Contract Publication Series 24-006

A PHASE I ARCHAEOLOGICAL SURVEY FOR A PROPOSED BUILD READY SITE, IN HOPKINS COUNTY, KENTUCKY

by
Michael Rusche

Prepared for

Ronald Johnson and Associates, P.S.C.

Prepared by

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cultural resource analysts, inc

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Indiana | Louisiana | Tennessee | Virginia

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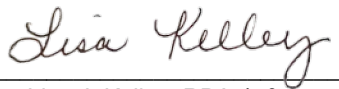

Lisa J. Kelley, RPA 4535
Principal Investigator

February 19, 2024

Lead Agency: Kentucky Cabinet for Economic Development
OSA Project Registration No.: FY24-12651

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ABSTRACT

Between January 17 and 25, 2024, Cultural Resource Analysts, Inc., personnel completed an archaeological survey for a proposed Kentucky Build Ready Site in Hopkins County, Kentucky. The survey was conducted at the request of Ronald Johnson and Associates, P.S.C., on behalf of the City of Madisonville. The proposed project area encompasses approximately 8.1 ha (20.0 acres), which was surveyed in its entirety.

Prior to the fieldwork, a records review was conducted at the Office of State Archaeology, which showed that there are one previous archaeological survey and one previously recorded archaeological site (15Hk318) within the current project area. During the previous survey, only a portion of the current project area was investigated and evaluated, and, as a result, the extent of the site boundary shown outside of the previous survey was only estimated. The portions of Site 15Hk318 not surveyed in 2007 were investigated during the current reconnaissance. This site has been significantly disturbed and there is little to no integrity remaining. Therefore, Site 15Hk318 is recommended not eligible for inclusion in the National Register of Historic Places. No further archaeological work is recommended for the project.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

Between January 17 and 25, 2024, Cultural Resource Analysts, Inc. (CRA), personnel completed an archaeological survey for a proposed Kentucky Build Ready Site in Hopkins County, Kentucky (Figure 1). The survey was conducted at the request of Ronald Johnson and Associates, P.S.C., on behalf of the Kentucky Cabinet for Economic Development. Michael Rusche, Dakota Woodard, and Kim Huddleston completed the fieldwork in approximately 60 person hours. Office of State Archaeology (OSA) Geographic Information Systems (GIS) data requested by CRA on January 9, 2024, was returned on January 19, 2024. The results were researched by Jennie VanMeter of CRA at the OSA on January 19, 2024. The OSA project registration number is FY24-12651.

Purpose of Study

This study was conducted to comply with Section 106 of the National Historic Preservation Act. The purpose of this archaeological survey was to locate, describe, evaluate, and make appropriate recommendations for the future treatment of any archaeological sites that may be affected by the proposed project. For the purposes of this assessment, a site is defined as "a place where past human occupation, habitations, or activities occurred, indicated by the presence of one or more artifacts," including "non-portable evidence of past human behavior or activity found on or in the ground" (IC 14-21-1-1). Cultural deposits meeting this definition, but less than 50 years of age, were not considered sites in accordance with "Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines" (National Park Service 1983).

The following is a description of the project area, previous research in the project area vicinity, field methods and laboratory methods used, results of this investigation, and recommendations. The survey and report are intended to conform to *Specifics for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Sanders 2017).

Project Description

Ronald Johnson and Associates, P.S.C., on behalf of the Kentucky Cabinet for Economic Development, is preparing a Kentucky Build Ready Site in compliance with the Kentucky Cabinet for Economic Development. The proposed project area is on the south side of US 41A (Nebo Road) on the northwest side of Madisonville (Figures 2 and 3). The proposed project area measures approximately 275 m (902 ft) northeast-southwest by 275 m (902 ft) northwest-southeast and encompasses approximately 8.1 ha (20.0 acres).

Summary of Findings

Prior to conducting the field research, a records review was conducted at the OSA. The review indicated that 15 archaeological sites and 11 previous investigations had been conducted within a 2 km radius of the project area. One previous investigation overlaps with the current project area, and one archaeological site (15Hk318) has been previously documented within the proposed project area.

The entirety of the project area was surveyed using systematic shovel testing and visual inspection of obviously disturbed areas. During the current survey, the previously recorded archaeological site (15Hk318) was reinvestigated. Site 15Hk318 is recommended not eligible for inclusion in the National Register of Historic Places (NRHP). No further work is recommended for the project area.

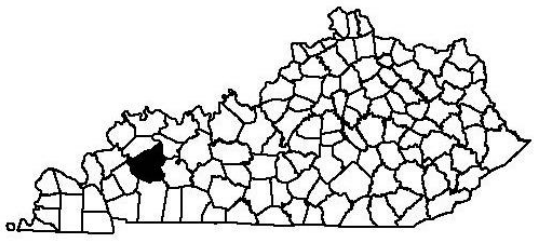

Figure 1. Map of Kentucky showing the location of Hopkins County.

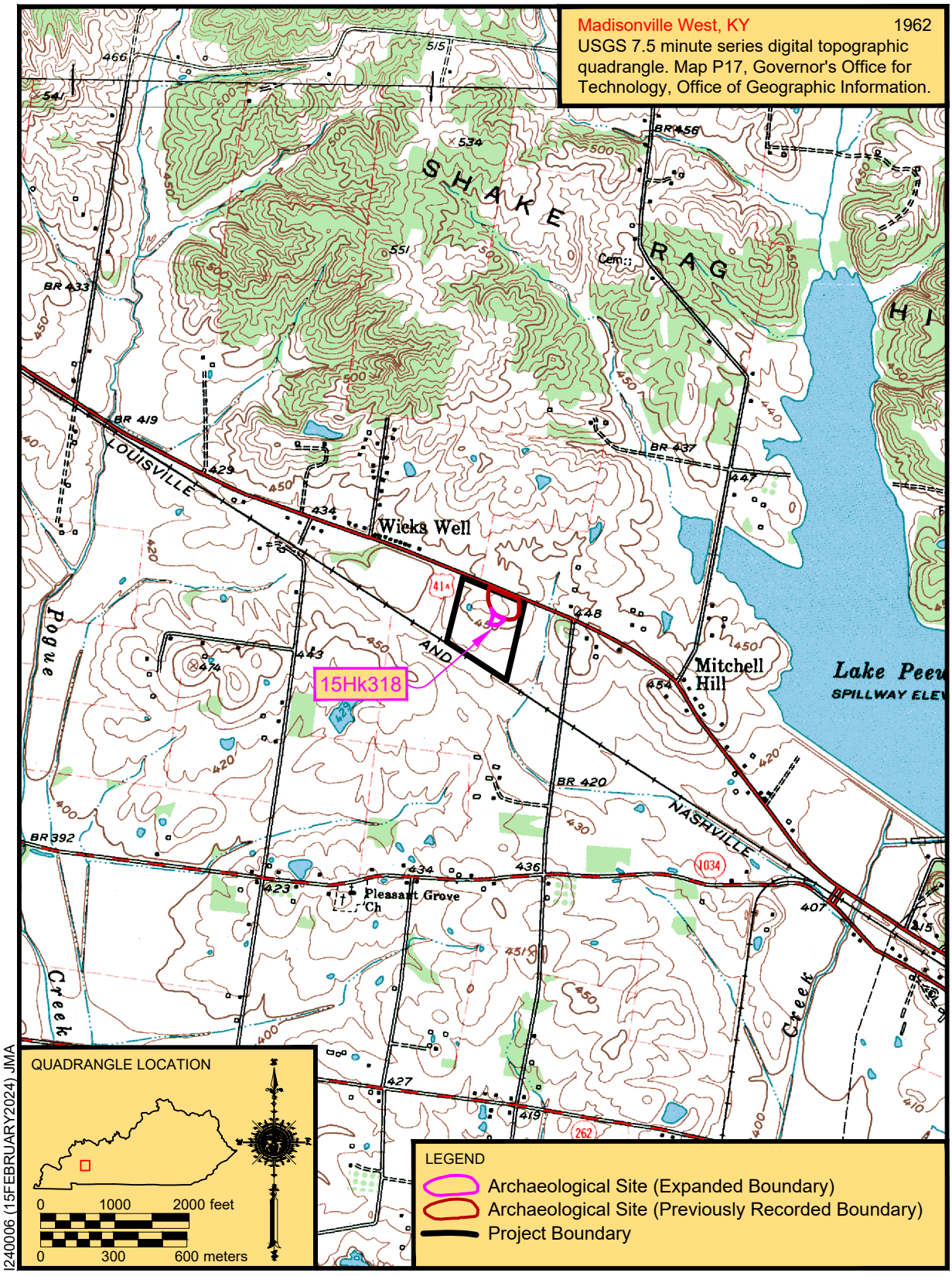

Figure 2. Location of the project area on a topographic quadrangle map.

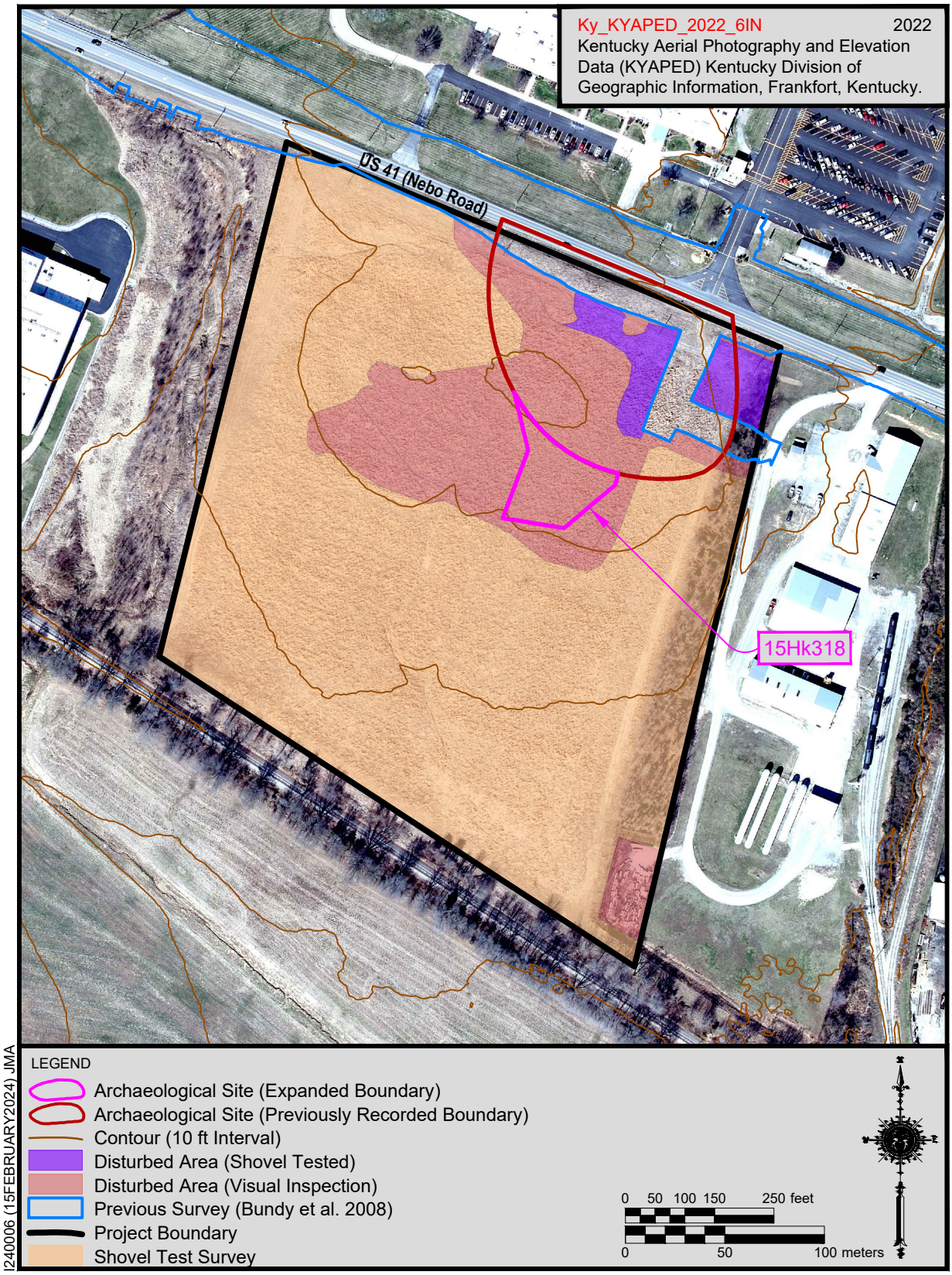

Figure 3. Project area plan map.

II. ENVIRONMENTAL SETTING

This section of the report provides a description of the modern and precontact environment and considers those aspects of the environment that may have influenced the settlement choices of past peoples. Attributes of the physical environment also often guide the methods used to discover archaeological sites. Topography, bedrock geology, vegetation, hydrology, soils, lithic resources, and climate for the region in which the project area is located are discussed below.

