kentucky River floodplain.

Geology/Hydrology

The underlying bedrock throughout the project area consists of interbedded limestones and shales of Late Ordovician age (Greene 1966; McGrain 1983:42). These Late Ordovician rocks erode relatively easily, leading to the dissected environment discussed above. Most of central and northern Madison County is covered by the same lithology, with the exception of restricted areas of more recent Silurian dolomites and shales and alluvium in the floodplains (Greene 1966). The southeastern part of the county in the Knobs and Eastern Coal Fields regions also contains more recent Silurian, Devonian, Mississippian, and Pennsylvanian aged limestones, sandstones, and dolomites. These more recent formations are found on the tops of knobs in the Knobs Region (Weir et al. 1971). Further southeast, Mississippian and Pennsylvanian limestones and sandstones rise to form the Cumberland Escarpment, the western border of the Eastern Coal Fields (Weir et al. 1971).

No chert resources outcrop in primary contexts within the Richmond South Geologic Quadrangle, where the Howard site is located (Greene 1966). However, Ste. Genevieve and St. Louis cherts of the Mississippian aged Newman Limestone Formation outcrop in the Berea Geologic Quadrangle to the south (Weir 1967) and the Bighill Geological Quadrangle (Weir et al. 1971) to the southeast. Devonian aged Boyle chert also outcrops in the Berea and Bighill Quadrangles. All three of these cherts range from moderate to high quality and are available in primary contexts at a distance of around 13 km to the south and southeast of the site. The alternative to procuring lithic material from primary contexts is gathering cobbles from streams and rivers. Given this possibility, cherts that form within Newman limestones (Paoli, Haney, Ste. Genevieve, and St. Louis) and Boyle may all be available in gravel and cobble form much closer than their primary contexts.

Soils

Soils of the Shelby-Mercer-Nicholson Association cover the Howard site. On top of this south trending finger ridge is a Shelbyville silt loam (2 to 6 percent slopes) (Newton et al. 1973:32). These soils tend to occur on convex and rather wide ridge tops and stream terraces, with sinks and depressions sometimes occurring. Roots penetrate deep into these soils and the erosion hazard is considered moderate (Newton et al. 1973:33). Both of these points will be revisited throughout this report. Hagerstown silt loams (6 to 12 percent slopes), a minor component of the Shelbyville and Mercer soils, occur on the upper side slopes of this finger ridge. These soils are typically found along drainageways that dissect gently sloping ridgetops (Newtown et al. 1973:21). Some of these silt loams will demonstrate heavy erosion. The lower side slopes skirting this ridge, close to the drainage bottoms, consist of Faywood silt loams (12 to 30 percent slopes). These soils are commonly found along drainageways that drain ridgetops (Newtown et al. 1973:20). The threat of erosion of these Faywood silt loams is severe.

Climate

Madison County exhibits a temperate climate, which is considered favorable for many types of plants and animals. Summers tend to be warm and humid and winters are moderately cold (Newtown et al. 1973:99). Average daily temperatures for the year range between a low of 46 to a high of 67 degrees Fahrenheit (Newtown et al. 1973:101). The average annual maximum is 97 degrees Fahrenheit with an average annual minimum of 0 degrees Fahrenheit (Newtown et al. 1973:101). The average length of the growing season is 200 days (Newtown et al. 1973:99). Annual precipitation averages 122 cm, which is well distributed throughout the year (Newton et al. 1973:101).

Flora And Fauna

The warming trend that marked the end of the Pleistocene was one of the contributing factors that lead to the extinction of large mammals and changed the forest communities in Madison County, which was originally primarily covered by hardwood forests. The entire area became part of the Mixed Mesophytic Forest of eastern North

America (Braun 1950). This forest is made up of beech, tulip tree, basswood, red oak, buckeye, sugar maple, walnut, shellbark hickory, white ash, cucumber tree, red elm, butternut hickory, white oak, redbud, dogwood, and other accessory species. A mosaic of forested areas interspersed with grassy openings and canebrakes characterized pre-Euro-American vegetation in the Madison County area. Campbell's (1985) research on pre-Euro-American vegetation of the Bluegrass Region associated these tree types with soil fertility.

The current vegetation in Madison County is dominated by cultivated fields, pasture, and secondary growth forests, resulting from many years of logging, agricultural cultivation, and grazing. The project area is completely covered by pasture grasses and weeds with tree species lining property boundaries and drainages.

The fauna that occupy Madison County today has changed somewhat from that described in the accounts of the first European explorers. Increased human activity, in the form of settlement, land clearing for farming, and logging, has drastically reduced the numbers and types of animals found in the region. Large mammals such as elk, buffalo, wolf and panther, which were abundant according to early accounts, are now absent (Filson 1784; Funkhouser 1925). Today, Madison County sustains several mammalian, bird, reptile, and fish species. Common mammals include raccoon, rabbit, coyote, squirrel, fox, ground hog, opossum, and white-tailed deer. These modern fauna replaced cold-adapted species, such as ground sloth, tapir, reindeer, caribou, musk ox, mastodon, peccary, and grizzly bear common to the area during the Pleistocene Era.

REGIONAL CULTURE HISTORY

The following section is a general overview of the prehistory and early history of Kentucky. The historic information is adapted from Niquette and Henderson (1984).

Paleoindian Period (12,000–8,000 B.C.)

Sometime during the Late Pleistocene, by about 10,000 B.C., groups of hunter-gatherers entered the New World from North East Asia and spread over the continent (Dillehay 2000). The earliest settlers have traditionally been known as Paleoindians. They were the first people to colonize the New World, although there are debates as to when this occurred (Dillehay 2000). Until recently the accepted dates for the earliest inhabitants of North America were between 9000 and 9500 B.C. (Haynes 1993). Recent research, however, suggests that humans may have been in North America by 15,000 B.C. if not earlier (Dillehay 2000).

Evidence of Paleoindians was first discovered in the western United States during the first half of the twentieth century. In this region, several diagnostic projectile points, including Clovis points, were found in association with extinct megafauna, such as bison or mammoths. In the East, while large numbers of Paleoindian artifacts have been found, they have yet to be recovered in direct association with extinct Pleistocene animals. The

earliest Paleoindian groups were initially thought to be specialized big game hunters, who concentrated almost exclusively on Pleistocene megafauna. Recent reevaluations of Paleoindian subsistence strategies have suggested that they may have utilized a more generalized strategy that included the hunting of smaller animals in addition to Pleistocene megafauna and the collection of wild plants. In this scenario, Pleistocene megafauna were exploited in a more opportunistic manner when Paleoindian groups came across them (Kelly and Todd 1988).

The Paleoindian period is divided into three subperiods (Early, Middle, and Late) in the western United States and sometimes into two subperiods (Early and Late) in the east (Tankersley 1996). The Early subperiod in the east subsumes the west's Early and Middle subperiods. The fluted Clovis point is the primary diagnostic artifact of the Early Paleoindian subperiod (Justice 1987). During the Middle Paleoindian subperiod the fluted Folsom point is the diagnostic point in the West (Justice 1987), while Quad, Cumberland, Swannee, Regan, and Debert points are common in the East. Unfluted Plano and Dalton cluster points are the primary diagnostic points during the Late Paleoindian subperiod (Justice 1987). The number and reliability of Paleoindian sites that pre-date the Early Paleoindian Clovis may give rise to a fourth subperiod: pre-Clovis (Dillehay 2000).

All of the Paleoindian subperiods date to the Late Pleistocene, a geologic period that encompasses the last ice age. The climatic conditions during the Late Pleistocene were cooler and wetter than today. By the time the Paleoindian groups arrived the ice sheets were retreating and the forests were changing, as were the faunal populations (Guilday 1984).

Throughout the Paleoindian period, social units consisted of between 20–50 people and were egalitarian in nature (Tankersley 1996:21). These bands would have moved camp several times over the course of the year in order to follow the migration patterns of the large Pleistocene big game (megafauna) who were themselves following the shifting patterns of available vegetation as they moved northwards along the glacial retreat.

Material evidence for Paleoindian occupation within Kentucky is scattered across the Commonwealth and is suggested by isolated finds of Paleoindian projectile points and by their presence in collections that are dominated by materials from later occupations (Turnbow and Sharp 1988; Lewis 1996). Artifacts from many Kentucky sites have been cross-dated with examples of early Paleoindian artifacts from other states with associated radiocarbon dates. No direct evidence between Paleoindian tools found in association with a Paleoindian kill site has been discovered in Kentucky; however, three possible Paleoindian kill sites are located within the Bluegrass region and include the Clays Ferry Crevice in Fayette County, the Adams Mastodon site in Harrison County, and Big Bone Lick in Big Bone Lick State Park (Tankersley 1996).

Conventional portraits of Early Paleoindian (9,500–9,000 B.C.) culture painted a picture of a highly mobile existence strictly dependent upon seasonal hunting of large

game, including megafauna (mastodon, mammoth, and *Bison antiquus*) that are now extinct. Today, archaeologists believe that Early Paleoindians were not entirely dependent upon the megafauna alone, but rather adopted a foraging strategy when hunting big game was unsuccessful or was temporarily unavailable. Their tool kit contained a variety of stone, bone, ivory, and antler implements, items of wood and plant fibers, and Clovis projectile points (Tankersley 1996:24). These fluted projectile points are produced by the removal of a long basal flake from either one or both sides. In the Eastern United States, Paleoindian projectile points have been found primarily from surface reconnaissance of open-air sites, but they have also been found in rockshelters, which were used by Paleoindians as temporary shelters, or caches and have produced some very early point types. Other Early Paleoindian artifacts include prismatic blades, chipped stone knives, scrapers, and endscrapers with graver spurs along with ground bone and ivory tools.

The Middle Paleoindian (9,000–8,500 B.C.) saw a dramatic decline and in some cases the extinction of particular megafauna. This occurred in response to changes in climatic conditions. This subperiod is reflected by changes in Paleoindian tool kits and by the introduction of two projectile point types: Gainey and Cumberland points. Prismatic blades and polyhedral blade cores of the Early Paleoindian subperiod were replaced with a technique called bipolar lithic reduction. These changes in lithic technology are associated with changes in settlement and subsistence patterns that resulted in a mixed approach of big and small game hunting along with a generalized foraging strategy.

Projectile points that are diagnostic of the Late Paleoindian subperiod (8,500–8,000 B.C.) include Lanceolate Plano, Dalton Cluster, Agate Basin, Quad, Beaver Lake, and Hardaway Side Notched forms (Tankersley 1996). The Late Paleoindian tool kit also included unfluted lanceolate points, and bifacial and unifacial tools, including large, bipointed and alternately beveled bifaces, backed bifaces, proximal end and side scrapers, asymmetrical end scrapers, narrow end scrapers, hafted perforators, and backed and snapped unifaces (Tankersley 1996:33). The rate of environmental and climatic change that occurred towards the end of the Paleoindian period brought with it changes in subsistence and settlement patterns. Whereas Early and Middle Paleoindian groups preferred a select few big game animals for their survival, and occasionally supplemented it with small game, plants, and aquatic resources, Late Paleoindian groups adapted to these new environmental conditions by foraging for resources in their localized environments and hunting terrestrial game, such as whitetail deer, bear, and turkey, in the forested areas. The greater use of plants and aquatic animals resulted in a more varied diet.

Archaic Period (8,000–1,000 B.C.)

The Archaic cultural tradition spans 7,000 years from the end of the Pleistocene approximately 8,000 B.C., to 1,000 B.C. During this period, the inhabitants of eastern North America primarily subsisted by hunting and gathering. They hunted deer and turkey, and other animals, and gathered nuts and other plant foods. Toward the end of

the Archaic period people began to cultivate several native plants, including sunflower (*Heliathus onnuus),* sumpweed (*Iva onnua),* goosefoot (*Chenopodium sp.)* and maygrass (*Phalaris caroliniana).* Through time the size of Archaic hunter and gatherer groups increased and they became more sedentary (Jefferies 1996).

The concept of the Archaic tradition was developed by William Ritchie in 1932 to describe a preceramic assemblage from the Lamoka Lake site in New York. The tradition was further defined by work done by William S. Webb and his Works Projects Administration archaeology crews on sites along the Green River of Kentucky (Webb 1939, 1946, 1950a, 1950b, 1974) and the Tennessee River in Alabama (Webb 1939; Webb and Dejarnette 1942). The presence of large quantities of riverine mussel shell aided the preservation of bone artifacts as well as the remains of humans and animals buried at many of the Green River sites. Description, analysis, and interpretation of these materials greatly expanded what was known about Late Archaic artifact assemblages and burial traditions (Webb 1974). Willey and Phillips (1958:110) described Archaic groups as migratory hunting and gathering cultures that subsisted on many kinds of plants and animals. Caldwell (1958:18) described the Archaic period in terms of "primary forest efficiency." He believed that Archaic hunters became more efficient as they became more familiar with their surroundings.

In the 1980s, archaeologists began to focus on Archaic hunters and gatherers with respect to sedentism and group mobility (Binford 1980). For instance, from their work in the lower Illinois valley, Brown and Vierra (1983:166) developed a model that linked aspects of local environmental history and ecology to Archaic subsistence and settlement patterns. Their analysis focused on the duration of site occupation, type of features present at a site, tool diversity, and the use of raw materials (Brown and Vierra 1983:166). By so doing they were able to document a shift through time from highly mobile to more sedentary settlement systems within the lower Illinois valley.

As with other archaeological cultural traditions, the Archaic is divided into Early, Middle and Late subperiods based on temporal, technological, social, subsistence, and settlement criteria (Jefferies 1996:39-40). The Early Archaic subperiod dates from 8,000 to 6,000 B.C.; the Middle Archaic from 6,000 to 3,000 B.C.; and the Late Archaic from 3,000 to 1,000 B.C.

The Early Archaic spans the first two thousand years of the Holocene Epoch. Early Archaic tool assemblages were similar to that of Late Paleoindians, although Kirk Corner-Notched and Thebes Side-Notched projectile points dominate Kentucky site assemblages (Jefferies 1996). Changes occurring near the end of the Early Archaic can be seen in projectile point styles that took the form of points with bifurcated bases like the Lecroy and Kanawha types.

Early Archaic groups remained highly mobile and most camps were occupied for only a short time. These hunter-gatherer bands were small, exploited a relatively large territory, and appear to have focused primarily on animals for food as indicated by the

relatively low frequency of plant processing tools in Early Archaic site assemblages (Jefferies 1996).

In general, the Middle Archaic witnessed an increase in regional variation in artifact styles. Around 6000 B.C. regionally distinct archaeological assemblages are present throughout the Eastern United States (Jefferies 1996:47). Middle Archaic artifact assemblages include an increasing number of groundstone tools, such as grooved axes, pestles, atlatl weights, grinding slabs, and pitted stones. Occupations in central Kentucky typically are represented by the presence of Morrow Mountain, Matanzas, and Big Sandy II points (Jefferies 1996). New groundstone tools, such as axes, pitted anvils, grinding stones, and pestles, suggest plant utilization increased or new techniques in plant processing developed (Jefferies 1996; Sussenbach 1989).

Variation exhibited by these cultures was partially the result of adapting to local environmental conditions (Jefferies 1996:47). At about 5000 B.C. the climate in the Ohio valley became warmer and drier; this period is known as the Holocene Hypsithermal. Undoubtedly, these climatic conditions had some impact on Middle Archaic settlement and subsistence patterns, but the extent to which they did so has yet to be fully determined. The Hysithermal climatic interval lasted until around 3000 B.C. when conditions ameliorated to its current pattern (Jefferies 1996).

Hunting strategies of Middle Archaic groups focused on white-tailed deer, wild turkey, and other small game. Hickory and other nuts were important plant foods along with starchy seeds and greens. The effects of the Hypsithermal reduced the size of forests, increased areas of grassland, and influenced human occupations and settlement patterns in Kentucky. Middle Archaic settlement patterns in central Kentucky are similar to those of the Early Archaic.

As climate fluctuations settled down around 3,000 B.C., Late Archaic (3,000–1,000 B.C.) settlements became widely dispersed compared to the Middle Archaic. Hunting and gathering practices continued with an emphasis on freshwater mussels and starchy seeds. The tool kit of the Late Archaic included a wide range of flaked stone, groundstone, and bone tools used for specialized tasks. Typical projectile points of the period had large straight, expanding, and contracting stems, with smaller stemmed and side-notched varieties being common (Jefferies 1996).

The Late Archaic also is marked by an increase in social complexity (Jefferies 1996:57). While Late Archaic groups were still largely egalitarian, evidence from several sites, such as the shell middens of the Green River, indicates some degree of social inequality with special treatment of high-status individuals.

Late Archaic sites in the Bluegrass Region of central Kentucky were generally small base camps situated along the narrow floodplains of entrenched rivers and streams, smaller floodplain and upland sites, and rockshelters. The majority of camps were occupied on a short-term basis, leaving behind fragmentary evidence of butchering and tool manufacture.

Woodland Period (1000 B.C.–A.D. 1000)

Important cultural developments took place during the Woodland period: increased dependence on domesticated plants for food; the manufacture of pottery for food storage and cooking; the elaboration of ritual and ceremony as illustrated by the construction of earthen or stone burial mounds; an increased participation in long-distance exchange of non-local ritual items; the balkanization of societies and an expansion into the uplands following the decline of mound building and long-distance exchange networks; the development of a new weapons technology (i.e., the bow and arrow); and the concomitant changes in social and political organization that undoubtedly accompanied these developments (Anderson and Mainfort 2002).

The Woodland period is divided into three subperiods: Early (1,000–200 B.C.), Middle (200 B.C.–A.D. 500), and Late (A.D. 500–1000). The term Woodland is used to describe prehistoric groups who made pottery, and lived by hunting, gathering, and gardening (Railey 1996).

The Early Woodland represents a continuance of some Archaic adaptive strategies (Turnbow and Sharp 1988:16). During this time, evidence of the emerging Adena mortuary complex surfaces in central and eastern Kentucky, southern Ohio, and western West Virginia (Webb and Snow 1945). Earthen mounds for the interment of the dead were constructed towards the end of the Early Woodland subperiod (ca. 500 B.C.). The Early Woodland subperiod witnessed the introduction of pottery as a widespread cultural trait. The first pottery in Kentucky was made in the eastern and possibly central part of the state/region by 1,000–800 B.C., and it reached the western end of the Commonwealth around 500 B.C. (Seeman 1986:564). The oldest pottery vessels in central and eastern Kentucky are typically thick-walled cordmarked, plain, or fabric impressed wares with coarse grit and rock temper. These vessels, which are classified as Fayette Thick, were large, deep, basin-shaped jars.

Prehistoric populations in Kentucky intensified their exploitation of the available subsistence resources during Early Woodland times. At this point, hunting and gathering practices were the principal means of acquiring food; however, horticulture began to play an increasing role in Woodland life. These gardeners practiced horticulture or incipient agriculture growing cultivated plants, such as sunflower, squash, gourds, maygrass, goosefoot, sumpweed, giant ragweed, erect knotweed, and possibly early forms of maize (Railey 1996).

Early Woodland sites are primarily associated with ridgetops located near a variety of resources and sources of water in the form of springs (Railey 1996). At this time, Bluegrass populations were dispersed among small, frequently shifting camps and settlements in the rolling uplands. It was not until later in Woodland times that settlements in the Bluegrass became consolidated.

During the Middle Woodland, burial mounds and earthen enclosures became more evident and interregional exchange of ritual items occurred across most of the Eastern Woodlands of North America. Large nucleated settlements emerged in the Bluegrass and eastern Kentucky during the latter half of the Middle Woodland.

In central Kentucky, Adena groups constructed hundreds of burial mounds, circular enclosures, and other earthworks. Materials associated with the Adena culture include stone gorgets, tubular pipes, elbow and platform pipes, stone balls, celts, hoes, simple and engraved tablets, hammerstones, galena and barite artifacts, bone and shell tools, copper bracelets, mica crescents, Adena and Robbins type projectile points, and fragments of textiles (Railey 1996). Ceramic vessels have not been found in direct association with Adena burials. The most common pottery type found in mound fill or near Adena burials was a limestone tempered jar referred to as Adena Plain.

Rituals connected with the interment of the dead in mounds, along with the use of other ceremonial sites brought together widely dispersed Adena households. The rituals served to bind the people together, reaffirming their identity as a group extending beyond the bounds of kinship-defined social relations. Excavations of mounds in Kentucky suggest that most were constructed after 200 B.C. After A.D. 300, mound construction declined, but did not cease, and some groups in the Bluegrass continued to build mortuary facilities during the Late Woodland subperiod (Railey 1996).

The predominant cultural expression associated with Late Woodland in central and northeastern Kentucky is the Newtown Complex (Railey 1996). This complex spans the late Middle Woodland and the early Late Woodland in the Bluegrass Region and northeastern Kentucky. Sites are identified by the presence of thin cordmarked jars with thickened angular shoulders. These jars are associated with an increased reliance on native cultigens, such as chenopod, maygrass, and marsh elder. A general trend towards more nucleated settlements took place in the Bluegrass around A.D. 300–500 (Railey 1996). By the terminal Late Woodland, people living in central and northeastern Kentucky appear to have returned to a more dispersed settlement pattern. However, the Late Woodland subperiod also witnessed an increased reliance on corn, as agriculture became the dominant subsistence strategy.

The Late Woodland subperiod, between A.D. 800–1000, is marked by a significant cultural change: the introduction of the bow and arrow. This technological change is represented in the archaeological record by the presence of small, triangular projectile points, which would have been affixed to the end of an arrow shaft. Throughout much of Kentucky, triangular points were immediately preceded by thin, corner notched points of the Jacks Reef type, which also may have been used as arrow points (Seeman 1992).

Late Prehistoric Period (A.D. 1000–1750)

The Late Prehistoric period in Kentucky is distinguished by two different cultural traditions: Mississippian and Fort Ancient. Mississippian peoples occupied western

Kentucky, as well as extreme portions of southern and southeastern Kentucky, and are closer, culturally, to the Late Prehistoric inhabitants of the southeastern United States. The Fort Ancient culture flourished in central and eastern Kentucky, as well as in southeastern Ohio and western West Virginia.

Around A.D. 900-1000, Late Prehistoric (Mississippian) groups throughout western and southern Kentucky had become increasingly sedentary, with long-term to permanent occupation of sites, and the construction of corporate structures and facilities. They began to rely heavily on cultivated plants, maize in particular, to meet their subsistence needs. They also began to participate in the Mississippian cultural and religious traditions of the Southeast and Midwest, and to create monumental architecture (Lewis 1996).

Mississippian settlements were arranged in a hierarchical manner with a political system generally described as a chiefdom. The hierarchical nature of Mississippian settlements is usually assessed on the basis of site and population density, as well as the presence or absence of monumental architecture. Political, social, and ideological centers of Mississippian settlements were the regional centers. They had a central plaza surrounded by houses and earthen platform mounds (on which the homes for the chiefly lineages were built), and were associated with larger resident populations. Mississippian populations also lived in smaller associated villages, hamlets, and farmsteads. Large multi-mound Mississippian sites, such as Jonathan Creek, Wickliffe, Angel, and Kincaid are present in western Kentucky and nearby regions.

Basic technological changes in ceramic and lithic assemblages can be documented for this period. Mississippian ceramics are characterized by shell tempering, with a variety of vessel forms that include jars, bowls, bottles, plates, and pans. Triangular projectile points dominate lithic tool assemblages. The presence of marine shell and copper artifacts at Mississippian regional centers points to participation in long-distance exchange networks and interaction spheres.

Most Mississippian regional centers in western Kentucky were abandoned by A.D. 1400 with regional populations relocating to smaller more dispersed settlements. An exception to this pattern is the Angel-Caborn-Welborn transition (Pollack 1998, 2004). Along the Ohio River in Henderson and Union counties and corresponding counties in Indiana and Illinois, following the collapse of the Angel chiefdom, during the subsequent Caborn-Welborn phase the regional Mississippian population continued to live in large villages and to maintain a settlement hierarchy. The largest Caborn-Welborn village is the Slack Farm site, which is located in Union County. In addition to large villages, Caborn-Welborn settlement patterns consisted of small villages, hamlets, farmsteads, and blufftop cemeteries (Pollack 1998, 2004). However, the Caborn-Welborn settlement system lacked a regional mound center.

Fort Ancient peoples lived in large nucleated villages numbering between 100–300 people (Sharp 1996:182). In contrast to preceding periods, hunting and gathering were not the primary subsistence strategies, though they did continue less intensively.

Rather, with the increased reliance on corn near the end of the Late Woodland period, agriculture became the dominant subsistence strategy.

Fort Ancient village sites were situated on broad ridgetops in the Bluegrass Region or in valley bottoms along the main stems of the region's larger rivers. Villages often contained central plazas and some have associated burial mounds. It is believed that these villages were occupied year-round by at least a portion of the site's population. Recent data suggests Fort Ancient groups followed a pattern of seasonal movement known as the Miami-Potawatomi pattern (Turnbow and Sharp 1988). During the winter most households would leave a village to establish winter camps in good hunting territories.

Fort Ancient artifact assemblages include small triangular arrow points and coarse, shell tempered ceramics with cordmarked or plain exterior surfaces. Some vessels have incised designs on their necks. Like their Mississippian counterparts to the west and south, the Fort Ancient peoples produced pendants, beads, and elaborate gorgets out of freshwater and marine shell. Some of the motifs on the gorgets are associated with the Southern Cult, a complex of religious imagery and associated beliefs that was prominent throughout the Southeast and Midwest during the Late Prehistoric period (Hudson 1976).

Subsistence is characterized by a reliance on the cultivation of corn, coupled with beans and squash. However, even with this increase in energy expended on horticulture, hunting still provided an important source of subsistence.

Contact Period (A.D. 1540–1795)

In Kentucky, the Contact period extends from when the first indirect effects of the European presence were felt by Native American cultures in the area (ca. A.D. 1540), to the signing of the Greenville Treaty in 1795 (Henderson et al. 1986:1). During this period, Europeans traded goods, such as firearms, metal tools, trinkets and cloth, first indirectly and then (after about the 1730s) directly, to the indigenous inhabitants (Henderson et al. 1986:2). In return, native peoples provided the Europeans with information in regards to survival, such as aboriginal hunting methods, the uses of native materials for shelters and canoes, and the uses of native plants for nourishment and medicinal cures (Henderson 1986:2).

> The knowledge base provided by the Indian could only be built upon by the Europeans and not lost. However, the Indians' continued demand for European goods ultimately led to material dependency on their European neighbors. This dependency succeeded in changing the economic, social and political character of Indian culture. These changes, along with conflicts and diseases engendered by the European presence, led to the extinction, amalgamation, and/or migration of the Ohio Valley Indian groups (Henderson et al 1986:2).

European households that moved to the Ohio Valley and Kentucky invaded the territories of the Chickasaw and Shawnee (Schenian and Mocas 1993). The Shawnee, who struggled with early Kentucky settlers more than any other tribe, probably numbered no more than three or four thousand by 1750 (Harrison and Klotter 1997). Many Shawnee and other indigenous groups left Kentucky by the end of the 1700s. Those who remained were absorbed into the culture of the new Commonwealth of Kentucky, although some kept alive the memories of their traditional ways of life.

Historic Period (A.D. 1750–Present)

The first Europeans to visit Kentucky included explorers, trappers, traders, and surveyors. During the 1750s, the English Crown attempted to colonize the Ohio Valley, spurring a race to form land companies and send surveyors into the area to map out enormous swaths of land. It is believed that the first verifiable documentation of exploration in Kentucky by Euro-Americans began with Dr. Thomas Walker and his scouting party, who visited the Upper Cumberland in April of 1750 (Kleber 1992). The Loyal Land Company, based in Virginia, was headed by Walker, a thirty-five year old physician who had a greater interest in exploring and surveying than in the practice of his profession (Harrison and Klotter 1997). He entered Kentucky through the Cumberland Gap following the Warrior's Path to Swan Pond, located below Barbourville in Knox County, where they built the first cabin in Kentucky.

In 1751, Colonel Christopher Gist, exploring for the Ohio Land Company, swam his horses across the Ohio River at the mouth of the Scioto and entered Kentucky at the northern terminus of the Warrior's Path at Lower Shawneetown (15Gp15). He turned west in search of the flat land described by fur traders and Indians. While moving toward the Falls of the Ohio he was warned of Indian attacks and turned southeast toward Maysville. At Leestown he crossed the Kentucky River and followed Buffalo Path to a trail at Mount Sterling. The trail took him past the Red River in Wolfe County and to the North Fork of the Kentucky River. Gist followed an old Indian trail through what is now Jackson, Hazard, and Whitesburg and finally across Pine Mountain and through Cumberland Gap (Jillson 1934: 53-54).

John Finley, an Indian trader, is supposed to have made at least three trips to Kentucky. The first was in 1752, when he came upon the Falls of the Ohio. Following the river over to Big Bone Lick, in what is now Boone County, he met up with some Shawnee Indians who took him to Eskippakithiki (Cotterill 1917: 49-50). One source claims that Finley married an Indian woman and lived with her at Eskippakithiki (Jillson 1934:52). While living at the Shawnee village, he traveled through eastern Kentucky. He returned home to the Yadkin Valley in 1753.

Other explorers, including Daniel Boone, entered the southern part of what is currently known as Madison County in 1769. As an employee of the Transylvania Company, Daniel Boone revisited the area in 1775 and blazed Boone's Trace to establish Fort Boonesborough on the south bank of the Kentucky River in the northern part of the

county. In 1779, Boonesborough was the first town to be chartered in what was then Kentucky County, Virginia.

Madison County was created on December 15, 1785, and was named for the Virginia statesman James Madison, who became the fourth president of the United States (Kubiak 1992). According to Kubiak (1992), the county's early history was dominated by General Green Clay, a member of the county court for nearly 40 years. His son, Cassius Marcellus Clay, served as ambassador to Russia during the Civil War and was an outspoken antislavery advocate (Kubiak 1992). Not unlike other central Kentucky counties, Madison County produced corn, hemp, and tobacco very early in its history. The oldest continuous industry in the county , pottery making, was established around 1809 (Kubiak 1992:602). Since World War II, Richmond, and Madison County have attracted light manufacturing businesses, which along with Eastern Kentucky University and Berea College continue to function as major employers in the county. Burley tobacco and cattle raising are still major contributors to the county's economic base.

CHAPTER 3:
PREVIOUSLY DOCUMENTED FORT ANCIENT SITES IN MADISON COUNTY

Several Fort Ancient sites have been documented in the vicinity of the Howard site. Among them are Site 15Ma428, Duncannon Mound (15Ma150), Coy (15Ma144) and the Hays Fork site (15M349). Broaddus (15Ma179) and the Tobacco-Wharehouse site are other important Fort Ancient villages that have been documented in Madison County. Of these, Site 15Ma428 contains an early Fort Ancient component, while the other five sites represent middle Fort Ancient villages, though the Coy site also contains minor early and late Fort Ancient components.

Site 15Ma428 is a multicomponent site located directly south of the Howard site that was occupied during the Late Archaic and Fort Ancient times (Schlarb et al. 2009). Of note is a concentration of early Fort Ancient Jessamine ceramics that were documented on bench overlooking Hays Creek. Though limited excavations conducted in this area failed to locate intact subplowzone deposits, the restricted spatial distribution of these materials, is suggestive of use of this locale by one or two households during early Fort Ancient times. Such an interpretation is consistent with what is known about early Fort Ancient settlements in central Kentucky. They tend to be small and dispersed across the landscape. It was not until the middle Fort Ancient subperiod that households began to congregate in larger and more nucleated settlements. The restricted spatial distribution of early Fort Ancient materials at Site 15Ma428 is similar to that documented at the Curtis site in Johnson County (Burdin and Pollack 2006). Minor Fort Ancient components that also may represent small dispersed settlements have been documented at nearby Sites 15Ma426 and 15Ma429.

The Duncannon Mound site is a middle Fort Ancient village about 1 km to the northwest of the Howard site (Hand 1999; Carl Shields, personal communication 2007). This mound and village complex encompasses about 2 ha. The mound stands about two meters high and has a diameter of ca. 20 m. Limited investigation of this site resulted in the documentation of subplowzone features. All of the ceramics recovered from the site were tempered with shell, with seven having plain exterior surfaces and nine exhibiting cordmarked exterior surfaces. All were body sherds, except for a possible rim, that may have had a rimfold (Hand 1999:28).

The Coy site is located on a broad upland ridgetop slightly more than 3 km to the west of the Howard site and encompasses an area that measures 176 x 128 m (O'Shaughnessy and Wilson 1990). As with Duncannon, it consists of a mound and associated village area (Henderson 1998:328-335). In this case, the mound is considered to predate the Fort Ancient occupation by about a thousand years. Though construction of the mound may predate the Fort Ancient occupation, the village may have been organized so as to take advantage of this important landscape feature. A possible plaza, which is bordered by cultural materials, is suggestive of a circular community, similar to that of Broaddus (see below).

Though the site was occupied intermittently throughout the Fort Ancient sequence, it appears to have been most intensively occupied during the middle Fort Ancient subperiod (Henderson 1998:334). Most of the ceramics are assignable to Jessamine Plain, with only about fifteen percent being classified as Jessamine Cordmarked and five percent Jessamine Check-Stamped (Henderson 1998:329). Slightly more than two-thirds of the sherds are tempered with just shell. The projectile point assemblage is dominated by Type 2 and Type 5 Fine Triangulars, with Type 3 Fine Triangulars being well-represented.

The Hays Fork site is also located to the southwest of the Howard site, but slightly closer than the Coy site. Though only known from limited survey coverage, this site may contain a very late Fort Ancient component. This observation is based on the presence of a wide thin strap handle fragment and a Nodena Ellipitical projectile point. These materials were found in association with mussel shells and faunal remains, within a 50 x 50 m area.

Broaddus is a middle Fort Ancient circular village and mound site located about 10 km to the east of the Howard site. Like most other Fort Ancient villages in central Kentucky it is located on a broad upland ridge (Carmean 2003; Waite and Ensor 1996). The village area encompasses 1.6 ha and measures 120 by 133 m. The plaza is oval, measuring 65 by 80 m. Midden width, like most central Kentucky circular villages, is 25-30 m (Carmean 2003:2). The mound is situated in the west/southwest section of the plaza. It stands about 70 cm high and measures about 25 m in diameter (Carmean 2003:1).