The Western Kentucky Coal Field region (Figure 4) consists of the following 20 counties: Breckinridge, Butler, Caldwell, Christian, Crittenden, Daviess, Edmonson, Grayson, Hart, Hancock, Henderson, Hopkins, Logan, McLean, Muhlenberg, Ohio, Todd, Union, Warren, and Webster. Of these, Butler, Daviess, Hancock, Henderson, Hopkins, McLean, Muhlenberg, Ohio, Union, and Webster Counties are situated completely within the region. Portions of the remaining counties overlap with the Mississippian Plateaus region. The region is generally bordered to the north by the Ohio River, and the Dripping Springs Escarpment forms a circular barrier to the south, west, and east. The escarpment is a southward-facing, asymmetrical ridge that separates a low and rolling karst plain of the Western Kentucky Coal Field region from the higher Mississippian Plateaus region (McGrain and Currens 1978:26). The karst plain contains numerous sinkholes, sinking creeks, springs, and caverns, and Mammoth Cave National Park is situated in the southeast portion of the region (McGrain and Currens 1978:9).

The Western Kentucky Coal Field region is characterized by rolling uplands with sandstone cliffs, and Pennsylvanian-age sandstone, shale, and coal underlie the area (Pollack 2008a:15). The upland bedrock is leached and weathered, and surface mining of thick coal beds on hilltops and valley bottoms has altered the topography of vast areas (Newell 2001). Burroughs (1924) identifies the region as a hilly upland of low to moderately high relief dissected by streams located in poorly drained and swampy valleys.

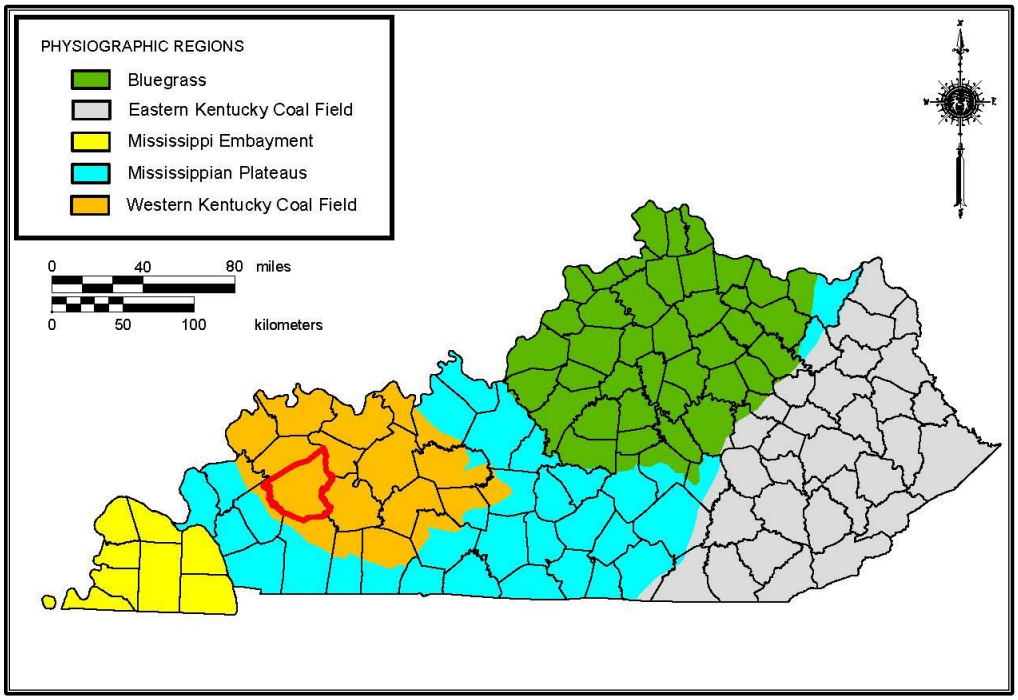

Figure 4. The Western Kentucky Coal Field region.

Most of the Western Kentucky Coal Field region is located in the Green River drainage basin (other portions are drained by the Ohio and Tradewater Rivers) (Figure 5). The Green and Tradewater Rivers have created broad valley bottoms that consist of alluvium and Quaternary lake sediments deposited when the Ohio Valley river mouths were dammed by glacial outwash (Newell 2001).

The Western Kentucky Coal Field is located within the Western Mesophytic Forest region as defined by Braun (2001:122–161). This forest region offers a mosaic pattern of climax vegetation types that are often less luxuriant than those observed for the Mixed Mesophytic Forest region to the east (Braun 2001:122–123). The Western Mesophytic region is considered a transition zone in which the effects of local environments allow different climax types to exist in proximity. Braun states that the modern pattern of forest distribution is the result of past and present environmental influences, with changes in climate, topography, or soil bringing about changes in vegetation (Braun 2001:529).

Historically, oak was dominant in much of the original Western Kentucky Coal Field area, although beech, tulip, sugar maple, hickories, and other species were also identified (Braun 2001:146–147). According to Burroughs (1924:48), great forests covered the Western Kentucky Coal Field region in pioneer days, and beech, maple, hickory, persimmon, sassafras, walnut, and various oaks were present in the hilly uplands. The lower rolling land contained predominately maple and beech, whereas bottomlands typically contained black oak, red oak, sweet and black gum, sycamore, and elm. Secondary oak or oak-hickory forests prevail along the modern rolling plateau, and hemlock is prevalent within the vicinity of the Pottsville Escarpment. Modern upland slope forests consist primarily of the white oak-black oak-tulip type, while slopes along the limestone soils of the Green River basin contain predominately beech and sugar maple (Braun 2001:148). Overall, oak-hickory, oak-tulip, and beech-chestnut types share dominance along with prairie communities in the modern Western Kentucky Coal Field region.

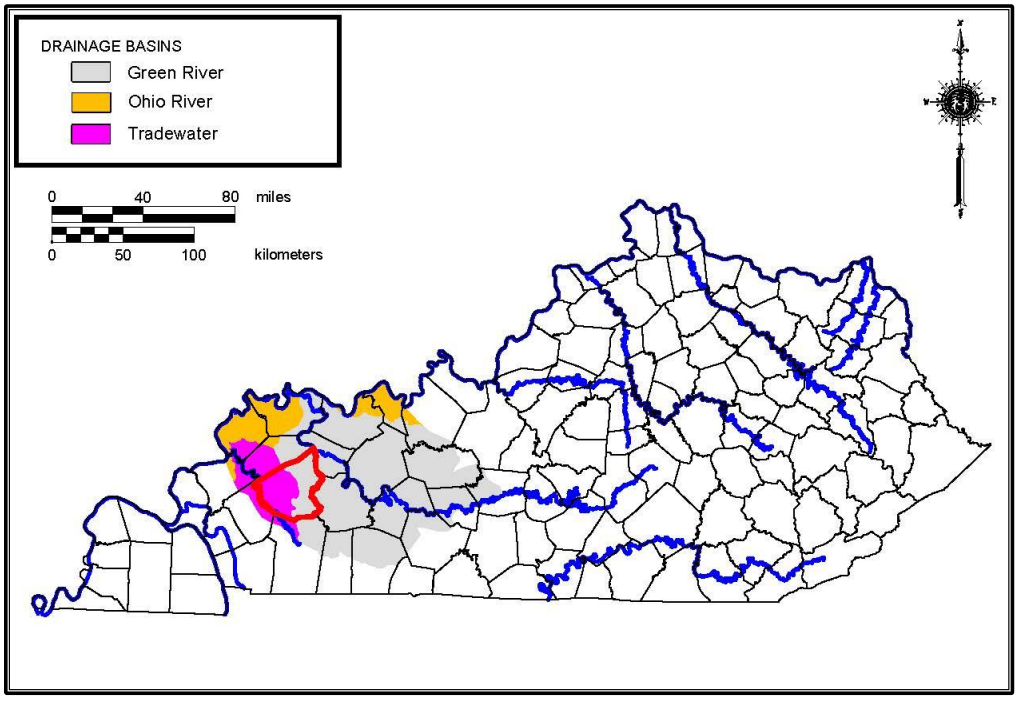

Figure 5. Rivers that drain the Western Kentucky Coal Field region.

Soils of the Western Kentucky Coal Field

The Western Kentucky Coal Field region is predominately mapped as the Alfisols order of soils. Alfisols developed on late Pleistocene or older surfaces or on erosional surfaces of similar age. They have a thin, dark A horizon rich in organic matter and nutrients and a clay-enriched subsoil, and they are relatively fertile due to being only moderately leached (Soil Survey Staff 1999:163–165). Alfisols may contain intact archaeological deposits very near to or on the ground surface, depending upon the landform on which they formed (e.g., sideslope vs. ridgetop).

The Alfisols are predominately mapped as the Udalfs suborder of soils, which are the more or less freely drained Alfisols in areas with well-distributed rainfall and seasonally varying soil temperatures. Some of the Udalfs are underlain by limestone or other calcareous sediments. Udalfs are thought to have developed under forest vegetation and, depending on temperature regime, they supported either a deciduous forest (mesic or warmer) or a mixed coniferous and deciduous forest (frigid). Many Udalfs have been cleared of trees and are intensively farmed. As a result of erosion, many now have only a clay-enriched or iron and aluminum oxide-enriched horizon below an Ap horizon that is mostly made up of material once part of the subsoil. Udalfs on stable surfaces retain most of their weathered or leached eluvial horizons above the subsoil. A few Udalfs have a natric, or clay and sodium-enriched, horizon, and others have a compacted zone, such as a fragipan, in or below the subsoil (Soil Survey Staff 1999).

Portions of the Western Kentucky Coal Field region that are predominately mapped as Entisols and Inceptisols occur to a lesser extent. Entisols are sandy soils that formed very recently in unconsolidated parent material and have not been in place long enough for pedogenic processes to form distinctive horizons aside from an A horizon. They are located on steep, actively eroding slopes or on floodplains or glacial outwash plains that frequently receive new deposits of alluvium. They do not have a compacted zone, such as a fragipan, and do not have accumulated clays or aluminum or iron oxides, but they may be sodium enriched (Soil Survey Staff 1999:389–391). Because of their young age, Entisols rarely have buried and intact precontact archaeological deposits.

In these portions of the Western Kentucky Coal Field region, two suborders, Aquents and Orthents, dominate the Entisol order. Aquents are found along margins of lakes or along streams where the water table is at or near the surface for much of the year. Many Aquents have bluish or grayish colors and redoximorphic features caused by alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Most support vegetation that tolerates permanent or periodic wetness. Orthents are located on recent erosional surfaces, the result of either geologic processes or of mining, cultivation, or other factors. The upper horizons have been either truncated or completely removed. Some are in areas of recent loamy or fine eolian deposits, in areas of glacial deposits, or in areas of debris from recent landslides and mudflows. Orthents occur in any climate and under any vegetation (Soil Survey Staff 1999).

Inceptisols developed in silty, acid alluvium during the late Pleistocene or Holocene time periods on nearly level to steep surfaces. Inceptisols may have deeply buried and intact archaeological deposits, depending upon the landform on which they formed (e.g., sideslope vs. alluvial terrace). Inceptisols exhibit a thick, dark-colored surface horizon rich in organic matter and a weakly developed subsurface horizon with evidence of weathering and sometimes of gleying (Soil Survey Staff 1999:489–493).

Again, two suborders, Aquepts and Udepts, dominate the Inceptisol order in the area. Aquepts are the wet Inceptisols exhibiting poor or very poor drainage. The water table is at or near the surface for much of the year. Aquepts generally have a gray to black surface horizon and a gray subsurface horizon with redox concentrations, or areas of accumulated iron and manganese oxides, that begins at a depth of less than 50 cm. A few of the soils have a brownish surface horizon that is less than 50 cm thick. Most Aquepts formed in late Pleistocene or younger deposits in

depressions, on nearly level plains, or on floodplains. Most of the Aquepts soils have a slightly altered but not quite clay-enriched subsoil or B horizon, and some have a subsurface compacted zone like a fragipan. Some also exhibit a human-made surface layer 50 cm thick or more produced by long term manuring (Soil Survey Staff 1999).

Udepts are mainly the more or less freely drained Inceptisols in areas with well-distributed to excessive rainfall. In areas of excessive rainfall, the soils formed in older deposits. Most of the soils are thought to have developed under forest vegetation, but some supported shrubs or grasses. Most of the soils have a thin or thicker but leached surface horizon and a weakly developed subsoil or B horizon. Some also have a sulfuric acid-enhanced horizon, which commonly results from artificial drainage, surface mining, or other earthmoving activities. Some also exhibit a subsurface cemented zone, such as a duripan, or a compacted zone, such as a fragipan (Soil Survey Staff 1999).

Small areas in Henderson and Union Counties along the Ohio River are predominately mapped as the Mollisols soil order. They are grassland soils, and because of the long-term addition of organic material to the soil from plant roots, the surface horizon is thick, dark, and fertile. They can exhibit clay, sodium, and/or carbonate-enriched, or even leached, subsoil horizons. These soils formed on level to sloping ground in late Pleistocene to Holocene or even earlier deposits, and generally under grassland that could have been previously forested. They have the potential to contain deeply buried and intact archaeological deposits on level floodplain or terrace landforms (Soil Survey Staff 1999:555–557).

These areas are predominately mapped as the Aquolls suborder of soils, which are the wet Mollisols. The water table is at or near the surface for much of the year. Most have supported grasses, sedges, and forbs, but a few have supported forest vegetation. They are generally found in the Midwestern states and are associated with glaciated areas where the drift or loess was calcareous, or in other words, was composed of calcium carbonate. Aquolls are generally olive in color and have high contrast redox depletions, areas where iron and manganese oxides or clay have been stripped out, in or below the surface soil layer. These soils commonly develop in low areas where water collects and stands, but some are on broad flats or on seepy hillsides. Aquolls exhibit a reducing moisture regime, meaning that the soil is virtually free of dissolved oxygen because it is saturated by water. They can also be artificially drained (Soil Survey Staff 1999).

Finally, Henderson County also has areas along the Ohio River floodplain mapped as the Vertisols order. They are clayey soils that have "deep, wide cracks for some time during the year and have slickensides within 100 cm of the mineral soil surface. They shrink when dry and swell when moistened" (Soil Survey Staff 1999:783). Slickensides are polished and grooved surfaces. Vertisols formed on Holocene or older landforms. They can have accumulation of carbonates, gypsum, or a subsurface horizon enriched with salts more soluble than gypsum. They are generally gently sloping, although a few are strongly sloping, and they support predominately grass, savanna, open forest, or desert shrub vegetation (Soil Survey Staff 1999:783–784).

Vertisols are predominately mapped as the Aquerts suborder of soils, which are the wet Vertisols. At or near the surface, they exhibit a reducing regime in which the soil generally lacks dissolved oxygen because the water table is located at or near the surface for much of the year. Aquerts are typically found in low areas, such as glacial lake plains, floodplains, stream terraces, and depressions (Soil Survey Staff 1999).

Lithic Resources

The Western Kentucky Coal Field region displays very few sources of lithic raw materials that could have been exploited by precontact inhabitants. There is some chert found in the Mississippian-age Vienna and Menard chert-bearing limestone formations on the margins of the region and in other limestone formations containing Haney, Girkin, and Paoli cherts (United States Geological Survey [USGS] 2011). The Green and Rough Rivers also flow through these formations and may have provided some

alluvial sources in the form of water-transported gravel. Also, Pliocene and Pleistocene gravels are found in some river valleys in the region. They contain chert pebbles and cobbles referred to as Mounds Gravel.

Precontact and Historic Climate

Climatic conditions during the period of human occupation in the region (late Pleistocene and Holocene ages) can be described as a series of transitions in temperature, rainfall, and seasonal patterns that created a wide range of ecological variation, altering the survival strategies of human populations (Anderson 2001; Niquette and Donham 1985:6–8; Shane et al. 2001). The landscape during the Pleistocene was quite different from that of today. Much of the mid-continent consisted of periglacial tundra dominated by boreal conifer and jack-pine forests. Eastern North America was populated by a variety of faunal species, including megafaunal taxa such as mastodon, mammoth, saber-toothed tiger, and Pleistocene horse, as well as by modern taxa such as white-tailed deer, raccoon, and rabbit.

The Wisconsinan glacial maximum occurred approximately 21,400 years BP (Anderson 2001; Delcourt and Delcourt 1987). By 15,000 BP, following the Wisconsinan glacial maximum, a general warming trend and concomitant glacial retreat had set in (Anderson 2001; Shane 1994). Towards the end of the Pleistocene and after 14,000 BP, the boreal forest gave way to a mixed conifer/northern hardwoods forest complex. In the early Holocene and by 10,000 BP, southern Indiana was probably on the northern fringes of expanding deciduous forests (Delcourt and Delcourt 1987:92–98). Pollen records from the Gallipolis Lock and Dam on the Ohio River near Putnam County, West Virginia, reveal that all the important arboreal taxa of mixed mesophytic forest had arrived in the region by 9000–8500 BP (Fredlund 1989:23). Similarly, Reidhead (1984:421) indicates that the generalized hardwood forests were well established in southeastern Indiana and southwest Ohio by circa 8200 BP.

Prior to approximately 13,450 BP, climatic conditions were harsh but capable of supporting human populations (Adovasio et al. 1998; McAvoy and McAvoy 1997). Populations were probably small, scattered, and not reproductively viable (Anderson 2001). The Inter-Allerød Cold period, 13,450–12,900 BP, brought about the dispersal of Native Americans across the continent. This period was followed by the rapid onset of a cooling event known as the Younger Dryas (12,900–11,650 BP), during which megafauna species became extinct, vegetation changed dramatically, and temperature fluctuated markedly. It was also a period of noticeable settlement shift that marked the appearance of a variety of subregional cultures across eastern North America (Anderson 2001).

In a recent review, Meeks and Anderson (2012:111) described the Pleistocene/Holocene transition as "a period of tremendous environmental dynamism coincident with the Younger Dryas event." The Younger Dryas (12,900 to 11,600 cal. BP) represents one of the largest abrupt climate changes that has occurred within the past 100,000 years. The onset of the Younger Dryas appears to have been a relatively rapid event that may have been driven by a freshwater influx into the North Atlantic as a result of catastrophic outbursts of glacial lakes. According to Meeks and Anderson (2012:111), "The net effect of these outbursts of freshwater was a reduction in sea surface salinity, which altered the thermohaline conveyor belt; effectively slowing ocean circulation of warmer water (heat) to the north and bringing cold conditions" (though see Meltzer and Bar-Yosef 2012:251–252 for a critique of this view). This resulted in significantly lower temperatures during this time. The Younger Dryas ended approximately 1,300 years later over a several-decade period. The onset of the Younger Dryas coincides with the end of Clovis and the advent of more geographically circumscribed cultural traditions.

Pollen records for the Younger Dryas indicate that vegetation shifts were sometimes abrupt and characterized by oscillations. These shifts were not uniform over the entire Southeast and indicate that a variety of factors were at play. At Jackson Pond in Kentucky (Wilkins et al.

1991), for example, several pronounced reciprocal oscillations occurred in a large number of spruce and oak. According to Meeks and Anderson (2012:113), "these oscillations reflect shifts between boreal/deciduous forest ecotones associated with cool/wet and cool/dry conditions, respectively."

Meeks and Anderson (2012:126–130) define five population events for the Paleoindian–Early Holocene transition. Population Event 1 (15,000–13,800 cal. BP) is a pre-Clovis occupation that exhibits a slow rise in population. This event may represent the initial colonization of the southeast region and may represent the basis of later Clovis occupation or a failed migration (Meeks and Anderson 2012:129). Population Event 2 represents an apparent 600-year gap between Events 1 and 3. Population Event 3 (13,200–12,800 cal. BP) occurred just prior to, and extended into, the Younger Dryas event. This event represents the "first unequivocal evidence for widespread human occupation across the southeastern United States" (Meeks and Anderson 2012:129). Event 3 coincided with the Clovis occupation in the region. A marked decline in the population is posited for Population Event 4 (12,800–11,900 cal. BP). This equates with the early to middle Younger Dryas and relates to a post-Clovis occupation of the region. Meeks and Anderson (2012:129) see a fragmentation of the regional Clovis culture at this time along with "the development of geographically circumscribed subregional, cultural traditions in the southeastern United States." A marked increase in population density is posited between 11,900 and 11,200 cal. BP. This coincides with the late portion of the Younger Dryas and the early portion of the Holocene. Population Event 5 is represented by this time frame. Early Side Notched and Dalton hafted bifaces are seen during this time.

During the early Holocene, rapid increases in boreal plant species occurred on the Allegheny Plateau in response to the retreat of the Laurentide ice sheet from the continental United States (Maxwell and Davis 1972:517–519; Whitehead 1973:624). At lower elevations, deciduous species were returning after having migrated to southern Mississippi Valley refugia during the Wisconsinan advances (Delcourt and Delcourt 1981:147). The climate during the early Holocene was still considerably cooler than the modern climate and based on species extant at that time in upper altitude zones of the Allegheny Plateau, conditions would have been similar to the Canadian boreal forest region of today (Maxwell and Davis 1972:515–516). Conditions at lower elevations were less severe and favored the transition from boreal to mixed mesophytic species. At Cheek Bend Cave in the Nashville Basin, an assemblage of small animals from the late Pleistocene confirms the environmental changes that took place during the Pleistocene to Holocene transition and the resulting extinction of Pleistocene megafauna and establishment of modern fauna in this area (Klippel and Parmalee 1982).

Traditionally, middle Holocene (8000–5000 BP, also referred to as the Hypsithermal) climate conditions were thought to be consistently drier and warmer than the present (Delcourt 1979:271; Klippel and Parmalee 1982; Wright 1968). The influx of westerly winds contributed to periods of severe moisture stress in the Prairie Peninsula and to an eastward advance of prairie vegetation (Wright 1968). More recent research (Anderson 2001; Shane et al. 2001:32–33) suggests that the middle Holocene was marked by considerable local climatic variability. Paleoclimatic data indicate that the period was marked by more pronounced seasonality characterized by warmer summers and cooler winters.

The earliest distinguishable late Holocene climatic episode began circa 5000 BP and ended around 2800 BP. This Sub-Boreal episode is associated with the establishment of essentially modern deciduous forest communities in the southern highlands and increased precipitation across most of the mid-continental United States (Delcourt 1979:271; Maxwell and Davis 1972:517–519; Shane et al. 2001; Warren and O'Brien 1982:73). Changes in local and extra-local forests after approximately 4800 BP may also have been the result of anthropogenic influences. Fredlund (1989:23) reports that the Gallipolis pollen record showed increasing local disturbance of the vegetation from circa 4800 BP to the present, a disturbance that may have been associated with the development and expansion of horticultural activity. Based on a study of

pollen and wood charcoal from the Cliff Palace Pond in Jackson County, Kentucky, Delcourt and Delcourt (1997:35–36) recorded the replacement of a red cedar-dominated forest with a forest dominated by fire-tolerant taxa (oaks and chestnuts) around 3000 BP. The change is associated with increased local wildfires (both natural and culturally augmented) and coincided with increases in cultural utilization of upland (mountain) forests.

Beginning around 2800 BP, generally warm conditions, probably similar to those of the twentieth century, prevailed during the Sub-Atlantic and Post-Sub-Atlantic climatic episodes, with the exception of the Neo-Boreal sub-episode, or Little Ice Age (700–100 BP), which was coldest from circa 400 BP until its end. Despite the prevailing trend, brief temperature and moisture variations occurred during this period. Some of these fluctuations have been associated with adaptive shifts in Midwestern precontact subsistence and settlement systems (Baerreis et al. 1976; Griffin 1961; Struever and Vickery 1973; Warren and O'Brien 1982).

Studies of historic weather patterns and tree-ring data by Fritts et al. (1979) indicate that twentieth-century climatological averages were "unusually mild" when compared to seventeenth- to nineteenth-century trends (the time period used for comparison represents the coldest period of the Neo-Boreal [400–100 BP], or the Little Ice Age) (Fritts et al. 1979:18). The study suggested that winters were generally colder, weather anomalies were more common, and unusually severe winters were more frequent between AD 1602 and AD 1900 than after AD 1900. The effects of the Neo-Boreal sub-episode, which ended during the mid- to late nineteenth century, have not been studied in detail for this region. It appears that the area experienced smaller temperature decreases during the late Neo-Boreal than did the upper Midwest and northern Plains (Fritts et al. 1979), so it follows that related changes in extant vegetation would be more difficult to detect.

Modern Climate

The modern climate of Kentucky is moderate in character and temperature, and precipitation levels fluctuate widely. The prevailing winds are westerly, and most storms cross the state in a west to east pattern. Low pressure storms that originate in the Gulf of Mexico and move in a northeasterly direction across Kentucky contribute the majority of the precipitation received by the state. Warm, moist, tropical air masses from the Gulf predominate during the summer months and contribute to the high humidity levels experienced throughout the state. As storms move through the state, occasional hot and cold periods of short duration may be experienced. During the spring and fall, storm systems tend to be less severe and less frequent, resulting in less radical extremes in temperature and rainfall (Anderson 1975).

Description of the Project Area

The proposed project area is located in central Hopkins County. This project area is situated south of US 41A, approximately 202 m east of the intersection of US 41A and Lovers Road. The topography throughout the project ranges between relatively flat grass fields to manmade rises and slopes, with an average elevation of 137 m above mean sea level (AMSL).

Ground surface visibility was poor across the entire project area. The vegetation consisted of brush, grasses, and secondary-growth forest, though it did vary based on the extent to which certain areas had been disturbed and the time that had passed since the disturbance occurred. For example, in the northern portions of the project area, previous construction had utilized this region as a staging area for heavy machinery and other equipment, and the ground appears to have been razed and built upon (Figure 6). This portion of the project area was void of any surface vegetation. Disturbance within the southern and western portions of the project area was minimal and related to the past agricultural activity that had occurred. The project area had been an agricultural field at one time and been left fallow (Nationwide Environmental Title Research [NETR] 2024). The vegetation within the less disturbed area consisted of tall grasses (Figure 7). Along the eastern edge of the project area, there

is a secondary-growth forest with trees, brush, and grasses (Figure 8). Additionally, there is a buried natural gas pipeline and multiple gas storage containers located in the southeast corner of the project area (Figure 9).

As previously mentioned, the most significant disturbance was situated in the northern portion of the project area, directly south of US 41A in the northeast and central portions of the project area. This disturbance is apparent on aerial images dating to 2023 (Google Earth 2024). The vegetation was not only removed, but unnatural landforms have also been created as a result of the associated earthmoving (see Figure 6). This area also contains a paved roadway that was developed at some point between 2023 and the time of the current survey (Figure 10).

Soils in the Project Area

A general overview of the soils will be presented here. The soils in the project area belong to the Loring-Grenada-Calloway soil association (Fehr et al. 1977). The modern soil survey shows that the entire project area is covered by the Hosmer-Robbs-Zanesville silt loams map unit (Soil Survey Staff 2024).