The ceramic assemblage is dominated by Jessamine Plain and Jessamine Cordmarked ceramics (Henderson 1998:324). A small amount of Jessamine Check-Stamped ceramics also were recovered from this site (Carmean 2003:72; 89). The assemblage is predominately tempered with shell, with minor amounts of mixed limestone and shell tempered sherds being present. Vessels were mainly jars, although a few bowls and pans were present (Carmean 2003:81). Handles were mainly loops, but a few straps were recovered (Carmean 2003:87). Decorated examples were not common, and consisted of cordmarked or notched lips, and incising (Carmean 2003:78-79). Diagnostic chipped stone artifacts included mainly Type 2 and Type 5 fine triangulars, with only a few Type 3's represented (Carmean 2003:48).

The Tobacco Warehouse-Hally (15Ma41 and 15Ma134) site is another important Fort Ancient village located in Madison County (Henderson 1998; O'Malley 1990). Unlike those villages located near the Howard site, which are located on upland interior ridgetops, the Tobacco Warehouse-Hally site is situated in the floodplain of the Kentucky River. The site encompasses an area that measures 190 x 70 m. Limited investigation of this arc-shaped village has documented the presence of substantial intact subplowzone deposits. Based on similarities of the ceramics with the well-documented Guilfoil site (15Fa166) in nearby Fayette County the Tobacco Warehouse-Hally site was assigned to the middle Fort Ancient subperiod (Fassler 1987; Henderson 1998:308). Unlike Fort

Ancient sites in the interior of Madison County where Jessamine Plain tends to dominate site ceramic assemblages, almost three-quarters of the Tobacco Warehouse-Hally site assemblage was classified as Jessamine Cordmarked. About twenty percent of the assemblage is tempered with shell, and more than fifty percent with a combination of shell and limestone.

CHAPTER 4:
FIELD METHODS

The field methods employed during the 2006 investigation of the Howard site were designed to: 1) determine the horizontal distribution of material concentrations; 2) determine the nature and extent of intact subplowzone cultural deposits; and 3) sample the intact cultural deposits. To accomplish these goals several methods of data collection were employed. First, systematic collection of cultural materials from plow strip furrows, previously overturned by CRA (Arnold 2006), provided the basis to gain an initial impression of the horizontal distribution of materials at the site and the overall shape of the site. Second, hand excavated test units provided the means to assess the stratigraphy of the site and to determine the presence or absence of intact cultural deposits. This method was also the most systematic way to gather a standardized sample of materials, which would later be examined in the laboratory. Finally, the mechanical removal of plowzone was employed to expose subplowzone features. Any features identified were carefully excavated by hand and mapped.

PEDESTRIAN SURVEY

CRA conducted the first survey of the Howard site (Arnold 2006) in December of 2005. Since the entire survey area was covered in pasture a plow was used to turn over strips of sod along transects spaced an average of 15 m apart. Plow strip furrows were then subjected to pedestrian survey and the location of observed artifacts noted. Several months later KAS archaeologist returned to the Howard site and walked these transects again to gain a better understanding of the spatial distribution of material. Though a large amount of debitage was observed on the surface only the location of diagnostic projectile points and ceramics and concentrations of artifacts were flagged. These locations were then recorded with a Trimble ProXRS GPS backpack unit. This instrument is capable of plotting data points with sub-meter accuracy. A sketch map of material distribution was also made in the field. The GPS data points were plotted in the ArcMap GIS computer program. Locations where material density was relatively high were targeted for excavation.

A soil core and limited shovel probing were also used to gain an understanding of the site's soil stratigraphy. Both cores and shovel probes were placed opportunistically in areas that displayed potential for subplowzone deposits.

TEST EXCAVATION

Units were excavated in cultural/natural soil zones, with the plowzone removed as one level. After the plowzone was removed the floor of the unit was carefully examined for the presence of intact features (i.e., pits, hearths, and structures). Unless the unit was part of a contiguous block of units, the excavated soil was screened through 6.25 mm

wire mesh to facilitate and standardize the collection of artifacts. When contiguous units were excavated to expose prehistoric features, the plowzone often was not screened.

Due to the recovery of very small, but important artifacts (i.e., a small blue glass and a copper trade bead) some of the back dirt from the Howard site was collected for fine screening in the laboratory. After excavated to sterile subsoil, the excavators drew a soil profile of a single wall on the long axis of each unit. A unit level form was completed for each unit.

Features were excavated in the following manner: 1) the surface limits of the feature was defined; 2) photographs were taken and a planview map was drawn; 3) half of the feature was excavated and all soils were dry-screened through a 6.25 mm wire mesh; 4) all cultural materials were collected, and bagged by provenience; 5) photographs were taken and the bisected profile was drawn; and 6) the second half was excavated by cultural strata, if present. Flotation/soil samples of up to 40 liters were collected from each strata, with the remaining soil dry screened through 6.25 mm wire mesh. All cultural materials were collected. Whenever possible, radiocarbon samples were collected from each feature. A feature form was completed in the field for each feature.

No backhoe was available for mechanical stripping, but the city of Richmond was able to provide a bulldozer. Plowzone was removed about 10 cm at a time to the interface of the plowzone and sterile subsoil. The contrast between dark feature fill and lighter colored subsoil would indicate the possible presence of a cultural feature that would be excavated by hand. Field personnel monitored the mechanical removal of the plowzone, noting the location of potential features, posts, and soil anomalies. Despite the excavation of 184 m^2 of plowzone using this method, no cultural features were identified.

The field directors decided to halt use of the bulldozer to remove plowzone because it was potentially damaging the site. At the time of use, it had rained several days in a row, and the cleats on the bulldozer tracks were tearing through the soil.

All investigated areas (units, features, and mechanically stripped blocks,) were photographed using digital color; and black and white, and/or color film. All units and mechanically stripped areas were additionally plotted on a grid with the aid of a Leica Geosystems TC 305 total data station. These data were then entered into the ESRI ArcMap GIS computer program.

Materials collected from the Howard site were washed, labeled, and catalogued at the University of Kentucky's Archaeology Laboratory. All cultural materials and records documenting these investigations are curated at the University of Kentucky's William S. Webb Museum of Anthropology in Lexington, Kentucky.

CHAPTER 5:
CHIPPED STONE, GROUND STONE AND MICA

The chipped stone assemblage (n=6,010) recovered from the Howard site represents a good cross-section of the Fort Ancient lithic industry. It consists of flakes and flake fragments (n=5,820), projectile points and point fragment (n=66), edge-modified/retouched flakes (n=19), drills/perforators and fragments (n=6), bifaces and biface fragments (n=60), cores and core fragments (n=22), unifacial endscrapers and unifacial endscraper fragments (n=9), bifacial endscrapers (n=4), serrated flakes (n=2) and Native American gunflint/fragments (n=2). The relatively complete range of chipped stone tools recovered from the site indicates that all stages of manufacture, use, and maintenance took place during the Fort Ancient occupation of this locale.

ANALYTICAL METHODS

Current approaches to the analysis of lithic artifacts include a study of the step-by-step procedures utilized by prehistoric knappers to make tools. The term used to describe this process is referred to as *chaine operatoire* or reduction strategy (Grace 1989,1993,1997; Tixier and Roche 1980). The analysis of stone tool assemblages provides insights into the processes by which prehistoric flintknappers produced their implements. It also enables archaeologists to characterize the technical traditions of specific prehistoric cultural groups (Grace 1997).

The production of any class of stone tools involves a process that begins with the selection of a suitable raw material. The basic requirements of any raw material to make flaked stone artifacts include the following: 1) it can be easily worked into a desirable shape; and 2) sharp, durable edges can be produced as a result of flaking (Grace 1997). Once an adequate source is located and a raw material is selected, the process of tool manufacture begins. Two different strategies can be utilized. One involves the reduction of a material block directly into a tool form, like a biface, or the production of a core. The second involves the preparation of a block of raw material so that flakes or blanks of a suitable shape and size can be detached. These blanks are then flaked by percussion or pressure flaking into a variety of tool types, including scrapers, bifacial knives, and projectile points.

Experimental work has shown that the former manufacturing strategy, involving a raw material block, begins with the detachment of flakes with cortical or natural surfaces. This is accomplished by direct percussion, usually involving a hard hammer (stone) that more effectively transmits the force of the blow through the outer surface. Having removed a series of flakes and thus created suitable striking platforms, the knapper begins the thinning and shaping stage. The majority of the knapping is conducted with a soft hammer (antler billet). The pieces detached tend to be invasive, extending into the mid-section of the biface. A later stage of thinning may follow, which consists of further

platform preparation and the detachment of invasive flakes with progressively straighter profiles in order to obtain a flattened cross-section. By the end of this stage, the biface has achieved a lenticular or bi-convex cross-section. Finally, the tool's edge is prepared by a combination of fine pressure work and pressure flaking if desired. It should be noted that flakes derived from biface reduction are sometimes selected for bifacial, unifacial, and expedient tool manufacture.

The second type of manufacturing trajectory, utilizing a flake or blank, begins with core reduction and the manufacture of a suitable flake blank. The advantages of employing a flake blank for biface reduction include the following: 1) flakes are generally light-weight and can be more easily transported in large numbers than blocks of material; and 2) producing flakes to be used for later biface reduction allows the knapper to assess the quality of the material, avoiding transport of poorer-grade chert.

The initial series of flakes detached from the flake blank may or may not bear cortex. However, they will display portions of the original dorsal or ventral surfaces of the flake from which they were struck. It should be noted that primary reduction flakes from this manufacturing sequence could be entirely noncortical. Therefore, the presence of cortex alone to define initial reduction is of limited value. Biface reduction on a flake involves the preparation of the edges of the piece in order to create platforms for the thinning and shaping stages that follow. In most other respects, the reduction stages are similar to those described above, except that a flake blank often needs additional thinning at the proximal or bulbar end of the piece to reduce the pronounced swelling and achieve a thinned final product.

FORMAL CHIPPED STONE TOOLS

The identification of formal and informal chipped stone tools is useful in addressing questions involving the trajectory of reduction and the general activities undertaken by the prehistoric occupants of a site(s). Formal tools are defined as implements with a standard morphology. Formal tools, such a projectile points, may in fact be produced for a specific anticipated function or functions. However, we also know they were often used to perform a wide variety of tasks. Identification of prehistoric formal chipped stone tools recovered from this site was based on comparisons with previously defined types (Justice 1987; Railey 1992, Ritchie 1961, 1969a).

Projectile Points

A total of 66 projectile points and point fragment was recovered from the Howard site. If complete, or nearly complete, projectile points were examined for size and shape, resharpening methods, flaking characteristics, blade and haft morphology, presence of basal thinning or grinding, notch flake scars, type of fracture(s), and material type. Length, width, and thickness measurements (in millimeters) were taken for each projectile point. Length measurements were taken on points retaining a distal end or working edge. "Length" reflects the maximum length along the axis of the point.

"Width" reflects the point of maximum width that is perpendicular to the long axis of the point. Two width measurements were taken for the fine triangular arrow points (basal and mid-point). "Thickness" reflects the point of maximum thickness on a plane that is perpendicular to the width.

Type 2 Fine Triangular: Flared Base (n=5)

Type 2 Fine Triangular points recovered from the Howard site (Figure 5.1), were manufactured from Boyle (n=3), Breathitt (n=1), and St. Genevieve (n=1) cherts. These specimens display either a biconvex, or flattened cross-section and all exhibit some form of edge resharpening. They range in length from 28.1 to 33.7 mm, with a mean of 30.1 mm (Table 5.1). Basal width ranges from 16.0 to 19.0 mm, with a mean of 17.3 mm, and middle width ranges from 8.9 to 12.9 mm, with a mean of 10.5 mm. The range of thickness is 3.8 to 5.4 mm, with a mean of 4.7 mm.

Type 2 Fine Triangular points are diagnostic of the early Fort Ancient subperiod (A.D. 1000-1200), but continued to be manufactured well into the middle Fort Ancient subperiod (A.D. 1200-1400) (Henderson 1998; Railey 1992). In the central Kentucky region these types of points have been recovered from the early Fort Ancient Muir (Jessamine County) and Dry Run (Scott County) sites (Sharp 1984; Turnbow and Sharp 1988) and the middle Fort Ancient Guilfoil (Fayette County), Carpenter Farm (Franklin County), Dry Branch Creek (Mercer County), Florence 15Hr21 and Broaddus (Madison County) sites (Carmean 2003; Fassler 1987; Pollack and Hockensmith 1992; Pope et al. 2005; Sharp and Pollack 1992).

Figure 5.1. Type 2 Fine Triangular Points.

Type 4 Fine Triangular: Short, Excurvate (n=7)

The seven Type 4 Fine Triangular points recovered from the Howard site (Figure 5.2) (Railey 1992:188-190) were manufactured from Boyle (n=2), Breathitt (n=1), Haney (n=2), St. Genevieve (n=1), and unidentified (burned) (n=1) cherts. They range from 16.0 to 24.0 mm in length, with a mean of 21.3 mm (Table 5.1), and basal width ranges from 9.1 to 16.3 mm, with a mean of 12.9 mm. Middle width ranges from 9.4 to 12.5mm, with a mean of 10.7 mm, and thickness ranges from 3.6 to 5.3mm, with a mean thickness of 4.1 mm. Very fine pressure flaking is evident on all of the specimens, on both the bases and lateral blade margins. Type 4 fine triangular points post-date (A.D. 1400) (Railey 1992:189-190). In the central Kentucky region this point type also has been recovered from the late Fort Ancient Capitol View (Franklin County) and New Field (Bourbon County) sites (Henderson 1992; Henderson and Pollack 1996).

Table 5.1. Metric Data for Fine Triangular Arrow Points

Point Type	Range Length	Mean Length	Range Basal Width	Mean Basal Width	Range Middle Width	Mean Middle Width	Range Thickness	Mean Thickness
Type 2 (n=5)	28.1-33.7	30.1	16-19	17.30	8.9-12.9	10.50	3.8-5.4	4.72
Type 4 (n=7)	16.8-24.4	21.3	9.1-16.3	12.95	9.4-12.5	10.68	3.6-5.3	4.14
Type 5 (n=4)	-	-	12.0-16.4	13.87	11.6-14.7	13.00	3.6-6.0	4.60
Type 6 (n=2)	-	-	15.2-16.7	15.95	12.3-13.0	12.65	4.6-4.7	4.65

Figure 5.2. Type 4 Fine Triangular Points.

Type 5 Fine Triangular: Straight Sided (n=4)

Type 5 Fine Triangular points recovered from the Howard site were manufactured from Boyle (n=1), Breathitt (n=2), and Haney (n=1) chert (Figure 5.3) (Railey 1992:190-191). Since all are lacking their tips, their length could not be determined. Basal width

ranges from 12.0 to 16.4 mm, with a mean of 13.8 mm (Table 5.1), and mid width ranges from 11.6 to 14.7 mm, with a mean of 13.0 mm. Thickness ranges from 3.6 to 6.0 mm, with a mean of 4.6 mm. The cross-sections observed on these specimens are biconvex (n=1), flattened (n=2), and lenticular (n=1).

Type 5 Fine Triangular points have been recovered from early through late Fort Ancient sites. They were initially thought to have reached their peak of popularity between A.D. 1400 and 1550 (Railey 1992:161-163), but subsequent research has shown that Type 5 Fine Triangular projectile points are the most common point type found at middle Fort Ancient sites. For instance, it accounts for 68.8 percent and 46.7 percent, respectively of the points recovered from the middle Fort Ancient Carpenter Farm (Franklin County) and Florence Hr22 (Harrison County) sites (Pollack and Hockensmith 1992; Sharp and Pollack 1992). In comparison Type 5 Fine Triangular projectile points account for 33.8 percent of the points from the late Fort Ancient New Field (Bourbon County) site (Henderson and Pollack 1996). In central Kentucky this point type also has been recovered from the early Fort Ancient Dry Run (Scott County) and Muir sites (Jessamine County) (Sharp 1984), middle Fort Ancient components at Guilfoil (Fayette County), Dry Branch Creek (Mercer County) and Broaddus (Madison County) (Carmean 2003; Fassler 1987; Pope et al. 2005) and the late Fort Ancient. Capitol View (Franklin County) site (Henderson 1992).

Figure 5.3. Type 5 Fine Triangular Points.

Type 6 Fine Triangular: Concave Base (n=2)

The Howard site yielded two, Type 6 Fine Triangular: Concave Base points. These points are distinguished by their concave basal margins and narrow to medium basal widths (Railey 1992:163) (Figure 5.4). These two specimens have flattened or

planoconvex cross-sections. Although both points display excurvate blade margins, some resharpening is evident. They were manufactured from Haney and Boyle cherts, respectively. As with the Type 5 Fine Triangular points, these specimens are missing their distal portions. Therefore, their lengths could not be determined. Basal width ranges from 15.2 to 16.7 mm, with a mean of 15.6 mm, and mid width ranges from 12.3 to 13.0 mm, with a mean of 12.7 mm (Table 5.1). Thickness ranges from 4.6 to 4.7 mm, with a mean of 4.65 mm. Type 6 Fine Triangular points are a reliable temporal indicator of late Fort Ancient (post-A.D. 1400) occupations (Railey 1992:165). Type 6 Fine Triangular points also have been recovered from other central Kentucky Fort Ancient sites, such as Broaddus (Carmean 2007), New Field (Henderson and Pollack 1996), Larkin (Pollack and Powell 1987), and Dry Branch Creek (Pope et al. 2005).

Large Triangular (n=1)

A single large triangular projectile point manufactured from Boyle chert was recovered from Howard site. This specimen has a length of 48.1 mm, a basal width of 23.7 mm and a middle width of 15.5 mm. It has a maximum thickness of 7.9 mm. This specimen probably functioned as a knife, as evidenced by the resharpening of both blade margins. This triangular point is larger and less refined than the Type 8 Fine Triangular points recovered from the New Field site (Henderson and Pollack 1996).

Figure 5.4. Type 6 Fine Triangular Points.

Unnotched Pentagonal and Jack's Reef Clusters (n=7)

Seven fragmented specimens of Late Woodland (A.D. 500-1000) unnotched pentagonal cluster (n=4) (Figure 5.5) and Jack's Reef cluster points (n=3) (Figure 5.6) were recovered from the Howard site. The unnotched pentagonal specimens were

manufactured from Boyle (n=2), thermally altered Boyle (n=1), and Breathitt (n=1) cherts. All three of the corner notched points were made from Boyle chert.

The unnotched pentagonal specimens range in thickness from 4.1 to 4.6 mm, with a mean of 4.4 mm. The basal edge of these points range from 15.3 to 15.9 mm in width, with a mean of 15.5 mm. All four specimens displayed straight-sided blade margins that contracted toward the base. Two of the specimens show the wide obtuse angle (resulting in the pentagonal shape) formed along the upper blade margins. The basal edges of all four points were lightly ground. Because of the refined percussion thinning technique used for this point type (Justice 1987:215), minimal pressured flaking was noted along the edges of these specimens.

The corner notched specimens consisted of heavily damaged points (n=2) Figure 5.6) and a hafting element (n=1). Very little metric data was obtained from these specimens; but one specimen had a blade thickness of 3.9 mm and the other a thickness of 4.6 mm, respectively. The specimen with a thickness of 4.6 mm displays a wide, obtuse angle formed along the upper blade margins (resulting in a pentagonal shape).

Figure 5.5. Unnotched Pentagonal Cluster Points.

Uunnotched pentagonal points may have functioned as a blank, or perform of the Jack's Reef Corner Notched point (Justice 1987:215). That use-wear was observed on unnotched pentagonal points, however, indicates they were utilized as finished tools. Jack's Reef Unnotched Pentagonal and Corner Notched points are diagnostic of the Late Woodland subperiod (Justice 1987; Ritchie 1961, 1969a). Extremely thin Jack's Reef Corner Notched points may represent the first true arrow points used in Kentucky, ca. A.D. 700-800 (Seeman 1992). A single Jacks Reef Corner Notched point was recovered from the early Fort Ancient deposits at the Howard site, suggesting that this point type may have witnessed continued use during this time period.

Figure 5.6. Jack's Reef Cluster (Corner Notched Points).

Contracting Stemmed (n=1)

The proximal portion of a contracting stemmed projectile point manufactured from Haney chert was recovered from the Howard site (Figure 5.7). The stem/hafting element of this specimen has a length of 18.1 mm, with the upper portion (near both notches) having a width of 16.8 mm. The base of the stem has a width of 8 mm. The stem margins have been lightly ground. This specimen displays a plano-convex cross section, with a maximum thickness of 7.6 mm. It is similar to Gary Contracting Stemmed points recovered from other sites in Kentucky (Justice 1987:189-190; Rolingson and Rodeffer 1968). Contracting stemmed projectile points date to the Late Archaic and Early Woodland subperiods (Justice 1987:189-190).

Figure 5.7. Contracting Stemmed Point.

Projectile Point Fragments (n=39)

A total of 39 projectile point fragments was recovered from the Howard site. Of these, six were unidentifiable distal fragments and nine were portions of either Archaic or Woodland period projectile points. The remaining fragments originated from crude and fine triangular arrow points. They consist of distal fragments (n=5), medial fragments (n=6), proximal fragments (n=12), and indeterminate fragments (n=1). The projectile point fragments were manufactured from Boyle (n=14), Breathitt (n=3), Haney (n=6), Paoli (n=3), and unidentifiable/burned (n=13) cherts. Due to the crude, or highly fragmented condition of the basal fragments, no temporal affiliations were assigned to these specimens.

Drills/Perforators (n=6)

Four complete or nearly complete bifacial drills/perforators, and two drill fragments were recovered from the Howard site (Figure 5.8). The drills and fragments were manufactured from Boyle (n=1), Haney (n=2), Paoli (n=1), St. Genevieve (n=1), and unidentified (burned) (n=1) cherts. They display straight basal edges (n=2), a concave basal edge (n=1), and an expanded base (n=1). Three of the specimens have biconvex cross-sections, and one is flattened. Very fine pressure flaking is evident on the bit, or perforator on all of the specimens. Drills/perforators were used for boring and/or piercing a wide variety of materials, such as bone, shell, antler, wood, stone, and leather. Drills are commonly found at Fort Ancient sites and often represent recycled triangular points (Railey 1992:144).

Figure 5.8. Drills/Perforators Recovered from the Howard Site.

Unifacial Endscrapers and Fragments (n=9)

The unifacial endscrapers recovered from the Howard site consist of complete specimens (n=4), a nearly complete specimen (n=1), and distal fragments (n=4). The complete specimens were manufactured from Boyle (n=1), Haney (n=2), and Paoli (n=1) cherts. The nearly complete specimen was made from an unidentifiable (burned) chert. It has a working edge angle of 70 degrees and a light polish is evident as a result of use. The distal fragments were produced from Boyle (n=2), and Haney (n=2) cherts. The distal fragments made from Boyle chert have working edge angles of 65 and 68 degrees, respectively. Both specimens display hinge and step fractures and both tools may have been broken during use. The distal fragments produced from Haney chert have working edge angles of 45 and 60 degrees, respectively. Both show slight polish from use. These tools may have been multi-functional, serving a variety of tasks, including the cutting of soft materials and the scraping of harder materials.

The unifacial endscraper photographed in (Figure 5.9), was manufactured from Haney chert. This elongated specimen, produced from a biface initial reduction flake exhibits damage caused by incidental heating. The working edge of this specimen is beveled and displays small, serrated projections. Small hinge and step fractures also were noted along the working edge, which has an edge angle of 70 degrees. The complete specimens manufactured from Paoli and Boyle cherts appear to have been fashioned from biface initial reduction flakes. These stone tool have a working edge angle of 75 and 76 degrees, respectively. The specimen manufactured from Paoli chert also displays step fractures and small projections. The specimen made from Boyle chert was lacking projections; however, step fractures and light polish are evident on the working edge of this specimen. The edge angles, signs of use wear, and the small serrations or projections, indicate that these tools were probably used to cut soft materials, as well as incise, or scrape hard materials, such as wood or bone.

Figure 5.9. Unifacial Endscraper.

Bifacial Endscrapers (n=4)

The bifacial endscrapers recovered from the Howard site consist of three complete specimens and a nearly complete specimen. The complete bifacial endscrapers were manufactured from Haney (n=1), Paoli (n=1), and Ste. Genevieve (n=1) cherts. The nearly complete specimen was produced from Boyle chert.

The bifacial endscraper manufactured from Paoli chert (Figure 5.10) has a length of 40.6 mm, a width of 16.4 mm, and a thickness of 6.4 mm. The specimen exhibits extensive bifacial flaking and is generally triangular in shape. The working edge of this stone implement is not as steeply beveled as a typical unifacial endscraper; however, it is consistent with that of bifacial endscrapers. In addition, the working end is still sharp. The endscraper manufactured from Haney chert is triangular in shape. It has a length of 37.6 mm, a width of 21.6 mm, and a maximum thickness of 7.2 mm. The morphology of this specimen is similar to that of a unifacial endscraper when observing the dorsal surface; however, the ventral surface exhibits both random and fine pressure flake scars. The working edge angle is 50 degrees and small projections were noted. Light polish and step fractures observed on the working edge and along one of the lateral margins, indicates that this tool was probably a multi-functional end and sidescraper.

The complete bifacial endscraper made from Ste. Genevieve chert is very similar in morphology to the one made from Paoli chert shown in (Figure 5.10); however, it is a more diminutive tool. This specimen has a length of 26.3 mm, a width of 13.4 mm, and a maximum thickness of 8.4 mm. Cortex is still present on the end of the tool that would have been hafted, suggesting that it was produced from a small chert pebble. The working edge of this stone implement is not as steeply beveled as a typical unifacial endscraper; however, it is consistent with that of bifacial endscrapers and has retained its sharpness.

The fragmented specimen manufactured from Boyle chert has a width of 23.5 mm and a maximum thickness of 10.2 mm. The portion of the tool that would have been hafted is missing. The working edge of this tool shows some light polish and small projections also were noted. The working edge angle on this specimen is 60 degrees and is still very sharp.

Bifacial endscrapers have a more limited temporal distribution than unifacial endscrapers, and are primarily known from sites that post-date A.D. 1550 (Railey 1992:143). In the central Bluegrass region they have been recovered from the Goolman site (Clark County) (Turnbow and Jobe 1984:33.40), and in northeastern Kentucky they have been recovered from Hardin Village (Hanson 1966:128, Figure 49d) and Bentley/Lower Shawneetown (Greenup County) (Pollack and Henderson 1984:12).

Figure 5.10. Bifacial Endscraper.

Gunflints (n=2)

The majority of the gunflints recovered from historic sites in North America have been identified from their sources, which originated in Europe. These gunflints were manufactured from Brandon chert, mined in a region northeast of London, England and French, honey-yellow or blond chert, which primarily was extracted from areas surrounding the Marne and Seine Rivers. Native American gunflints, however, are less easily distinguished by source materials (Kenmotsu 1990). These gunflints were knapped from locally available lithic raw materials, resulting in substantial source variation (Kenmotsu 1990:96). Native American manufacture of gunflints began with the introduction of firearms into a given region and generally continued until a reliable source of European gunflints was available.

A complete gunflint (n=1) and a gunflint fragment (n=1) was recovered from the Howard site. The complete gunflint shown in (Figure 5.11) was manufactured from locally available St. Louis Green chert. This gunflint was produced by removing an individual flake (spall) from a nodule, or prepared core through direct percussion. The flake was subsequently modified to a subrectangular form. Because of the technique used in its manufacture, the specimen recovered from the Howard site has been categorized as a spall gunflint. This specimen has been unifacially flaked and exhibits a plano-convex cross-section. The dorsal surface displays cortical material and fine pressure flaking scars are evident along all four sides. Through the reduction process, the bulb of percussion appears to have been removed from the ventral side. Areas that show crushing and battering, as well as hinge and step fractures can be observed along the working edges of this specimen. This use wear is the result of the gunflint coming into contact with the flintlock's steel frizzen.

Figure 5.11. Gunflint Recovered from the Howard Site.

The fragmented specimen also was manufactured from St. Louis Green chert; however, it had been burned. Although fragmented, hinge and step fractures also can be seen along the two discernible working edges. Native American manufactured gunflints also have been recovered from nearby Site 15Ma299 (Davis et al. 1999).

INFORMAL CHIPPED STONE TOOLS

Informal chipped stone tools are those artifacts that were manufactured for a specific task at, or shortly before the point at which they are to be used. These tools either show evidence of utilization without modification, or minimal modification through nominal retouching.

Retouched Flakes (n=12)

The retouched flakes (n=12) recovered from the Howard site were produced from Boyle (n=6), Haney (n=5),) and an unidentified-burned (n=1) chert. Possible uses of retouched flakes are suggested by Wilmsen's (1968) examination of the measurement of edge angles as an indicator of tool function. He conducted experiments on edges with different angles. His results indicated that edges with angles between 35 and 45 degrees would be most effective at cutting soft material and butchering. Edges with angles between 50 and 75 degrees would be most effective at cutting, scraping, or shaping hard materials, such as bone or wood. Edge angles on the retouched flakes from the Howard site range from 38 to 78 degrees, suggesting these specimens were utilized for a wide variety of tasks, including cutting soft plant or animal material, butchering, and scraping or shaping hard materials, such as bone, shell or wood. The variability in the shape of

these flakes and the relatively simple level of modification strongly suggests these are informal tools. These tools were probably expediently produced and used on an as-needed basis and then discarded.

Blade-like Flakes (n=7)

The blade-like flakes (n=7) recovered from the Howard site exhibited a distinctive medial ridge on their dorsal surface. All, however, lack the parallel medial margins, prismatic cross-sections, and platform preparation scars that are typical of Middle Woodland (Hopewellian) bladelets. The blade-like flakes were fashioned from Boyle (n=2), Haney (n=3), Muldraugh (n=1), and unidentifiable/burned (n=1) cherts. Edge angles range from 40-75 degrees, indicating these specimens were utilized for cutting plant materials and/or butchering animals.

Serrated Flakes (n=2)

Serrated flakes (n=2) produced from Boyle and Haney cherts were recovered from the Howard site. The specimen produced from Boyle chert is shown in Figure 5.12. Both specimens were fashioned from relatively thick bifacial initial reduction flakes. Unlike the micro-chipping observed on edge-modified/retouched flakes, the flaking observed on the working edge of these specimens displays coarse serrations. Pressure flaking with the tine of an elk or deer antler would have produced these serrations. Serrated flakes were expedient and may have been used to slice meat or tendons on small game, or may have been used to engrave wood (Railey 1992). Serrated flakes also have been recovered from the late Fort Ancient component at Fox Farm (Mason County) (Railey 1992).

Figure 5.12. Serrated Flake.

Bifaces and Biface Fragments (n=60)

The six complete bifaces and 54 biface fragments recovered from the Howard site exhibit a variety of shapes and sizes. To provide some clarity to this group, they were divided into four subcategories: early stage, middle stage, late stage, and fragments. An

early stage biface exhibits the initial outline of the chipped stone tool. Flake scars are widely spaced and the biface itself is relatively thick. A middle stage biface is thinned to the point where projections and irregularities are removed. As a result of this shaping they tend to be thinner than early stage bifaces, and their lateral blade margins are more defined. A late stage biface is essentially finished, well-thinned, and symmetrical in outline and cross-section. Biface fragments were further subdivided into proximal, middle, distal, and indeterminate categories that were too small to classify

The complete bifaces consisted of early stage (n=3) and middle stage (n=3) specimens. The early stage bifaces were manufactured from Boyle (n=1) and Haney (n=2) cherts. The middle stage bifaces were produced from Boyle (n=2) and Haney (n=1) cherts.

CHIPPED STONE DEBITAGE

The French term *debitage* has two related meanings: 1) the act of intentionally flaking a block of raw material to obtain its products, and 2) the products themselves (Grace 1989, 1993). Commonly, the term *debitage* is used by prehistorians to describe flakes that have not been modified by secondary retouch and made into tools. For the purpose of this analysis, which is based on the research of Grace (1989, 1993), each type of debitage has been assigned to a specific class. These classes are as follows:

1) Initial reduction flakes (Initial): produced from hard hammer percussion; are typically thick; display cortex on all or part of their dorsal surfaces; and have large plain or simply faceted butts (striking platforms).

2) Unspecified reduction sequence flakes (Unsp.): applies to those pieces to which a specific reduction sequence cannot be assigned. With these pieces, it is impossible to tell whether they have been detached by simple core reduction or biface manufacture. For example, cortical flakes initially removed from a block of material can appear similar in both core and biface reduction strategies.

3) Biface initial reduction flakes (Bif/Initial): produced from hard or soft hammer percussion; are typically thick; display cortex on part of their dorsal surfaces; and have large plain or simply faceted butts (striking platforms). These flakes display more dorsal scars than initial reduction flakes.

4) Biface thinning and shaping flakes (BTS): result from shaping the biface while its thickness is reduced; generally lack cortex; are relatively thin; and have narrow, faceted butts, multidirectional dorsal scars, and curved profiles. Bifacial thinning flakes are typically produced by percussion flaking.

5) Biface finishing or trimming flakes (BFT): produced during the preparation of the edge of the tool. These flakes are similar in some respects to thinning flakes, but are generally smaller and thinner and can be indistinguishable from tiny flakes resulting from other processes, such as platform preparation. Biface finishing flakes may be detached by either percussion or pressure flaking.

6) Chips: describe flakes (< 1cm in length) that are detached during several different types of manufacturing trajectories. First, they can result from the preparation of a core or biface edge by abrasion, a procedure that strengthens the platform prior to the blow of the hammer. Second, tiny flakes of this type also are removed during the manufacture of tools like endscrapers.

7) Shatter: produced during the knapping process and through natural agents. Naturally occurring shatter is usually the result of thermal action shattering a block of chert. During biface reduction, shatter results from an attempt to flake a piece of chert with internal flaws (fossils) and fracture lines. For the purpose of this analysis, shatter is defined as a piece of chert that shows no evidence of being struck by a human (i.e., bulb of percussion and faceted butt [striking platform]), but may nonetheless be a waste product from a knapping episode

8) Janus Flakes: produced during the initial reduction of a flake blank (Tixier and Roche 1980). The removal of a flake from the ventral surface of a larger flake results in a flake the dorsal surface of which is completely or partially composed of the ventral surface of the larger flake.

Discussion

Nearly one half of the unmodified flakes recovered from the Howard site consist of unspecified reduction sequence flakes (n=2,701; 46.4 percent) (Table 5.2). However, the remaining specimens were classified as biface initial reduction flakes (n=1,130; 19.4 percent), biface thinning and shaping flakes (n=770; 13.2 percent), biface finishing or trimming flakes (n=456; 7.8 percent), shatter (n=425; 7.3 percent), initial reduction flakes (n=304; 5.2 percent), chips (n=28; 0.5 percent), and Janus flakes (n=6; 0.1 percent) (Table 5.2).

Over 40 percent of the debitage recovered from the Howard site resulted from biface manufacture (Table 5.2:Classes 3-5) and the debitage assemblage is well represented by early stage biface reduction flakes or class 3 flakes, derived from the initial thinning of bifaces. Shatter represents over 7 percent of the assemblage and this class includes angular fragments of chert. The incidence of heating is high, and much of the shatter was badly burned.

The analysis of the debitage reveals that the site's prehistoric knappers did not rely heavily on the heat treatment of lithic raw materials. With the exclusion of shatter (Class 7),

which mostly contains artifacts that were terribly burned, all other heated debitage accounts for only 12% of the total assemblage. The only raw material types that appear to have been subjected to heat treatment at the Howard site were Boyle and Muldraugh cherts. A possible explanation for the low occurrence of intentional thermal alteration is the availability of moderate to high quality Middle Devonian and high quality Mississippian formation cherts found within the region.

Table 5.2. Flake Types Recovered from the Howard Site.

Flake Type	Frequency	Percent
Initial Reduction Flakes	304	5.2
Unspecified Reduction Sequence Flakes	2701	46.4
Biface Initial Reduction Flakes	1130	19.4
Biface Thinning or Shaping Flakes	770	13.2
Biface Finishing or Trimming Flakes	456	7.8
Chips	28	0.5
Shatter	425	7.3
Janus Flakes	6	0.1
Total	5820	100.0

OTHER CHIPPED STONE

Cores and Core Fragments (n=22)

Nineteen cores and three core fragments were recovered from the Howard site. Most (n=18) had amorphous shapes, and were fashioned from small (mean weight of 18.8 g) river-worn cobbles. Amorphous cores are irregular in shape and usually have very few to several usable or abandoned striking platforms. This type of core often represents the final attempt of a knapper to extract the last usable flakes from a piece of raw material. The amorphous cores recovered from the Howard site were produced from Boyle (n=8), Breathitt (n=1), Haney (n=3), Paoli (n=1), Ste. Genevieve (n=2), and unidentified/burned (n=3) cherts. The three core fragments were produced from Boyle chert.

When cortex (n=7) is present it is water worn. Since cores tend to be indicative of the primary lithic resources exploited at a site the presence of only river-worn specimens, indicates that chert was primarily procured from nearby streams.

A single bipolar core produced from Boyle chert also was recovered from the Howard site. Bipolar cores result from the resting raw material on an anvil and striking it with a hard hammerstone (Crabtree 1972).

CHIPPED STONE RAW MATERIAL

Raw material identification was conducted on all lithic debitage, as well as formal, and informal tools recovered from the Howard site. Raw material types were identified on the basis of personal experience, physical properties of the raw materials (i.e., color, luster, fracture, and texture), reference to published descriptions (Applegate 1996; Meadows 1977), and comparisons with chert specimens at the William S. Webb Museum of Anthropology in Lexington**.** A 10x hand lens, and on occasion higher levels of magnification with a 12-30x Spencer stereomicroscope, was used to identify inclusions and to evaluate texture and structure.

Cortex was described as being present or absent in residual (block) or cobble form. The presence of residual or block cortex denotes lithic procurement from primary sources or outcrops, while cobble cortex indicates procurement from secondary sources (i.e., stream gravel bars). Generally, residual cortex is rather coarse, while cobble cortex is smooth and often pitted and/or polished. That nearly all of the cortex-bearing specimens recovered from the Howard site exhibited cobble cortex, strongly indicates that raw materials were being procured from stream locales.

With regard to material type, the most productive chert-bearing units near the Howard site are that of the Mississippian-aged Newman Limestone formation and Devonian aged Boyle Formation. However, Pennsylvanian aged Breathitt chert also was utilized.

Boyle Chert

Boyle chert is present in the Middle Devonian aged dolomites of the Boyle Formation of central and eastern Kentucky, and occurs as nodules and discontinuous layers (Meadows 1977:102). The nodules are large and blocky, and can be found eroding out of its parent dolomite in a clayey soil environment. These nodules often exhibit a white, chalky primary cortex. However, stream transported cobbles frequently exhibit a smooth, polished brown cortex. The interior color is highly variable, with a mottled mixture of tan, blue, yellow, gray, and different shades of brown. Boyle chert can range from earthy to waxy in appearance. It is generally opaque, but can be translucent. This material also can be highly fossiliferous, containing bryozoans, brachiopods, corals, crinoids, and echinoderms (Vento 1982). Boyle chert accounts for 34.2 percent of the lithic raw materials utilized at the Howard site (Table 5.3).

Newman Limestone Cherts

Newman Limestone is known to outcrop along the western boundary of the Eastern Coalfields (Applegate 1996; Meadows 1977). It also crops out near the Pine Mountain overthrust of southeastern Kentucky. The Mississippian-age Newman Limestone contains several chert-bearing members, including Haney, Paoli/Beaver Bend, Ste. Genevieve, and St. Louis. Each of these limestone members contains a subtype of Newman chert (i.e., Haney, Paoli, Ste. Genevieve, and St. Louis). As a group Newman

Limestone cherts accounts for 32.2 percent of the of the lithic raw materials utilized at the Howard site

Haney

Haney chert can be distinguished by its high content of oolites, which can be observed by the naked eye. Oolites are spheroidal or ellipsoidal bodies that are usually calcareous or siliceous in composition and are suspended within the chert matrix. According to Meadows (1977:109), other than its oolitic appearance, Haney chert is essentially the same as Paoli chert, but more translucent. However, some specimens of Haney chert do not appear to be highly oolitic. Haney chert varies in color from white and buff, to tan, brown, and dark-brown (Vento 1982). This material also may contain brownish and grayish banding, or stripes. Haney chert is of high quality and fractures with ease. Haney chert accounts for 8.1 percent of the lithic raw material recovered from this site (Table 5.3).

Table 5.3. Chipped Stone Raw Material Types and Frequencies.

Chert Type	Flakes	Projectile Points/ Frags	Edge Mod Flakes	Drills	Bifaces/ Frags	Cores/ Frags	Uniface/ Biface Scrapers/ Frags	Misc	Percent
Boyle	1985	28	8	1	16	12	4	1	34.2
Breathitt	75	8	-	-	3	1	-	-	1.4
Haney	437	11	8	2	17	3	5	1	8.1
Paoli	821	3	-	1	2	1	2	-	13.8
Muldraugh	88	-	1	-	1	-	-	-	1.5
Ste. Genevieve	322	2	-	1	3	2	1	-	5.5
St. Louis (Green)	170	-	-	-	-	-	-	2	2.9
UID	1922	14	2	1	18	3	1	-	32.6
Total	5820	66	19	6	60	22	13	4	100.0

Paoli

Paoli chert occurs as irregularly shaped and elongated nodules, and in thin discontinuous beds (Meadows 1977:108). This material is nonfossiliferous and highly silicified. Paoli is a colorful and variegated chert, sometimes displaying lines and swirls of red, brown, orange, yellow, and tan. It is vitreous and shiny, and can be semi-translucent. Paoli chert is a very high quality knapping material and comprises 13.8 percent of the lithic raw material recovered from this site (Table 5.3).

St. Louis (Green)

St. Louis chert occurs in nodular and tabular form (Vento 1982), and Meadows (1977:107) describe the green nodules as being almost perfectly spherical in shape, often quite large in diameter, and very dense. Because of these qualities, St. Louis chert generally requires considerable force to fracture. Nodules of St. Louis chert can be found

in the basal strata of limestone cliffs. In addition, this chert type can be found scattered in alluvial streambed and terrace deposits. St. Louis chert ranges in color from white to red to differing shades of green, with the latter being the most predominant (Vento 1982). St. Louis chert accounted for 2.9 percent of the lithic raw materials recovered from the site (Table 5.3).

Ste. Genevieve

Ste. Genevieve chert recovered from the Howard site ranges from very dark gray to dark greenish gray, to grayish-black. The chert occurs in nodules, is vitreous, hard, can be semi-translucent and appears to have chipped well. Ste. Genevieve chert accounts for 5.5 percent of the lithic raw materials recovered from the site (Table 5.3).

Breathitt Chert

In eastern Kentucky, Pennsylvanian-age Breathitt chert (also known as Flint Ridge of Morse), outcrops in eastern Breathitt County and southwestern Magoffin County in the upper Breathitt formation (Vento 1982). Breathitt chert ranges in color from gray to bluish-gray, very dark gray, and olive. This material occurs in nodular and tabular form, and is microcrystalline to crypto crystalline in structure. It is highly siliceous and contains monaxon sponge spicules (Vento 1982). Breathitt chert accounts for 1.4 percent of the lithic raw material recovered from the site (Table 5.3).

Muldraugh

The Mississippian-age Muldraugh chert recovered from the Howard site ranges from light to dark gray, mottled with areas of white to light-blue. The texture of this chert is earthy or granular in appearance. However, heat treatment of this material creates a more vitreous luster and the color can change to hues of red and pink. Only 1.5 percent of the lithic raw material recovered from the site was made up of Muldraugh chert (Table 5.3).

Unidentifiable/Burned Chert

The remaining material type consisted of unidentifiable (burned) pieces of lithic debris. Unidentifiable, burned chert accounted for 32.7 percent of the lithic assemblage (Table 5.3). These specimens were probably burned incidentally during both prehistoric and historic times.

Discussion

For the most part, lithic raw material utilized at the Howard site originated from nearby sources and probably were procured from local streams. Middle Devonian-age Boyle and Mississippian-age Newman cherts appear to have been the preferred lithic raw materials. However, lesser amounts of Breathitt and Muldraugh cherts also were utilized by the site's prehistoric inhabitants.

GROUNDSTONE

By
Rick Burdin

Description

Only one piece of groundstone was recovered from the Howard site. It consists of a medium brown fine grain quartzite that contains a moderate density of silica inclusions. It has two large facets and a relatively thick edge. The tool weighs 560 grams and is oval-to-circular in shape. At its greatest dimensions it measures 117.9 mm in length, 98.7mm in width, and is 26.4 mm in thickness.

Cortex is present in the center of one facet, but has been worn off around its edges. The area of cortex also appears to have been smoothed (Figure 5.13). The opposite facet has light colored concretions are present across this facet (Figure 5.14). It has been damaged and has a large flake scar that is about 40 mm wide at the edge and extends into the facet almost 50 mm (Figure 5.14). The center of the facet has a slight depression (ca. 1.5 mm deep) that also has distinct areas of polish present (Figure 5.15).

The edges of the tool exhibit several areas of battering. The large flake scar and a smaller one on the opposite facet might be contributed to the use of the tool as a battering stone. Alternatively, these large flake scars could have been the result of accidental damage caused, for example, by dropping it on another hard rock. Other areas around the edge are distinct and are most likely associated with battering tasks (Figure 5.16).

Figure 5.13. Facet with Cortex.

Figure 5.14. Photograph of Facet with Concretions.

Figure 5.15. Area of Polish to the Right of the Large Flake Scar.

Figure 5.16. Battered Area on the Edge.

Interpretation

The tool exhibits wear patterns that suggests that it was used for multiple tasks. The smoothed edges around the margins of its two large facets suggest that it might have been used as a polishing stone. The pitted side of the tool indicates that some kind of grinding tasks also might have been performed. More detail about what was ground or polished might be obtained by a microscopic analysis of the polished material.

In sum, the tool probably started its use-life as a grinding or polishing tool. At some point, whether due to accidental damage or deliberately, it was used as a battering stone. An alternative explanation is that it served multiple functions simultaneously and was discarded when the large flake scar was made unintentionally.

MICA

Several fragments of mica weighing 3.0 grams were recovered from the Howard site. The larger fragments (n=9) averaged 10.0-12.0 mm in diameter. The smaller fragments (n=3) were 5.0 mm in diameter or less. The mica recovered from the Howard site may represent debitage from items that were manufactured for personal adornment. The most proximate source of high-quality mica sheets is the Blue Ridge Mountains of North Carolina, approximately 322 km southeast of Howard. The presence of mica at the Howard site, suggests a regional exchange of this highly-regarded silicate mineral.

Figure 5.17. Mica Fragment.

SUMMARY

Based on the recovery of a contracting stemmed projectile point, four unnotched Pentagonal Cluster, and three Jack's Reef Cluster points, the Howard site appears to contain minor Late Archaic/Early Woodland and terminal Late Woodland subperiod components. The Late Archaic/Early Woodland component is represented by just one point. Since Fort Ancient people would have been farming the adjoining fields it is quite possible that it represents a recycled object that they found while cultivating their fields. As for the Jack's Reef points, while they may be indicative of a terminal Late Woodland component, it is also possible that these types of tools continued to be used well into the early Fort Ancient period.

The Howard site was most intensively occupied during the Fort Ancient period (A.D. 1000-1750), as reflected by the presence of Types 2, 4, 5, and 6 Fine Triangular points as well as unifacial and bifacial endscrapers, and gunflints. Of these tools, most are associated with the late Fort Ancient component. Only the Type 2 Fine Triangular projectile points can be assigned to the early Fort Ancient component with any degree of confidence, though the Type 5 Fine Triangulars also are probably associated with this component. The remaining triangular projectile points as well as the endscrapers and gunflints are all diagnostic of late Fort Ancient sites, and the gunflints in particular are indicative of contact with Europeans.

The recovery of bifaces in differing stages of production and several cores, indicates that both bifacial and core reduction was practiced by the early and late Fort Ancient inhabitants of this site. Bipolar core reduction also may have taken place at the Howard site as reflected by a core that exhibits this production strategy.

The Howard site debitage profile indicates that the full range of lithic reduction, which included the production of formal and informal stone tools, took place at this site. Nearly one fourth of the debitage assemblage consisted of smoothed, often pitted and/or polished cortex, indicating that stream cobbles were transported to the site and knapped into their finished form. The large amount of cobble cortex present in this assemblage also indicates that the bulk of lithic raw material utilized at the Howard site was obtained from local streams. Middle Devonian-age Boyle and Mississippian-age Newman cherts appear to have been the preferred lithic raw materials.

The association of more endscrapers than triangular projectile points with the late Fort Ancient component, reflects its importance to the Fort Ancient toolkit. One of the uses of these multi-purpose tools was to scrape hides, and it is quite possible that at the Howard site they were used to prepare hides for exchange with Europeans. The presence of bifacial drills/perforators, edge modified/retouched flakes, and a serrated flake, also points to repeated activities aimed at processing both plant and animal materials. The groundstone tool recovered from the Howard site might have been used as a polishing stone and the pitted side of the tool further indicates that some kind of grinding tasks might also have been performed. The recovery of Mica suggests that the Howard site's

Fort Ancient inhabitants were involved in a long distance trade network with groups living in the Blue Ridge Mountains of North Carolina. The mica may have been used to create objects for personal embellishment.

CHAPTER 6:
PREHISTORIC CERAMICS AND NONVESSEL CLAY OBJECTS

By
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INTRODUCTION

In this chapter, the ceramic assemblage from the Howard site is described and compared to contemporary Fort Ancient ceramic assemblages. The ceramic assemblage consists of 2,408 sherds, seven nonvessel clay objects (e.g., beads, pipes, and figurines), and 170 pieces of fired clay (Table 6.1). All body sherds greater than 4 cm^2, and all rim sherds, decorated body sherds, and appendages regardless of size, and all of the nonvessel clay objects were subject to detailed analysis. Body sherds less than 4cm^2 and all fired clay fragments were simply counted and weighed.

Table 6.1. Ceramics Recovered from the Howard Site.

Artifact Class	Count	Weight (g)
Ceramics greater than 4 cm^2	389	2937.2
Ceramics less than 4 cm^2	2,019	2016.4
Nonvessel clay objects	7	28.7
Fired Clay	170	181.4
Grand Total	2,585	5163.7

The analyzable sample consists of 444 sherds (389 greater than 4 cm^2, 55 less than 4cm^2, and seven nonvessel clay objects). Data collected for each analyzed sherd, included exterior and interior surface treatment; type, size, and percent of temper relative to clay in the paste recipe; type and size of clay inclusions; exterior and interior surface colors; vessel form; body sherd thickness; rim thickness and orientation; lip thickness and shape; orifice diameter and percent of rim present; decoration; and appendage type and thickness.

Four types of surface treatment were recorded for this assemblage: plain, cordmarked, knot-roughened, and check-stamped. Cordmarking was further divided into two subgroups: well-defined cordmarking and smoothed-over cordmarking. For all cordmarked ceramics, the average thickness of the cords was recorded, along with the twist direction, when possible. Twist direction was assessed by visual inspection of the sherd and then reversed to arrive at cordage twist. No measurements were taken of the knot-roughened impressions, as they were not very distinct. Attempts were made, however, to measure the dimensions and shape of the check-stamped impressions.

Data was collected on several aspects of the paste recipe of each sherd. A paste recipe consists of raw clay and temper (usually an aplastic material, such as crushed rock or shell). Adding temper to raw clay adds strength to the resulting vessel and makes it more resistant to thermal shock. The particular procedure for mixing a paste can vary considerably, depending on raw material availability and quality, as well as cultural preference. Therefore, for each sherd, data were recorded on temper type, size, and

percent relative to the clay used to construct the vessel. Temper type was identified visually. Some of the specimens, however, had only voids where the temper had eroded out of the clay body. Blocky angular voids were inferred to represent leached limestone, and the platy voids, leached shell. Some sherds contained both angular and platy voids, indicating that they had been tempered with limestone and shell. Modal temper size was recorded based on the Wentworth scale, a standardized categorization of grain size used in geological characterizations. Temper percent was estimated relative to the percent of clay in each sherd, and for mixed tempered sherds, an attempt was made to determine the dominant temper type. Natural aplastic inclusions in the clay also were noted.

The interior and exterior surface colors of a ceramic vessel reflect the clay's chemistry and the atmosphere to which it was exposed during firing and use. Reducing atmospheres (oxygen-poor environments) cause the vessel surface to turn darker shades of brown, gray, or black. Oxidizing atmospheres (oxygen-rich environments) produce a lighter color, usually orange, red, or tan, depending on the chemistry of the clay used. Interior and exterior surface color was recorded for each sherd based on visual observations.

Vessel form can be divided into several qualitative and quantitative variables. Body, shoulder, neck, rim, and lip (there were no bases identified) thickness was recorded using digital calipers. Body and shoulder thickness was measured at the thickest point. The angle degree was recorded for angular shoulders. Neck thickness was measured at the base of the neck's curve, if possible. Lip thickness was measured at the extreme tip of each rim sherd. Rim thickness was measured 1 cm below the lip. Handle width was measured at the top, midsection and bottom of the handle, and handle thickness was measured at the midsection. Handles were classified as follows: loop (width to thickness ratio of 1.0-1.5); intermediate loop/straps (width to thickness ratio of 1.5-2.0); thick straps (width to thickness ratio of 2.0-3.0); and thin straps (width to thickness ratio greater than 3.0).

Rim sherds also were described based on their orientation (direct, slightly inslanting, inslanting, slightly outflaring, outflaring, and outslanting). If a rim sherd was large enough to orient, orifice diameter was recorded in 2 cm increments and the amount of the rim present was measured in increments of 5 percent using a ceramic diameter template (Rice 1987). Each rim was assumed to encompass at least 5 percent of a vessel's orifice. Lips were described as flattened, rounded, or pointed. A minimum number of vessels were determined for each ceramic type based on rim orientation, lip shape, and orifice diameter.

Decoration was associated with vessel lips, rims, and necks. Lip and rim decoration consisted of narrow, deep, and closely spaced to wide, shallow, and more widely spaced notches. Regardless of width and spacing, all of the notches were made by pressing the tip of the finger or finger nail into wet clay. Neck decoration consisted of incised, trailed, or punctuated designs. Incised lines are made with a sharp instrument and are "V" shaped in profile, while trailed lines are made with a more rounded tool and are "U" shaped in profile. Punctations were either deep and oblong or shallow and

circular. The former were probably made with a stick, while the latter may have been produced with a finger-tip.

Sherds were assigned to one of three ceramic series: Jessamine, McAfee, and Madisonville. Within each ceramic series, they were further subdivided by surface treatment. Aside from the two Madisonville Cordmarked ceramic disks, the nonvessel ceramic objects could not be assigned to a specific ceramic series or type. The Jessamine and McAfee Series were defined by Turnbow (1988) based on his work at the Muir site in Jessamine County. The Jessamine Series was later refined by Sharp and Pollack (1992), based on their work at the Florence site in Harrison County. The Madisonville Series was defined by Griffin (1943) based on his extensive review of Fort Ancient collections throughout the middle Ohio Valley. Subsequent work (e.g., Hanson 1966; Riggs 1998; Turnbow and Henderson 1992) at a variety of sites has led to refinement of this ceramic series, but the basic types still conform to Griffin's initial descriptions.

JESSAMINE SERIES

Jessamine Plain (n=135: 90 bodies; 20 necks; 1 shoulder; 15 rims; 9 appendages)

The Jessamine Plain specimens display variable paste recipes. Slightly more than forty percent are tempered with just limestone (n=58; 42.3 percent), while 36.5 percent are tempered with a mixture of limestone and shell (n=50) and 5.8 percent are tempered with a mixture of shell and limestone (n=8). Only 11.7 percent (n=16) are tempered with just shell (Table 6.2). Of the remaining sherds, temper type could not be identified for three (2.2 percent) specimens, one (0.7 percent) is tempered with grog (fired clay), and one (0.7 percent) is tempered with grit. The average proportion of temper in the ceramic paste for all temper types is 24.7 percent. The only significant deviation from this average with respect to temper type is the grog tempered sherd, which contains only 5.0 percent grog.

Interior surfaces of the Jessamine Plain ceramics are dominated by dark grayish brown (19.0 percent), grayish brown (14.6 percent), and very dark grayish brown (11.7 percent), with the remainder made up of diverse hues and intensities of brown, yellowish brown, and reddish brown. Exterior surface color tends to be lighter, dominated by brown (19.0 percent), yellowish brown (13.9 percent), dark yellowish brown (10.2 percent), and a diverse array of other colors (Figure 6.1c, f). The slightly lighter colors on the exterior surfaces of these vessels may indicate that they were exposed to a more oxygen-rich atmosphere during firing and use. This pattern may result from firing vessels with the orifice facing down.

All of the Jessamine Plain sherds were determined to be fragments of jars. Of the 15 Jessamine Plain rims, one is inslanted, two are slightly inslanted, five are direct (Figure 6.2b), three are slightly outflaring (Figure 6.2f), and one is outflaring (Figure 6.2g). The remaining three rims could not be oriented. Most have flat lips, with one direct rim having a pointed lip, and two slightly outflaring and one outflaring rim having

rounded lips. Rims tend to be slightly thicker than the lips, 5.58 mm and 5.18 mm, respectively. Rim orifice diameter ranges from 4 to 16 cm, with a mean orifice diameter of 11.3 cm, and a mode of 12 cm. When the one miniature vessel (orifice diameter of 4 cm) is removed from the sample, Jessamine Plain vessels have a mean orifice of 12.3 cm. A minimum of 11 Jessamine Plain vessels were recovered from the Howard site.

Table 6.2. Ceramic Type Frequencies.

Ceramic Series/Type	Body		Neck/Shoulder		Rim		Appendage		Total	
	Freq	Wt	Freq	Wt	Freq	Wt	Freq	Wt	Freq	Wt
Jessamine Plain										
Limestone	44	299.3g	6	67.9g	6	11.1g	1	1.1g	57	379.5g
Limestone/Shell	35	232.2g	7	47.9g	5	11.3g	3	32.9g	50	324.3g
Shell/Limestone	5	31.9g	1	3.1g	2	2.8g			8	37.8g
Shell	5	81.4g	3	20.5g	2	16.8g	5	20.8g	15	139.5g
Grog	1	10.0g							1	10.0g
Grit			1	6.0g					1	6.0g
Unidentified			3	10.1g					3	10.1g
Total	90	654.8g	21	155.5g	15	42.0g	9	54.8g	135	907.1g
Jessamine Cordmarked										
Limestone	30	223.1g	3	56.8g	2	5.9g			35	285.8g
Limestone/Shell	16	116.2g	1	7.1g					17	123.3g
Shell/Limestone	1	9.8g			1	1.5g			2	11.3g
Shell/Grit	1	4.1g							1	4.1g
Shell	2	15.5g			1	3.1g			3	18.6g
Grog	1	16.3g							1	16.3g
Grit	2	9.6g					1	8.6g	3	18.2g
Total	53	394.6g	4	63.9g	4	10.5g	1	8.6g	62	477.6g
Jessamine Check-Stamped										
Limestone			4	33.7g					4	33.7g
Limestone/shell	1	9.4g							1	9.4g
Total	1	9.4g	4	33.7g					5	43.1g
Jessamine Knot-Roughened										
Limestone	1	12.8g							1	12.8g
Limestone/Shell	1	11.3g							1	11.3g
Shell/Limestone	1	8.4g							1	8.4g
Shell	1	22.7g							1	22.7g
Grog	1	10.5g							1	10.5g
Total	5	65.7g							5	65.7g
Madisonville Plain (includes two disks)										
Shell	134	787.6g	30	318.2g	34	252.4g	15	96.3g	213	1454.5g
Total	134	787.6g	30	318.2g	34	252.4g	15	96.3g	213	1454.5g
Madisonville Cordmarked										
Shell	14	67.3g							14	67.3g
Total	14	67.3g							14	67.3g
McAfee Plain										
Untempered					2	6.7g			2	6.7g
Total					2	6.7g			2	6.7g
Eroded										
Limestone	1	3.7g							1	3.7g
Limestone/Shell	1	3.2g							1	3.2g
Shell/Limestone	1	7.0g							1	7.0g
Shell	5	18.2g							5	18.2g
Total	8	32.1g							8	32.1g
Grand Total	**305**	**2011.5g**	**59**	**571.3g**	**55**	**311.6g**	**25**	**159.7g**	**444**	**3054.1**

Figure 6.1. Jessamine Series: c, e, f, Plain; a, b, d, Cordmarked.

Jessamine Plain body sherds have a mean thickness of 6.85 mm. Jars shoulders tend to be rounded and the one clearly identifiable shoulder had a thickness of 6.03 mm.

Of the nine Jessamine Plain appendages, one is a complete loop handle (Figures 6.1c and 6.2g), one is an almost complete, very thick (22.43 mm) loop handle with a groove extending down the center of the handle, two are fragments of intermediate loop/strap handles, three are fragments of thick strap handles, and one is a parallel-sided thick strap handle fragment, with a groove extending down the center of the handle. The complete loop handle exhibits a sharp angle at its midpoint (Figures 6.1c and 6.2g). Two body sherds have handle scars, in the form of a rivet hole. The handles have an average thickness of 11.78 mm. When the very thick loop handle is removed from the sample the remaining specimens have a mean thickness of 9.65 mm. All of the handles appear to have been attached to the lip and riveted to the body of the vessel, as evidenced by rivet fragments and a rivet hole.

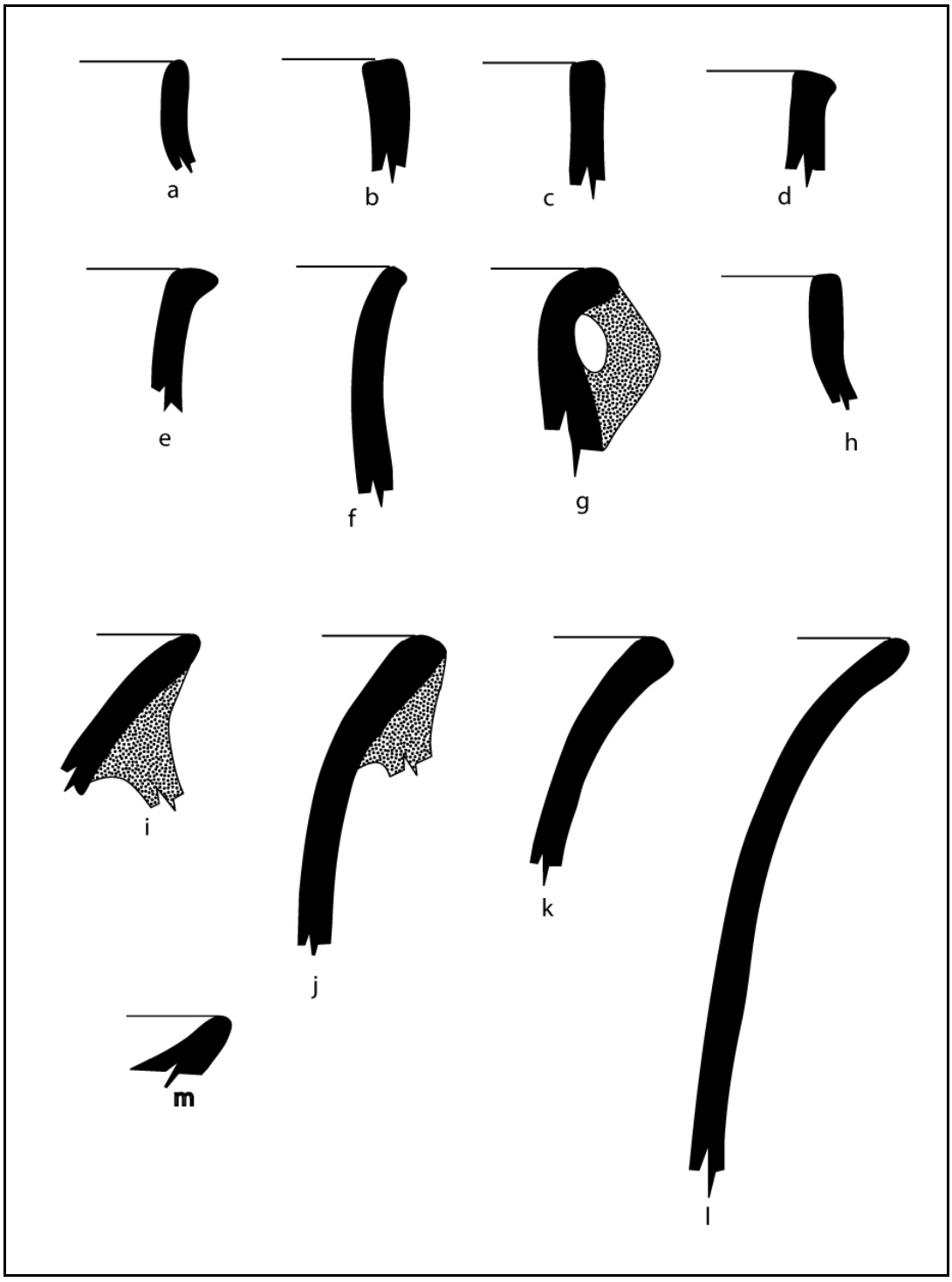

Figure 6.2. Rim Profiles: a, c, McAfee Plain; b, f, Jessamine Plain; d, e, Jessamine Cordmarked; h-m, Madisonville Plain.

In addition to the two decorated handles, nine other sherds were decorated. Of these, seven consisted of incised lines associated with jar necks. Incising took the form of parallel rectilinear (n=1) or curvilinear (n=2) designs. The rectilinear design consists of at least three parallel lines on either side of the angular loop handle (Figure 6.1c). These lines could be associated with a line-filled triangle or a rectilinear guilloche. The curvilinear decoration consisted of at least two to three parallel curved lines. Of the remaining four sherds, one was a rim, with two incised lines that start 12 mm below the lip; there was a handle base with a single line; and two body sherds had a single incised line. Line width ranged from 0.44 to 1.42 mm, with a mean of 0.81 mm.

The only other decoration associated with Jessamine Plain ceramics consisted of lip notching (n=1) and finger-nail punctuations (n=1). One rim exhibited closely spaced notches on the exterior of the lip, which gave the exterior of the rim a crenulated appearance. The notches had been created by applying a stick to the lip exterior. Each notch had a length of at least 12 mm (Figure 6.1e). Closely spaced (2-3 mm) finger-nail impressions were observed on the lip of the previously mentioned miniature vessel.

Jessamine Cordmarked (n=62: 53 bodies; 3 necks; 1 shoulder; 4 rims; 1 appendage)

Jessamine Cordmarked is distinguished from Jessamine Plain, based on the presence of regularly patterned, parallel cordage impressions on a sherd's exterior surface. These impressions were made by wrapping a wooden paddle with cordage and pressing or slapping that paddle on the wet exterior surface of the formed vessel. If permitted to dry immediately after paddling, clear cordage impressions will remain on the surface. In these cases, the direction of the cordage twist can be recorded. Smoothing of the cordmarks was observed on 12 sherds. This would have occurred after the impressions were initially applied and was probably done by hand while the clay was still wet.

More than 50 percent (n=35; 56.5 percent) of the Jessamine Cordmarked sherds are tempered with limestone (Table 6.2). Of the remaining sherds, 40.0 percent are tempered with limestone and shell (n=17; 27.4 percent), shell and limestone (n=2; 3.2 percent), shell and grit (n=1; 1.6 percent), grit (n=3; 4.8 percent), and grog (n=1; 1.6 percent). Only 3.2 (n=2) percent are tempered with just shell. The average proportion of temper in the ceramic paste across all temper types is 27.0 percent. The only significant deviation from this average with respect to temper type is the grog tempered sherd, the grit tempered sherds, and the shell and grit tempered sherds. The average proportion of temper in the ceramic paste associated with these sherds is 13.0 percent.

Of the 62 Jessamine Cordmarked specimens, twist could only be determined for 12 sherds. S-twist cordage was used to produce 11 of these specimens, and one exhibited Z-twist cordage. Clear cordage impressions averaged 1.48 mm in thickness.