There are two United States Department of Agriculture (USDA) soil resources available for this part of Kentucky. One is the online Web Soil Survey, and the other is the Soil Survey of Hopkins County published in 1977 (Fehr et al. 1977; Soil Survey Staff 2024). The original soil report produced in 1977 shows the entire project area mapped within the Calloway silt loam; Grenada silt loam, 2 to 6 percent slopes; and Loring silt loam, 2 to 6 percent slopes, series (Fehr et al. 1977). However, the modern soil survey shows three individual soil map units are mapped within the project area. These include Hosmer silt loam, 2 to 6 percent slopes (uHosB); Robbs silt loam, 0 to 2 percent slopes (uRobA); and Zanesville silt loam, 6 to 12 percent slopes, severely eroded (ZnC3).

Figure 6. Overview of previously disturbed landform directly south of US 41A, facing north.

Figure 7. Overview of grass field south of the disturbed landform, facing south.

Figure 8. Secondary-growth forest along the eastern edge of the project area, facing north.

Figure 9. Buried natural gas pipeline in the southeast corner of the project area, facing east.

Figure 10. Paved access road leading from US 41A to Fortner LP Gas, facing west.

The modern soil survey shows soil polygons that have the same sizes and shapes as those on the original soil survey from 1977 (Fehr et al. 1977; Soil Survey Staff 2024). However, Hosmer and Robbs silt loams are shown at the location of the Grenada soils. Hosmer and Robbs soils are described as having formed on upland landforms, while Grenada soils are more common along terraces and floodplains. The topography in the project area consists of uplands, which is more consistent with the 2024 soil report. Thus, it was considered that the soil data described within the online soil survey was more accurate for use during the current investigation.

Soil series are classified by the amount of time it has taken them to form and the landscape position on which they are found (Birkeland 1984; Soil Survey Staff 1999). This information can provide a relative age of the soils and can express the potential for buried archaeological deposits within them (Stafford 2004). The soil order and group classifications for each soil series are used to assist with determining this potential. All of the soils are classified as Alfisols, which would contain archaeological deposits at, or very near, the surface, depending upon the landform on which they formed (e.g., sideslope vs. ridgetop) (Soil Survey Staff 1999:163–165).

III. RESULTS OF THE FILE AND RECORDS SEARCH AND SURVEY PREDICTIONS

Prior to the fieldwork, a search of records maintained by the NRHP and the OSA (FY24-12651) was conducted to: 1) determine if the project area had been previously surveyed for archaeological resources; 2) identify any previously recorded archaeological sites that were situated within the project area; 3) provide information concerning what archaeological resources could be expected within the project area; and 4) provide a context for any archaeological resources recovered within the project area.

A review of OSA records revealed that 11 previous professional archaeological surveys and archaeological site investigations have been conducted within a 2 km radius of the project area (Table 1). In addition, 15 archaeological sites have been recorded in this area (Table 2). One survey (Bundy et al. 2008) overlaps for approximately 0.20 ha of the northern half of the project area, and one site (15Hk318) overlaps with 1.04 ha of the northern half of the project area; however, the portions of Site 15Hk318 shown outside of the previous survey area were only estimated and not actually assessed (see Figure 3). The 2 km radius included areas within the Earlington quadrangle (USGS 1962).

From November 26 to 30, 2007, CRA personnel completed an archaeological survey of the preferred alternate and railroad overpass option associated with the proposed reconstruction of US 41A, north of Madisonville in Hopkins County, Kentucky (Bundy et al. 2008). At the request of GRW Engineers, Inc., on behalf of the Kentucky Transportation Cabinet (Item No. 2-137.01), 8.48 ha was investigated by intensive pedestrian survey supplemented with screened shovel testing. Six sites (15Hk318–15Hk323) and one previously recorded site (15Hk255) were identified during the survey. Site 15Hk318, which is entirely within the boundaries of the current project area, was a historic farm/residence dating from 1851 to 1900. None of the seven identified sites were considered eligible for NRHP inclusion, and no further work was recommended for Sites 15Hk255 and 15Hk318–15Hk322. Site 15Hk323 is a cemetery, and monitoring of grave relocations was recommended if the proposed construction plans were not modified to avoid it.

Table 1. Previously Conducted Archaeological Surveys Within the Records Search Radius.

SHPO ID	Reference	Requested By	Requested On Behalf Of	Purpose	Survey Date	Survey Size	Survey Methods	Results	Recommendations	NRHP Eligibility
054-163	Bundy et al. 2008	GRW Engineers, Inc.	KYTC (Item No. 2-137.01)	The preferred alternate and railroad overpass option associated with the proposed reconstruction of U.S. 41A, north of Madisonville in Hopkins County, Kentucky.	November 26 - 30, 2007	8.48 ha (20.96 acres)	Intensive pedestrian survey, screened shovel testing	6 sites (15Hk318–15Hk323), and 1 previously recorded site (15Hk255)	15Hk255, 15Hk318–15Hk322: No further work 15Hk323: Avoidance/monitoring	15Hk255, 15Hk318–15Hk323: Not eligible
054-173	Bybee 2008	Alliance Coal, LLC	Warrior Coal, LLC (Permit Application Number 954-5041)	Proposed coal mine operation near the community of Manitou in Hopkins County, Kentucky.	April 21 - 29, December 9, 2008	Original permit area of 172 ha (425 acres); Final permit area of 6.0 ha (14.7 acres)	Intensive pedestrian survey, screened shovel testing	14 sites (15Hk329–15Hk342), and 1 previously recorded site (15Hk44)	15Hk44: Avoidance/testing 15Hk329–15Hk341: No Further work 15Hk342: Avoidance/archaeological relocation of cemetery, no further work for other aspects of site	15Hk44, 15Hk342: Not assessed 15Hk329–15Hk341: Not eligible
054-134	Carstens 2005	Big Rivers Electric	-	Proposed electrical transmission line in Hopkins County, Kentucky.	February 11, 2005	1.4 ha (3.4 acres)	Pedestrian survey, shovel testing	No Sites Identified	No Further Work	N/A
054-168	Crider 2008	Environmental Corporation of America (ECA)	T-Mobile South, LLC	Proposed cell tower (Madisonville West Cellular Tower) in Hopkins County, Kentucky.	November 16, 2008	0.3 ha (0.74 acre)	Pedestrian survey, screened shovel testing	No Sites Identified	No Further Work	N/A
054-007	McGraw 1975	City of Madisonville	-	Proposed water intake structure, primary treatment facilities, a pumping station, a 30 inch ductile iron pipeline and a stilling basin in Hopkins County, Kentucky.	August 1975	243–263 ha (600–650 acres) and 24.5 linear km (15.2 mi) of pipeline corridor	Pedestrian survey	1 site (15Hk54)	Not Specified	Not Specified
054-013	Schock 1979	Mayor Charlotte Baldwin, City of Madisonville	-	Proposed industrial park in Madisonville in Hopkins County, Kentucky.	August 1, 1979	110.0 acres (44.5 ha)	Pedestrian survey	2 sites (15Hk87, 15Hk88A and B)	Testing if Impacted	None Assessed
054-028	Schock 1985	Ronald R. Johnson, City Engineer	-	Proposed fishing dock replacement and a proposed Boy Scout shelter in Hopkins County, Kentucky.	July 1985	7.3 ha (18.0 acres)	Pedestrian survey, surface examination	No Sites Identified	No Further Work	N/A
054-014	Schock and Weis Langford 1979	Mayor Charlotte Baldwin, City of Madisonville	-	NRHP evaluation of sites 15Ho87 and 15Ho88A and B, as part of proposed industrial park in Madisonville in Hopkins County, Kentucky.	November 14 - 21, 1979	Area of unspecified size	Test unit excavation, mechanical trenching	NRHP evaluation of sites 15Ho87, 15Ho88A and B	No Further Work	None Eligible
054-149	Smith 1993	Ronald R. Johnson, Madisonville City Engineer	-	Proposed sewer line extension in Hopkins County, Kentucky.	October 8, 1993	1.5 linear km (0.9 mi)	Pedestrian survey, shovel testing	No Sites Identified	No Further Work	N/A
-	Webb and Funkhouser 1932	-	-	Compile a list of known archaeological sites in 68 Kentucky counties.	1932	Area of unspecified size	Surface inspection, informant interviews	15Hk38 (among numerous other sites reported)	Not Specified	Not Assessed
054-020	Weinland and DeLorenze 1980	Not Specified	-	To generate a hypothesis about site distribution and density in two distinct ecozones - to prepare a practical preservation plan for the remaining sites in Hopkins County, Kentucky.	October, November 1978	Area of unspecified size	Pedestrian survey, shovel testing, informant interviews	33 sites (15Hk8, 15Hk46, 15Hk47, 15Hk51, 15Hk58–15Hk86)	None Specified	15Hk8, 15Hk46A–15Hk47, 15Hk63, 15Hk69, 15Hk72, 15Hk79: Considered eligible 15Hk51, 15Hk58–15Hk62, 15Hk64–15Hk68, 15Hk70–15Hk71, 15Hk73–15Hk78, 15Hk80–15Hk86: Not specified

Table 2. Previously Documented Archaeological Sites Within the Records Search Radius.

SHPO ID	Site	Site Name	References	Revisit	Site Type	Cultural Affiliation	Surveyed By	Survey Company	Survey Date	Investigation Type	NRHP Status
-	15Hk38	-	Webb and Funkhouser 1932	-	Earth Mound	Indeterminate Prehistoric	Reported by Rufus T. Whittinghill	Not specified	Not specified	Volunteered report	Not Assessed
054-020	15Hk51	-	Weinland and DeLorenze 1980	-	Open habitation w/o mounds	Early Archaic Early Woodland Late Archaic Middle Archaic Middle Woodland	Marcia K. Weinland, Gerald N. DeLorenze	KHC	First entered January 28, 1971; updated 1978	Reconnaissance Volunteered report	Not Assessed
054-013	15Hk87	-	Schock 1979	-	Open habitation w/o mounds	Late Archaic Woodland	Jack M. Schock	Arrow Enterprises	August 16, 1979	Reconnaissance	Not Assessed
054-013	15Hk88A	-	Schock 1979	-	Open habitation w/o mounds	Indeterminate Prehistoric	Jack M. Schock	Arrow Enterprises	August 16, 1979	Reconnaissance	Not Eligible
054-013	15Hk88B	-	Schock 1979	-	Open habitation w/o mounds	Late Woodland/Mississippian	Jack M. Schock	Arrow Enterprises	August 17, 1979	Reconnaissance	Not Eligible
-	15Hk255	-	None	-	Historic farm/residence	1901 - 1950	Harold E. Smith	Vaughan Engineering, Inc.	March 27, 1995	Reconnaissance	Not Eligible
054-163	15Hk255	-	Bundy et al. 2008	Yes	Historic farm/residence	1901 - 1950	Paul D. Bundy, Mike Mucio, Edwin Jockers	CRA	November 27, 2007	Reconnaissance	Not Eligible Site Destroyed
054-163	15Hk318	-	Bundy et al. 2008	-	Historic farm/residence	1851 - 1900	Paul D. Bundy, Mike Mucio, Edwin Jockers	CRA	November 27, 2007	Reconnaissance	Not Eligible
054-163	15Hk319	-	Bundy et al. 2008	-	Historic farm/residence	1900 - 2000	Paul D. Bundy, Mike Mucio, Edwin Jockers	CRA	November 28, 2007	Reconnaissance	Not Eligible
054-163	15Hk320	-	Bundy et al. 2008	-	Indeterminate historic	1851 - 1900	Paul D. Bundy, Mike Mucio, Edwin Jockers	CRA	November 27, 2007	Reconnaissance	Not Eligible
054-163	15Hk321	-	Bundy et al. 2008	-	Historic farm/residence	1851 - 2000	Paul D. Bundy, Mike Mucio, Edwin Jockers	CRA	November 29, 2007	Reconnaissance	Not Eligible
054-163	15Hk322	-	Bundy et al. 2008	-	Historic farm/residence	1851 - 1900	Paul D. Bundy, Mike Mucio, Edwin Jockers	CRA	November 29, 2007	Reconnaissance	Not Eligible
054-163	15Hk323	Bean Cemetery	Bundy et al. 2008	-	Cemetery	1851 - 1900	Paul D. Bundy, Mike Mucio, Edwin Jockers	CRA	November 29, 2007	Reconnaissance	Not Eligible
054-173	15Hk335	-	Bybee 2008	-	Historic farm/residence Open habitation w/o mounds	1851 - 2000 Indeterminate Prehistoric	Alexandra D. Bybee	CRA	April 23, 2008	Reconnaissance	Not Eligible
054-173	15Hk336	-	Bybee 2008	-	Open habitation w/o mounds	Indeterminate Prehistoric	Alexandra D. Bybee	CRA	April 23, 2008	Reconnaissance	Not Eligible
054-173	15Hk337	-	Bybee 2008	-	Historic farm/residence Open habitation w/o mounds	1851 - 1950 Indeterminate Prehistoric	Alexandra D. Bybee	CRA	April 23, 2008	Reconnaissance	Not Eligible

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Archaeological Site Data Hopkins County

OSA records show that, prior to this survey, 382 archaeological sites have been recorded in Hopkins County (Table 3). Precontact open habitations without mounds (n = 199; 52.1 percent) are the most common site types that have been recorded in the county. Other commonly recorded site types include historic farmsteads/residences (n = 77; 20.2 percent), rockshelters (n = 18; 4.7 percent), mound complexes (n = 17; 4.5 percent), and earthen mounds (n = 15; 3.9 percent).