Interior surfaces of the Jessamine Cordmarked ceramics are dominated by dark grayish brown (38.3 percent), very dark grayish brown (15.0 percent), and black (13.3 percent), with the remainder made up of diverse hues and intensities of gray and brown.

Exterior surface color tends to be lighter, dominated by grayish brown (28.3 percent), and dark yellowish brown (18.3 percent), yellowish brown (13.3 percent) and a diverse array of other colors. The slightly lighter colors on the exterior surfaces of these vessels may indicate that they were exposed to a more oxygen-rich atmosphere during firing and use. This pattern may result from firing vessels with the orifice facing down.

Jessamine Cordmarked vessels display fairly uniform average wall thickness across all fragment types. The thickest part of Jessamine Cordmarked vessels is the shoulder (9.47 mm). Shoulders are typically rounded, but one appeared angular. Wall thickness tapers through the neck (7.77 mm) into the rim (5.63 mm) and thickens considerably at the lip (6.83 mm). Body sherds average 6.94 mm in thickness.

The four Jessamine Cordmarked rims are derived from jars. Of the two rims that could be oriented, one has a direct profile and a flat lip that protrudes slightly from the rim (Figure 6.2d). The other rim also is direct in profile, but has a slight fold at the rim/lip juncture (Figure 6.2e). Of the other two rims, one is castellated and has a flat lip. The other has a rounded lip. Both of the rims that could be oriented have an orifice diameter of 10 cm. A minimum of four Jessamine Cordmarked vessels were recovered from the Howard site.

Decoration is associated with eight Jessamine Cordmarked sherds (Figure 6.1b), with incised lines being placed over smoothed-over cordmarked surfaces. Of the eight decorated sherds, one appears to be associated with a line-filled triangular design, and five exhibit rectilinear designs that also may represent line-filled triangles (Figure 6.1b). The lines associated with the remaining two sherds were too fragmentary to determine the type of design with which they may have been associated. Line width ranges from 0.74 to 1.83 mm, with a mean of 1.40 mm.

Lip notching was associated with a castellated rim (Figure 6.1d) and a rim with a slight fold. The notches associated with the castellated rim appear to have been made with a stick with only the castellated portion of the lip being notched. Notches associated with the rim fold are wide and appear to have been made with a finger-tip.

One complete smoothed-over cordmarked intermediate loop strap handle, with a groove extending down the center of the handle and a rivet at the bottom of the handle (Figure 6.1a), and one sherd with an appendage scar was identified among the Jessamine Cordmarked ceramics. The handle had a thickness of 11.43 mm. The scar was in the form of a rivet hole.

Jessamine Check-Stamped (n=5: 4 bodies; 1 neck)

Check-stamping is formed by carving a grid pattern into a wooden paddle or block. This leaves raised rectangles, squares, or diamonds that would leave similarly shaped impressions when applied to wet clay. The Jessamine Check-Stamped specimens are tempered with limestone (n=4; 80.0 percent) or limestone and shell (n=1; 20.0

percent) (Table 6.2). The average proportion of temper in the ceramic paste across all temper types is 30.0 percent.

Interior surfaces of the Jessamine Check-Stamped ceramics are yellowish brown (80.0 percent) and very dark gray brown (20.0 percent). Exterior surface color tends to be lighter, consisting of yellowish brown (80.0 percent) and dark brown (20.0 percent). The slightly lighter colors on the exterior surfaces of these vessels may indicate that they were exposed to a more oxygen-rich atmosphere during firing and use. This pattern may result from firing vessels with the orifice facing down.

Jessamine Check-Stamped body sherds have an average wall thickness of 7.81 mm. The one neck sherd recovered from the site has a thickness of 5.80 mm. Since no rims were recovered, little can be said about vessel form, but it is presumed that these sherds are derived from jars. None of the check-stamped sherds were decorated.

Jessamine Knot-Roughened (n=5: 5 bodies)

Knot-roughening is formed by impressing netted or knotted fabric on a vessel's exterior surface**.** The Jessamine Knot-Roughened specimens display a high degree of temper variability. Of the five knot-roughened specimens, one (20.0 percent) is tempered with just limestone; one (20.0 percent) with a mixture of limestone and shell; one (20.0 percent) with a mixture of shell and limestone; one (20.0 percent) with just shell; and one (20.0 percent) with just grog. The average proportion of temper in the ceramic paste across all temper types was 21.0 percent.

Interior surfaces of the Jessamine Knot-Roughened ceramics are very dark grayish brown (40.0 percent), dark brown (20.0 percent), yellowish brown (20.0 percent), and black (20.0 percent). Each of the knot-roughened specimens displayed a different exterior surface color: brown, dark brown, yellowish brown, reddish brown, and grayish brown.

All of the Jessamine Knot-Roughened specimens are body sherds that have an average wall thickness of 7.74 mm. Since no rims were recovered, little can be said about vessel form, but it is presumed that these sherds are derived from jars. None of the knot-roughened sherds were decorated.

MADISONVILLE SERIES

Madisonville Plain (n=213: 132 bodies; 30 necks; 34 rims; 15 appendages; 2 disks described with the ceramic objects])

The Madisonville Plain specimens display very homogeneous paste recipes compared to the Jessamine ceramics. All Madisonville Plain ceramics are tempered exclusively with shell (Table 6.2). The average proportion of temper in the ceramic paste was 27.7 percent.

Interior surfaces of the Madisonville Plain ceramics are dominated by brown (21.0 percent), dark brown (12.1 percent), very dark grayish brown (9.3 percent), and black (7.9 percent), with the remainder comprised of diverse hues and intensities of brown, yellow, and red. Exterior surface tends to be lighter, with brown (18.2 percent), grayish brown (12.1 percent), and yellowish brown (9.8 percent) colored sherds being the most common. The slightly lighter colors on the exterior surfaces of these vessels may indicate that they were exposed to a more oxygen-rich atmosphere during firing and use. This pattern may result from firing vessels with the orifice facing down.

While Madisonville Plain vessels exhibit slight thickening at the lip, in general, vessel wall thickness is rather consistent from the bottom to the top of the vessel, with body sherds having a mean thickness of 5.09 mm, necks a mean thickness of 5.74 mm, rims a mean thickness of 6.31 mm, and lips a mean thickness of 5.26 mm, with an overall mean body sherd thickness of 5.39 mm.

All but two of the Madisonville Plain vessels were determined to be jars. Among the 29 jar rims, orientation could be determined for 19. Of these, the most frequent rim orientation is slightly flared (n=12; 63.2 percent) (Figure 6.2j-l), followed by flared (n=4; 21.1 percent) (Figure 6.2i), direct (n=2; 10.5 percent), and slightly incurvate (n=1; 5.3 percent). Rims range in orifice diameter from 4 to 26 cm, with a mean diameter of 15.4 cm and a mode of 20 cm (n=6). All of the rims are unmodified, but a few (n=2) exhibit a slight thickening at the lip. Almost two-thirds of the rims have rounded lips (n=18; 62.1 percent), with the remainder having pointed (n=6; 20.7 percent) or flat lips (n=5; 17.2 percent). A minimum of 17 Madisonville Plain jars are present in the Howard site ceramic assemblage.

In addition to the jars, one bottle and one bowl rim were recovered from the Howard site. The bottle has a direct rim, a flat lip, and an orifice diameter of 8 cm (Figure 6.2h). The bowl has an outslanting rim, a pointed lip, and an orifice diameter of 4 cm (Figure 6.2m). A minimum of one Madisonville Plain bottle and one bowl are present in the Howard site ceramic assemblage.

Slightly more than sixteen percent (n=35) of the Madisonville Plain ceramics are decorated in some way (Figure 6.3a-e, g). Most of this decoration occurs on vessel necks (n=27), with other instances of decoration found on the lip (n=8). On necks, decoration consists of wide-shallow trailed lines (n=11) (Figure 6.3d, g), punctations (n=7) (Figure 6.3c), incised lines (n=4), wide-shallow trailed lines and punctations (n=5) (Figure 6.3a-c, e), and an applied notched strip. Trailed lines range in width from 2.44 to 6.94 mm, with a mean of 4.40 mm. Some of the trailed lines, as well as some of the punctations, were so shallow that they were barely visible (Figure 6.3a-e, g). While all of the sherds were too small to fully discern the motif, a few of the trailed designs appear to represent rectilinear guilloches (n=2), while others represent rectangular trailed designs bounding shallow circular (n=3), oblong (n=1), or finger-nail punctations (n=1). Incised lines range in width from 0.81 to 1.48 mm, with a mean width of 1.21 mm. Among the incised sherds, one exhibits curvilinear incisions, one a rectilinear design, and one specimen has

Figure 6.3 Madisonville Plain: a, b, e, Trailed Lines and Punctations; c, Punctations; d, Trialed Lines; f, h, Strap Handle Fragments.

three parallel lines bounded by a fourth. Punctations tend to occur in single rows by themselves (Figure 6.3c) or, as previously mentioned, bounded by wide, shallow trailed lines (Figure 6.3a,b,e).

Eight instances of lip notching were recorded: seven on jar rims and one on a bowl rim. The notches range from narrow, deep, and closely spaced (n=4) to wide, shallow, and more widely spaced impressions (n=4). One of the notched lips is associated with a handle scar. The only example of finger-nail lip notching was associated with the bowl rim.

Of the 15 Madisonville Plain appendages recovered from the Howard site, 13 are portions of thin strap handles (Figure 6.3f, h), and one is a portion of a thick strap handle. The upper part of the thin strap handles were attached directly to the vessel about 1 cm below the lip. One is complete enough to further classify the strap as parallel-sided. The remaining appendage is a notched applied strip. Though the lip was missing, this strip was probably associated with a direct rim bowl. Two handle attachment scars also were identified.

Madisonville Cordmarked (n=14: 14 bodies)

The Madisonville Cordmarked type differs from the plain type because of regularly patterned, parallel cordage impressions on part or all of the exterior surface of the vessel. These impressions were made by wrapping a wooden paddle with cordage and pressing or slapping that paddle on the wet exterior surface of the formed vessel. If permitted to dry immediately after paddling, clear cordage impressions will remain on the surface. In these cases, the direction of the cordage twist was recorded, if possible. All 14 of the Madisonville Cordmarked specimens retained clear cordage impressions, which averaged 1.47 mm in thickness. The majority (n=9) could not be classified for cordage twist, but those that could all represented S-twist cordage (n=5).

The Madisonville Cordmarked specimens display very homogeneous paste recipes. All are tempered exclusively with shell. The average proportion of temper in the ceramic paste was 31.5 percent.

Interior surface colors of the Madisonville Cordmarked ceramics are dominated by grayish brown (21.4 percent), yellowish brown (21.4 percent), and black (21.4 percent), with several other colors making up the remainder. Exterior surface color consists of dark brown (28.6 percent), very dark grayish brown (21.4 percent), orange (14.3 percent), black (14.3 percent), grayish brown (14.3 percent), and yellowish brown (7.1 percent).

All of the Madisonville Cordmarked specimens were body sherds that had an average thickness of 4.58 mm. No decoration was documented on any of the cordmarked sherds.

MCAFEE SERIES

McAfee Plain (n=2: 2 rims)

McAfee Plain is an untempered vessel form that was expediently made. One has a brownish yellow exterior surface and the other a light brownish yellow exterior surface. Both were brownish yellow in color on the interior surface. The average thickness of these two sherds is thin compared to the other ceramic types. The thickest part is the neck (4.88 mm), which tapered upward toward the rim (4.71 mm) and lip (4.08 mm).

Both of the McAfee vessels were classified as jars with direct rims. One rim has a flat lip and an orifice diameter of 10 cm (Figure 6.2c). The other has a pointed lip and an orifice diameter of 8 cm (Figure 6.2a). A minimum of two McAfee Plain vessels were recovered from the Howard site. Finger-nail notching was observed in association with the rim that has a flat lip.

ERODED (n=8: 8 Bodies)

Eroded sherds are those that could not be confidently assigned to a type because of either a missing exterior surface due to spalling or excessive weathering. Five of the eroded sherds (n=5; 62.5 percent) are shell tempered. Of the remaining sherds, one (n=1; 12.5 percent) is tempered with limestone and shell, one (n=1; 12.5 percent) is tempered with shell and limestone, and one (n=1; 12.5 percent) is tempered with just limestone. All eight specimens were body sherds.

CERAMIC OBJECTS

Disks (n=2)

Two ceramic disks were recovered from the Howard site (Table 6.3). Both were manufactured from Madisonville plain body sherds (Figure 6.5). The paste and temper of both specimens is consistent with that of Madisonville Plain, as is their exterior and interior surface color. These disks have a diameter of 4 cm, and a thickness of 4.55 mm and 5.23 mm, respectively.

Spoon (n=1)

One of the ceramic objects recovered from the Howard site appears to be part of a small, well-fired clay spoon (Figure 6.6). While it is somewhat fragmentary, what was recovered consists of a shallow bowl-shaped object with a handle. The bowl has a depth of 20.85 mm. Temper does not appear to have been added to the paste, which contains a large number of manganese concretions. The spoon has a reddish brown exterior surface color.

Table 6.3. Ceramic Objects.

Ceramic Objects	Freq	Wt
Ceramic Disks	2	20.5g
Madisonville Spoon	1	9.5g
Clay Beads	3	0.3g
Dog Figurine	1	10.8g
Human Figurine Head	1	1.6g
Pipe Stem	1	6.5g
Total	9	49.2g

Figure 6.4. Ceramic Disk.

Figure 6.5. Spoon.

Clay Beads (n=3)

Three very small clay beads were recovered from flotation samples (Figure 6.6). They range in length from 3.57 to 5.08 mm and in width from 2.62 to 4.99 mm. The diameter of the hole drilled through each bead ranges from 1.53 to 2.00 mm. Temper was not added to the paste of any of the beads. One of the specimens has a light brown exterior color and the other two, a grayish brown exterior color. That these beads were only recovered from flotation samples suggests that they are underrepresented in the Howard site ceramic collection.

Figure 6.6. Beads: Left, Glass; Center, Clay; Right, Copper.

Table 6.4. Bead Measurements

Specimen	Length	Width	Diameter
43-8	5.08	4.99	2.00
47-9	4.07	3.20	1.53
45-9	3.57	2.62	1.66

Figurines (n=2)

Two figurines were recovered from the Howard site. One is a four-legged animal (Figure 6.7 left) and the other, a human head (Figure 6.7 right). Temper does not appear to have been added to the paste, but manganese concretions are present. Overall, it has a dark reddish brown exterior color. The animal effigy has a length of 32.70 mm and a height of 24.24 mm. The body has a thickness of 13.01 mm. Unfortunately, the head of the four-legged animal is missing. It has a stocky body and a short pointed tail. Based on these attributes it may represent a dog. Of note is the hole that had been drilled directly below its pointed tail. Its presence suggests this figurine may have been worn as a pendant.

Figure 6.7. Effigies: Left, Dog; Right, Human Head.

The small human head effigy does not appear to have been attached to the exterior of a ceramic vessel. Rather, it was probably part of a larger figurine. The face is fairly small, measuring 12.82 mm from the chin to the top of the head and 14.32 mm from the left to the right ear. In addition to the ears, the nose and mouth are clearly identifiable, but the eyes are not. No special hair treatment was observed on the back of the head. As with the possible dog effigy, temper does not appear to have been added to the paste of this specimen and manganese concretions are present. Overall, it has a light brown exterior surface color.

Pipe (n=1)

The pipe is represented by a stem mid-section fragment that has a length of 39.67 mm and a width of 16.02 mm (Figure 6.8). It has a flat bottom, and the pipe stem hole has a diameter of 3.26 mm. Temper does not appear to have been added to the clay, which contains a large number of manganese concretions. The pipe stem has a reddish brown exterior surface color.

FIRED CLAY

Objects assigned to this category consisted of small rounded pieces of fired clay that had not been tempered. None of the 170 fired clay pieces recovered from the Howard site appear to represent daub used in house construction. Rather, they appear to be clay that was fired during the course of the using and cleaning of hearths.

Figure 6.8. Pipe Stem.

CERAMIC ASSEMBLAGE SUMMARY

The Howard site ceramic assemblage is comprised of almost equal amounts of Jessamine and Madisonville Series ceramics (Table 6.2). The Jessamine Series assemblage is dominated by Jessamine Plain, followed by Jessamine Cordmarked, Jessamine Check-Stamped, and Jessamine Knot-Roughened. Almost fifty percent of the Jessamine Series ceramics are tempered with a combination of limestone and shell or just shell (Table 6.5). Sherds tend to be relatively thick, having a combined thickness of 7.3 mm. All of the sherds are derived from jars that range in orifice diameter from 4 to 16 cm, with a mean of 11.33 cm and a mode of 12 cm. Rims are primarily direct or incurvate, though a few are slightly outflaring. One rim is castellated. Jar shoulders tend to be rounded, but one exhibits a sharply angled shoulder. Almost seven percent of the sherds are decorated, with decoration on jar necks consisting primarily of incised designs, some of which may represent line-filled triangles. Lip notching is present on a few rims. Appendages consist primarily of loop handles, intermediate loop/strap handles, and thick strap handles that were riveted to jar necks. Three of the handles have grooves extending the length of the handle; one loop handle is sharply angled.

As with the Jessamine Series, the Howard site Madisonville series assemblage is dominated by plain surfaced sherds, with Madisonville Plain accounting for 93.8 percent of the ceramics assigned to this series (Table 6.6). All of the Madisonville Series sherds were tempered exclusively with shell, and they tend to be relatively thin with an average thickness of 5.4 mm. Most are derived from jars that range in orifice diameter from 8 to 26 cm, with a mean of 17.3 cm and a mode of 20 cm. The one bowl rim recovered has an orifice diameter of 4 cm and the one bottle an orifice diameter of 8 cm. Rims are primarily slightly outflaring, though a few are direct or outflaring. The bowl rim is outslanting and the bottle rim is direct. Slightly more than 14 percent of the sherds are

decorated, with decoration on jar necks consisting primarily of trailed or incised designs, some of which may represent rectilinear guilloches. Many of the trailed lines are very shallow and wide and they often bound a single line of punctations. Lip notching is present on several jar rims and the one bowl rim. On jars, the notches are wide and deep. Appendages consist primarily of thin strap handles that were attached about one centimeter below the lip. A notched jar lug and an applied horizontal notched strip that may be associated with a bowl also were recovered.

The ceramic assemblage also is characterized by a diversity of nonvessel ceramic objects. These include ceramic disks, effigies, a spoon, clay beads, and a pipe.

Table 6.5. Jessamine Series Ceramics.

	Freq	Percent
Ceramic Type		
Jessamine Plain	134	66.2
Jessamine Cordmarked	62	29.0
Jessamine Check-Stamped	5	2.4
Jessamine Knot-Roughened	5	2.4
Total	207	100.0
Temper		
Limestone	97	46.9
Limestone and Shell	69	33.3
Shell and Limestone	11	5.3
Shell	19	9.2
Other	11	5.2
Total	207	100.0
Rim Form		
Direct	3	18.8
Slightly Incurvate	3	18.8
Incurvate	11	68.8
Slightly Flared	4	25.0
Flared	1	6.3
Total	16	100.0
Lip Shape		
Flat	13	61.9
Rounded	5	23.8
Pointed	1	4.8
Total	21	100.0
Decoration		
Incising on Neck	11	78.6
Lip Notching	3	21.4
Total	14	100.0
Appendages		
Loop	1	11.1
Intermediate loop/strap	3	33.3
Thick Strap	4	44.4
Total	9	100.0

Table 6.6. Madisonville Series Ceramics

	Freq	Percent
Ceramic Type		
Madisonville Plain	213	93.8
Madisonville Cordmarked	14	6.2
Total	227	100.0
Temper		
Shell	227	100.0
Total	227	100.0
Rim Form		
Direct	3	14.3
Slightly Incurvate	1	4.8
Slightly Flared	12	57.1
Flared	4	19.0
Outslanted	1	4.8
Total	21	100.0
Lip Shape		
Flat	6	18.2
Rounded	19	57.6
Pointed	8	24.2
Total	33	100.0
Decoration		
Incising on Neck	6	20.0
Trailed on Neck	9	30.0
Trailed and Punctated on Neck	3	10.0
Punctation on Neck	4	13.3
Lip Notching	8	26.7
Total	30	100.0
Appendages		
Thin Strap	14	87.5
Notched Strip	1	6.3
Notched Lug	1	6.3
Total	16	100.0

REGIONAL COMPARISON

Jessamine Series

The Muir site (15Js86), located in nearby Jessamine County, is the best documented early Fort Ancient site in central Kentucky (Turnbow and Sharp 1988). Excavations conducted there in the mid-1980s recovered a large and diverse ceramic assemblage.

Overall, the Howard site's Jessamine Series assemblage compares favorably with the Muir site assemblage (Turnbow 1988:121). For instance, jars with direct rims and flat lips dominate both assemblages, and mean body sherd thickness (combined body,

neck, and shoulder measurements) at Muir and Howard is very similar: 7.3 mm and 7.2 mm, respectively. It should be noted, however, that the jars at Muir were much larger than those from Howard, having a mean orifice diameter of 27.3 cm, compared to 11.33 cm for Howard. Whether this reflects sample size (the Muir sample is substantially larger than Howard) or site function remains to be determined.

At both sites, about 10 percent of the Jessamine Series ceramics were shell tempered (it should be noted that Turnbow did not assign Muir's shell tempered ceramics to the Jessamine Series [see Sharp and Pollack 1992]), but a higher percentage of mixed shell and limestone tempered specimens were recovered from Howard than from Muir, 38.6 and 22.7 percent, respectively (Turnbow 1988:101). Incised lines at both sites tend to be deep and narrow, though incising is somewhat more prevalent in the Howard assemblage.

Another trait shared by both sites is the presence of minor amounts of knot-roughened and check-stamped ceramics, with these two ceramic types being slightly more common at Howard. In addition, at both sites, handles tend to be intermediate loop/straps or thick straps that were riveted to the vessel neck, and grooves extending down the center of the handle are common. At Howard, one example of a Muir angled handle was recovered, as was one example of a sharply angled jar shoulder.

As with other central Kentucky Fort Ancient sites, most of the Jessamine Cordmarked sherds at Howard were impressed with S-twist cordage. One trait that does distinguish Howard from Muir, and many other early and middle central Kentucky Fort Ancient sites is its high percentage of Jessamine Plain relative to Jessamine Cordmarked. For instance, at Howard, Jessamine Plain accounts for slightly more than sixty-six percent of the assemblage. In comparison, at Muir about seventy-five percent of the sherds were classified as Jessamine Cordmarked. The high percentage of Jessamine Plain vessels at Howard also distinguishes it from other early Fort Ancient sites, such as Dry Run (15Sc10) in Scott County (Sharp 1984). In contrast to these sites, at the Coy site (15Ma144), a middle Fort Ancient village located about three km southwest of Howard, Jessamine Plain accounts for 72.7 percent of this site's ceramic assemblage (Henderson 1998). Jessamine Plain vessels also outnumber Jessamine Cordmarked (52 to 41 percent) vessels at the middle Fort Ancient Broaddus site (15Ma179), another Madison County site (Carmean 2003).

Madisonville Series

The Madisonville Series ceramics recovered from the Howard site are consistent with those recovered from other very late Fort Ancient (A.D. 1550-1750) sites in Kentucky (Pollack n.d.; Turnbow and Henderson 1992). This assemblage is characterized by thin wall vessels, wide, shallow, trailed lines, shallow punctations, notched lips, and thin strap handles. All of these characteristics are consistent with very late Fort Anceint ceramic assemblages. As will be discussed below, the paucity of bowls and the absence of pans, may be due to the contexts investigated and sample size and the context The

presence of historic trade goods and bifacial endscrapers also points to the presence of a late Fort Ancient/Contact period component at this site.

The closest late Fort Ancient sites to Howard that have been investigated by professional archaeologists are Larkin and New Field in Bourbon County (Henderson and Pollack 1996; Pollack et al. 1987), and several rockshelters in Powell County, including Raised Spirits (15Po331), Dangerous Dan (15Po425), and Twin Branch (15Wo232) (Ison and Faulkner 1994; Pollack and Schlarb 2004; Schlarb 2006; Gwynn Henderson, personal communication 2007). Ceramic assemblage attributes these sites share include thin walled jars; wide, thin, strap handles that were often attached below the lip; wide deep lip notching; and wide, shallow, trailed lines that sometimes bound a single line of punctation. For instance, at the Howard site, jars have a mean wall thickness of 5.4 mm compared to a mean thickness of 5.7 mm at both Larkin and New Field (Henderson and Pollack 1996:172). Since larger ceramic samples have been recovered from late Fort Ancient villages than rockshelters, and the former collections have been subjected to more detailed analysis the remaining discussion will focus on a comparison of village collections.

Ceramic assemblages from late Fort Ancient sites in central Kentucky tend to have more Madisonville Plain than Madisonville Cordmarked specimens (Henderson and Pollack 1996:180). This preference for Madisonville Plain distinguishes the central Kentucky area from late Fort Ancient sites located in northern and northeastern Kentucky (Turnbow and Henderson 1992). Since Madisonville Plain ceramics accounts for 93.8 percent of the Howard site's Madisonville Series ceramic assemblage, the site easily conforms to this pattern. This type also account for 90 percent of the Larkin assemblage, and 78 percent of the somewhat earlier New Field collection (Henderson and Pollack 1996; Pollack n.d.).

That Fort Ancient sites in the vicinity of Richmond exhibit a preference for plain surface vessels reflects continuity from earlier Late Woodland sites. It also suggestive of a cultural preference that serves to distinguish groups living in this area from those to the north of the Kentucky River, where cordmarked sherds are much more prevalent on early and middle Fort Ancient sites.

Turnbow and Henderson (1992) reported that in northeastern Kentucky Fort Ancient jar neck decoration peaked during the early late Fort Ancient (A.D. 1400-1550). This trend also appears to be present in central Kentucky. For instance, while 22 percent of the sherds from the New Field site exhibited trailed/incised lines and/or punctuations, only 11 percent of the analyzed sherds from Howard were decorated. A substantially higher percentage of Madisonville jars at Howard, however, were decorated than at the contemporary Larkin (2 percent) site. The extent to which this reflects intersite stylistic differences, sample size, or contexts examined remains to be determined.

Lip decoration was more at Howard than at New Field or Larkin. At Howard 26.7 percent of vessel lips were decorated compared to about thirteen percent at New Field and Howard.

Some intersite differences also were observed in the size of the jars recovered from Howard, Larkin, and New Field. The Howard site jars on average were somewhat smaller than the jars from the other two sites. Howard site jars have a mean diameter of 15.4 cm and a mode of 20 cm, while the Larkin jars have a mean diameter of 21 cm and a mode of 20 cm, and the New Field jars, a mean diameter of 26 (mode could not be determined for this assemblage). The difference in average jar size between Howard and Larkin may be due to the recovery of very large jars from the latter site that were used in ritual feasting (Pollack n.d.). On average, those jars at Larkin were much larger than those recovered from a nearby domestic trash disposal area at that site. This explanation, however, does not account for the large size of the New Field jars. Since on average, the New Field jars are significantly larger than their Howard site counter parts and much bigger than the mortuary feasting vessels that dominate the Larkin assemblage (only three of the Larkin jar rims were larger than the reported New Field jar mean) context of recovery and vessel function may be skewing the New Field sample. Thus, average vessel size reported for New Field may not be representative of the entire site.

In addition to differences in frequency of neck decoration and jar size, bowls and pans are much more common at Larkin than at Howard or New Field. Of the 116 orientable rims recovered from Larkin in 1987, 13 were classified as bowls and 11 as pans (Pollack n.d.). In contrast, one bowl rim and no pan rims were recovered from Howard. A single bottle rim was found at both sites. New Field also was characterized by a paucity of bowls and an absence of pans (Henderson and Pollack 1996). At some contemporary northeastern Kentucky sites, bowls account for a much as 30 percent of the rims and pans for as much as 11 percent of the rims (Turnbow and Henderson 1992).

Perhaps differences in site vessel composition reflect, in part, vessel use and discard patterns within these communities. Bowls and pans were probably primarily used for eating and serving food (Hally 1986) and may have been used in everyday domestic activities in and around houses and then discarded in nearby trash disposal areas or when a house was abandoned. Jars would have been used for storage and cooking (Hally 1986), both activities of which would have taken place near houses, but also perhaps in more or religious contexts removed from domestic residences. If this was the case then one would expect to see more bowls and pans discarded in and around domestic structures, while higher percentages of jars would be expected in trash disposal contexts associated with lineage, clan, or community activities. A similar pattern was documented at the contemporary Caborn-Welborn Slack Farm site (Pollack 1998). At this large village, jars, especially those with decorated shoulders, were more commonly found in large former storage pits, while bowls and pans were more commonly discarded in the vicinity of abandoned structures.

When context of recovery is considered that most of the ceramics from Howard and New Field were recovered from large pit features may account somewhat for the paucity of bowls and pans at these sites. Likewise, that most of the ceramic vessels from Larkin were recovered from mortuary activity areas and from a shallow basin-shaped pit, may account for the greater quantities of the bowls and pans recovered from this site. At

other late Fort Ancient sites in Kentucky where bowls and pans are common, such as Snag Creek, Augusta, and Petersburg, most of the ceramics were associated with houses or middens (Henderson 1993; Jobe and Turnbow 1992; Pollack and Jobe 1992). Again an indication that ceramic vessel discard patterns within communities and the contexts sampled by archaeologists may strongly influence site ceramic vessel composition.

SUMMARY

The Fort Ancient ceramic collection recovered from the Howard site contains almost equal amounts of Jessamine and Madisonville Series ceramics. Jessamine Plain accounts for almost 66.2 percent of the Jessamine Series sherds and Jessamine Cordmarked 29.0 percent. The remaining sherds were classified as Jessamine Check-Stamped (2.4 percent) and Jessamine Knot-Roughened (2.4 percent). In general, these materials are very similar to the early Fort Ancient ceramics recovered from other central Kentucky early Fort Ancient sites.

The Madisonville Series assemblage from Howard is dominated by Madisonville Plain, with Madisonville Cordmarked accounting for only 6.2 percent of the assemblage. This very late Fort Ancient ceramic assemblage is characterized by very thin walled vessels, wide, shallow, trailed lines and punctations, lip notching, and thin strap handles. In general, this assemblage is very similar to materials recovered from other central Kentucky late Fort Ancient sites.

CHAPTER 7:
HISTORIC MATERIALS

By
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INTRODUCTION

A total of nine historic artifacts, including objects manufactured from glass, metal, and ceramics, was recovered from the Howard site. The following subsection describes the historic materials recovered by functional groups.

Historic artifacts were assigned to functional groups to facilitate site interpretation (South 1977). Artifacts were assigned to the architecture, clothing, kitchen, and personal groups (Table 7.1). Construction materials, such as nails and window glass, were assigned to the architecture group. The clothing group includes garment items, which consists of a grommet. All material types used in food preparation and storage, including ceramics and container glass, were assigned to the kitchen group. Items that usually belong to just one person, such as jewelry, were assigned to the personal group.

Glass and ceramic objects were classified by form, color, decoration, method of manufacture and/or paste type. The minimum number of ceramic or glass vessels (MNV) was calculated by grouping together ceramic sherds with similar paste, decoration, and shape, or glass fragments with similar color, shape, and surface treatment. MNV is used to give a more accurate assessment of the quantity of materials recovered from a site. For example, one broken bottle should have a value of one rather than 20.

A temporal analysis generally includes using mean ceramic dates (MCD), *terminus post quem* (TPQ) techniques, and window glass thickness to establish chronology. MCD is calculated by multiplying the median manufacture date for a ceramic type by the total number of sherds for that ceramic type; adding these products together; and dividing that sum by the total number of sherds (South 1977:217). Additionally, Moir (1987) developed a regression formula for the chronological dating of window glass based on the thickness of the glass. The formula works best on structures built after 1810 and before 1915 (Moir 1987:80). Moir calculated the manufacture date of window glass fragments by multiplying the average thickness (mm) by 84.22; then adding the baseline date of 1712.7. The concept of TPQ suggests that the latest made artifact in an archaeological context represents the earliest date that the context could have been deposited (Noel Hume 1969:11). However, due to the low density of historic ceramics (n=2) and window glass (n=1) recovered from this site, MCD and window glass thickness analyses were not carried out.

Functional Groups

Architecture (n=2)

Items belonging to this group consist of an unidentified nail fragment (n=1) and a single fragment of window glass (n=1). Due to the degree of corrosion of the fragmentary nail, it was not possible to determine its method of manufacture (i.e. wrought, machine-cut, or wire). The window glass fragment measured 1.85 mm in thickness and appears to have been burned.

Table 7.1. Historic Artifacts Recovered by Function and Provenience.

Unit	**1**	**2**	**5**	**11**	**13**	**18**	**20**	
Zone	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**Total**
Architecture								
Nail Fragment, unidentified			1					1
Window Glass							1	1
Clothing								
Grommet					1			1
Kitchen								
Pearlware, undecorated							1	1
Ironstone, undecorated				1				1
Container Glass			1			1		2
Personal								
Bead, glass		1						1
Bead, copper	1							1
Total	1	1	2	1	1	1	2	9

Clothing (n=1)

This group consists of a small metal grommet. A grommet is a reinforced eyelet through which a fastener may be passed. Although no chronology of metal grommets has been established, this example appears to be a rather recent tennis shoe grommet.

Kitchen Group (n=4)

Items related to food preparation, serving, and storage comprise this artifact group, which at this site are represented by ceramics and container glass. Ceramics were classified by paste type and decoration. A total of two tiny ceramic sherds was recovered (Table 7.2). The refined ceramic types represented consist of pearlware (n=1) and ironstone (n=1). Pearlware was manufactured from 1780-1830 (South 1977:212), and ironstone dates from 1842-1930 (Miller 1991:10, 1993:5-6). No decorative treatment was present on either specimen. Since most ceramics recovered from archaeological sites are highly fragmented, it is often difficult to identify what type of vessel or object the sherds were once a part of. This was the case for the sherds from this site (Table 7.2).

Table 7.2. Refined Ceramic Types and Decoration.

Type/Decoration	Frequency	MNV
Pearlware		
Undecorated	1	1
Ironstone		
Undecorated	1	1
Total	2	2

Two tiny fragments of container glass also were recovered. Container glass was classified by color, vessel type, and function. Fragments consist of dark olive (n=1) and clear (n=1) body sherds. Dark olive, or green, glass was principally used for the production of flasks and bottles (McKearin and McKearin 1948:7), and dates from 1815 to 1885 (Newman 1970:74). Prior to 1864, clear glass was produced by adding lead to the glass mixture. However, the advent of colorless soda-lime glass in 1864 was far more economical and became the most common method of glass decolorization (McKearin and McKearin 1948:8). This method was first used on pressed glass, and later on bottles. Clear bottle glass decolorized with this technique dates from 1880 to the present (Newman 1970:74). Due to their highly fragmented nature, the sherds were unidentified for vessel form (Table 7.3). No diagnostic lip or base fragments were recovered.

Table 7.3. Container Glass Vessel Forms and Objects.

Vessel/Form	Frequency	MNV
Unidentified, dark olive	1	1
Unidentified, clear	1	1
Total	2	2

Personal Group (n=2)

This group is comprised of objects that usually belong to just one person. Personal items recovered consist of items used for ornamentation. These artifacts include a glass bead (Figure 6.6) and a copper bead (Figure 6.6). Both represent evidence of trade between Europeans and Native Americans. The glass bead was coded and described according to Kidd and Kidd's (1970) typology, as well as Karklins' (1985) analytical design. Using this combined format, this bead was examined for manufacturing techniques (drawn, wound, molded, etc.), size (very small - <2 mm in diameter, small – 2-4 mm in diameter, large 6-10 mm in diameter, very large – 10-17 mm in diameter, and very, very large - >17 mm in diameter), diaphaneity (opaque, transparent, translucent, burned, etc.), and color (an attempt was made to match color with Kidd and Kidd's color chart for consistency). This bead also was assessed as to compound or simple construction, and surface decoration.

Kidd and Kidd (1970) developed a classification scheme for beads based on their process of manufacture and physical characteristics. This glass bead is a wire wound bead. Wire wound beads, also termed wound and mandrel wound, were formed by winding a viscid rod or strand of glass around a rotating metal mandrel one or more times

until the desired size and shape was achieved (Karkilns 1983:96). However, "[b]ecause they are handcrafted, it is impossible to reduce wire wound beads to a neat classification" (Kidd and Kidd 1970:53). The bead recovered is a large, translucent, monochrome bead of simple round shape, and is classified as WIb in Kidd and Kidd's (1970:53-56) typology. No surface decoration is present, and it measures 5.04 mm in length by 6.45 mm in diameter.

An attempt was made to match the color of this bead with the color chart offered by Kidd and Kidd (1970). However, an exact match could not be made. As Karklins (1985:86) points out, the wound bead chart offered by Kidd and Kidd (1970:52) is not nearly as detailed as their typological flow chart for drawn beads (Kidd and Kidd 1970:51). The colors in Kidd and Kidd's (1970) system were designated using the Color Harmony Manual (Container Corporation of America 1958). Following Karklins' (1985:109) example, due to the obscurity and unavailability of the Color Harmony Manual, the Munsell (1942) color notation system and the Bustanoby (1947:28) color system used by Harris and Harris (1967) and Sudbury (1976) were utilized to determine the color of this bead. This bead is designated 10B 4/8 in the Munsell (1942) color notation system, which most closely corresponds to Bluebird (code B7) in the Bustanoby (1947) color system. The blue color of glass beads was achieved by adding cobalt to the glass mixture (McKearin and McKearin 1948:9; Brain 1979:98).

This bead does not appear to match any of the varieties documented by Kidd and Kidd (1970) or Karklins (1985). Nevertheless, it is interpreted as a Contact Period (A.D. 1550-1750) historic Indian trade bead. This glass bead is similar to one recovered from the Fredricks site (31Or231) in the Piedmont region of North Carolina, which was occupied from between about A.D. 1680-1710 (Dickens et al. 1987:151). This bead is also similar in shape to wire wound beads recovered from the Trudeau site (16Wf25) in West Feliciana Parish, Louisiana, which was occupied from A.D. 1731-1764 (Brain 1979:98-99). It is not surprising that this bead does not appear among the glass trade beads documented by Kidd and Kidd (1970) and Karklins (1985), since most of their research was based on sites located in Canada.

A medium-sized copper tubular bead also was recovered. This object is bent into a triangular shape, with the edges touching, but not overlapping. It measures 12.5 mm in length and 7.67 mm in diameter. The bead is manufactured from a small rectangular sheet of copper that measures 0.62 mm in thickness. The material of the bead was identified by immersing the object in a solution of sodium sesquicarbonate (four parts sodium bicarbonate and five parts sodium carbonate, with enough water to make a 5 percent solution) to remove the corrosive green carbonates and soften the oxide beneath (Noel Hume 1968:280-282). The bead was then scratched to determine if it was manufactured from copper (reddish) or brass (yellowish).

Rolled copper tube beads have been found in burial contexts at late Fort Ancient/Contact period sites in central Kentucky, such as Larkin (Bourbon County) and the Muir site 15Js86 (Jessamine County) (Pollack et al. 1987; Van Niewerburgh 1972). However, the bead recovered from the Howard site is much larger, and differs in shape

and size, from the beads that were available for inspection and comparison from the aforementioned sites. The sheet of copper that this bead is manufactured from, however, is similar in thickness to rolled copper tube beads recovered from late Fort Ancient/Contact period burials at Petersburg (15Be6) (Boone County) in northern Kentucky (Henderson 2006).

SUMMARY

Of the nine historic artifacts recovered from the Howard site, seven represent nineteenth or twentieth century, architecture, clothing, and kitchen group related materials. Given the low density and highly fragmented nature of these materials they do not appear to be directly associated with a domestic residence. It is more likely that they were discarded at this site as a result of nineteenth and twentieth century farm related activities, such as the spreading of manure gathered from another location.

The other two artifacts, a blue glass bead and a copper tube bead, represent historic trade goods associated with the Howard site's late Fort Ancient/Contact period component. These materials along with aboriginal gun flints (see Chapter 5) reflect Fort Ancient interaction with Europeans. Along with the marginella shell bead (see Chapter 9), and mica (see Chapter 5), they also reflect late Fort Ancient participation in long-distance exchange networks.

CHAPTER 8:
ARCHAEOBOTANICAL REMAINS

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INTRODUCTION

A substantial archaeobotanical collection (n=13,953 specimens) was recovered from the Howard site. These specimens were recovered from 10 flotation samples (131 liters) (Table 8.1). Both an early and late Fort Ancient component are represented, though most of the samples (8 samples, 111 liters) are from the late component. Only two samples (20 liters) were associated with the early Fort Ancient component.

Analysis of the botanical remains recovered from both components has contributed to the growing body of data on Fort Ancient plant subsistence patterns. Once established, Fort Ancient plant use involved a reliance on corn-beans farming, supplemented by the collecting of fleshy fruits and nuts that remained relative unchanged for several centuries. As new collections are obtained and reported on, researchers are gaining new insights into regional/site specific variation within this generalized subsistence system. In the case of Howard site, an unusually high nutshell density in the late component, the absence of common beans in the early component (although the floated sample is small), and a trace amount of marshelder, have contributed to this growing dataset.

Table 8.1. Frequencies and Gram Weights of General Categories of Plant Remains.

Category	Freq	Pct*	Gm Wt	Pct
Wood charcoal	10,760	77.1	205.6	81.5
Nutshell	2,142	15.4	38.1	15.1
Tropical cultigens	975	7.0	8.5	3.4
Native cultigens	5	0.0	----	----
Wild plant seeds	40	0.3	----	----
Unidentified - general/seeds	31	0.2	0.1	0.0
Total plant remains	13,953	100.0	252.3	100.0

METHODS

Botanical remains are produced from archaeological sites using a method known as water flotation. Soil samples from the site are placed in a tank with agitated water, and the lighter charcoal and roots float to the surface and are collected in a “light fraction.” Portions of the sample that sink are caught below in a fine screen as “heavy fraction.” The samples from Howard were floated at the University of Kentucky Laboratory for Archaeological Research. At Ithaca College, these samples were prepared for analysis by

passing light and heavy fractions through a 2 mm geological sieve before sorting charcoal from non-carbonized contaminants, such as roots.

In open prehistoric sites like the Howard site, only carbonized remains are considered archaeological. Plant materials from the larger than 2 mm sample were identified, counted, and weighed. Sievings smaller than 2 mm were scanned carefully for seeds. This procedure is followed because fragments of wood and nutshell smaller than 2 mm are difficult to reliably identify. In most instances, charcoal specimens larger than 2 mm are representative of smaller specimens, although there are a few exceptions, such as acorn nutshell, squash rind, and gourd rind (Asch and Asch 1975). Laboratory sieving and analysis of materials greater than 2 mm in size thus saves considerable sorting time with minimal or no loss of information.

The samples were examined under a light microscope at magnifications ranging from 10 to 30x. Identification of materials was aided by a comparative collection of both archaeological and modern specimens, along with standard catalogs (Delorit 1970; Martin and Barkley 1973; Panshin and deZeeuw 1970; U.S. Department of Agriculture 1948). Specimens were sorted by species, counted, and weighed to the nearest tenth of a gram. Macroscopic wood characteristics were observed from specimen cross-sections. Changes in the visibility of macroscopic characteristics that occur during carbonization were also accounted for, to insure maximum accuracy of identification (Rossen and Olson 1985). Very small wood specimens or specimens that were badly deformed during the carbonization process were classified as "unidentified." Similarly, deformed or fragmented seeds were classified as "unidentified-seeds."

Wood charcoal frequencies for samples that contain more than 400 specimens represent carefully constructed estimates and not exact figures. Estimates were derived in the following manner. Two hundred specimens were counted, this subsample was weighed, and the weight of the total lot was divided by the subsample. This number was then multiplied by 200. Estimates of the species composition of each sample were derived by identifying between 20 and 50 specimens. An estimate of the relative percentage of each species represented was then used to calculate the estimated frequency of each species in a sample. Testing of this method of estimating frequencies revealed only a very low margin of error (less than 3 percent), so this technique is believed to be a reliable and efficient means for handling large lots of wood charcoal (Rossen 1991).

PRESERVATION

Archaeobotanical preservation varies greatly between sites for reasons that are only partially understood. Two factors that influence preservation are soil drainage and chemical composition of midden deposits (such as soil pH and ash content). The circumstances surrounding plant carbonization, including firing temperature and the amount of oxygen reduction present, also influence preservation. Soil particle size and inclusions affect whether or not carbonized plant remains are eroded or destroyed by mechanical grinding.

Plant remains from the Howard site late component are generally well-preserved, with little erosion of surface characteristics. Seed coats of *Chenopodium berlandieri* seeds are present, another indicator of good archaeobotanical preservation. This allowed a large inventory and high density of materials to be recovered from relatively few samples and little soil literage. There is, however, some suggestion that materials from the early Fort Ancient component are not as well-preserved as late Fort Ancient materials. Both samples, are characterized by lower plant densities and materials are more eroded. In addition, seeds are relatively scarce.

ANALYSIS RESULTS

Wood charcoal

Wood charcoal (n=10,760) is the most common component of the assemblage, with 11 tree species being present (Table 8.2). At many central Kentucky sites, oak and hickory comprise 60 to 80 percent of the recovered wood charcoal, reflecting the oak-hickory dominated forests of the Inner Bluegrass (Campbell 1985; Rossen 1991). At the Howard site, however, the five most well-represented species account for only 10.2 to 17.2 percent of all wood charcoal by frequency. These species are red oak group (*Quercus* sp.), American elm (*Ulmus americana*), black walnut (*Juglans nigra*), yellow poplar (*Liriodendron tulipifera*), and American chestnut (*Castanea dentata*). The latter three are usually present in low percentages as secondary and tertiary species in most central Kentucky wood charcoal collections. White oak group (*Quercus* sp.) and hickory (*Carya* sp.), both usually dominant species at central Kentucky Fort Ancient sites, account for only 7.4 percent and 4.6 percent, respectively, of the Howard site collection. Other species present are maple (*Acer* sp.), slippery elm (*Ulmus rubra*), ash (*Fraxinux* sp.) and cane (*Arundinaria gigantea*).

Table 8.2. Wood Charcoal (both components combined).

Species	Freq	Pct	Gm Wt	Pct*	Ubiq
Red oak group (*Quercus* sp.)	975	17.2	16.9	14.3	.70
American elm (*Ulmus Americana)*	917	16.2	22.1	18.6	.50
black walnut (*Juglans nigra*)	827	14.6	15.1	12.7	.60
Yellow poplar (*Liriodendron tulipifera*)	789	14.0	19.3	16.3	.60
American chestnut (*Castanea dentata*)	577	10.2	12.4	10.5	.40
White oak group (*Quercus* sp.)	416	7.4	8.7	7.3	.70
Maple (*Acer* sp.)	340	6.0	6.9	5.8	.70
Slippery elm (*Ulmus rubra*)	338	6.0	8.8	7.4	.30
Hickory (*Carya* sp.)	259	4.6	4.3	3.6	.50
Ash (*Fraxinus* sp.)	148	2.6	2.9	2.4	.30
Cane (*Arundinaria gigantea*)	69	1.2	1.1	0.9	.20
Total identified wood charcoal	5,655	100.0	118.5	100.0	
Unidentified wood charcoal	5,105		87.1		
Total wood charcoal	10,760		205.6		
* calculated to nearest 0.1 percent					

It is possible that because the Howard site collection represents only a few feature contexts, the wood charcoal represents localized firewood collection. This may be inferred from not only the unusual species percentages, but also the high percentage of unidentified wood charcoal specimens (n=5105 or 47.4 percent of all wood charcoal). The unidentified specimens are small twigs or branches with poorly developed cellular structures, probably dead firewood. In comparison, at the late early/early middle Fort Ancient Dry Branch Creek site (15Me62) (Mercer County), where a greater variety of feature and midden contexts were sampled, only 29.9 percent of specimens could not be identified (Rossen 2005:6-4). This site's wood assemblage also contained a more diverse wood assemblage: 18 identified species compared to the Howard site's 11 species. Given the greater higher number of wood species identified at Dry Branch Creek, this site's wood profile, may provide a better indication of forest diversity along the edge of the Inner Bluegrass.

On the other hand, it is possible that Madison County had forests that were locally more diverse and co-dominant (without dominating species) than surrounding areas of the Inner and Outer Bluegrass. Wood charcoal from the Dreaming Creek site (15Ma27), a Late Woodland site also in Madison County, produced a collection with 19 wood species that also had an unusually low amount of its most frequent species, white oak (22.3 percent) and American holly (*Ilex opaca*) (22.2 percent) (Rossen 2007). In addition to American holly other species not identified at the Howard site, that have been recovered archaeologically recovered from sites in the Outer Bluegrass are American hornbeam (*Carpinus caroliniana*), basswood (*Tilia* sp.), beech (*Fagus grandifolia*), black locust (*Robinia pseudoacacia*), cherry (*Prunus* sp.), honeylocust (*Gleditsia triacanthos*), sassafras (*Sassafras albidum*), sycamore (*Platanus occidentalis*), and two disturbed land succession species, pine (*Pinus* sp.) and eastern redcedar (*Juniperus virginiana*) (Rossen 1991, 2007).

In the cases of sites like Howard and Dreaming Creek, interpreting wood charcoal as either reflecting contextual bias or a true environmental aberration of a pocket of co-dominating tree species is an unsolved issue. As mentioned above, the white oak and red oak groups, along with hickory are often the dominant species in archaeological wood charcoal collections, sometimes comprising as much as 80 percent of all site wood in the Inner Bluegrass region (such as in the case of the Muir site, Jessamine County) (Rossen 1991). Sites in the Outer Bluegrass, like the Madison County sites discussed above, tend to exhibit more variety of species and an absence of dominating types than those located in the Inner Bluegrass (see also Campbell 1985). This observation is supportive of the characterization of eastern Kentucky's old growth forests as a Mixed Mesophytic forest lacking a dominating species (Braun 1950; Martin 1987).

Nutshell

Six species of nutshell (hickory, black walnut, butternut, acorn, pecan, and hazelnut) were recovered, with hickory accounting for 89.8 percent of the remains (Tables 8.3 and 8.4). Throughout much of the Archaic and Woodland periods in Kentucky, hickory was a focal resource. Hickory nuts were valued for their high protein

and fat content, and relative ease of collection, preparation, and storage. Swanton (1946) reviewed at length the ethnographic data on hickory nut use by southeastern Native Americans. The most common use was in a "hickory nut soup," prepared by cracking nuts and placing them into a pot of boiling water, where the nutshell would settle to the bottom leaving an oily white broth that was considered a delicacy.

Black walnuts contain over three times more nutmeat (Styles 1981:82) and approximately 10 percent more protein and fat than hickory (Lopinot 1982:858-859). They may be more difficult to collect and utilize, however, because walnut trees do not grow in stands like hickories, and shelling and processing is more time-consuming.

Butternut is widespread in the eastern U.S. archaeological record, but only in small amounts. Its nutritional content, processing and use is very similar to that of black walnut. Butternut trees, however, only produce good harvests every two or three years, so butternut may not have fit into a seasonal collection strategy as well as those nut-bearing species that produce more consistent harvests (U.S. Department of Agriculture 1948:110, 202). The amount and availability of butternut in prehistoric Kentucky is difficult to assess because a blight has drastically reduced its numbers in recent years.

A substantial quantity (n=93) of acorn (*Quercus* sp.) was recovered, considering that its shell is thin and fragile, which usually results in it being underrepresented in archaeological collections (Asch and Asch 1975). It is probably the most abundant and reliable southeastern U.S. nut, producing consistent annual masts while other species vary more in annual production. Acorns, however, require special processing to remove the astringent tannic acid of the nutmeat. Furthermore, acorns are nutritionally inferior to other nuts, with only half the protein, and one-third the fat of hickory nuts. Despite this, acorns may be easier to collect then other nuts, and nutmeat yields are high. The net energy potential of acorn may thus be similar to that of other nuts (Lopinot 1982:726), which would have encouraged its collection and consumption.

Table 8.3. Nonwood Plant Remains: Early Fort Ancient Component.

Plant Type/Species	Freq	Gm Wt
Nutshell		
hickory (*Carya* sp.)	88	1.2
black walnut (*Juglans nigra*)	13	0.1
acorn (*Quercus* sp.)	1	0.0
Tropical cultigens		
corn (*Zea mays*)		
cupule	5	0.0
kernel/kernel fragment	22	0.2
Wild plant seeds		
bedstraw (*Galium* sp.)	5	---
smartweed (*Polygonum* sp.)	1	---
pokeweed (*Phytolacca americana*)	1	---
Miscellaneous		
unidentified - seed fragments	3	---

Table 8.4. Nonwood Plant Remains: Late Fort Ancient Component.

Plant Type/Species	Freq	Gm Wt	Ubiq
Nutshell			
hickory (*Carya* sp.)	1835	29.1	1.00
black walnut (*Juglans nigra*)	161	5.7	1.00
butternut (*Juglans cinerea*)	36	2.0	0.50
acorn (*Quercus* sp.)	5	0.0	0.25
pecan (*Carya illionoensis*)	2	0.0	0.25
hazelnut (*Corylus* sp.)	1	0.0	0.13
Tropical cultigens			
corn (*Zea mays*)			
cupule	718	5.7	1.00
kernel/kernel fragment	179	1.5	1.00
cob fragment	4	0.6	0.25
husk fragment	1	0.1	0.13
bean (*Phaseolus vulgaris*)`	24	0.4	0.75
gourd (*Lagenaria* sp.) - rind	21	0.0	0.75
squash – rind (*Cucurbita* sp.)	1	0.0	0.13
Native cultigens			
chenopod (*Chenopodium berlandireri*)	4	---	0.13
marshelder (*Iva annua*)	1	---	0.13
Wild plant seeds			
bayberry (*Myrica pensylvanicum*)	13	---	0.50
grape (*Vitis* sp.)	8	---	0.38
sumac (*Rhus* sp.)	3	---	0.13
bedstraw (*Galium* sp.)	2	---	0.13
verbena (*Verbena* sp.)	2	---	0.13
knotweed (*Polygonum* sp.)	1	---	0.13
cherry (*Prunus* sp.)	1	---	0.13
plum (*Prunus americana*)	1	---	0.13
blackberry/raspberry (*Rubus* sp.)	1	---	0.13
pawpaw (*Asimina triloba*)	1	---	0.13
Miscellaneous			
unidentified – general	19	0.1	
unidentified - seed fragments	9	---	

Pecan, a thin-shelled hickory (*Carya illinoensis*), is present in trace amounts. Pecan mast yields are large but periodically irregular, with two to three abundant years usually followed by years of little or no nut production (Reid 1991). Pecans appear to have been primarily restricted to the westernmost areas of Kentucky, where they are common in Mississippian sites (Edging 1995:143), and along the Ohio River floodplain of northeastern Kentucky (Lopinot 1988:599). Its presence at the Howard site along the southern edge of the Bluegrass is thus somewhat unusual, although trace amounts of pecan also were recovered from the Dry Branch Creek, which is located along the southwestern edge of the Bluegrass region.

Hazelnut (either *Corylus americana*, the American hazelnut or *Corylus cornuta*, the beaked hazelnut) is a high protein and easily stored nut (Krochmal and Krochmal 1982:6-8). Hazelnuts always occur in only very low frequency in Kentucky sites, and probably only represent a minor food source.

At some point during the Late Woodland subperiod, nut use appears to have dramatically decreased throughout central and northern Kentucky (Table 8.4). For instance, the terminal Late Woodland collection from the Watson Gravel site (15Be249) (Boone County) had a much lower nut density relative to early Late Woodland sites, such as Hansen (15Gp14) (Greenup County) and Shelby Lake (15Sh17) (Lopinot 1988; Rossen 1996). That the early Late Woodland components at Dreaming Creek (15Ma97) (Madison County) and Withrow Creek (15Ne55) (Nelson County) also are characterized by low nutshell densities suggests that this trend may have begun earlier in some regions than others (Davis et al. 1997:187; Rossen 2007). A similar trend of decreasing nut use during the Late Woodland period has been documented in central Ohio and northwestern West Virginia (Wymer 1987, 1990, 1992). The Ohio and West Virginia observations of Dee Ann Wymer were made from small samples with a wide geographic range, and she did not compare her results to Late Prehistoric period data. The addition of Late Prehistoric data may provide further insights into long-term nut use (Table 8.5). Among the several plant use changes that occurred ca A.D. 1000, Fort Ancient groups in central, northern, and eastern Kentucky heavily de-emphasized their use of nuts (Rossen 1993; Rossen and Edging 1987).

The Howard site early Fort Ancient component fits the general trend of low Fort Ancient nutshell density, but the very high late Fort Ancient nutshell density documented at this site bucks the observed pattern. Both the frequency (18.4) and gram weight per liter (.33) values are unusually high. Based on the nutshell density temporal trends illustrated in Table 8.5, these values generally fall between expected Late Archaic and Middle Woodland nutshell densities. The high late Fort Ancient nutshell density documented at the Howard site, may be due to the limited number of feature contexts sampled at this site. At the middle Fort Ancient Florence site 15Hr22 in Harrison County, a botanical assemblage dominated by samples recovered from pit feature contexts, also exhibited unusually high nutshell density values. If Fort Ancient site botanical assemblages derived from a variety of feature and midden contexts emerge with similarly high nutshell densities, it may be necessary to discuss pockets of Fort Ancient people who did not deemphasize nuts as a food source. Or alternatively, turned to nuts during periods of subsistence stress.

Tropical cultigens — corn, bean, gourd, and squash

Corn was apparently introduced into the southeastern and Midwestern U.S. during the Early Woodland subperiod (Chapman and Crites 1987; Crites 1978; Ford 1987; Riley et al. 1990). It appears, however, only in low frequencies if at all in Kentucky Woodland sites, such as the Watson Gravel site in Boone County (Rossen and Hawkins 1995). Early in the Late Prehistoric period (ca. A.D. 1000), corn became highly visible in the archaeological record of Kentucky, dominating food remains at both Fort Ancient and Mississippian sites (Edging 1995; see Broida 1984; Lynott et al. 1986 for supporting stable carbon isotope data).

Table 8.5. Nutshell Densities (frequencies and gram weights per liter of floated soil) at Selected Kentucky Archaeological Sites and Site Groupings, Listed in Approximate Chronological Order from Top to Bottom.

Site(S)/County Or Region	Period	Freq/L	Gm/L
Withrow Creek (15Ne55) Nelson County	Archaic Component	40.8	.53
Highland Creek (15Un127) Union County	Late Archaic	35.9	.55
Hedden (15McC81) McCracken County	Late Archaic	35.3	.48
Slack Farm (15Un28) Union County	Middle Woodland	15.4	.22
Shelby Lake (15Sh17) Shelby County	Late Woodland	16.9	.28
Hansen (15Gp14) Greenup County	Late Woodland	10.5	.27
Withrow Creek (15Ne55) Nelson County	Late Woodland Component	5.8	.13
Dreaming Creek (15Ma97) Madison County	Late Woodland	1.3	.02
Watson Gravel (15Be249) Boone County	Terminal Late Woodland	2.9	.07
Howard (15Ma427) **Madison County**	**Early FA component** **Late FA component**	**5.1** **18.4**	**.07** **.33**
Dry Branch Creek (15Me62) Mercer County	Late Prehistoric	2.8	.03
Kentucky *Fort Ancient* sites** (northern Ky/southern Ohio - 3 sites)	Late Prehistoric	4.2	.06
Kentucky *Fort Ancient* sites*** (central Kentucky - 6 sites)	Late Prehistoric	3.2	.07
Kentucky *Fort Ancient* sites* (northeastern Kentucky - 3 sites)	Late Prehistoric	1.7	.04
Kentucky *Mississippian* sites+ (western Kentucky - 6 sites)	Late Prehistoric	10.9	.23

References: Davis et al. 1997:182; Hockensmith et al. 1998; Lopinot 1988; Rossen 1994, 2000, 2005, 2006, 2007, n.d.a; Rossen and Hawkins 1995.
* after Rossen 1992, 1993:57; ** after Cowan et al. 1990; Dunavan 1993; Rossen 1993
*** after Rossen 1992; + after Edging 1995; Rossen 1987

Corn was recovered from every flotation sample. The early component contained more kernel fragments than cupules (22 to 5), the outer structural units of the cob that hold the kernels. In contrast, the late component contained more than four times as many cupules as kernel fragments (718 to 179). Kernel remains usually represent food waste, while cupules represent an earlier stage of food preparation. Since most of these materials come from different zones within Feature 1, it is difficult to understand the disparity of types of corn remains from the two components.

Four cob fragments, along with the size and morphology of the cupules and kernels, leave no doubt these are examples of the Eastern Eight variety that is typically found in Kentucky Fort Ancient sites. Two of the four cob fragments are 8 row specimens, while the other two are 10 row cobs, a morphological variant of the same 8-row variety (Table 8.6). Kernels are low, wide, and crescent-shaped, with kernel heights ranging from 4.3 to 7.5 mm and kernel widths ranging from 6.8 to 10.0 mm. Kernel embryos are deep, with heights of 3.0 to 4.0 mm and widths of 3.2 to 3.8 mm. Cupules are open, with widths ranging from 4.5 to 7 mm (mostly in the 6 to 7 mm range), and lengths ranging from 2 to 4 mm.

Table 8.6. Corn Cob Measurements

Feature 1	Diameter	Length	Row#
#1	7 mm	6 mm	8
#2	11 mm	7 mm	10
#3	8 mm	10 mm	10
#4	12 mm	9 mm	8

Fort Ancient sites invariably produce large amounts of well-preserved corn, sometimes including complete cobs (Rossen 1992). Most Kentucky Fort Ancient sites exhibit a high density of corn, including frequencies of 3 to 4 per liter of floated soil and gram weights of .03 to .06 per liter, with some sites like Florence (Harrison County), New Field (Bourbon County), and Fox Farm (Mason County) displaying much higher density values. A few Fort Ancient sites with special contextual/sampling issues like Larkin (Bourbon County), where only burials were excavated, and Capitol View (Franklin County), a very short-term occupation, display lower corn densities (Rossen 1993:57).

Howard site displays a low corn density for the early component (frequency=1.4, gram weight=.01 per liter), but a quite high corn density for the late component (frequency=8.1, gram weight=.07 per liter). The overall site corn densities (frequency=7.1, gram weight=.06 per liter) are high, complementing the high nutshell densities and suggesting that the pit feature contexts that were exclusively floated and analyzed produced atypically high botanical densities.

A total of 24 common beans (*Phaseolus vulgaris*) or bean fragments was recovered. Beans are present in all three features, but only in samples from the late component of the site. Complete specimens are relatively small for Fort Ancient

specimens, with lengths ranging from 5 to 6.2 mm and from 3.5 to 5.5 mm in width. There is substantial variety in their shape, ranging from tapered to narrow with parallel sides to nearly round. In contrast, the larger beans from Fox Farm site in Mason County range in length from 7 to 14 mm with a mean value of 10.7 mm.

The appearance and use of *Phaseolus* beans in the prehistoric eastern U.S. woodlands has been a topic of debate. Though a high frequency of beans at Fort Ancient sites has long been known (Wagner 1983, 1987), there is not one confirmed *Phaseolus* bean from pre-A.D. 1400 western Kentucky Mississippian contexts (Edging 1995; see also Johannessen 1984, 1988). Thus beneath the umbrella of maize, Fort Ancient cultures adopted and heavily used *Phaseolus* beans while their contemporary Mississippian neighbors did not.

It has been recently argued that *Phaseolus* beans diffused into the eastern U.S. relatively late, ca. A.D. 1300, instead of the earlier generally accepted date of ca. A.D. 1000 (Hart and Scarry 1999). Though the absence of beans in early component samples at Howard tends to reinforce the idea that they were introduced later than previously believed, only twenty liters of soil from this component were floated and the recovered remains were not as well-preserved as those associated with the late component. As such, the early components absence of beans may be due to sample size and preservation conditions, and should not be taken as an indication that beans were not part of their diet.

To more fully address the issue of the timing of the adoption of beans by Fort Ancient groups, beans from the Muir site, in Jessamine County, Kentucky, that are associated with eleventh century radiocarbon dates, will be further evaluated by A.M.S. dating. Whatever arrival date is decided on based on future research, it is clear that *Phaseolus* beans were essential to middle and late Fort Ancient plant use and identity. Around A.D. 1400, with western Kentucky Mississippian towns declining and Fort Ancient villages enlarging, *Phaseolus* beans diffused west and began to appear in Late Mississippian Caborn-Welborn sites like Slack Farm (Rossen 1994). Prior to A.D. 1400, *Phaseolus* beans (to be carefully distinguished from the wildbean, *Strophostyles*) are a clear cultural marker of the Fort Ancient lifeway.

Twenty-two gourd rind (*Lagenaria* sp.) fragments were recovered, including specimens from all three features, but again, only from samples representing the late component. Gourd species are native to the Old World, and its prehistoric introduction to the New World remains shrouded in mystery (Stone 1984). They were used as containers and fishing floats, and their nutritious seeds were eaten (Hart et al. 2004; Hudson 2004). Gourd has been found in numerous Kentucky sites ranging from the Archaic to the Late Prehistoric periods. Gourd rind is a thin and fragile remain that is often underrepresented archaeologically. Its relatively strong presence in late component samples and its absence from early component samples at the Howard site suggest there are preservation differences and contextual biases between the two components, as both the corn and nut remains also suggest.

Squash rind (*Cucurbita* sp., n=1) was recovered from one Feature 1 late component sample (Table 8.4). Prehistoric squashes in the southeastern U.S. were hard-shelled and probably used primarily for their edible seeds. Squash appears very early in the archaeological record, and has been found sporadically in Archaic period contexts (Cowan et al. 1981; Kay et al. 1980; Marquardt and Watson 1977). There is ongoing debate if the early specimens were cultivated or wild, and whether or not squash had native North American origins (see Heiser 1989; Smith 1987; Watson 1989 on this debate). Allozyme, morphology, and phytogeography studies are now convincing more scholars that squash was independently domesticated in the eastern U.S. from wild populations in Arkansas and Missouri (Decker-Walters 1990; see discussion (Edging 1995:170). Whether or not squash was cultivated during Archaic times, by the Late Woodland and Late Prehistoric periods it was certainly a garden plant. It is present in several central Kentucky sites. Like gourd, squash is considered an underrepresented plant in the archaeobotanical record because of its thin fragile rind, and thus the single specimen from the Howard site may represent a more substantial use of this plant.

Native cultigens

The prehistoric use of a complex of starchy and oily-seeded native cultigens has been archaeologically documented throughout much of the midwestern and southeastern U.S. The Woodland period was the height of seed plant gardening. Central Kentucky Woodland groups were familiar with some of the same plants that were widely cultivated by contemporary groups from West Virginia to Illinois: chenopod (*Chenopodium berlandieri*), maygrass (*Phalaris caroliniana*), marshelder (*Iva annua*), erect knotweed (*Polygonum erectum*), sunflower (*Helianthus* sp.) and little barley (*Hordeum pusillum*). The differential continuation or abandonment of these cultigens during the Late Prehistoric period appears to reflect social choices made by populations living in Kentucky after A.D. 1000. With a few notable exceptions, Fort Ancient people appear to have abandoned most native cultigens with the notable exception of chenopod, while neighboring Mississippian groups continued their use.

The chenopod seeds recovered from Feature 1 (late component) were classified as the cultivated variety (*C. berlandieri*), while the small size of the one marshelder (*Iva annua*) seed associated with this component suggests that it is of the wild variety. Chenopod was utilized for both its greens and its abundant starchy seeds. The cultivated variety was widely utilized in the southeastern United States during Woodland times (Jones 1936; Smith 1987; Watson 1989). It is distinguished from wild populations by its distinctive "truncate-margin" profile (as opposed to a simpler biconvex profile in wild seeds) and a thinner or absent seedcoat. The recovered specimens from the Howard site clearly display the distinctive morphology of the cultivated variety. Cultivated chenopod has been recovered from several Late Archaic contexts in eastern Kentucky rockshelters (Cowan 1978, 1979; Cowan et al. 1981; Jones 1936; Gremillion 1993, 1998; Ison 1988). The plant was heavily utilized throughout the Woodland period, appearing in Late Woodland contexts at the Dreaming Creek (Madison County) and Hansen sites (Greenup County) and in abundance in the Middle Woodland component at Slack Farm (Union County) (Lopinot 1988:609, 611; Rossen 1994, n.d.a.). As stated above, chenopod

appears to have been the only native cultigen that was widely grown by Kentucky Fort Ancient populations, and was recovered in abundance at sites, such as Fox Farm (Mason County) (Rossen 1992:199-200) and Petersburg (Boone County) (Rossen 1993:55).