Table 3. Summary of Selected Information for Previously Recorded Sites in Hopkins County. Data Obtained from OSA and May Contain Coding Errors.

Site Type:	N	%
Cave	0	0.0
Cemetery	7	1.8
Earth mound	15	3.9
Historic farm / residence	77	20.2
Industrial	3	0.8
Isolated burials	0	0.0
Isolated find	7	1.8
Military	0	0.0
Mound complex	17	4.5
Non-mound earthwork	1	0.3
Open habitation w/ mounds	3	0.8
Open habitation w/o mounds	199	52.1
Other special activity area	5	1.3
Petroglyph / pictograph	0	0.0
Quarry	0	0.0
Rockshelter	18	4.7
Stone mound	1	0.3
Workshop	1	0.3
Other	2	0.5
Undetermined	26	6.8
Total	382	100.0
Time Periods Represented	**N**	**%**
Paleoindian	5	0.9
Archaic	92	16.6
Woodland	63	11.4
Late Prehistoric	50	9.0
Protohistoric	0	0.0
Indeterminate Prehistoric	165	29.7
Historic	110	19.8
Unspecified	70	12.6
Total	555*	100.0
Landform	**N**	**%**
Dissected Uplands	207	54.2
Floodplain	52	13.6
Hillside	75	19.6
Terrace	13	3.4
Undissected Uplands	33	8.6
Other	2	0.5
Unspecified	0	0.0
Total	382	100.0

**One site may represent more than one time period.*

The most commonly recorded time period other than indeterminate prehistoric (n = 165; 29.7 percent) represented in the archaeological record of Hopkins County is historic (n = 110; 19.8 percent). Other commonly recorded time periods include Archaic (n = 92; 16.6 percent), Woodland (n = 63; 11.4 percent), and Late Prehistoric (n = 50; 9.0 percent).

Sites have been most commonly recorded on dissected uplands (n = 207; 54.2 percent) in Hopkins County. Other landform types bearing recorded sites include hillsides (n = 75; 19.6 percent), floodplains (n = 52; 13.6 percent), and undissected uplands (n = 33; 8.6 percent).

Map Data

In addition to the file search, a review of maps and aerial imagery available online and in the private collection at CRA was initiated to help identify potential historic properties (structures) or historic archaeological site locations within the project area. Maps and images from the following sources were reviewed:

1907 Earlington, Kentucky, 15-minute series topographic quadrangle (USGS)

1909 Earlington, Kentucky, 15-minute series topographic quadrangle (USGS)

1940 Highway and Transportation Map of Hopkins County, Kentucky (Kentucky State Highway Department [KSHD])

1950 Highway and Transportation Map of Hopkins County, Kentucky (KSHD)

1954 Earlington, Kentucky, 7.5-minute series topographic quadrangle (USGS)

1962 Madisonville West, Kentucky, 7.5-minute series topographic quadrangle (USGS)

The maps and imagery provided useful information about the general location of former structures and alerted the crew to the possible existence of historic deposits within a general area. All mapped structure locations were investigated for archaeological deposits according to accepted methodology, as described in the Methods section of this report. The available maps show that the land use in the project area has been primarily agricultural throughout the twentieth century.

The earliest reviewed map, dating to 1907, reveals the Louisville and Nashville Railroad (Morganfield Branch), running in a northwest-southeast direction south of the project area (USGS 1907). There is also one mapped structure (MS 1) shown within the middle of the northern portion of the current project area on the 1907 map (Figure 11) (USGS 1907). A previously recorded archaeological site, 15Hk318, was documented at the location of MS 1. This structure is represented on subsequent historical maps until 1962, when it is no longer depicted.

Historic aerial images also helped illustrate the presence of structures along with the mid- to late twentieth-century land use and disturbances within the project area (NETR 2024). The first available aerial photograph is from 1950 and shows the project area as an agricultural field. The same aerial shows MS 1 located in the northern half of the project area. Subsequent aerials from 1952, 1955, and 1962 depict no further changes in the project. By 1982, MS 1 is no longer present within the project area. All the subsequent maps from 1983 to 2014 depict no further changes within the project area, but they highlight the changes within the surrounding environment, which has become more industrial with multiple factories appearing to the north, east, and west of the project area (NETR 2024). In 2016, a small development is depicted in the southeast corner of the project area that includes tree stripping, road expansion, and the installation of gas storage containers (NETR 2024).

Additionally, aerial images available on Google Earth were reviewed beginning in 1998 and ending in 2023 (Google Earth 2024). From 1998 to 2020, these aerials further illustrate the agricultural nature of the project area prior to the industrialization of the surrounding area. On the 2023 aerial, there is extensive disturbance shown in the northern portion of the project area, including land stripping/raising and road developments (Google Earth 2024). This disturbance is a result of the road widening of US 41A, and the northern portion of the project area was utilized as a staging area for the heavy machinery and other equipment.

Survey Predictions

Considering the known distribution of sites near the project area and the nature of this area, certain predictions were possible regarding the kinds of sites that might be encountered. These predictions were based on the known distribution of sites in the county, the available information on recorded site types, the nature of the landscape within the project area, and the presence of structures indicated on historic maps and aerial imagery. Based on historic maps, aerial imagery, and the previously recorded archaeological site, it was considered plausible that a historic farmstead could be encountered within the project area. It was also considered likely that precontact open habitations without mounds could be documented on upland landforms due to their prevalence in the county. However, the obvious disturbances in the northern portion of the project area have greatly reduced the possibility that many of these sites still exist within this portion of the project area.

Cultural Overview

Early Human Occupation

The timing and actual entry point of the first humans into North America are still topics for debate. Over the last decade there has been increasing data indicating human occupation in North America circa 15,000 BP. This data comes from both archaeological and genetic/DNA research (e.g., Gilbert et al. 2008; Goebel et al. 2008; Jenkins et al. 2012; Reich et al. 2012; Waters et al. 2011). While there has been some discussion of eastern routes to North America (e.g., Bradley and Stanford 2004, 2006; Stanford and Bradley 2012), the general consensus remains that humans entered North America from Asia via the Bering Strait. Goebel et al. (2008:1501) summarize much of this data and state that:

> the most parsimonious explanation of the available genetic, archaeological, and environmental evidence is that humans colonized the Americas around 15 ka [15,000 BP], immediately after deglaciation of the Pacific coastal corridor. Monte Verde, Schaefer, and Hebior point to a human presence in the Americas by 14.6 ka [14,600 BP]. Human occupations at Meadowcroft, Page-Ladson, and Paisley Cave also appear to date to this time. Together these sites may represent the new basal stratum of American prehistory, one that could have given rise to Clovis. Most mtDNA and Ychromosome haplogroup coalescence estimates predict a 15-ka migration event.

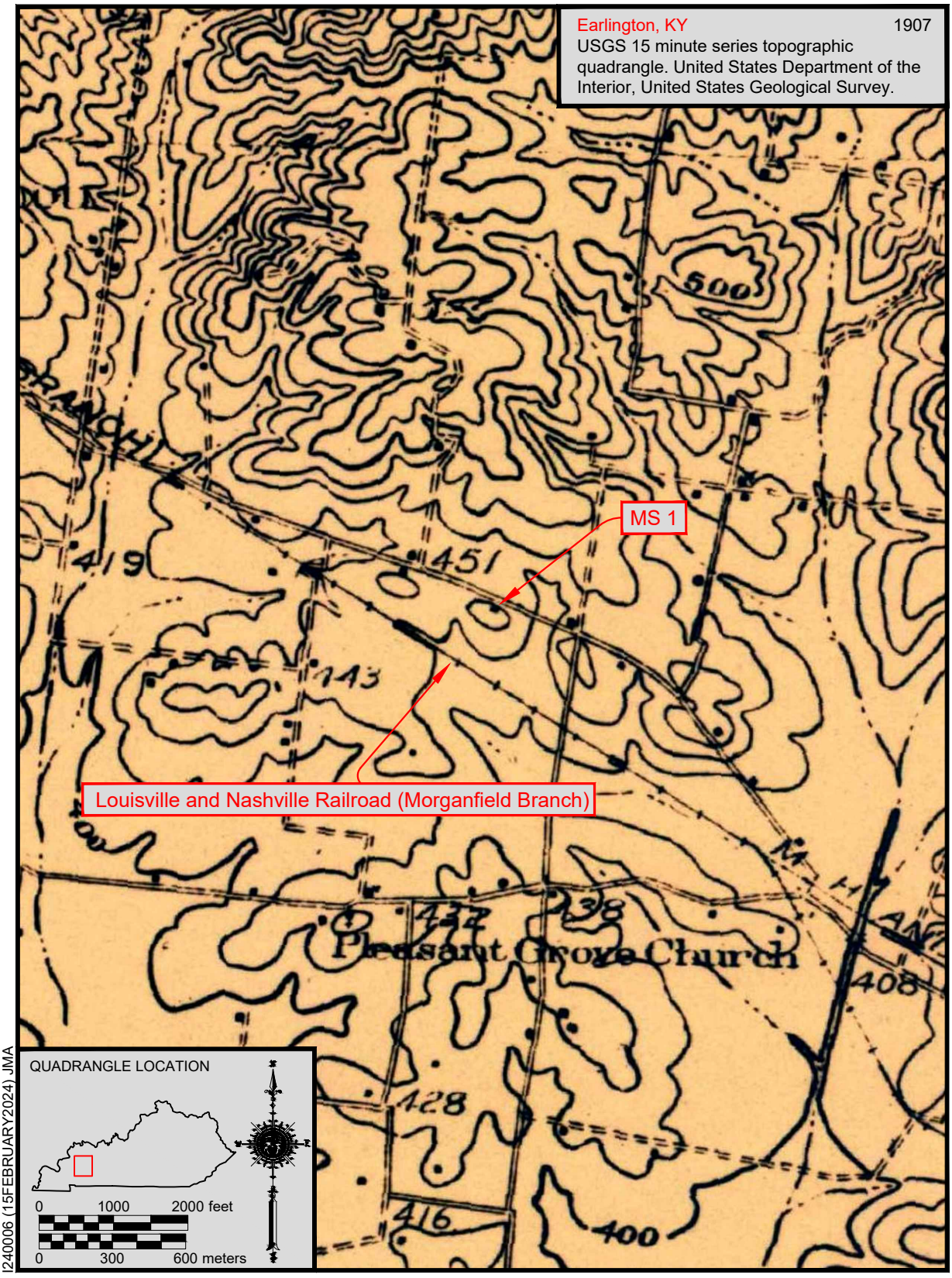

Figure 11. 1907 Earlington, Kentucky, 15-minute series topographic quadrangle showing MS 1 (USGS).

Based on genetic data, Reich et al. (2012) suggest Native Americans are descended from three migrations of Asian gene flow. The majority of Native Americans share a single ancestral population that they call "First American." This population is suggested to have migrated into America over 15,000 years ago. A second stream of gene flow from Asia was responsible for speakers of Eskimo-Aleut languages from the Arctic. Approximately half of Eskimo-Aleut gene flow was a result of this second migration. It is suggested that Eskimo-Aleut represents a mix of the First American and the second gene flow. Finally, the Na-Dene-speaking Chipewyan from Canada inherit roughly one-tenth of their ancestry from a third stream. Reich et al. (2012) argue that the initial peopling followed a southward expansion facilitated by the coast, with sequential population splits and little gene flow after divergence, especially in South America.

Genetic studies indicate that the first Americans originated in northeast Asia. However, no fluted Clovis points or other diagnostic characteristics of Clovis have been identified outside North America. Fluted points are also rare in Alaska, are technologically different, and postdate Clovis. These lines of evidence suggest to Waters et al. (2011:1599–1600) that "although the ultimate ancestors of Clovis originated from northeast Asia, important technological developments, including the invention of the Clovis fluted point, took place south of the North American continental ice sheets before 13.1 ka [13,100 BP] from an ancestral pre-Clovis tool assemblage."

Not only did entry into North America occur across a land bridge, but it may also have happened via northern coastal waterways leading to the western seaboard (Waguespack 2007). According to Maggard and Stackelbeck (2008:110), "these discoveries have seriously challenged the Clovis-first model and force us to reconsider the timing of colonization and the processes that were involved in the initial settlement of the New World."

One case supporting the pre-Clovis occupation of North America has been documented at Meadowcroft Rockshelter in western Pennsylvania. Excavations at the site have produced radiocarbon dates earlier than 17,000 BC through material recovered from the deepest microstrata in Stratum IIa associated with pebble tool artifacts, such as choppers, scrapers, and planes (Adovasio et al. 1978:638–639).

The Monte Verde site in northern Chile in South America has provoked much discussion because of an occupational surface (MV-II) dating to approximately 12,500 years ago that was documented at the site. The Monte Verde occupation includes wooden huts, hearths, and associated stone artifacts. The site dates approximately 1,000 years earlier than the generally accepted dates for Clovis, but it is situated approximately 16,000 km (9,942 mi) south of the Bering Land Bridge (Dillehay 1989, 1997; Meltzer et al. 1997). In fact, the Monte Verde data have compelled Meltzer and other archaeologists to back off from proclamations concerning a "Clovis Barrier" that had not been breached (Meltzer et al. 1997).