The recovery of a single marshelder seed is notable. Marshelder is a plant with nutritious oily seeds that has a long history of utilization throughout the eastern woodlands (Asch and Asch 1985; Yarnell 1978). This plant came under cultivation sometime during the Late Archaic or Early Woodland subperiods, as indicated by gradual but large increases in seed length and its archaeological occurrence in large caches (Yarnell 1978). During the Late Prehistoric period, marshelder was cultivated by western Kentucky Mississippian groups, but apparently not by central Kentucky Fort Ancient people (Edging 1995; Rossen and Edging 1987). Marshelder is absent from most Fort Ancient sites. The single seed, from Feature 1 (late component) measures only 3.5 mm in length. In the Yarnell scale (1978:292-293), the seed falls well within the range of wild specimens and far below the minimum size of 6.3 mm expected for cultivated specimens. Two marshelder seeds of similar small size to the Howard site specimen (3.5 and 3.7 mm) were recovered from Fort Ancient deposits at the Dry Branch Creek site in Mercer County (Rossen 2005). It appears that though not cultivated by Fort Ancient people, a small amount of wild marshelder was collected and utilized.

Wild plant seeds

Wild plant seeds represent a collecting component of Fort Ancient subsistence that emphasized fleshy fruits and medicinal plants (Tables 8.3 and 8.4). All have been previously recovered from Fort Ancient sites. They are discussed in order of frequency in the collection.

Bayberry (*Myrica pensylvanicum*, n=13) berries were recovered from four Feature 1 samples (late component). The plant has various medicinal uses, such as for an astrigent to combat diarrhea and colitis, and to fight colds and flu. Its presence at the Howard site and the Dry Branch Creek site (Rossen 2005) suggests an economic use for this plant.

Sumac (*Rhus* sp., n=3) was recovered from a Feature 1 sample (late component). A bush or small tree that produces edible berries, sumac is best-known for its prehistoric use in a high Vitamin C tea, although it is a high energy food source and medicinal plant as well (Gilmore 1931:47-48; Vogel 1982:378). The berries were often dried for storage (Swanton 1946:606). It also may have been used as a flavoring for the hickory nut soup described above (Cowan 1979:9). Sumac appears in many southeastern United States Woodland period sites in low to moderate frequency (Lopinot 1982, 1988; Rossen n.d.a.; Wymer 1990). Many Fort Ancient sites such as Fox Farm (Mason County) and Capitol View (Franklin County) have yielded high frequencies of sumac seeds (Henderson 1992; Rossen 1992; Wagner 1987). Based on these data, it appears sumac gained importance in central and eastern Kentucky during the Fort Ancient period, when it may have been a protected or encouraged plant (Rossen 1992:196-199).

Bedstraw (*Galium* sp., n=7) was recovered from two Feature 1 samples (one early and one late component). *Galium* is one of the largest and most diverse plant genera of North America. Some archaeobotanists consider the persistent presence of bedstraw in the archaeological record to represent accidental inclusions, because the seeds readily stick to clothing and hair (Asch et al. 1972). Bedstraw has now been recovered in low frequencies at many Kentucky sites (cf. Rossen 1992:194). More notable are the high bedstraw frequencies at sites such as in the multicomponent deposits at Site 15SP26 (Spencer County) (Dunn 1984), the Late Woodland contexts at Dreaming Creek (Madison County), and the Fort Ancient contexts at Capitol View (Franklin County) (Henderson 1992; Rossen n.d.b.). In the latter case, bedstraw was recovered in distinctive spatial distributions inside houses (Rossen n.d.b.). As the archaeological occurrences proliferate, it becomes clear that bedstraw must be viewed as a prehistoric economic plant of considerable importance. As its name suggests, bedstraw could be used as bedding material, as suggested by its spatial distribution at Capitol View (Rossen n.d.b.). The plant may also be eaten in salads and used as a dye. In other regions of the United States, the plant was historically used as a diuretic by the Ojibwa and a perfume among the Omaha and Ponca (Gilmore 1931:63).

Knotweed (*Polygonum* sp., n=1) and Smartweed (*Polygonum* sp., n=1) were recovered from two Feature 1 samples (late components for knotweed and early component for smartweed). Both are weedy disturbed land annuals that produce edible seeds. In should be noted, however, that *Polygonum* is a large, diverse genus, and identification to species is difficult. One variety of knotweed (*P. erectum*) was cultivated during Woodland times for its starchy seeds, but the specimen from the Howard site does not represent the cultivated variety. The knotweed specimen does resemble *P. punctatum* or *P. convulvu,* and the The smartweed specimen resembles *P. densiflorum*.

Several fleshy fruits, such as grape (*Vitis* sp., n=8), cherry (*Prunus* sp., n=1), plum (*Prunus americana*, n=1), blackberry/raspberry (*Rubus* sp., n=1), and pawpaw (*Asimina triloba*, n=1), were recovered from the Howard site (Tables 8.3 and 8.4). Wild grape, cherry, and plum were commonly used foods, either eaten fresh seasonally or fire-dried for storage (Bartram 1955[1791]:321). Blackberry and raspberry, impossible to distinguish from their carbonized seeds, also were commonly eaten and stored. Pawpaw is a fruit-bearing bush or understory tree that grows in damp, shady habitats and produces a large edible fruit with a creamy texture. Fort Ancient sites often exhibit a substantial fleshy fruit wild plant collecting component, in contrast with neighboring Mississippian sites, where these seeds are less common (Rossen 1992).

Verbena (*Verbena* sp., n=2) was recovered from a Feature 1 sample (late component). This is a medicinal plant recorded ethnographically throughout the Eastern Woodlands, given for stomach cramps, worms, and diarrhea (Herrick 1995: 205).

DISCUSSION

Fort Ancient plant use is now generally well-understood. In Kentucky alone, at least 16 major Fort Ancient plant assemblages representing 4,500 liters of soil samples have been analyzed (Rossen 1992, 1993, 1995). From these assemblages, it appears that, once established by the eleventh or twelfth centuries, the Fort Ancient plant use system was fairly consistent and stable until the eighteenth century (Rossen 1992, 1993). Classic Fort Ancient plant use was based on the farming of eight row "Eastern Eight" corn, a variety marked by its signature eight rows (sometimes ten rows) of kernels, square cob cross-section, and open cupules. *Phaseolus* beans were heavily used by Fort Ancient peoples in contrast to their Middle Mississippian contemporaries to the west who apparently rejected beans (Riley et al. 1990; Rossen and Edging 1987). Kentucky Fort Ancient sites also are usually marked by a conspicuous absence of the starchy and oily seeded native cultigens (with the notable exception of chenopod [*Chenopodium berlandieri*]), and usually contain markedly low nutshell densities (Rossen 1992; Rossen and Edging 1987). These archaeobotanical patterns are all notable for their consistency and repetition throughout the Fort Ancient territory (Rossen 1992; Rossen and Edging 1987; Wagner 1987).

The Howard site displays the familiar Fort Ancient plant use pattern with a few interesting traits that may reflect local variation in plant use or, more likely, the contextual biases of the collection. The unusually high nutshell density may reflect a site where nuts were a more important common component of the diet than at other Fort Ancient sites. It also might represent the limited number of pit features analyzed coupled with an absence of analyzed midden samples. The presence of common beans only in late component samples fuels speculation about the debate surrounding the date of introduction of beans to the eastern United States, either at ca A.D. 1000 or ca. A.D. 1300 (Hart and Scarry 1999), but it should be remembered that the early component is represented by only two samples (20 liters).

There are early Fort Ancient sites in Kentucky like Dry Branch Creek (Mercer County) and Old Springs (15Fr20) (Franklin County) that have not yielded common beans. The early Fort Ancient Muir site (Jessamine County), however, did yield beans associated with eleventh century dates that are undergoing further evaluation. It may be that common beans were differentially adopted by early Fort Ancient peoples and spread in popularity during middle Fort Ancient times. At the Howard site, contextual bias in the sample also is supported by unusually high corn densities in the late component and low corn densities in the early component.

The presence of one marshelder seed is interesting in that native cultigens besides chenopod appear only sporadically in Fort Ancient sites. Yet these irregular appearances are beginning to suggest a minor use of these plants, if only as holdovers from Woodland times or as minor wild collected plants. The Howard site marshelder specimen is similar to two undersized specimens recovered from the Dry Branch Creek site, suggesting these were collected wild. Dry Branch Creek also had a single specimen of maygrass (*Phalaris caroliniana*) and the early Fort Ancient Muir site contained erect

knotweed (*Polygonum erectum*), possibly as a holdover of Woodland plant cultivation practices that would soon disappear. These occasional appearances of the starchy-oily seeded native cultigens are worth documenting carefully in future Fort Ancient archaeobotanical studies.

A final interesting story in this collection is the wood charcoal profile, which is the second archaeobotanical collection from Madison County (along with Dreaming Creek) to contain a wide variety of wood species, but lacking a dominating tree species. This Outer Bluegrass county may have had notably different forests than the nearby Inner Bluegrass, where archaeobotanical evidence suggests oaks and hickories comprised as much as 80 percent of the local forests. Madison County lies near the environmental dividing point between the oak-hickory forests of the Inner Bluegrass and the more diverse co-dominant forests of the Outer Bluegrass. Future collections from Outer Bluegrass sites may shed further light on this issue of environmental reconstruction.

CHAPTER 9:
FAUNAL REMAINS

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INTRODUCTION

Fort Ancient groups are thought to have maintained a high animal resource breadth and relatively focal to moderately high spatial breadth (Breitburg 1988, 1992, 2002; Colburn and White 1993). Wapiti (elk), deer, black bear, and wild turkey obtained from forest edge margins, open woodlands, and interior forests along the Ohio River and its tributary streams constitute the most essential components of a subsistence economy that focused on the hunting of large meat-bearing mammals. These animal resources were supplemented by the hunting of a variety of smaller mammals and reptiles, the collecting of mollusks, and fishing. In the following discussions the methods and objectives used to analyze the Howard site faunal sample are presented, the faunal assemblage is described, and animal procurement strategies identified at the Howard site are related to what is known about the Fort Ancient animal procurement strategies and exploitation of the prehistoric landscape.

The methods employed to analyze the faunal remains involved the classification of each specimen as identifiable or indeterminate mammal, bird, reptile, amphibian, fish or shell. When possible each specimen was identified to species, anatomical portion of the element and side, and observed for butchering evidence or other types of natural and cultural modification. The data gathered during this phase of the analysis were entered in a Microsoft Excel spreadsheet (on file at the KAS, University of Kentucky, Lexington) of faunal remains organized by laboratory bag number, provenience, cultural component, level and taxa. The information contained in the inventory was employed to generate tables of the frequency of skeletal portions for each skeletal category.

The tables for the frequency of skeletal remains were employed to determine the skeletal composition for each represented taxon, and the minimum number of individuals (MNI) represented for each identified species. Additional information noted during this part of the analysis included the number of burned, cut and/or modified specimens associated with each category. Subsequently, MNI determinations (White 1953) for each edible species were calculated to elicit the similarities and differences in taxa and faunal utilization between early and late Fort Ancient components.

Additional objectives of faunal analysis are oriented toward establishing site-specific models of animal utilization, butchering strategies and bone implement manufacture and use. While a model of animal utilization is presented, one should be alerted to the potential biases that may affect the outcome of the analysis, particularly those of small sample size and taphonomic condition of the faunal remains. Given the condition of the bone and the location of the site, animal resource representation and use

biases should be expected. Moreover, the present sample and fragmentary nature of the material does not allow for the reconstruction of butchering techniques or the use of bone elements for manufacturing purposes. Only seven cut bones and 25 specimens of modified bone and shell provide some information as to the types of elements treated during the butchering process or the bones and shell used for manufacturing utilitarian and nonutilitarian objects, respectively.

SKELETAL AND TAXONOMIC ASSOCIATION AND COMPOSITION

A total of 1,115 specimens accounts for 43 individuals and, excluding two human bone fragments representing an adult individual, a total of 17 taxa that include nine mammals, one bird, one reptile, one fish, and at least three freshwater bivalves, one marine snail, and more than two terrestrial snail taxa (Table 9.1). Most of the remains are associated with Features 1 and 2 and have been divided according to component association. A summary of the distribution of faunal remains is presented in Table 9.1. Of the 1,115 specimens of vertebrate and invertebrate species, about 13 percent (n=142, MNI=9) is associated with the early Fort Ancient component, about 71 percent (n=793, MNI=36) the late Fort Ancient component, and about 16 percent (n=180, MNI=10) was classified indeterminate component.

The entire sample of early, late and indeterminate Fort Ancient components consists of 261 (ca. 23 percent) identifiable specimens of which 55 percent (n=614) are burned, one is cut, and about two percent (n=25) are modified. Of the 142 specimens associated with early Fort Ancient deposits, 20 percent (n=28) is identifiable, 73 percent (n=104) is burnt, one specimen is cut and no specimens show evidence of modification. In contrast, the late Fort Ancient deposits account for the majority of the material (71 percent or 793 specimens). Twenty-six percent or 202 specimens are identifiable, 49 percent or 365 specimens show evidence of heat damage, five specimens are cut , and less than four percent (n=21) show evidence of modification. Finally, of 180 specimens associated with indeterminate Fort Ancient period deposits, 17 percent or 30 specimens are identifiable to species, 70 percent or 180 specimens are burned, one specimen is cut, and three specimens show signs of modification.

Given the rather small sample of faunal remains, it is neither prudent nor possible to present a clear picture of the differences between early and late Fort Ancient subsistence practices. Therefore, the following discussions focus on the sample as representing a generalized picture of the animals exploited by the site's inhabitants.

ACCOUNTS OF SPECIES

Mammals identified to species include white-tailed deer, striped skunk, raccoon, black bear, gray wolf, possibly vole or field mouse, gray and fox squirrels, and woodchuck (Table 9.2). The identified avifauna, reptile, and fish include wild turkey, eastern box turtle, and catfish family, respectively. Three freshwater mussels present

Table 9.1. Summary of Howard Site Faunal Remains.

Taxon	Totals					Early Fort Ancient					Late Fort Ancient					Unaffiliated Deposits				
	Count	**MNI**	**B**	**C**	**M**	**Count**	**MNI**	**B**	**C**	**M**	**Count**	**MNI**	**B**	**C**	**M**	**Count**	**MNI**	**B**	**C**	**M**
Totals	1115	43	614	7	25	142	9	104	1	0	793	36	385	5	22	180	10	125	1	3
Mammals																				
Human, *Homo sapien,*	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0
White-tailed deer, *Odocoileus virginianus,*	111	3	25	5	6	15	1	7	0	0	77	3	13	4	6	19	2	5	0	0
Striped skunk, *Mephitis mephitis*	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Raccoon, *Procyon lotor*	2	1	0	1	0	1	1	0	1	0	1	1	0	0	0	0	0	0	1	0
Gray wolf, *Canis lupu,*	3	1	0	1	0	1	1	0	0	0	2	1	0	1	0	0	0	0	0	0
Black bear, *Ursus americanus*	4	1	1	0	0	3	1	1	0	0	0	0	0	0	0	1	1	0	0	0
Microtine	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Fox squirrel, *Sciurus niger*	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Gray squirrel, *Sciurus carolinensis*	5	1	1	0	0	0	0	0	0	0	5	1	1	0	0	0	0	0	0	0
Woodchuck, *Marmota monax*	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Unidentified Large mammal	622	0	445	0	7	88	0	82	0	0	401	0	252	0	6	133	0	111	0	1
Unidentified Mammal	23	0	15	0	0	7	0	6	0	0	9	0	5	0	0	7	0	4	0	0
Unidentified Small mammal	14	0	2	0	0	2	0	1	0	0	12	0	1	0	0	0	0	0	0	0
Unidentified Small mammal/bird	10	0	4	0	0	0	0	0	0	0	10	0	4	0	0	0	0	0	0	0
Birds																				
Turkey, *Meleagris gallopavo*	6	1	0	0	0	2	1	0	0	0	4	1	0	0	0	0	0	0	0	0
Large bird	21	0	13	0	1	2	0	2	0	0	17	0	9	0	0	2	1	2	0	1
Unidentified Bird	53	0	24	0	1	3	0	1	0	0	50	0	23	0	1	0	0	0	0	0
Repitles																				
Box turtle, *Terrapene carolina*	107	4	31	0	8	4	1	1	0	0	96	4	28	0	7	7	1	2	0	1
Turtle	22	0	18	0	1	1	0	0	0	0	20	0	18	0	1	1	0	0	0	0
Fish																				
Ictaluridae, Catfish family	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Unidentified Fish	2	0	1	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
Miscellaneous unidentified vertebrate	55	0	29	0	0	9	0	3	0	0	44	0	26	0	0	2	0	0	0	0
Molluscs																				
Mucket, *Actinonaias carinata*	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Spike, *Elliptio dilatatus*	3	2	0	0	0	1	1	0	0	0	2	1	0	0	0	0	0	0	0	0
Pocketbook, *Lampsilis ovata*	2	1	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
Freshwater bivalve	22	1	5	0	0	2	1	0	0	0	17	1	4	0	0	3	1	1	0	0
Common marginella, *Prunum apicinum,*	1	1	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
Anguispira alternate	9	9	0	0	0	1	1	0	0	0	7	7	0	0	0	1	1	0	0	0
Terrestrial snail	10	10	0	0	0	0	0	0	0	0	8	8	0	0	0	2	2	0	0	0

MNI, minimum number of individuals; B, burned; C, cut; M, modified

include mucket, spike, and pocketbook. One modified marine snail represents *Prunum apicinum* or common marginella. The ensuing discussions elaborate further on the species present and other information that is relevant to understanding the faunal sample.

Mammals

The mammal class (n=798) sample is composed of 111 identifiable specimens (ca. 43 percent) representing relatively mature white-tailed deer. A minimum of three individuals is represented by the recovery of a similar number of relatively complete or fragmented maxillary first molars. The remaining 57 percent of the identifiable mammal bone represents eight additional taxa. These species, along with deer, represent mammals (Barbour and Davis 1974; Burt and Grossenheider 1976) typical of a mixed mesophytic forest region (Braun 1950; Shelford 1963). The species present include skunk, raccoon, gray wolf, black bear, gray and fox squirrels, vole or mouse species, and woodchuck, or species more commonly associated with forested and semiforested habitats. Each of the latter is represented by five or less elements.

White-tailed deer dominate the mammal sample by specimen count and number of individuals (Table 9.1). Antler, cranial, mandibular and dental remains account for about 37 percent (n=41) of the deer sample, and axial vertebral and costal elements about nine percent (n=10). Forequarter scapula, humerus, radius, metacarpus, and carpus elements (ca 16 percent; n=18), and hindquarter innominate, femur, tibia, tarsal, and metatarsal elements (28 percent; n=31) are present in significantly different portions. Miscellaneous metapodial, phalanx, and sesamoid bones represent about 10 percent (n=11) of the deer bone sample.

About 23 percent (n=25) of the deer bone was subjected to differing degrees of heat, ranging from surface charring to complete calcination. Modified specimens produced by human manufacturing processes and use or handling consist of six specimens, while five of the specimens exhibit cut marks associated with carcass preparation or consumption appear on less than five percent of the vertebrate sample.

As noted, cut and modified bones are relatively rare to the sample. Evidence of the treatment of a deer during the butchering process involved disarticulating the carcass by applying transverse cuts to the ventral side of the axis vertebra to remove the head, across the posterior fossa of the humerus to separate the front leg at the ‘elbow,’ and distal metatarsal trochlea to remove the toes, respectively. These latter cuts appear on one specimen each. Also occurring on one specimen each are cuts along the shafts of a humerus and femur. These cuts indicate the elements were defleshed.

Six, and one possible, modified deer bones provide a somewhat limited view of the implements made from antler and other long bones used for utilitarian purposes. All of the specimens are associated with the late Fort Ancient component. One tine tip fragment probably represents the working end of a chert-working tool. Another specimen of antler shows scraping striations suggesting smoothing of the surface to fashion an unknown implement. The third specimen includes a polished jaw fragment of

indeterminate use or purpose. The fourth modified specimen is a distal femur portion exhibiting polish. Finally, three fragments or portions of beamers fashioned from metatarsal elements account for the remaining modified deer bone. Beamers are very common to Fort Ancient sites and were most likely employed like a drawknife or scraping tool in the processing the hides of larger mammals such as deer, gray wolf, or black bear.

Black bear is the second most important game mammal present. The animal is represented by one wrist, one ankle and two metapodial specimens. All of the elements are associated with early Fort Ancient deposits. Based on the presence of the latter elements at least one individual is present.

A third large mammal identified to be present includes the gray wolf. A left mandibular third premolar and a right ramus fragment are associated with late Fort Ancient deposits and one right mandibular first molar is associated with early Fort Ancient deposits. At least one individual is present, and possibly two, if component associations are considered in calculating MNI.

Collectively, the remains of other mammals (skunk, raccoon, vole, gray and fox squirrels, and woodchuck) point to a relatively diverse hunting pattern of smaller mammals as a source of meat, fur, and bone. Of these mammals, one raccoon element exhibits a cut mark. The cut appears on the anterior side and across the fossa of a distal humerus shaft. The cut implies that raccoons were partitioned, in part, by cutting through the bend of the 'elbow' to release the lower from the upper part of the forelimb.

Birds, Reptiles, Fishes, Mussels, and Gastropods

While bird, reptile, fish, and mollusc remains are somewhat scarce, the presence of these taxa certainly suggests that these animals were taken. Wild turkey bones appear in both early and late Fort Ancient deposits. The presence of 21 additional specimens of large indeterminate birds most likely also represents this species. At least one individual is associated with each component.

Box turtle remains appear in both components, but most of them are associated with the late component (96 of 107 specimens). Eight specimens show scraping, abrasion, or polish from manufacture and/or use of carapaces as cups, bowls, or rattles. One complete carapace is associated with the late component. The specimen exhibits exterior polish from use, and the interior neural arches have been reduced by scraping and scoring procedures. Six additional carapace fragments show either exterior or interior polish. One humerus is polished. The other 22 specimens of indeterminate turtle bones are also in all probability box turtle. The presence of the species at Fort Ancient sites is common and the use of the carapace for utilitarian or non-utilitarian use is also common.

One craniofacial fragment of a catfish is identifiable at least to family (Ictaluridae). Two other fragments of indeterminate fish are present. The small number of

fish remains suggests little use of fish. Both components produce evidence of freshwater mussels. Each of the species represented in both components include mucket, spike, and pocketbook. Besides being a source of some nutrients, mussels may have been used as spoons, digging tools, or for shell tempering of ceramic vessels.

While turkeys may have been obtained throughout the year, reptiles, fishes and mussels were more likely acquired during the warmer months, lasting from the spring to late fall. Mussel collection would also coincide with the period of the year when water levels were lowest and mussel habitats easiest to collect.

In addition to modified mammal and bird bone, one specimen of marine gastropod is associated with the late Fort Ancient Feature 2 deposits. Although never appearing in great quantities at Fort Ancient sites, Griffin (1966) reported that they are present at many of the sites. The presence of a single common marginella bead implies that the inhabitants at this Fort Ancient site were part of a larger trade network that may have reached to the southeastern coast of the United States or to the coastal areas of the Gulf of Mexico.

CONCLUSION

The small sample of faunal remains recovered from the Howard site allowed for a limited view of the array of animal species that may have been exploited by the site's inhabitants. Analysis of these remains, however, was able to identify some general trends in the types of animal resources used, the habitats frequented to obtain these animals, the seasons when animal procurement activities would have been conducted, and the use of modified faunal remains in domestic and ritual activities. The focus of hunting activity was centered on white-tailed deer, black bear, turkey, and to a lesser extent, small mammals. The only large mammal, which is present in most Fort Ancient assemblages, that is absent is elk (wapiti). The absence of wapiti remains at the Howard site is probably due to sample size. The paucity of aquatic and semiaquatic resources (i.e., migratory avifauna, fish, and mussels) at Howard and other Fort Ancient sites, suggests that the residents of these communities were engaged in a procurement strategy that focused on terrestrial vertebrates.

Though a variety of animals were consumed, white-tailed deer, and black bear because of their size provided most of the meat. The Howard site animal resource breadth value (2.85) is somewhat lower than the average econiche breadth value (3.68) for Fort Ancient sites. This again is a reflection of sample size, and does not appear to point to intersite variation in animal exploitation patterns.

The Howard site's spatial breadth (2.17) exceeds the average value (1.99) for Fort Ancient sites. This suggests that the site's inhabitant exploited a more diverse environment than residents of other Fort Ancient communities. Situated in the Outer Bluegrass, between the southern edge of the Inner Bluegrass and the eastern edge of the

Cumberland Plateau, the residents of the Howard site were in an ideal position to exploit the open areas of the Inner Bluegrass and the forested areas of the Cumberland Plateau.

Seasonality of procurement suggests a strong fall through winter procurement strategy that concentrated on deer, bear and turkey. During the spring and summer reptiles, fish, and possibly mussels would have supplemented their diet.

Modified animal bones were used for both domestic activities and perhaps rituals. The presence of beamers, points to the process of hides, while the recovery of turtle shell cups and rattles, points to their use as serving vessels and in religious ceremonies. The presence of a single marine snail bead points to the personal and ritual use of nonlocal goods.

CHAPTER 10:
RESULTS OF SURVEY AND EXCAVATION

SITE DESCRIPTION

Site Type:	Open habitation without mounds
UTM Coordinates:	N 4173705; E 739775
Elevation:	298.7 m amsl
Physiography:	Dissected Uplands
Slope:	2-6% (southern aspect)
Soil Type:	Shelby-Mercer-Nicholson
Proximity to Water:	110 m
Visibility:	Good
Dimensions:	178 by 142 m (25,276 m²)

The Howard site (15Ma427) is an open habitation site located on a ridgetop and rolling sideslopes overlooking an unnamed tributary of Hart's Fork, located 110 m to the south. The site is situated at an elevation of 298.7 m above mean sea level AMSL, providing a clear view of the surrounding landscape, in particular to the south and west. The dimensions of the Howard site's fenced-in (preserved) area are 178 m north-south by 142 m east-west, encompassing 25,276 m² (approximately 2.5 ha).

Based on the initial examination of plow strip furrows, Arnold (2006) characterized Howard as a multicomponent, open habitation site with possible occupations during Woodland, Late Prehistoric (Fort Ancient), and historic times. This was based on the recovery of two limestone tempered cordmarked ceramic body sherds, which suggested to Arnold that the site was occupied during the Woodland period. A Fort Ancient occupation was indicated by the presence of two plain and two cordmarked shell tempered body sherds, and two small triangular projectile points. The recovery of pearlware, redware, whiteware, amethyst glass, a porcelain doll fragment, wire, and a piece of cinder was thought to represent the remains of a mid-nineteenth to early-twentieth century refuse site (Arnold 2006). Although intact prehistoric cultural deposits were not encountered, based on the recovery of prehistoric and historic diagnostic artifacts, Arnold (2006) recommended that the Howard site be avoided and preserved in place or be subjected to Phase II investigations to determine its eligibility for listing in the National Register of Historic Places.

In April and May of 2006, additional work was undertaken at the Howard site by archaeologists from the Kentucky Archaeological Survey. The goal of this study was to determine if the Howard site contained significant archaeological deposits. KAS's initial work at the site, consisted of a controlled surface collection. This involved a systematic reexamination of the plow strip furrows initially examined by Arnold (2006). Based on the results of the surface collection, several concentrations of materials were identified. Four concentrations were subjected to more intensive investigation in the form of hand excavated units. This resulted in 19 units that encompassed 38 m^2 being excavated by

hand. Mechanical equipment also was used to remove the plowzone from an area measuring 8 x 3 m.

During the course of this project, KAS archaeologists confirmed the presence of not one, but two Fort Ancient components. Intact subplowzone deposits were associated with both components. The limestone tempered ceramics that Arnold had assigned to Woodland period were found in direct association with early Fort Ancient shell tempered ceramics, subsistence remains, and a radiocarbon date. Based on these associations they were assigned to the early Fort Ancient component. The recovery of several Jack's Reef projectile points, however, is suggestive of a terminal Late Woodland component. It is also quite possible that these types of points continued to be manufactured and used well into early Fort Ancient times. No evidence of a substantial or significant Historic period component was documented at the Howard site.

AREAS

Examination of the distribution of artifacts within the plowed strips led to the identification of several concentrations of ceramics, chipped stone tools, debitage, and animal bone. During their visit they recorded the location of individual artifacts as well as clusters of artifacts. They also noted the presence of a large number of ceramics, chipped stone tools, and small quantities of animal bone. An examination of the distribution of these materials resulted in the identification of four distinct concentrations of artifacts (areas A-D) surrounding an open area that was relatively devoid of cultural materials (Figure 10.1).

Area A was located in the south-central and southeastern portions of the site. The dimensions of this area measured 117 m northeast-southwest by 33 m northwest-southeast (Figures 10.1 and 10.2). The area was defined by a dense surface concentration of lithic debitage and moderate concentration of ceramic sherds. Two bifaces and both aboriginal gunflints also were recovered from Area A.

Area B was located in the western section of the site, measuring 69 m north-south by 27 m east-west (Figures 10.1 and 10.2). This area was delineated by moderate surface concentrations of lithic debitage and ceramic sherds.

Area C, positioned in the site's northwestern portion measured only 21 m north-south by 20 m east-west (Figures 10.1 and 10.2). However, a dense surface concentration of ceramic sherds and lithic debitage was documented in this area. In addition, a triangular projectile point and a biface also were recovered from this area.

Area D was situated in the site's northeastern sector. This area measured 76 m north-south by 18 m east-west (Figures 10.1 and 10.2) and yielded moderate to heavy surface concentrations of ceramic sherds and lithic debitage. Several triangular projectile points and a biface were recovered from Area D. In addition, the drills/perforators recovered from this area appear to have been utilized in a specialized activity area.

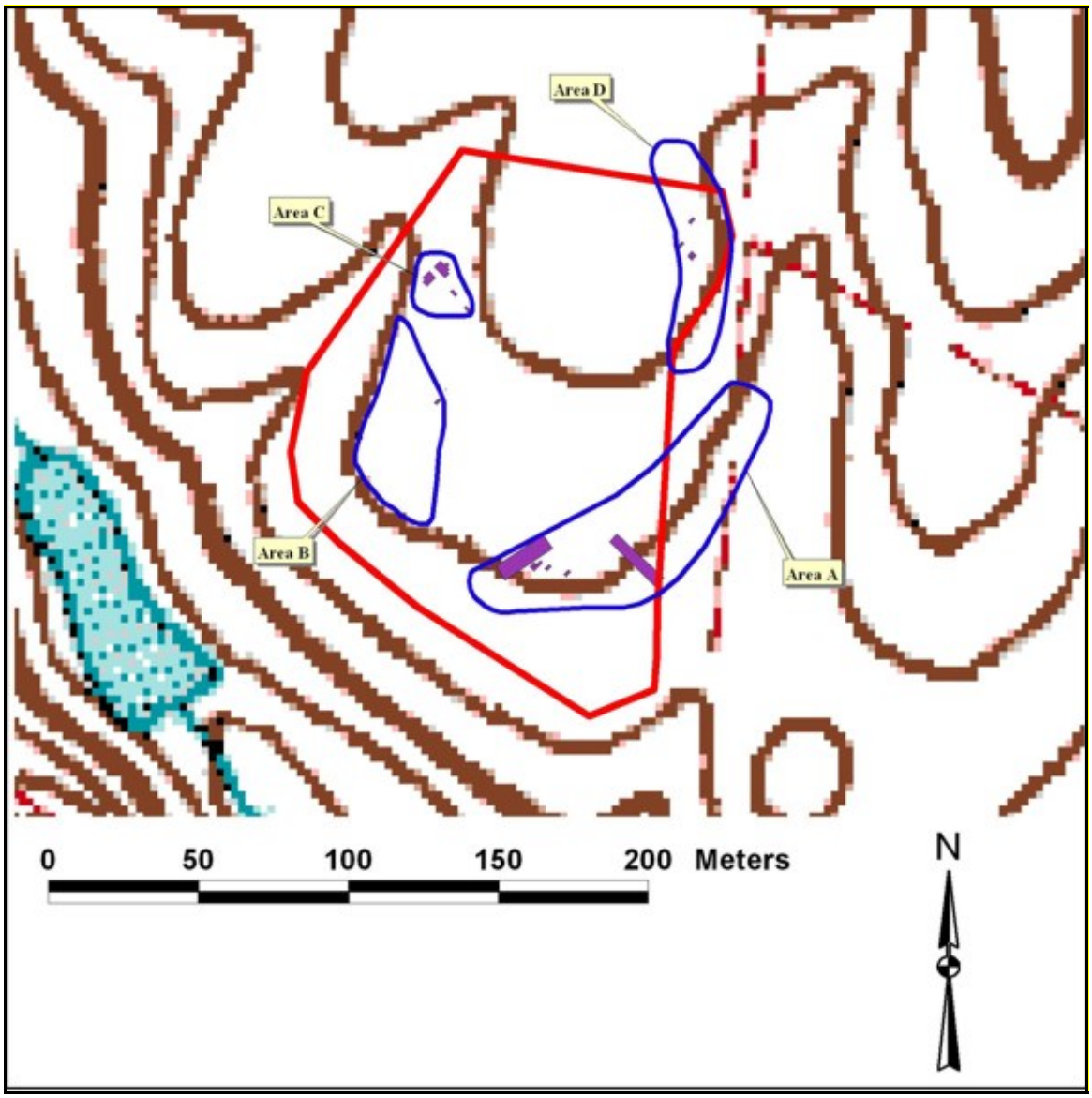


Figure 10.1: Howard Site: Areas A-D.

Excavation units were placed in areas A-D. Though the number and size of the units varied by each area, at least 2 m^2 was excavated in each area, with 53m^2 being excavated.

Area A - Units 1, 2, 4, 6, 9, 20, and 22 (Figure 10.1)

This area consisted of a surface concentration of late Fort Ancient ceramics and chipped stone tools associated with dark organically enriched soils. Within this area, which measured 117 by 33 m, seven 1 x 2 m units were excavated. The stratigraphic profile consisted of a dark brown (10YR3/3) silty loam plowzone (Zone I) that ranged in thickness from 30 to 37 cm. A dark yellowish-brown (10YR3/4) silty clay subsoil (Zone

II) was encountered below the plowzone (Figure 10.3). The plowzone/subsoil transition was not very distinct in this area and consisted of a 5 to 8 cm thick mottled zone. The presence of this transitional zone points to a period of deep plowing, followed by a period of much shallower plowing, which has resulted in the leaching of organics from the lower portions of the plowzone. While no pit features were documented in Area A, a possible posthole was noted in the northern portion of Unit 9.

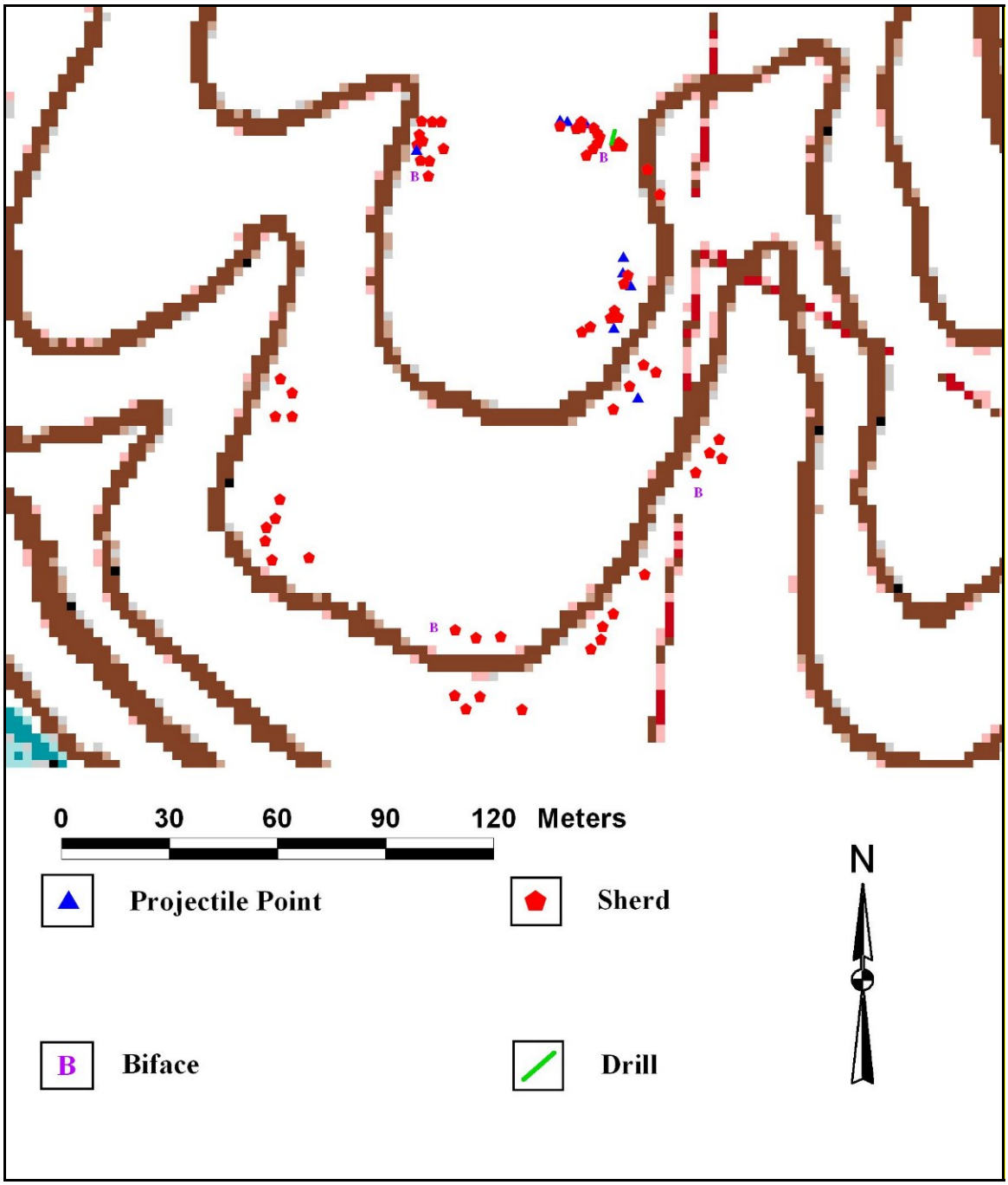


Figure 10.2: Piece Plotted Artifacts.

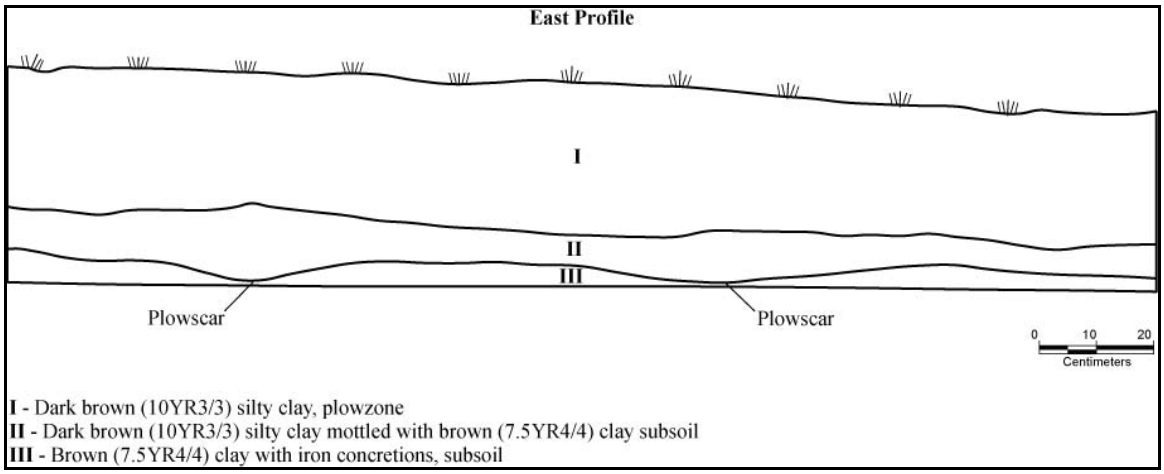


Figure 10.3. East Profile of Unit 1.

Heavy equipment was used to remove the plowzone from an 8 x 3 m block within Area A. Because of the wet conditions, the bulldozer could not make a clean cut without sinking into the moist subsoil. Due to these conditions, and because intact subplowzone deposits were documented in other areas of the site, the decision was made to discontinue the use of heavy equipment to mechanically remove the plowzone from this or other areas.

Posthole

The possible posthole documented in Unit 9 had a diameter of 19 cm. It was encountered at a depth of 30 cm below ground surface and extended an additional 8 cm into the subsoil. The fill consisted of dark grayish brown (10YR4/2) silt loam mottled with wood charcoal.

Cultural Materials

Cultural materials recovered from Area A consisted of both prehistoric and historic artifacts. Prehistoric materials were recovered from the surface and units, while all of the historic artifacts were recovered from units (Table 10.1). Prehistoric chipped stone tools recovered from Area A consisted of Jack's Reef Cluster points, Type 2, Type 4 and Type 5 Fine Triangular points, bifaces and biface fragments, informal chipped stone tools, and unifacial and bifacial endscrapers (Table 10.1). A couple of Native American gunflints also were recovered from this area. The Late Prehistoric ceramics recovered from Area A consisted of Jessamine and Madisonville Series sherds (Table 10.1). Historic artifacts consisted of a blue glass bead (Figure 6.7), a rolled copper bead (Figure 6.7), a fragment of burned window glass, and a sherd of undecorated pearlware (Table 10.1). Several fragments of mica also were recovered from Area A.

Most of the identifiable faunal remains recovered from Area A consisted of white-tailed deer, box turtle, and a mussel shell. One of the turtle carapaces exhibited interior scraping and polishing, suggesting that it had been used as a container.

Of note was the recovery of a human long bone fragment and a human cranial bone from Area A. The recovery of these skeletal elements points to the presence of human burials at this site.

Early Fort Ancient use of this portion of the site in reflected by the presence of a few Jessamine series sherds and Type 2 Fine Triangular projectile points (Table 10.1). The Jessamine series ceramics from Area A consisted of three Jessamine Cordmarked and two Jessamine Plain sherds. While the latter were body sherds, the former consisted of a thick strap handle and two rim sherds, which had orifice diameters of 10 and 14 cm, respectively. Two parallel incised lines were present 7.2 mm below the lip of the smaller jar. They were oriented at a slight angle to the lip.

Though the presence of the Jack's Reef Cluster points could indicate earlier Late Woodland use of this locality, as previously noted it is also quite possible that these points continued to be manufactured and used into early Fort Ancient times. Support for this suggestion comes from a Jack's Reef Corner Notched point recovered from Zone III in Feature 1 (see below).

Late Fort Ancient use of this area is reflected by the presence of Madisonville Plain ceramics, Type 4 triangular project points, and a large number of unifacial and bifacial endscrapers. Among the Madisonville Plain ceramics was four Madisonville Plain rim sherds. A thin strap handle had been attached 1.4 cm below the lip of one these rims (Figure 6.3h). This rim had an orifice diameter of 20 cm. The orifice diameters of the other rims could not be determined. Two other detached strap handle fragments were recovered from Area A, and a single row of punctuations was observed at the rim/neck juncture of another sherd.

Almost seventy percent of the unifacial and bifacial endscrapers recovered from the Howard site were found in Area A. This suggests that this area may have been used for hide or plant processing, as these types of tools are known to have been used for a variety of functions.

The blue glass and the rolled copper bead, as well as the Native American gunflints recovered from Area A point to use of at least this portion of the Howard site during the Contact period. The other historic artifacts postdate this occupation.

As with the Historic trade goods, the presence of the mica, points to the site's inhabitants participation in long distance exchange networks. That there is little evidence of this interaction during the early Fort Ancient subperiod throughout central Kentucky, it is quite likely that the mica is associated with the Howard site's late Fort Ancient component.

Though the animal remains recovered from this area could not be assigned to a specific Fort Ancient component, the human remains undoubtedly are associated with the site's late Fort Ancient component. Unlike early Fort Ancient groups who did not inter

their dead within their villages, this was a common practice of late Fort Ancient groups. For this reason the recovered human skeletal remains are suggestive of the presence of late Fort Ancient cemeteries at the Howard site.

Table 10.1. Materials Recovered From Area A.

Cultural Materials	Surface	Units	Total
Ceramics			
Madisonville Plain	2	16	18
Madisonville Cordmarked		1	1
Jessamine Plain	2	1	3
Jessamine Cordmarked		2	2
Less then 4 cm^2	43	308	351
Fired Clay		3	3
Total	47	330	378
Chipped Stone			
Debitage	36	2,855	2,891
Biface/Biface Fragments	9	19	28
Informal Tools	2	2	4
Uniface and Bifacial	5	4	9
Cores/Fragments	1	6	7
Projectile Points			
Frags	1	6	7
Type 2	1	0	1
Type 4	2	2	4
Type 5		3	3
Jack's Reef Pent or Corner	1	2	3
Total	58	2,899	2,957
Historic Materials			
Window Glass, burned		1	1
Pearlware, undecorated		1	1
Bead, glass		1	1
Bead, copper		1	1
Total		4	4
Faunal Remains	3	126	129
Botanical Remains	0	0	0
Grand Total	108	3,364	3,472

Area B (Unit 13) (Figure 10.1)

This concentration of Fort Ancient materials measured 67 by 27 m. It consisted of chert debitage, Late Prehistoric ceramic sherds and a biface, but was not as dense as Area A. Nor was the soil as organically enriched as Area A.

Only one 1 x 2 m unit (Unit 13) was excavated in Area B, and no subsurface features were documented in this unit. The stratigraphic profile in this area consisted of a dark brown (10YR3/3) silty loam plowzone (Zone I) to a depth of 45 cm below ground surface (Figure 10.4). Dark yellowish-brown (10YR4/6) clay subsoil (Zone II) was encountered at the base of the plowzone.

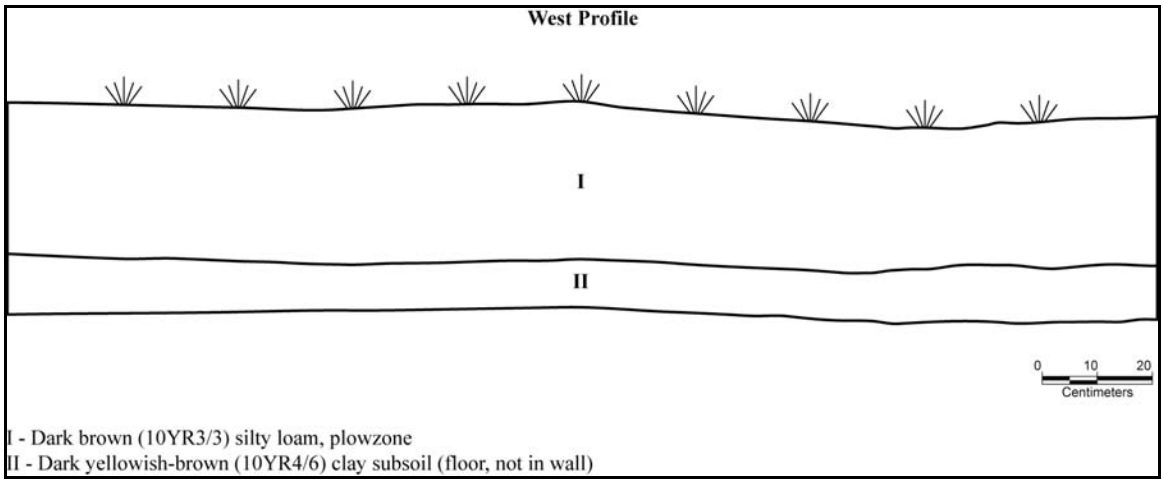


Figure 10.4. Unit 13 West Wall Profile.

Cultural Materials

The only diagnostics recovered from this area were three Jessamine Series sherds, a Madisonville Plain sherd, and a Type 4 Fine Triangular (Table 10.2). Two fragments of triangular projectile points also were recovered, but neither could be classified as to type. Other artifacts recovered consisted of debitage, and a serrated flake. These materials reflect limited use of Area B during both the early and late Fort Ancient components.

Table 10.2. Materials Recovered from Area B.

Cultural Materials	Surface	Unit	Total
Ceramics			
Madisonville Plain		1	1
Jessamine Plain	2		2
Jessamine Cordmarked	1		1
Less then 4 cm^2		8	8
Total	3	9	12
Chipped Stone			
Debitage		254	254
Triangular proj pt frags	2	1	3
Serrated Flake	1		1
Total	3	255	258
Historic Materials			
Grommet	1		1
Total	1		1
Grand Total	**7**	**264**	**281**

Area C (Units Units 5, 7, 8, 10, 11, 14, 15, 16, 17, 18,19 and 24) (Figure 10.1)

As with Area A, this area was characterized by a high density of late Fort Ancient materials associated within organically enriched soils. It encompassed an area that measured 21 by 20 m. Of the 10 units excavated in this area, nine (Units 5, 7, 8, 10, 11, 14, 15, 16, 18, and 19) were 1 x 2 m in size and one measured 1 x 1 m (Unit 17) in size. The stratigraphic profile throughout this area consisted of a very dark brown (10YR2/2) silty loam plowzone (Zone I) that ranged in thickness from 20 to 42 cm (Figure 10.5). Dark yellowish-brown (10YR3/4) clay subsoil (Zone II) underlaid the plowzone, except for where features were present. Within Area C, two large pit features (Features 1 and 2) were documented.

Units 18 and 24

Units 18 and 24 were placed 5 to 10 meters southeast of Feature 1, respectively. The placement of these units was an attempt to see if the remains of a house structure could be found in the vicinity of Features 1 and 2. The stratigraphic profile of both units consisted of a very dark brown (10YR2/2) silty loam plowzone (Zone I) that ranged in thickness from 23 to 26 cm (Figure 10.5). The plowzone was underlain by a dark yellowish-brown (10YR3/4) silty clay subsoil (Zone II).

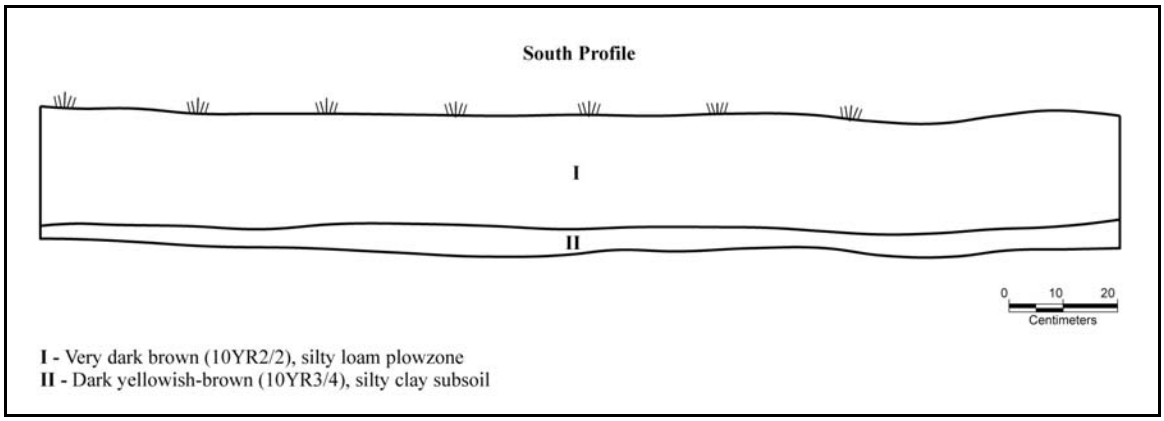


Figure 10.5. Unit 18 South Profile.

Cultural Materials

A single unidentifiable Fine Triangular point fragment and a biface fragment was recovered from the plowzone in Unit 18. A moderate density of chert debitage also was recovered; however, no ceramic sherds were recovered from this unit. Unit 24 yielded a light density of chert debitage.

Feature 1 (Units 5, 7, 8, 10, 19)

Feature 1 was initially encountered in Unit 5 at a depth of 20 cm below ground surface. Units 7, 8, 10, and 19 were excavated to expose the limits of this feature. This resulted in the removal of the plowzone from an 18 m^2 block, with only a sample of the

plowzone being screened. When it was initially defined Feature 1 had a diameter of 2.80 m (Figure 10.6). Upon excavation, however, it was determined that the limits of this pit extended an additional 20 to 30 cm to both the north and south, resulting in a slightly oblong pit that measured 3.60 m north-south but 2.80 m east-west. The edges of the pit had been disturbed by historic activities, as evidenced by an east-west trending plow scar that truncated the center of the feature at the base of the plowzone. Feature 1 extended to a depth of 1.24 m below the base of the plowzone.

Table 10.3. Materials Recovered from Area C.

Cultural Materials	Surface	Units	Fea.1	Fea.2	Total
Ceramics					
McAfee Plain	1		1		2
Madisonville Plain		4	145	30	179
Madisonville Cordmarked			8	5	13
Jessamine Plain	1	1	123	3	128
Jessamine Cordmarked			55	2	57
Eroded			8		8
Less then 4 cm^2	14	64	1128	268	1474
Fired Clay		2	151	13	166
Ceramic Objects			7		7
Total	16	71	1626	321	2034
Chipped Stone					
Debitage		471	978	181	1630
Biface/Biface Fragments	1	5	10		16
Informal Tools	2	3	5		10
Uni/Bifacial Endscraper			1		1
Drill/Perforator			1		1
Cores			7	1	8
Projectile Points					
Frags	2	4	5	1	12
Type 2	1		3		4
Type 4			1		1
Type 6	1				1
Late Archaic			1		1
Jack's Reef			1		1
Total	7	483	1013	183	1686
Historic Materials					
Nail Fragment, unidentified		1			1
Ironstone, undecorated		1			1
Container Glass		2			2
Total		4			4
Faunal Remains	2	45	655	253	955
Botanical Remains			12049	1718	13767
Grand Total	25	603	15343	2475	18446

In planview the feature consisted of a very dark grayish-brown (10YR3/2) silty clay loam with a high density of wood charcoal (Figure 10.6). Within this matrix, four distinct areas were noted. Two consisted of burned soil located in the northern portion of the feature. The third consisted of an area of yellowish-red (5YR5/8) silty clay loam mottled with wood charcoal and burned soil. It contained a concentration of ash and was

located in the central portion of the featuare. The fourth area consisted of a concentration of ceramic material located in the northeast portion of the feature.

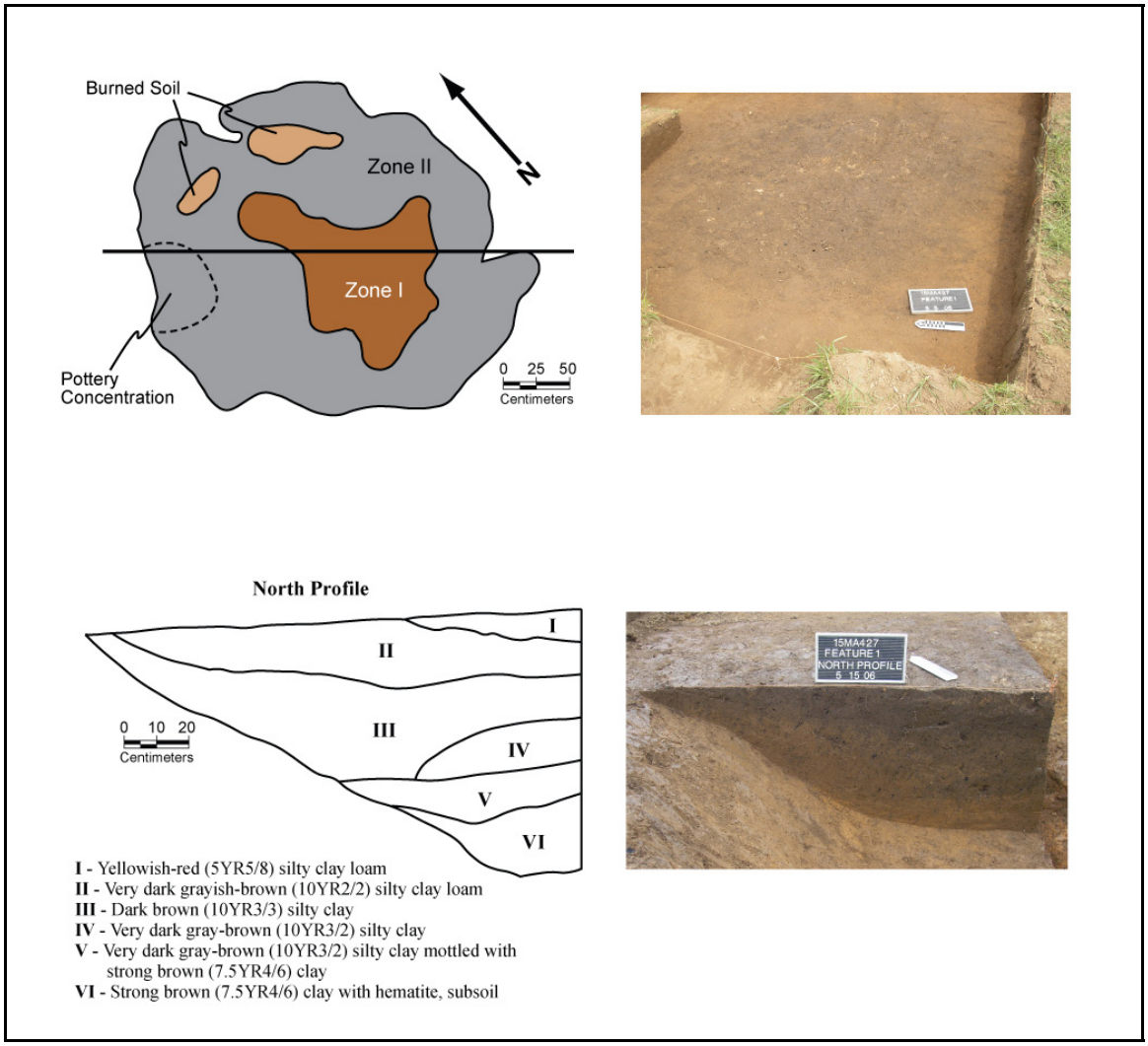


Figure 10.6. Feature 1.

Feature 1 was excavated in six zones. Of these, Zones I-V represent different episodes of fill, while Zone VI is associated with postdepositional rodent activity (Figure 10.7). Zone 1 consisted of the yellowish-red (5YR5/8) silty clay loam mottled with wood charcoal, burned soil, and ash observed in the center of the feature. At its thickest point, this zone extended approximately 10 cm beneath the plowzone. Zone II was approximately 20 cm thick, and consisted of the very dark grayish-brown (10YR3/2) silty clay loam with burned soil and wood charcoal that characterized most of the feature in planview. Zone III was approximately 30 cm thick, and consisted of a dark brown (10YR3/3) silty clay mottled with wood charcoal. Zone IV was approximately 20 cm thick and consisted of a very dark grayish-brown (10YR3/2) silty clay with a high density of wood charcoal. Zone V ranged in thickness from 16 to 34 cm, and consisted of very

dark grayish-brown (10YR3/2) silty clay mixed with strong brown (7.5YR4/6) clay with hematite inclusions (subsoil [Zone VI]).

The bottom of this feature appears to have been disturbed by rodent activity some time in the past. Rodent activity (Zone VI) had impacted the lower portions of Zones IV and V. Zone VI ranged in thickness from 20 cm to 38 cm, and consisted of a very dark grayish-brown (10YR3/2) silty clay loam. Zone VI, the subsoil, consisted of a strong brown (7.5YR4/6) clay with hematite.

The stratification observed in the profile of Feature 1 suggests multiple episodes of use. Among all of the use episodes, there was no evidence of intensive burning. Although small fragments of fired clay was recovered, there were no layers of fired earth present. This suggests that all of the cultural materials recovered from the Zones I-V were secondarily deposited as refuse.

Zones I and II yielded a large number of Fort Ancient ceramics (Table 10.4). Though, a few Jessamine series sherds were recovered from Zone I and a fair number were associated with Zone II, based on the predominance of Madisonville series ceramic from these two zones, they were assigned to the Howard site's late Fort Ancient component. The presence of the Jessamine series ceramics in Zones I and II is interpreted as reflecting the mixing of materials from the lower zones that occurred during the late Fort Ancient occupation of the site. It also could be a result of subsequent bioturbation.

Table 10.4. Feature 1: Diagnostic Ceramics and Chipped Stone Tools by Zone.

	Late Fort Ancient		Early Fort Ancient			
	Zone 1	**Zone 2**	**Zone 3**	**Zone 4**	**Zone 5**	**Total**
Ceramics						
Madisonville Plain	57	71	8	2		138
Madisonville Cordmarked	2	4		1		7
Jessamine Plain	7	40	53	22		122
Jessamine Cordmarked	6	11	20	15	1	53
Jessamine Check-Stamped			4	1		5
Jessamine Knot-Roughened		3	1	1		5
Total	72	129	86	42	1	330
Chipped Stone Tools						
Uni/Bifacial Endscraper		1				1
Drills/Peforators		1				1
Jack's Reef Corner Notched			1			1
Late Archaic Stemmed			1			1
Frags*		2			**2**	4
Type 2 Fine Triangular		1	2			3
Type 4 Fine Triangular	1					1
Total	73	134	90	42	3	342

Zones III and IV were assigned to the early Fort Ancient component, based on the paucity of Madisonville series ceramics in both zones coupled with the presence of

Jessamine series ceramics that are similar to those recovered from the Muir site, and a calibrated radiocarbon date of (A.D. 980-1180) obtained from Zone III (Table 10.5). A second charcoal sample from Zone III, yielded an unacceptable calibrated date of 1610-1410 B.C. The disparity of the two dates is difficult to explain as both were obtained from the same charcoal sample. While the disparities in these dates, undoubtedly reflect laboratory error, it is possible, though not probable, that a portion of the charcoal sample from which Beta-218402 was obtained included some very old wood.

Table 10.5. Radiocarbon Dates from Feature 1.

Context	Laboratory No.	B.P. Age	Calibrated Age At 2 Sigma	Material
Feature 1, Zone III	Beta-218403	980±50	A.D. 980-1180	Wood
Feature 1, Zone III	Beta-218402	3220±50	1610-1410 B.C.	Wood

Based on the diagnostic materials recovered from Zones I-V and the stratigraphic profile of Feature 1, the following history is proposed. This large pit was initially excavated during the early Fort Ancient occupation of the Howard site. During the course of this occupation it was filled with trash. With the site's abandonment by ca. A.D. 1200, the feature began to settle. By the time the site was reoccupied about 400 years latter it had settled considerably. As such during the late Fort Ancient occupation it would have appeared as a large shallow depression. It was within this basin that late Fort Ancient residents of the site deposited their trash.

Cultural Materials

Feature 1 yielded the bulk of the cultural materials recovered from the site. As previously noted the materials from Zones I and II were assigned to the late Fort Ancient component and the materials from Zones III, IV, and V to the early component. The latter is primarily represented by Jessamine Plain and Jessamine Cordmarked ceramics, but a few Jessamine Check-Stamped and Jessamine Knot-Roughened body sherds also were recovered. Decoration on Jessamine Plain and Cordmarked jar necks takes the form of fine line incising, with both rectilinear and curvilinear designs being present (Figure 6.2b,c). Some of the former may represent line-filled triangles. Decoration associated with Jessamine series ceramics also takes the form of lip notching and finger-nail punctuations (Figure 6.2d,e). One rim exhibited closely spaced notches on the exterior of the lip, which gave it a crenulated appearance (Figure 6.2e). Lip notching also is associated with a castellated rim (Figure 6.2d) and a rim fold, and finger-nail impressions were observed on the lip of one rim. Appendages consist of loops, intermediate loop/straps, and thick strap handles that were attached to a vessels lip and riveted to its neck. One loop and intermediate loop/strap have a groove running down the middle of the handle (Figure Figure 6.2a). Another of the loop handles exhibits a sharp angle at its midpoint (Figure 6.2c).

Chipped stone tools associated with the early component consist of Type 2 Fine Triangulars, a Jack's Reef Corner Notched projectile point, and a Late Archaic contracting stemmed point. The debitage is characterized by somewhat more biface initial reduction flakes, than biface thinning and shaping and biface finishing or trimming flakes (Table 10.6). Boyle chert and unidentifiable, burned chert dominates the assemblage, with a minor amount of Newman cherts also being used.

Table 10.6. Feature 1 Debitage by Component.

Flake Type	Early Component		Late Component		Total	
	Freq.	%	Freq.	%	Freq.	%
Initial Reduction Flakes	22	5.0	9	10.0	31	5.8
Unspecified Reduction Sequence Flakes	201	45.2	36	40.0	237	44.4
Biface Initial Reduction Flakes	61	13.7	24	26.7	85	15.9
Biface Thinning and Shaping Flakes	51	11.5	4	4.4	55	10.3
Biface Finishing or Trimming Flakes	38	8.6	10	11.1	48	9.0
Chips	0	0.0	0	0.0	0	0.0
Shatter	70	15.8	7	7.8	77	14.4
Janus Flakes	1	0.2	0	0.0	1	0.2
Totals	444	100.0	90	100.0	534	100.0

Botanical remains associated with the Feature 1 early Fort Ancient component, consist primarily of corn and nuts (Table 10.7). Hickory was the predominant nut species associated with this component, with lesser amounts of black walnut, butternut, halzenut, and acorn being present. Other plant food remains recovered include smartweed and knotweed. Walnut accounts for almost fifty percent of the early component wood charcoal collection, followed by American chestnut, American elm, yellow popular, maple, ash, white oak, and cane.

The early component faunal assemblage is dominated by white-tailed deer (Table 10.8). Bear, gray wolf, raccoon, and wild turkey also are present, as are some fish remains, and a small number of mussel shells.

The late Fort Ancient component associated with Feature 1 consists of a large number of Madisonville Plain sherds and a few Madisonville Cordmarked sherds. All of the latter are body sherds. Several Madisonville Plain jar necks exhibit decoration in the form of incised or trailed lines or punctuations (Figure 6.3b-d,g). When present, trailing is wide and shallow. Punctations tend to occur as a single row, and may be bounded by trailed lines (Figure 6.3b,c). Decoration also takes the form of wide and deep notches on jar lips. The one bowl rim recovered from Feature 1, exhibits, deep finger-nail notches on its lip. Appendages are primarily wide thin strap handles attached to the rim about 1.5 cm below the lip (Figure 6.3f). In addition to portions of ceramic vessels, a variety of ceramic objects were recovered in association with the Madisonville series ceramics. They consisted of a dog effigy (Figure 6.8) , a human head effigy (Figure 6.8), several clay beads (Figure 6.7), a pipe stem fragment (Figure 6.9), a spoon (Figure 6.7), and two ceramic disks (Figure 6.5).

Table 10.7 Botanical Remains Recovered from Features.