Several additional thoroughly investigated sites in the southeastern United States have also been suggested as pre-Clovis candidates. Among these are the Cactus Hill site located in southeast Virginia (McAvoy and McAvoy 1997; Wagner and McAvoy 2004) and the Topper site in South Carolina (Chandler 2001; Goodyear 1999; Goodyear and Steffy 2003). McAvoy and McAvoy (1997) have recovered fairly good data on pre-Clovis activity at the Cactus Hill site. This site has produced evidence that it was used between 11,000 and 15,000 years ago, the most compelling of which was recovered from a thermal feature that contained a few core blade tools and returned a radiocarbon date of 15,070 ± 70 BP (McAvoy and McAvoy 1997:179). Two additional dates for this occupation were 16,670 ± 730 BP, which was associated with a thermal feature and prismatic blade clusters, and 16,940 ± 50 BP, which was associated with another thermal feature (McAvoy and McAvoy 1997; Wagner and McAvoy 2004). Thin, lanceolate-shaped hafted bifaces, core blades, blade cores, and worked flakes were found in occupation levels at the site below Clovis-aged occupations (McAvoy and McAvoy 1997).

At another southeastern United States site, the Topper site in South Carolina, a number of lithic artifacts, such as burin- and blade-like tools, have been recovered from beneath Clovis period layers. These artifacts have been dated by optically stimulated luminescence to approximately 13,500 ± 1000 BP (Goodyear 1999; Marshall 2001:1730) and "the pre-Clovis artifact-bearing alluvial sands… are at least 16,000 to 20,000 years old" (Goodyear 2006:108).

Summary data has recently been reported for the Paisley Cave site in Oregon (Gilbert et al. 2008; Jenkins et al. 2012) and the Debra L. Friedkin site in Texas (Waters et al. 2011). Lithic artifacts from the Debra L. Friedkin site are small in size and lightweight. It is suggested that the tool kit (Buttermilk Creek complex) was designed for high residential mobility. Waters et al. (2011:1600) state that "the most conservative estimate of the age of the Buttermilk Creek Complex is ~13.2 to 15.5 ka (13,200-15,500 BP), on the basis of the minimum age represented by each of the 18 OSL ages." At Paisley Caves, human coprolites were dated and indicate human occupation of the northern Great Basin by at least 14,000 BP (Jenkins et al. 2012).

Despite the evidence of pre-Clovis occupations in many areas, to date, no definitive pre-Clovis occupations or materials have been found in Kentucky (Maggard and Stackelbeck 2008:114).

The Paleoindian Period (before 8000 BC)

The earliest cultural period conclusively documented on the Western Kentucky Coal Field of Kentucky is Paleoindian. Dragoo (1976:5) has dated this period in the eastern United States from about 10,500 BC to 8000 BC Mason (1962:236), however, has suggested that this period may have begun as early as 11,550 BC.

The arrival of humans to the plateau was probably linked to the movements of the Pleistocene glaciers. During the Paleoindian period, the last of these glacial advances and retreats, called Greatlakean Stadial (post-9900 BC), occurred. Although the glaciers never actually extended south of the Ohio River, their climatic effects were probably felt further south. A cooler, moister climate would affect the composition and distribution of floral and faunal communities (Delcourt and Delcourt 1982; Klippel and Parmalee 1982).

Distinctive, lanceolate-shaped, often fluted hafted bifaces called "Clovis Points" are the hallmarks of the early part of the Paleoindian period. Unifacially and bifacially chipped tools, such as knives, scrapers, spokeshaves, endscrapers with spurs, drills, and gravers, have also been recovered. Archaeologists infer that artifacts and tools of wood, bone, and shell were also used, although rarely preserved. One exception is a "carved, incised, and beveled-based osseous point" recovered from the Sheriden Cave site in Wyandot County, Ohio (Tankersley 1997:713). An additional osseous point was recovered from the site in 2000. In Florida, where preservation is better, a number of bone and ivory tools have been described that are associated with Paleoindian remains (Dunbar and Webb 1996). Many of these tools were manufactured from now-extinct fauna, including megafauna.

In the Plains area, Paleoindian points recovered from subsurface contexts have been found in direct association with extinct Pleistocene megafauna (Jennings 1978:27). Often these sites have been interpreted as kill sites, leading archaeologists to hypothesize that these early Americans were engaged full time in hunting big game Pleistocene mammals, such as mammoth, mastodon, giant beaver, bison, and horse, to the exclusion of plant resource utilization (e.g., Bonnichsen et. al. 1987; Kelly and Todd 1988; Stoltman and Baerreis 1983).

An alternative interpretation of Paleoindian activity is supported by the many species of plants and small mammals that have been recovered from Clovis-age sites, including Lubbock Lake (Johnson 1987), Shawnee-Minisink (Dent and Kaufman 1985; Gingerich 2011), and Aubrey (Ferring 1989). At Dust Cave in northern Alabama, faunal material associated with the Late Paleoindian levels was more highly represented by avian species than mammals (Walker 1996). In a recent review of the topic,

Meltzer (1993) concluded that there is no widespread evidence for the specialized hunting of big game species (i.e., megafauna). Several authors (e.g., Davis 1993; Dincauze 1993; Meltzer 1993) now argue that the Paleoindian diet was more generalized and relied on a number of faunal and floral species. Megafauna would have been taken when encountered but not to the exclusion of other species. The Coats-Hines site in Williamson County, Tennessee, provides such an example. The remains of a mastodon were found with associated chipped stone tools (Breitburg and Broster 1995). Cut marks on the bones further evidenced this association. No hafted bifaces were recovered in association with the beast because it was scavenged rather than killed by a Paleoindian group.

In the eastern United States, few sites have definite associations between fluted points and extinct Pleistocene fauna. Associations between chipped stone tools and mastodon remains have been reported for several sites in the region. The Coats-Hines site, mentioned previously, is one such occurrence, and the Adams Mastodon site in Harrison County, Kentucky, where the remains of a single mastodon with cut marks on the bones were found in association with large limestone slabs, is another. At the Adams Mastodon site, the configuration of the skeletal remains and these cut marks led archaeologists to consider the possibility that butchering took place (Duffield and Boisvert 1983; Walters 1988). MacDonald (1968), however, has proposed that caribou, not megafauna, were the preferred game for Paleoindian cultures of this region, and evidence found at Holcomb Beach in Michigan supports his assertion (Fitting et al. 1966).

In a study of Kentucky Paleoindian sites, Rolingson (1964) found that the majority of Paleoindian hafted bifaces were found in the Western Kentucky Coal Field and the Bluegrass region. Rolingson and Schwartz (1966) discussed Paleoindian components at four sites in the Purchase area of western Kentucky (Henderson, Roach, Morris, and Parrish). Clovis, Cumberland, lanceolate fluted points, and uniface tools were recovered at these sites. All four sites lacked intact stratigraphy and contained later Archaic material in addition to the Paleoindian assemblage. Additional Paleoindian sites have been recorded in the counties bordering Kentucky Lake (Maggard and Stackelbeck 2008:136–138).

Paleoindian sites in the eastern United States where Clovis points have been recovered from subsurface contexts include Bull Brook in Massachusetts (Byers 1954); the Shawnee-Minisink site in Pennsylvania (Marshall 1978); Wells Creek Crater (Dragoo 1973); the Johnson-Hawkins, Johnson, and Carson-Conn-Short sites (Broster and Norton 1993) in Tennessee; the Debert site in Nova Scotia (MacDonald 1968); and the Modoc Rockshelter in Illinois (Fowler 1959). At Meadowcroft, despite the lack of diagnostic fluted hafted bifaces, subsurface remains that date to the Paleoindian period were recovered, including Mungai knives, bifaces, flake blades, and flake debris, as well as four fire-pit features (Adovasio et al. 1977). Although the date is far from being universally accepted, the earliest dated Paleoindian component in North America (14,225 ± 975 BC) (Adovasio et al. 1977:Table 7) was recovered from Stratum II at this site.

Radiometrically dated Paleoindian material on the Western Kentucky Coal Field is limited. Three dates from two Kentucky sites are worthy of note, although unfortunately a direct association between the dates and Paleoindian material cannot be demonstrated. An alluvial stratum at Big Bone Lick that contained sloth, horse, mastodon, and mammoth yielded a date of 8650 ± 250 BC (Tankersley 1985:41, 1987:36–37, 1990:Table 1). Clovis points found at the site over the years indicate that the date may be accurate in assessing Paleoindian use of this locale (Maggard and Stackelbeck 2008).

To the east of the Western Kentucky Coal Field itself, Enoch Fork Rockshelter (15Pe50) yielded two early dates: 9010 ± 240 BC and 11,530 ± 350 BC (Bush 1988:61; Tankersley 1990:Table 1). Both of the samples used to generate these dates were obtained from a stratum underlying an Early Archaic Kirk zone at the site (Cecil Ison, personal communication 1991). More recently, Broster and Barker (1992:120; also see Broster et al. 1991:9) have reported dates of 11,700 ± 980 BP, 11,980 ± 110 BP, and 12,660 ± 970 BP associated with fluted material from the

Johnson site along the Cumberland River in the Nashville Basin of Tennessee.

According to Freeman et al. (1996:402) most Paleoindian sites in Kentucky "represent short, ephemeral occupations that occur in shallow, deflated, or severely disturbed deposits" and larger sites are in "areas that provide high-quality lithic raw material, or topographic features or resources that would have attracted and concentrated game." Away from lithic source areas, for example, larger sites often "occur in association with ponded or slow-moving water, at stream confluences and fords, along major game trails, and at mineral springs" (Freeman et al. 1996:402).

With the retreat of the glaciers the environment began to change, and the Pleistocene megafauna became extinct. Regional archaeological complexes began to develop (Dragoo 1976:10), and new hafted bifaces replaced the Clovis point tradition. In the Southeast, Clovis fluted points gave way to Plainview, Agate Basin, Cumberland, Quad, Dalton (Meserve), Beaver Lake, and Hardaway-Dalton hafted bifaces. These hafted biface types are representative of the transition from Late Paleoindian to Early Archaic (circa 8500–8000 BC).

Transitional Paleoindian/Early Archaic sites of the Dalton culture are slightly more numerous than the earlier Paleoindian sites. Sites dating to this period show many resemblances to those with Paleoindian material (i.e., lanceolate projectile points/knives, uniface tools) and Early Archaic lifeways (e.g., more diverse subsistence, the introduction of many bifacial tool forms, and several types of sites). Hunting remained an important source of subsistence during this time period; however, Dalton peoples probably based their economy around the hunting of small game animals, such as the white-tailed deer, instead of the large game animals (Morse 1973). This is probably also the case for other Late Paleoindian/Early Archaic groups. According to Williams and Stoltman (1965:678), "available evidence suggests an increasing Dalton concentration into the Tennessee River Valley of northwest Alabama and western Tennessee, and the Green River in Kentucky." With the depletion of the big game herds, old supplementary subsistence patterns were intensified, signaling the beginning of an Archaic subsistence pattern (Williams and Stoltman 1965). Morse (1973) has described two basic kinds of Dalton sites, base settlements and butchering camps, but it is also during the Dalton period that the first systematic use of rockshelters is seen (Walthall 1998).

Many sites that contained Paleoindian material also contained components representative of the transition from the Paleoindian to Archaic periods. There appears to be an increase in the number of sites that may reflect a population increase as part of the transition. Hunting remained important; however, there is evidence for the use of wild plant foods as a dietary supplement. At the Hester site, Lentz (1986) recovered the remains of wild plum, hickory nut, hackberry, walnut, and acorn in association with Dalton, Big Sandy, Decatur, and Pine Tree horizons. Lentz (1986:272) suggests that "most of the foods [recovered in these early horizons] can be consumed fresh without any required grinding, soaking, or cooking." Few food processing artifacts were recovered from the site.

Goodyear (1982:382–392) has argued, based on radiocarbon dates and contexts of Dalton points across the Southeast, that Dalton points consistently date earlier and are not contemporary with later Archaic side-notched and corner-notched forms. Goodyear places this transitional phase between 8500 and 7900 BC.

The Archaic Period (8000–1000 BC)

The Archaic period includes a long span of time during which important cultural changes took place. As Funk (1978:19) states, "it is generally agreed that Archaic cultures evolved from Late Paleoindian expressions of the Southeast and Midwest, since there is growing evidence for the existence of transitional cultural manifestations. It is very unlikely that new migrations from Asia were represented." These manifestations probably occurred in part in response to environmental changes that took place at the close of the Pleistocene epoch. The Archaic period is customarily divided into three

subperiods: Early (8000–6000 BC), Middle (6000–4000 BC), and Late (4000–1000 BC).

Early Archaic (8000–6000 BC)

During Early Archaic times, the last glaciers retreated and the arctic-like boreal forest began developing into the eastern deciduous forest. Except for the adoption of new hafted biface styles, Early Archaic tool kits are nearly identical to those associated with the Paleoindian period. Chapman (1975:6) suggests that the Early Archaic "is marked by a shift from lanceolate to stemmed, notched, or barbed broad blade hafted biface forms." Because tools associated with the preparation of plant foods and fishing were scarce in the Early Archaic, hunting is thought to have been the dominant means of subsistence. The tool assemblage from Early Archaic sites, however, shows a shift to an increased reliance on plant foods and small game for subsistence purposes. This shift is particularly evident in chipped stone artifacts, which became more diverse in form and variety (Chapman 1975).