Plant Type/Species	Feature 1 Early	Feature 1 Late	Feature 2	Feature 3
Wood				
American chestnut (*Castanea dentata*)	167	453	23	
American elm (*Ulmus americana*)	105	812		
Yellow poplar (*Liriodendron tulipifera*)	84	690		16
red oak group (*Quercus* sp.)	21	472	478	
black walnut (*Juglans nigra*)	504	307		16
slippery elm (*Ulmus rubra*)		337		
Maple (*Acer* sp.)	84	215	23	16
white oak group (*Quercus* sp.)	21	356	93	16
hickory (*Carya* sp.)	84	80	96	
ash (*Fraxinus* sp.)		125	23	
cane (*Arundinaria gigantea*)		68		
unidentified	1,027	3,181	672	92
Nutshell				
hickory (*Carya* sp.)	88	1,672	157	6
black walnut (*Juglans nigra*)	13	130	20	11
butternut(*Juglans cinerea*		34	2	
acorn (*Quercus* sp.)	1	4		
pecan (*Carya illionoensis*)			2	
hazelnut (*Corylus* sp.)		1		
Tropical Cultigens				
corn –(*Zea mays*)	27	781	119	2
bean (*Phaseolus vulgaris*)		21	2	1
gourd – rind (*Lagenaria* sp.)		17	1	3
squash – rind (*Cucurbita* sp.)		1		
Native Cultigens				
chenopod (*Chenopodium berlandieri*)		4		
marshelder (*Iva annua*)		1		
Wild Plant Seeds				
bayberry (*Myrica pensylvanicum*)		13		
grape (*Vitis* sp.)		7	1	
Sumac (*Rhus* sp.)		3		
bedstraw (*Galium* sp.)	1	2		
verbena (*Verbena* sp.)		2		
Smartweed (*Polygonum* sp.)	1			
pokeweed (*Phytolacca americana*)	1			
knotweed (*Polygonum* sp.)		1		
Cherry (*Prunus* sp.)		1		
plum (*Prunus americana*)		1		
Blackberry/raspberry (*Rubus* sp.)		1		
pawpaw (*Asimina triloba*)			1	
Unidentified - seeds	3		1	1
Unidentified – general		13	4	2

Chipped stone tools associated with the late component include a Type 4 Fine Triangular projectile point, a bifacial endscraper, and a drill/perforator. Though a much smaller quantity of debitage was associated with the late component relative to the early component, except for a paucity of biface thinning and shaping flakes, the two components had very similar debitate profiles (Table 10.6). In addition, Boyle chert and a minor amount of Newman cherts continued to be the preferred materials used to

manufacture chipped stone tools. A significant amount of unidentifiable, burned chert, also was recovered the late component.

The late component botanical collection is dominated by corn and nuts, with beans being well represented (Table 10.7). Hickory was the predominant nut species recovered from Zones I and II, with lesser amounts of black walnut, butternut, hazelnut, and acorn being present (10.7). Other plant food remains recovered include several other wild plants (grape, plum, cherry, and pawpaw) and two native cultigens (chenopod and marshelder) (Table 10.7). Some plants, such as bayberry, bedstraw, and verbena may have been used for medicinal purposes. Gourds and squash may have been used as containers. The late component wood charcoal collection is quite diverse with American elm, American chestnut, yellow popular, and red oak each accounting for more than eleven percent of the wood charcoal. The next most frequently occurring wood species in order of occurrence are white oak, slippery elm, black walnut, maple, ash, hickory, and cane.

Table 10.8. Faunal Remains from Features.

Taxon	Feature 1		Feature 2	Feature 3
	Early	Late		
Mammals				
White-tailed deer, *Odocoileus virginianus*	16	36	35	2
Striped skunk, *Mephitis mephitis*		1		
Raccoon, *Procyon lotor*	1	1		
Gray wolf, *Canis lupus*	1	2		
Black bear, *Ursus americanus*	4			
Microtine		1		
Fox squirrel, *Sciurus niger*		1		
Gray squirrel, *Sciurus carolinensis*,		4	1	
Woodchuck, *Marmota monax*,			1	
Unidentified Large mammal	88	256	125	2
Unidentified Mammal	6	4	5	
Unidentified Small mammal	2	12		
Unidentified Small mammal/bird		3	6	
Birds				
Wild turkey, *Meleagris gallopavo*	2	1	3	
Large bird	2	12	4	
Unidentified Bird	2	38	10	1
Reptiles				
Box turtle, *Terrapene carolina*	4	66	26	
Turtle	1	6	14	
Fish				
Catfish family,Ictaluridae,			1	
Unidentified Fish		1	1	
Miscellaneous unidentified vertebrate	9	37	5	1
Molluscs				
Mucket, *Actinonaias carinata*			1	
Spike, *Elliptio dilatatus*	1			
Pocketbook, *Lampsilis ovata*		1	1	
Freshwater bivalve	2	12	5	
Common marginella, *Prunum apicinum*,		1		
Anguispira alternate	1	4	3	
Terrestrial snail		4	4	

The faunal assemblage is dominated by white-tailed deer and turtle remains (Table 10.8). Gray wolf, raccoon, squirrel, and wild turkey are present. Some fish remains, and a small number of mussel shells also were recovered. Some of the turtle bone exhibits polish suggesting use as cups or rattles, and an deer antler tip may have been used as a chert working tool. Fragments of beamers fashioned from deer long bones would have been used to work hides. A marginella shell bead also was associated with the late component

Feature 2 (Units 11, 14, 15, 16, and 17)

Located 2 m grid south of Feature 1, Feature 2 was initially documented in the southern half of Unit 11 at a depth of approximately 28 cm below ground surface. Units 14, 15, 16, and 17 were excavated to expose the limits of the feature, resulting in a small block that encompassed 9 m^2. Of the five units excavated in the vicinity of Feature 2, only the plowzone from Unit 11 was screened.

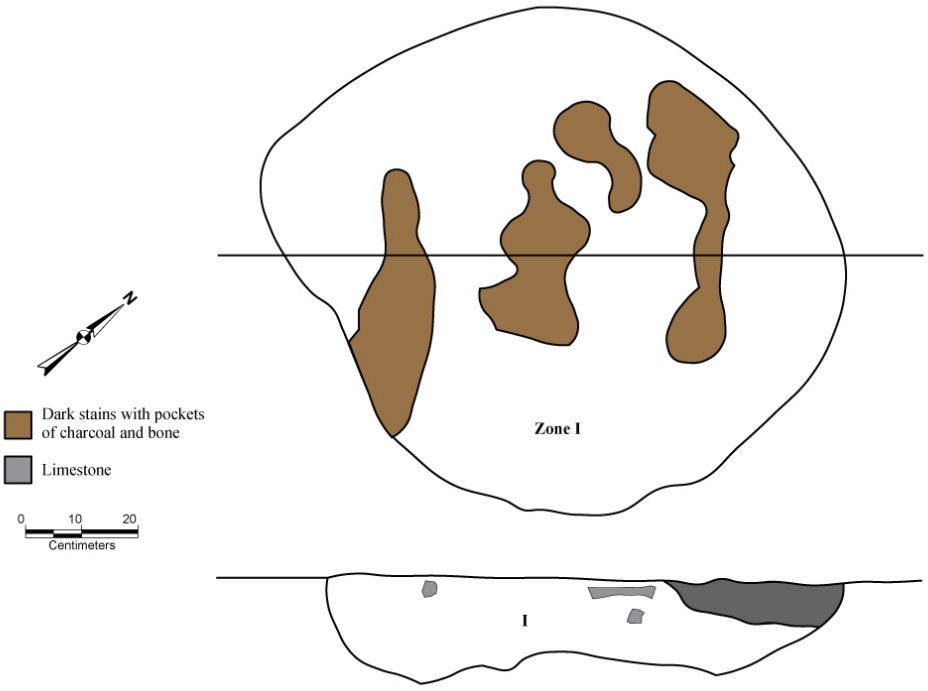
Feature 2 had a diameter of 1.89 m (Figure 10.7). It was basin shaped and had a thickness of 33 cm. In general the feature matrix consisted of a very dark grayish-brown (10YR3/2) silt loam that, relative to Feature 1 appeared to be fairly homogenous. Pockets of wood charcoal and faunal materials, however, were noted in the feature matrix.

A concentration of flat limestone was uncovered in the eastern portion of Feature 2, just below the surface. The limestone did not exhibit evidence of burning and appears to have been discarded onto the top of the feature.

Cultural Materials

The ceramic assemblage recovered from Feature 2 is dominated by Madisonville series ceramics, with most being plain (Table 10.3). A small amount of Jessamine Plain and Jessamine Cordmarked ceramics also were recovered. There were no diagnostic chipped stone tools associated with this feature.

Several of the Madisonville Plain sherds recovered from Feature 2 exhibited decoration in the form of motifs that incorporated shallow trailed lines and punctations (Figure 6a,e), or just trailed lines or punctuations. A detached notched jar lug and a portion of a thin strap handle attached to a jar neck also were recovered from this feature. All are diagnostic of late Fort Ancient ceramics (see Chapter 6). In addition to five Madisonville Cordmarked sherds, five Jessamine series sherds were recovered: three plain and two cordmarked. The two Jessamine Cordmarked specimens are body sherds as is one the Jessamine Plain sherds. Of the other two Jessamine Plain sherds one is a small rim, and the other a body sherd with a handle scar and incised lines at the base of the scar. As with Feature 1, the presence of these Jessamine series sherds in the fill of Feature 2 reflects the incorporation of earlier materials with the late Fort Ancient deposits.



I - Very dark grayish-brown (10YR3/2) silt loam
II - Very dark grayish-brown (10YR3/2) silt loam mottled with yellowish-brown (10YR5/6) silty clay

Figure 10.7. Feature 2.

The chipped stone assemblage recovered from Feature 2 consisted of debitage and the entire reduction sequence was present. The debitage was made up of initial reduction flakes (n=18), unspecified reduction sequence flakes (n=48), biface initial reduction

flakes (n=37), biface thinning and shaping flakes (n=27), biface finishing or trimming flakes (n=37), chips (n=3), and shatter (n=11). Boyle and Newman cherts dominated the debitage assemblage. However, lesser amounts of Muldraugh and Unidentified (burned) cherts also were present.

A variety of plant remains were recovered from this feature. Corn and beans, as well as hickory, black walnut, acorn, and pecans were recovered. Other food remains present were grape and papwaw. A fragment of a gourd rind also was found. The wood charcoal assemblage was dominated by red oak, with hickory, white oak, American chestnut, maple, and ash also being present.

As with Feature 1, faunal remains recovered from Feature 2 were dominated by white-tailed deer, with box turtle also being well represented. Also present were wild turkey, woodchuck, gray squirrel, and catfish remains. Many of the turtle bones, including the carapace exhibited polish, which suggests their use as cups or rattles. A fragment of a beamer produced from white-tailed deer also was recovered.

Area D (Units 3, 12, 21, and 23)

Area D was defined on the basis of a concentration of Fort Ancient ceramics and lithic debitage that measured 76 x 18 m. Unlike Areas A and C, these materials were not associated with dark organically enriched soils. A total of three 1 x 2 m units were excavated in Area D.

The depth at which subsoil was encountered generally ranged from 35 to 40 cm below ground surface. The stratigraphic profile in this area consisted of a dark yellowish-brown (10YR3/3) silty loam plowzone (Zone I) that extended to a depth of 35 to 40 cm below ground surface. It overlay a dark yellowish-brown (10YR3/3) clay subsoil (Zone II) (Figure 10.8). One pit feature (Feature 3) was documented in Units 12 and 23.

Cultural Materials

Most of the ceramics recovered from the surface and units in Area D were classified as Madisonville Plain, with most being recovered from Unit 12 directly above Feature 3 (Table 10.9). Of note was the presence of a large decorated Madisonville Plain neck. The motif on this sherd consisted of a series of shallow trailed lines bounding a short line of finger-nail punctations (see Figure 6.3a,b) for a similar decorative motif). A Madisonville Plain body sherd with a notched applied strip also was recovered from Unit 12. This sherd may be part of a hemispherical bowl.

Of the three Jessamine Series sherds from surface contexts, two were body sherds and one was a rim. The latter cordmarked and slightly incurvate in profile. It had a pointed lip and an orifice diameter of 12 cm.

The chipped stone artifacts recovered from the surface of Area D consists of one each, fragments of Type 4, Type 5, and Type 6 Fine Triangular projectile points. Other

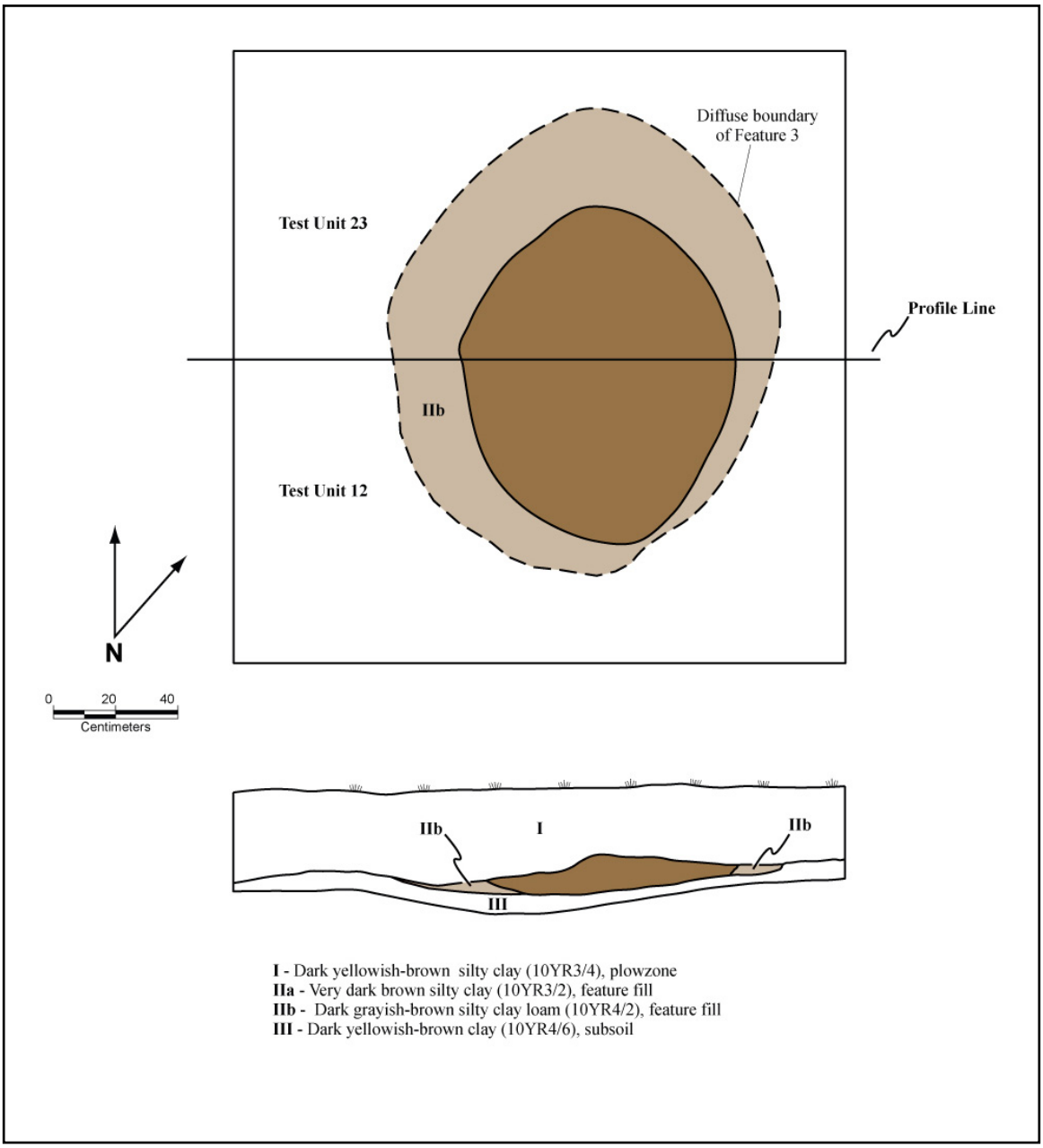


Figure 10.8. Planview of Feature 3 and Profile of North Wall of Unit 12 North Wall and Feature 3.

chipped stone artifacts recovered from the surface, include a single biface fragment and an edge modified, retouched flake. A single drill/perforator and two cores also were recovered from the surface of Area D. The chipped stone materials recovered from the units excavated in area D consists of eight biface/biface fragments, an edge modified, retouched flake, two unifacial endscrapers, and one bifacial endscraper. A total of four drills/perforators, two indeterminate Fine Triangular fragments and two cores also were recovered from the test units in Area D. The recovery of edge modified flakes, unifacial and bifacial endscrapers and drills/perforators, strongly indicate that a variety of tasks

related to the processing of animal hides and other materials, such as bone, shell, antler, or wood, as well as soft plant materials were carried out at this locale.

Feature 3

Feature 3 had a diameter of 1.25 m and a thickness of 12 cm. Generally circular in planview, it was bowl-shaped in profile with slightly sloping sides. This feature was comprised of two general areas; toward the central portion (Area A) it consisted of a very dark grayish brown (10YR3/2) silty clay loam mottled with wood charcoal. This area yielded most of the cultural materials recovered from this shallow pit. Area B consisted of a dark grayish brown (10YR4/2) silty clay loam. Significant bioturbation was apparent in Area B and at the base of the feature. This disturbance extended an additional 7 cm below the base of the feature as well as into the eastern wall of Unit 12.

Cultural Materials

Only two sherds were recovered in direct association with Feature 3. One was a small Madisonville Plain jar rim with a rounded lip. The other was a Jessamine Cordmarked body sherd (Table 10.9). While these two sherds do not provide a secure date for Feature 3, the Madisonville Plain sherds recovered from deposits directly above the feature as well as the botanical remains associated with this feature are suggestive of a late Fort Ancient affiliation. Though intrusive in this feature, the presence of the Jessamine Cordmarked sherd does reflect early Fort Ancient use of this portion of the Howard site.

The chipped stone assemblage recovered from Feature 3 consisted debitage. Although the sample was small, of the entire reduction sequence was accounted for. The debitage was made up of initial reduction flakes (n=3), unspecified reduction sequence flakes (n=17), biface initial reduction flakes (n=8), biface thinning and shaping flakes (n=3), biface finishing or trimming flakes (n=7), and shatter (n=5). Similar to Feature 2, Boyle and Newman cherts dominated the debitage assemblage, with lesser amounts of Muldraugh and Unidentified (burned) cherts also present.

Though a small quantity of botanical remains were associated with this feature, the recovered materials are similar to the plant remains associated with Features 1 and 2. A corn cupule, a corn kernel, a bean, and 17 nut fragments (hickory and black walnut) were the primary food remains found (Table 10.7). A few gourd rind fragments also were recovered from this feature. Identifiable wood charcoal consisted of black walnut, yellow poplar, white oak, and maple, each of which account for about the same percentage of the wood charcoal collection from Feature 3.

Faunal remains recovered from Feature 3 consisted primarily of white-tailed deer, unidentifiable large mammal bone and unidentifiable bird bone.

Table 10.9. Materials Recovered from Area D.

Cultural Materials	Surface	Units	Fea-3	Total
Ceramics				
McAffee Plain				
Madisonville Plain	1	9	1	11
Madisonville Cordmarked				
Jessamine Plain	2			2
Jessamine Cordmarked	1		1	2
Eroded				
Less then 4 cm^2	43	70	29	142
Fired Clay	2			2
Ceramic Objects				
Total	49	79	31	159
Chipped Stone				
Debitage		1254	43	1297
Biface/Biface Fragments	1	8		9
Informal Tools	1	1		2
Unifacial/Bifacial Endscrapers		3		3
Drills/Perforators	1	4		5
Cores	2	2		4
Projectile Points				
Frags		2		2
Type 4	1	1		2
Type 5	1			1
Type 6	1			1
Total	8	1275	43	1324
Faunal Remains	1	24	6	31
Botanical Remains			182	182
Grand Total	58	1378	262	1698

SUMMARY

A controlled surface collection and the excavation of 19 units at the Howard site resulted in the documentation of early and late Fort Ancient components at this site. Fort Ancient materials were found throughout the site, though they tended to be concentrated in five areas, with Areas A, C, and D yielding the most materials. In Areas A and C in particular cultural materials were associated with dark organically enriched soils. The overall distribution of materials is suggestive of a circular community with a central plaza, especially during the late Fort Ancient component. If this pattern is substantiated by future work, then the Howard site would be one of the few late Fort Ancient circular villages documented to date in Kentucky. Other contemporary villages, such as Larkin and Hardin Village consist of several clusters of houses.

The early Fort Ancient component is represented by Jessamine Series (plain, cordmarked, check-stamped, and knot-roughened) ceramics and Type 2 Fine Triangular projectile points, and a calibrated radiocarbon date of A.D. 980-1180. (Jack's Reef notched and unnotched projectile points are suggestive of a terminal Late Woodland component as well, but they also could be associated with the early Fort Ancient

component. The only intact deposits associated with this component, were the lower zones of Feature 1.

The late Fort Ancient component is represented by Madisonville Series (plain and cordmarked) ceramics, unifacial and bifacial endscrapers, Type 6 Fine Triangular pojectile points, a blue glass bead, a copper bead, and Native American gunflints. The presence of historic trade goods places the late component sometime after A.D. 1550 but before A.D. 1750. Late Fort Ancient materials were recovered from the upper zones of Feature 1, as well as Features 2 and 3.

CHAPTER 11:
CONCLUSIONS AND MANAGEMENT RECOMMENDATIONS

The Kentucky Archaeological Survey's investigation of the Howard site adds to the growing body of data on central Kentucky Fort Ancient cultural developments. To date, however; most studies of Fort Ancient sites undertaken in Madison County have focused on middle Fort Ancient villages (A.D. 1200-1400), such as Broaddus, Coy, Tobacco-Warehouse, and Duncannon. In contrast to these sites, the Howard site was primarily occupied somewhat earlier and later. Its initial early Fort Ancient (A.D. 1000-1200) occupation predates the establishment of middle Fort Ancient nucleated villages and its late Fort Ancient/Contact period (A.D. 1550-1750) component postdates the abandonment of these communities. The site also may have been briefly utilized during the Late Archaic and terminal Late Woodland, and the recovery of a small amount of Historic materials points to some use of this locality during the nineteenth century. But it is the Fort Ancient occupation that was the most intensive and significant. Limited investigations of these components has generated important new information on early and late Fort Ancient settlement, material cultural, and subsistence patterns in the Madison County region.

SETTLEMENT

Examination of the surface distribution of Fort Ancient materials at the Howard site resulted in the identification of four large concentrations (Areas A-D). Of these, Areas A, C, and D yielded much greater quantities of artifacts than Area B. The presence of dark organically enriched soils, were only noted in Areas A and C. Though some early Fort Ancient materials were found in all four areas, the vast majority of the recovered artifacts were assigned to the late Fort Ancient component. The widespread distribution of early Fort Ancient materials coupled with the absence of distinct surface concentrations of these artifacts is suggestive of repeated short-term occupations and the absence of an early Fort Ancient village at the Howard site. Rather, a series of hamlets may have been established at this locality throughout the early Fort Ancient subperiod. A similar hamlet was documented at the nearby Site 15Ma428. Each of these settlements may have been occupied by just a few households, with one being associated with the large pit in Area C, that yielded the bulk of the early Fort Ancient materials recovered from the Howard site. This pit feature yielded a calibrated radiocarbon date of (A.D. 980-1180).

Based on the greater quantity and diversity of late Fort Ancient materials relative to early Fort Ancient materials, the late component appears to have been more intensive and extensive. While early Fort ancient materials were only recovered from just one feature, late component materials were recovered from three large pits (two in Area C and one in Area D), and concentrations of late Fort Ancient materials, especially endscrapers and triangular points, were documented in Area A, as well as Area C. (Also of note was the recovery of a small amount of human remains from Area A, which points

to the presence of burials/cemetery in this area.) The four concentrations of late Fort Ancient materials were situated around a central area that yielded relatively few artifacts, but it is not clear at present if this area functioned as a central plaza. If the Howard site had been organized as a circular village, we would have expected to see a more uniform distribution of materials around the "plaza." That materials were associated with spatially distinct clusters is more suggestive of the organization of late Fort Ancient villages that consisted of several clusters of houses with associated cemeteries.

MATERIAL CULTURE

Diagnostic artifacts associated with the Howard site early Fort Ancient component are primarily represented by Jessamine Series ceramics and Type 2 Fine Triangular projectile points. At the Howard site, the Jessamine Series assemblage is dominated by Jessamine Plain followed by Jessamine Cordmarked. Jessamine Check-Stamped and Jessamine Knot-Roughened accounting for about five percent of the assemblage. In general, the Howard site's early Fort Ancient ceramic assemblage is very similar to Osborne phase ceramics recovered from the Muir site in Jessamine County. That small amounts of Jessamine Knot-Roughened and Jessamine Check-Stamped ceramics were recovered from both sites, points to some level of interaction with Fort Ancient groups to the east, where knot-roughening is more common, and with Mississippian groups to the south were check-stamping is much more prevalent.

One trait that does distinguish the Howard ceramic assemblage from Muir and most other early and middle Fort Ancient sites located to the north of the Kentucky River, is its high frequency of plain surfaced specimens relative to those with cordmarked exterior surfaces. For instance, at Howard almost two-thirds of the sherds have plain, exterior surfaces, but at Muir almost eighty percent have cordmarked exterior surfaces. A preference for vessels with plain exterior surfaces also is evident at the nearby Coy site where plain surfaced sherds account for about three-quarters of this site's ceramic assemblage. Though cordmarked surfaces are somewhat more common at the nearby middle Fort Ancient Broaddus site, plain surfaced sherds still account for more than fifty percent of the ceramics recovered from this site. Thus, it appears that the ratio of plain to cordmarked sherds may serve to distinguish early and middle Fort Ancient sites south of the Kentucky River from those located to the north.

In addition to Type 2 Fine Triangular projectile points, Jack's Reef Cluster projectile points also maybe associated with the early Fort Ancient component. That both types were recovered from intact early Fort Ancient deposits (Feature 1) at the Howard site, suggests that Jack's Reef Cluster points may have continued to be manufactured and used well into early Fort Ancient times. Both projectile point types were associated with debitage that reflects biface production from locally available cherts acquired primarily from nearby creeks and rivers. As with most central Kentucky sites, Boyle chert dominates the assemblage. The presence of lesser amounts of locally available Newman, Breathitt, and Muldraugh cherts reflects Madison County's proximity to the Knobs and the Cumberland Plateau.

Diagnostic artifacts associated with the Howard site's late Fort Ancient component, include Madisonville Series ceramics, Type 4 and Type 6 Fine Triangular projectile points, unifacial and bifacial endscrapers, two gunflints of Native American manufacture, a blue glass bead, and a copper bead. As with the Howard site Jessamine Series ceramic assemblage, Madisonville Series ceramics from Howard primarily have plain exterior surfaces. In fact, at the Howard site, Madisonville Plain accounts for more than 90 percent of the ceramics assigned to this series. Surprisingly the assemblage contains only a few bowl rims and no pan rims. These two vessel types are common at many other late Fort Ancient villages. Their absence from Howard as well as from the central Kentucky New Field site, may reflect the contexts sampled at these sites relative to those investigated at other late Fort Ancient sites. At both Howard and New Field, ceramics were primarily recovered from pit contexts rather than house or midden contexts. The latter tend to yield a wider range of vessel types than pits.

The late Fort Ancient component also is characterized by the presence of a variety of other ceramic objects that are not associated with the earlier component. These include ceramic disks, clay beads, a ceramic dog effigy, a human head effigy, a pipe stem fragment, and a spoon. The presence of these objects is not only reflective of the more intensive late occupation relative to the early Fort Ancient component, but points to the use of ceramic artifacts in activities that did not involve the preparation and consumption of food. For instance, the dog effigy and the clay beads were probably associated with pendants and necklaces, while the pipe would have been used to smoke tobacco.

In addition to Type 4 and Type 6 Fine Triangular projectile points, and unifacial and bifacial endscrapers, drills/perforators and retouched flakes also were associated with the late Fort Ancient component. The large number of endscrapers found at the site is suggestive of an increased emphasis on hide preparation, but these multi-purpose tools also would have been used for wood working and processing plant materials. Though from early to late Fort Ancient times there were changes in triangular projectile point styles which coincided with the introduction of new tools, such as unifacial and bifacial endscrapers, chert raw material procurement and utilization appears to have remained relatively unchanged throughout the Fort Ancient sequence.

Modified animal bones were associated only with the late Fort Ancient component and consisted of beamers, cups, and rattles. The presence of beamers, as with the endscrapers points to the processing of hides, while the recovery of turtle shell cups and rattles, points to their use as serving vessels and possibly in religious ceremonies.

Of note in the late Fort Ancient assemblage was the presence of artifacts that reflect long-distance exchange and interaction with Europeans. The recovery of a marginella shell bead and pieces of mica, reflect the Howard site's late Fort Ancient residents participation in exchange networks with groups living to the south. These same networks would have provided them access to historic trade goods, such as the blue glass and copper bead found at the site. The only other sites in central Kentucky that have yielded similar materials are Larkin and Site 15Js16. These networks also would have

provided them access to guns, which necessitated the need to manufacture gunflints from locally available raw materials.

SUBSISTENCE

In general, plant use during the early and late components was consistent with that observed at other Fort Ancient sites, as evidenced by a reliance on corn and beans, coupled with a decreased consumption of nuts and native cultigens relative to Woodland groups. Some deviation from this pattern, however, was documented at the Howard site. These differences may reflect local subsistence variation or, more likely, the contexts sampled. In particular, a high nutshell density was documented for the late occupation relative to contemporary Fort Ancient villages. If the observed high nutshell density is not a product of the limited number of contexts sampled, it could reflect a local preference for nuts. It also could represent a response to repeated poor crop yields, which necessitated an increased reliance on other foods.

The presence of common beans in late component samples, coupled with their absence in the early component samples, contributes to the discussion concerning the timing of the introduction of beans in the eastern United States and when they became an important component of the Fort Ancient diet. Did beans become part of the Fort Ancient diet by A.D. 1000, as suggested by their presence at the Muir site in Jessamine County? At present, it is the only early Fort Ancient site that has yielded beans. Or did beans not arrive in the central Kentucky region until ca. 1300 A.D., as suggested by their more widespread occurrence throughout the Fort Ancient region after that date? It also may be that beans were differentially adopted by early Fort Ancient peoples, and gained in popularity during middle Fort Ancient times.

As with plant exploitation, animal exploitation during both occupations at Howard is generally consistent with that documented at other Fort Ancient sites: the focus of hunting activities was centered on white-tailed deer, black bear, turkey, and to a lesser extent, small mammals. Elk is the only large mammal present in most Fort Ancient assemblages that is absent, and this is probably due to sample size rather than to cultural differences. The paucity of aquatic and semiaquatic resources (i.e., migratory avifauna, fish, and mussels) at Howard suggests that the residents of this community were engaged in an animal procurement strategy that focused on terrestrial vertebrates.

Seasonality of procurement suggests a strong fall through winter procurement strategy that concentrated on deer, bear and turkey. During the spring and summer reptiles, fish, and possibly mussels would have supplemented their diet.

The range of habitats reflected by the faunal assemblage from the Howard site, was somewhat greater than has been documented at other Fort Ancient villages, suggesting that the site's inhabitants exploited a more diverse environment than residents of other Fort Ancient communities. Situated in the Outer Bluegrass, between the southern edge of the Inner Bluegrass and the eastern edge of the Cumberland Plateau, the

residents of the Howard site were in an ideal position to exploit the open areas of the Inner Bluegrass and the forested areas of the Cumberland Plateau.

The Howard site's diverse wood charcoal profile with its lack of a dominating tree species also reflects its Outer Bluegrass location. It also stands in sharp contrast to archaeological wood profiles from sites to the north in the Inner Bluegrass region where hickories and oaks tend to dominate local forests. The species diversity documented at the Howard site is suggestive of the Mixed Mesophytic forest that once characterized much of the Outer Bluegrass and eastern Kentucky.

SUMMARY AND RECOMMENDATIONS

The Howard site is the first Fort Ancient site in Madison County to yield historic trade goods. These artifacts, are contemporary with many other diagnostics recovered from this site, including tear-shaped unifacial and bifacial endscrapers, aboriginal gunflints, Type 4 and Type 6 Fine Triangular projectile points, and late Madisonville Series ceramics. Together the Historic trade goods and the Fort Ancient diagnostics are consistent with the presence of a late Fort Ancient/Contact period village. This village would have been occupied sometime between A.D. 1550 and 1750.

In addition to the late Fort Ancient component, the Howard site also contains a significant early Fort Ancient (A.D. 1000-1200) component. The materials associated with this component are very similar to those recovered from the Muir site in nearby Jessamine County. Both site assemblages are characterized by Jessamine Series ceramics and Type 2 Fine Triangular projectile points.

The amount and diversity of late Fort Ancient materials recovered from the site, is suggestive of a large village. Based on the presence of four distinct concentrations of late Fort Ancient materials, this community appears to have consisted of several household clusters. The recovery of human remains points to the association of burials/cemeteries with these concentrations. In comparison, the early Fort Ancient assemblage is not as diverse or dense as the late Fort Ancient assemblage, and exhibits a much more diffuse distribution. The widespread distribution of these materials coupled with the absence of distinct concentrations of early Fort Ancient artifacts is suggestive of repeated short-term occupations and the absence of an early Fort Ancient village at the Howard site. Rather, a series of hamlets may have been established at this locality throughout the early Fort Ancient subperiod. These settlements may have been occupied by just a few households.

Though situated south of the Kentucky River and along the southern edge of the Fort Ancient culture area, the residents of the Howard site, as well as other Fort Ancient communities that were located in what is now Madison County, appear to have been active participants in Fort Ancient cultural developments. In general, cultural historical trends documented in Madison County parallel those documented in central, northern, and northeastern Kentucky. Located near the interface of the Bluegrass and Cumberland

Plateau, Fort Ancient people not only made use of the regions natural resources, but interacted with groups living to the south and east of Madison County.

Based on the presence of intact early Fort Ancient and late Fort Ancient deposits, the Howard site is eligible for listing in the National Register of Historic Places. Additional archaeological research at this site has the potential to address a variety of research questions relating to Fort Ancient settlement and subsistence patterns and interactions between Native Americans and Europeans. In order to preserve the Howard site, the Richmond Industrial Development Corporation agreed to exclude from development the most significant portion of this site. This resulted in a 2.5 ha area being fenced off and left as green space. Should project plans change and it become necessary to impact the Howard site, the Richmond Industrial Development Corporation should consult with the Kentucky Heritage Council to determine the nature and extent of any additional work that will need to be conducted.

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