Archaeological investigations at a number of deeply buried sites in the Southeast have served to outline cultural developments during the Archaic. These sites include the St. Albans site in West Virginia (Broyles 1971), the Longworth–Gick site near Louisville, Kentucky (Collins 1979), three sites in the North Carolina Piedmont (Coe 1964), Modoc Rockshelter in Illinois (Fowler 1959), and sites within the Little Tennessee River valley (Chapman 1973, 1975, 1977, 1978). A series of hafted biface forms are recognized as diagnostic of this stage. These include Early Side-Notched (Big Sandy I), Kirk Cluster Corner-Notched (Kirk, Palmer, Decatur, Pine Tree), and Bifurcated Base Cluster forms (St. Albans, LeCroy, Kanawha). Other tool forms, including knives, drills, scrapers, perforators, gravers, and a variety of flake tools, were also introduced, and bifacially worked implements are more commonly found on this type of site than on earlier Paleoindian sites (Chapman 1985; Faulkner and McCollough 1974; Pace et al. 1986).

Much of our current knowledge concerning the Early Archaic is derived from excavations in the Little Tennessee River valley of eastern Tennessee. A number of deeply buried sites that were excavated yielded in situ deposits dating to the Early Archaic. Six large base camps have been excavated (Rose Island, Icehouse Bottom, Bussell Island, Thirty Acre Island, Calloway, and Bacon Farm) (Chapman 1973, 1975) that contain features (e.g., hearths, globular pits, rock concentrations, basins, and cremations) and many chipped stone tool types. In general, these sites suggest that Native Americans lived in or near "areas of maximum microenvironmental and resource diversity" (Chapman 1978:142).

Many smaller sites were also examined by Chapman (1978:143), and he suggests that they "probably represent transient camps at which the exploitation of some, perhaps seasonal, resource[s] took place." During the Early Archaic, people utilized a "central based transhumance system" in which "a centralized base camp… served as a focus and an axis for seasonally controlled hunting and gathering camps elsewhere" (Chapman 1975:272). Chapman's (1975) settlement model for the Ridge and Valley Province of eastern Tennessee may be applicable to other areas of the Southeast.

Spatial analysis of a Bifurcate Base (LeCroy) level at the Rose Island site has allowed Kimball (1993) to model Early Archaic residential site structure. His spatial analysis indicated the location of a structure, family hearth/general work area, and several specialized activity areas.

Recently, Carr (1995) conducted a reanalysis of the lithic materials from several of the Tellico sites. His analysis suggests that patterns of technological organization remained similar in the area throughout the Early Archaic. Some differences in the settlement-subsistence system were documented. The lower Kirk occupations appear to represent a forager settlement mobility system (sensu Binford 1980), and the later Kirk occupations fit with expectations of collector base camps.

Recent work in eastern Kentucky adds data to this earlier research. Creasman (1995; Creasman et al. 1996) documented a site in eastern Kentucky containing a Bifurcate horizon dating circa 6500–6000 BC. The site was situated in Bell County, Kentucky, on a bank of the Cumberland

River. According to data obtained from Dixon and Rohr (Dragoo 1958; Mayer-Oakes 1955), Early Archaic peoples inhabited rockshelters, which were apparently used as short-term, temporary camps, as were the large riverine base camps mentioned above. Sites dating to the Early Archaic period have been found in every physiographic zone from upland areas to floodplain zones. In all sites, there is a continuation of some Paleoindian traits (i.e., uniface and blade tools) and the introduction of many new tool forms. The latter may reflect an increased diversity in the subsistence pattern. Many plant foods (e.g., hickory and acorn) were added to the diet to supplement hunting activities. Herbaceous seeds may have been collected also.

In addition to the better known corner-notched and bifurcate forms, more recent excavations have begun to shed some light on the earlier side-notched forms. At Dust Cave in northern Alabama, early side-notched forms occur between Cumberland and other Late Paleoindian and Kirk-Stemmed materials. Estimated ages for the early side-notched component range between 10,000 and 9,000 years ago, although several earlier dates ranging between 10,330 and 10,490 BP may also be associated with this component, or an earlier Late Paleoindian component (Driskell 1994:Table 1, 1996).

Numerous chipped stone and bone tools have been recovered from horizons associated with the early side-notched component at Dust Cave (Goldman-Finn and Walker 1994; Meeks 1994). Faunal remains are well preserved at the site as well. Of interest is the low percentage of deer in relation to aquatic and small terrestrial birds and mammals (Driskell 1996; Grover 1994; Walker 1996). A date of 10,350 ± 60 BP was also reported for early side-notched forms from 40Ch162 (Bradbury and McKelway 1996:7). These occupations on the Harpeth River in Cheatham County, Tennessee, represented a short-term, limited activity location for the duration of the Early Archaic.

Middle Archaic (circa 6000–4000 BC)

The environment during the Middle Archaic subperiod was dryer and warmer than the modern environment. Increasing regionalization of artifact inventories and the addition of new artifact classes and hafted biface styles suggest the development of extensive exploitation strategies. The Middle Archaic is marked by the introduction of groundstone artifacts manufactured through pecking, grinding, and polishing (e.g., adzes, axes, bannerstones, and pendants). A number of these groundstone tools (e.g., manos, mortars and pestles, and nutting stones) are often interpreted as plant food processing artifacts and indicate an increased utilization of plant food resources during the Middle Archaic (Jefferies 2008:203–206).

New hafted biface styles developed during the Middle Archaic, such as stemmed and basal-notched points. A variety of bone tools, including antler hafted bifaces, fishhooks, and gouges, suggest an improved efficiency in exploiting local resources. Middle Archaic sites tend to contain larger accumulations of materials than those of earlier periods, "suggesting increasing group size and either increased sedentism or carefully scheduled seasonal reoccupation of selected locations" (Cohen 1977:191). Important sites in the Southeast with Middle Archaic components include sites in the Little Tennessee River valley, such as Icehouse Bottom (Chapman 1977), Eva in west Tennessee (Lewis and Lewis 1961), North Carolina Piedmont sites (Coe 1964), and Modoc Rockshelter in Illinois (Fowler 1959).

Although it has yet to be excavated, the Glasgow site (46Ka229) may be one of the more important Middle Archaic sites to be identified in the middle Ohio River Valley (Hand and Hughes 1990; Redmond and Niquette 1991). It contains a buried Stanly component that is characterized by a 15-x-40 m (49.2-x-131.2 ft), 20 cm (7.9 in) thick midden zone. Tests from the site suggest that the Stanly zone may produce over one million artifacts. The Stanly zone at Glasgow produced three features encountered in a single 2-x-2 m unit and an uncorrected date of 5610 ± 70 BC (Niquette et al. 1991:31).

Chapman (1975) has suggested that Archaic hafted bifaces were probably used in conjunction with the atlatl, a device that increases the distance and accuracy of a thrown spear. The recovery of bone and groundstone objects (bannerstones) in Middle Archaic contexts interpreted as atlatl weights supports Chapman's suggestion (cf., Neuman 1967:36–53). Certain classes of chipped stone tool artifacts, such as scrapers, unifaces, drills, and gouges, indicate a continuation of their importance from the Paleoindian period.

Late Archaic (circa 4000–1000 BC)

The Late Archaic was a time of continued cultural expansion and complexity. Dragoo (1976:12–15) has discussed several Late Archaic traditions for the Eastern Woodlands. The distinctiveness of each tradition stems from each tradition's response to its regional environment. These responses are often reflected in the material culture. An increase in the number of sites noted for the Late Archaic might suggest an increase in population during this period, and evidence of longer, more intensive site occupation suggests, in some cases, extended habitation within an area.

Archaeologists have inferred from ethnographic analogy drawn from surviving hunter-gatherer groups in remote areas of the world that Late Archaic groups were probably organized in nomadic or semi-sedentary bands with scheduled seasonal movements to better exploit faunal and floral resources. Late Archaic settlement generally consists of a series of camps located to take advantage of seasonal environmental resources. Artifact inventories for the Late Archaic reflect these diversified responses to a wide variety of environmental conditions (Winters 1967:32, 1969).

Population increase and increased evidence of mortuary ceremonialism have led some investigators to postulate that a more complex social organization was developing in some areas of the eastern United States. Along the Green River in west-central Kentucky, large shell mound sites, such as Chiggerville (Webb and Haag 1939), Indian Knoll (Webb 1946), and Carlson Annis (Webb 1950), contain hundreds of human burials illustrative of complex mortuary practices and a rich ceremonial life. The development of interregional trading networks is indicated by the recovery of copper, marine shell, and other non-local artifacts from Late Archaic burials (Winters 1968). Dragoo (1976:17) states that "these foreign materials not only testify to the growing complexity of the ritualism connected with the burial of the dead but also to the interaction of many groups which would have facilitated the exchange of ideas as well as goods." There is little evidence, however, of this developing complexity in the Late Archaic record of the Cumberland Plateau.

Archaeologists have documented early squash domestication with a radiocarbon date of 1778 ± 80 BC in the Late Archaic levels of Cloudsplitter Rockshelter in Menifee County (Cowan et al. 1981:71, Table 1). Seeds of the Eastern Agricultural complex (sunflower, sumpweed, maygrass, and erect knotweed), though, are sparse in the Late Archaic levels of Cloudsplitter. However, according to Cowan et al. (1981:71), after 1050 BC "all members of the Eastern [Agricultural] Complex undergo a sudden and dramatic increase in the rate at which they were being deposited in the site," perhaps "indicative of a wholesale introduction of the complex into the region at this time."

The Cold Oak shelter in Lee County, Kentucky (15Le50) (Ison 1988), provides an interesting view of the latest documented Archaic site on the Cumberland Plateau. It contained several stratigraphic levels, the latest of which reflected recent lumbering activity and was preceded by a Late Woodland occupation. Zones III and IIIa date to the Late Archaic, and the latter contained a wealth of perishable materials, "such as nut fragments, small seeds, grasses, leaves, wood, and bits of discarded cordage" (Ison 1988:208). The assemblage included cultivated plants and a Cogswell projectile point. In Zone III, Cogswell and Wade points, which usually date to circa 900 BC, were recovered. Potentially cultivated plants from Cold Oak shelter include sunflower (*Helianthus* sp.), goosefoot (*Chenopodium* sp.), knotweed (*Polyongum* sp.), marshelder (*Iva* sp.), squash (*Cucurbita* sp.), and possibly maygrass (*Phalaris* sp.). Recovered faunal remains indicate that a wide variety of game, including deer, bear, turkey, squirrel,

turtle, and varieties of fish and local shellfish, was hunted (Ison 1988).

Excavators attribute the terminal Archaic of the site to the Cogswell phase (Ison 1988:215), which is distinguished by the distinctive Cogswell projectile points. Interestingly, Wade points, often considered Early Woodland, also occur in the Cogswell phase materials at Cold Oak. Because of the presence of these Wade points, the Cold Oak shelter has become an important reflection of the dynamics of the Late Archaic adaptation, which stressed wide ranging hunting and collecting. In the context of these activities, plants local to the Cumberland Plateau (and elsewhere in the eastern United States) were manipulated and brought into simple "cultivation," meaning that at some point the seeds were harvested and planted at the beginning of the following growing season. Subsequently, in the Woodland period, this tradition of native plant cultivation continued and became perhaps even more important. More intensive farming on the Cumberland Plateau, however, would not really occur until after AD 1000. It would involve cultivated plants, notably corn and, later, beans, that had been imported into the eastern United States.

The Woodland Period (1000 BC–AD 1000)

Traditionally, archaeologists distinguish the Woodland period from the Archaic by the appearance of pottery, the construction of burial mounds and other earthworks, and the rudimentary practice of agriculture (Willey 1966:267). Although these changes were substantial, the Woodland period can still be viewed as a developmental period that in many ways comes out of the Archaic. It is apparent, however, that all regions of the eastern United States did not march hand-in-hand through time toward increasing social and cultural complexity; neighboring regions changed at quite different rates. For example, the high social and cultural elaboration expressed in the earthworks and mortuary structures along the Scioto in southern Ohio during the Middle Woodland are paralleled elsewhere only in scattered locations, if at all, and are not found in the Cumberland Plateau. Although Woodland period earthworks—for example burial mounds and hilltop enclosures—do occur, they were rare, suggesting that they were not important elements of the cultural landscape (Applegate 2008:493–512; Railey 1996).

Archaeologists who think that the complexity of culture increased naturally over time were surprised to learn that peaks of cultural complexity during the Woodland period were not necessarily continued. The end of the Woodland period in many parts of the Ohio Valley is seen in terms of a decline in the level of complexity it is thought to have reached 100 to 200 years prior. This notable "decline" makes the Woodland period, there and elsewhere, the first point precontact that archaeologists acknowledge when cultural development in the eastern Woodlands was not leading inexorably toward civilization, as Caldwell (1958) had already pointed out. Cultural evolution in the eastern United States is now thought to have departed from Archaic underpinnings and to have proceeded by fits and starts, with local complexity increasing and decreasing.

The division between Late Archaic and Early Woodland in terms of stone tools is nebulous. Early Woodland sites in the Ohio Valley are most easily recognized by a collection of related stemmed projectile points. These have been subsumed by the Cogswell Phase, as defined by Ison (1988). Excavations at the Grayson site (15Cr73) suggest that the phase dates from circa 1250 to 800 BC (Ledbetter and O'Steen 1991). A variety of thermal features were excavated at Grayson, including large, charcoal-filled, and fire-cracked rock–lined pits (possibly earth ovens). In addition, chert-filled cache pits were attributed to the Cogswell Phase. Structure 3 at Grayson was associated with the Early Woodland use of the site. Open on one side, the structure consisted of an arc of well-defined postmolds enclosing an area approximately 10.0 m (32.8 ft) in diameter. Along the wall was a cluster of thermal and cache pits. Elsewhere on the site an earth oven containing a Buck Creek Barbed point produced a radiocarbon date of 2781 ± 67 BP (Ledbetter and O'Steen 1991:Tables 8–13).

Early Woodland (circa 1000–200 BC)

In the mountainous region of Kentucky, a rise in the use of natural rockshelters as habitation sites is noticed and may reflect the growing importance of plant cultivation during Early Woodland times. Native plants characteristic of the Early Woodland may have led to a much wider dispersal of human populations over the landscape than had occurred during the Archaic period (Railey 1996:86). This concentration of early plant domestication corresponded with an emphasis on other local resources (e.g., cherts used in tool production), which suggests that Native American populations "settled in" to the rugged land of the Cumberland Plateau during this period and used its resources to their fullest extent.

The increasing shift from river bottoms as preferred habitation sites to rockshelters in the Early Woodland follows the trend started during the Cogswell phase of the Late Archaic (mentioned briefly above) (Railey 1996:87). Although earlier Archaic peoples had used rockshelters as habitation sites (e.g., Newt Kash [Webb and Funkhouser 1936] and Cloudsplitter [Cowan 1985a, 1985b; Cowan et al. 1981]), evidence of pottery and other perishable items—both tool fragments and plant remains—is noted in addition to the Archaic tool inventory in late Cogswell phase occupations. In addition to nut crops (most importantly, hickory), Early Woodland occupants of these and other sites used the full range of plants that had been collected during the earlier Archaic, many of which would have been showing distinct signs of human domestication (generally in the form of enlarged seeds).

Pottery similar to the Early Woodland Fayette Thick (found in central and northern Kentucky), but lacking the distinctive pinched decoration, occurs on the Cumberland Plateau. A pottery type known as Graham Roughened was defined at the Graham site (15La222) in Lawrence County, Kentucky. Tempered with sandstone, it is described as a flat-bottomed, cylindrical-shaped caldron with a direct, undecorated, but well-smoothed rim. In contrast, body sherds were very rough and uneven, as if an attempt had been made to smooth the vessel after it had been partially dried. Feature 20 at the Graham site produced a quantity of Graham Roughened artifacts that dates between circa 350 BC and 210 BC (Niquette 1989).

Sheldon and Hughes (1990) reported a rockshelter in Breathitt County (15Br118) that held extremely valuable information relating to this time period. McGraw subsequently tested the site (McGraw et al. 1991) and identified an extended human burial. A fragment of beaten native copper—possibly a grave offering—was found in the pelvic region, and two Cogswell bifaces and a Buck Creek barbed point were found under the skeleton's right ulna. A bone sample yielded an uncorrected date of 1020 ± 130 BC (Betty J. McGraw, personal communication 1991). This date has a corrected date range of 1510–900 BC The burial demonstrates that Cogswell phase sites witnessed increased mortuary ritualism over the preceding Late Archaic, perhaps foreshadowing the intensified mortuary ceremonialism that is considered diagnostic of the Middle Woodland period.

Middle Woodland (circa 200 BC–AD 500)

During the Middle Woodland, site types on the Plateau became more diversified, but the complexity of mounds and earthworks that was characteristic of the Bluegrass and northern Kentucky really only developed where the Plateau meets the Ohio River Valley (e.g., the earthwork complexes of Greenup County near Portsmouth) (Squier and Davis 1848:Plate 27). Large burial mounds, like the C & O mounds near Paintsville, Kentucky (Webb 1942), and a mound near Oneida in Clay County, were the exception rather than the rule. Smaller mounds existed, but these were constructed primarily of stone rather than earth. An example of these structures is the Brisbin Mound in Boyd County (Aument 1985; Lewis 1996:109). Small, open-air, domestic sites, such as the Calloway site located on the floodplain of a small tributary of Tug Fork in Martin County, are much more typical of the Middle Woodland period in this region than are mounds (Niquette and Boedy 1986; Niquette et al. 1987). At Calloway, a series of features, some

of them scattered small rock ovens, contained burned plant food remains.

An important Middle Woodland settlement was excavated in Pike County, Kentucky, at the Martin Justice site (Kerr and Creasman 1995). Although the site is multicomponent, exhibiting evidence of human occupation from the Middle Archaic through the Late Woodland, Middle Woodland pottery was found that was associated with a roughly circular structure that must have been the focus for a single household (Kerr and Creasman 1995:162–165). The Martin Justice site, therefore, contained somewhat more permanent domestic features than were found at the Calloway site in Martin County.

Middle Woodland peoples continued the technologies developed in the Archaic and Early Woodland periods; however, there were changes as well. A chert bladelet industry developed exclusively during the Middle Woodland period. It produced small and sharp chert tools that were used in fine work. In addition, exotic materials—copper, mica, and on rare occasions, obsidian—were obtained through trade from distant sources. These artifacts are typically known from mortuary sites in Kentucky (Applegate 2008:352).

Excavations at Faust Shelter (Ahler 1967) in Morgan County, Tennessee, identified a preference for rockshelter dwellings by Early Woodland populations, but their use was more sporadic by the Middle Woodland period. Ahler (1967:49–50) suggests that Early Woodland people lived on the major terraces of the Emory River during the summer and then fragmented into smaller groups during the winter to exploit upland resources and live in rockshelters. During the Middle Woodland period, year-round occupation of the terraces is possible because horticultural practices intensified, so these populations were able to create food surpluses. The uplands would be needed only for hunting excursions during the winter. Although there is evidence for resident populations, lithic materials and ceramic tempering materials at Faust Shelter are primarily of non-local origin and come from the Tennessee Valley. This suggests that significant contact between the Cumberland Plateau and the Tennessee Valley in terms of trade existed, or that movements of people between the two areas during the Middle Woodland period was possible (Ferguson and Pace 1981:23).

Wilson and Finch (1980) found that sites with Early and Middle Woodland components increase in number and intensity in the Big South Fork area. In contrast to the Emory River area, the settlements are confined almost exclusively to rockshelters; however, rockshelters in this area are found in a wide variety of settings, which Wilson and Finch (1980:181–203) suggest may indicate year-round occupation of the area.

Late Woodland (AD 500–1000)

Around AD 400, the Hopewellian ceremonial centers and extensive trade network collapsed in the Ohio Valley, and burial practices became less complex. This decline marked the beginning of the Late Woodland. In areas such as Illinois or Ohio, where Hopewellian influence was greatest, Late Woodland marks a return to a less complex way of life. In other areas where Hopewellian influence was minimal, Late Woodland sites continued a more general Woodland lifestyle (i.e., dependence on domesticated plants increased, and hunting and gathering continued to be the primary means of subsistence) (Railey 1996).

Late Woodland projectile point forms include early Late Woodland (circa AD 400–750) Chesser and Lowe point varieties. These are followed in time by forms such as Jack's Reef Corner Notched, Raccoon Notched, and Levanna points. Small triangular projectile points appear in artifact assemblages by AD 800 and may represent the first appearance of the bow and arrow. Other archaeologists, however, place that invention in the Late Archaic, some 2,000 years earlier.

Although regional ceramic sequences have not been developed, most Late Woodland ceramics are generally cordmarked. Variability in ceramic tempering agents is thought to reflect regional and not temporal developments (Purrington 1967:124). A number of Late Woodland phases have been defined in the middle Ohio Valley. These include Newtown

(Griffin 1952), Peters (Prufer and McKenzie 1966), Chesser (Prufer 1967), Watson Farm (Mayer-Oakes 1955), Buck Garden (McMichael 1965), Childers, and Woods (Shott 1990).

Survey and excavation in the Cumberland Plateau of eastern Tennessee, undertaken by Pace and Kline (1976), Ahler (1967), and Wilson and Finch (1980), have demonstrated that the tendency to "settle" increased during the Woodland period. Not only are there more sites, but they are occupied for longer periods of time, possibly for multiple seasons or year round. Evidence for pottery production using local sandstone tempering materials may indicate longer-term use of the area by a resident population during this period. Production of food in the Sequatchie Valley and along the Highland Rim may have been supplemented with upland resources, which may have led to an increase in the number of sites in the uplands (Pace and Kline 1976:101–102).

Late Precontact Period (AD 1000–1700)

The late Precontact period has been associated with Mississippian cultures that are more easily recognized in the Mississippi and parts of the Ohio and Illinois River valleys, although Mississippian influences were seen in a much larger geographic area (Pollack 2008b). The Mississippian period was characterized by chiefdoms and intensive agriculture. Maize (*Zea mays*), beans (*Phaseolus vulgaris*), and squash (*Cucurbita* sp.) were the principal crops. Nevertheless, hunting and gathering continued to be important in many areas (Smith 1978).

Settlements were arranged in a hierarchical manner, were fortified, contained substructure mounds that were either for ceremonial purposes or dwellings for the elite, and were occupied year-round. Mississippian structures were built using wattle and daub construction, and the wall posts were set in trenches. Although there were continuously occupied villages in the settlement system, much of the Mississippian population lived in smaller hamlets and farmsteads scattered up and down the major rivers and secondary streams (Smith 1978). The Upper Cumberland region contains several Mississippian mound centers and smaller hamlets or farmsteads (Pollack 2008b:684–694).

Cultures with a similar level of development included the Pisgah in the Appalachian Summit, the Fort Ancient in the middle Ohio River area, and the Plaquemine of the lower Mississippi River area. Although a Late Woodland level of society continued in the Midwest, the Great Lakes, the Northeast, and the piedmont and coastal areas of the Middle Atlantic until European contact, some contact was made at the boundaries between the Mississippian cultural area and these regions. The Mississippian period dates to AD 800 in the middle Mississippi River area. Between AD 900 and 1350, independent Mississippian societies developed in the surrounding regions. These societies lasted until circa AD 1550 (Geier 1992:279–280).

Contact and Historic Period (AD 1700–Present)

The Protohistoric period begins with the first indications of contact between Native American groups and expanding western European populations after AD 1492. The evidence for this contact exists principally in the form of glass beads of European manufacture and metal artifacts (first brass, and only later, iron), some of which were of European manufacture (e.g., bells), and some of which were native (e.g., tinklers). In the middle Ohio Valley and the neighboring Cumberland Plateau these artifacts appear to date to the Late Precontact Madisonville horizon of the Fort Ancient culture (Drooker 1997). More importantly, however, they occur at the Madisonville site near Cincinnati and then are widely seen at other Fort Ancient sites of the phase, some of which are located on the plateau. They reflect indirect contact between Native American groups, the French in the St. Lawrence Valley to the north, and the Spanish to the south. That is to say, the European goods were obtained through trade between Native Americans and Europeans, with whom the Natives were living in direct contact (Drooker 1997).

An exhaustive analysis of Madisonville horizon Fort Ancient culture (Drooker 1997) suggests that this final Fort Ancient occupation of

the region may have been on the decline by the end of the first quarter of the seventeenth century, reflecting the movement of its peoples both west and east in order to maintain closer contact with the French settlements of the Mississippi Valley and the Dutch and English settlements of the east, both being developing points of trade. As a result, this portion of the Ohio Valley may have been largely vacated by Native Americans before the onset of the Iroquois depredations after AD 1640, themselves a product of intensifying commercial links between the tribes of the Iroquois Confederacy and the French (Drooker 1997:336–337).

After AD 1724, Native American tribes (e.g., the Shawnee) were pushed westward by the expansion of European settlement (McConnell 1992:21). The arrival of these tribes to the Ohio Valley was documented by AD 1750 at sites like Bentley and Old Fort Earthworks (named for the nearby Middle Woodland earthworks) (Henderson et al. 1986:131–37; Henderson et al. 1992:270–278; Pollack and Henderson 1984). By this time, they possessed a full range of iron tools and arms like their European competitors. Currently, however, there is little evidence to indicate that the Shawnees were the cultural descendants of the last Fort Ancient peoples of the Madisonville phase (Drooker 1997:104–105).

The conflicts between the Shawnees and other groups of the Middle Ohio (Delaware, Miami, Piankashaw, and Wyandot) lasted through the War of 1812. They are a part of the conflict between the French and British and later the British and the new American Colonies (Hammack 1992:928–929; McBride and McBride 2008; O'Donnell 1992:815).

The first Europeans to visit Kentucky included explorers, trappers, traders, and surveyors. It was in the 1750s, when the English Crown attempted to colonize the Ohio Valley, that the first organized attempt to settle Kentucky occurred. This attempt stimulated the formation of land companies that sent surveyors into the area (McBride and McBride 2008:909). One of these, the Ohio Land Company, sent a surveyor into Kentucky in 1751. The French and Indian War that erupted in 1754 disrupted this early exploration (Talbert 1992:689).

In 1763, England's King George III set aside the land west of the Appalachians for Indians and English fur traders and closed the area to permanent settlement. His decree was ignored, however, and further colonial exploration and development could not be stopped. One man who took advantage of the commercial expansion westward was Daniel Boone. Boone first explored Kentucky in 1767, and by 1769 he had explored much of the Red and Kentucky River valleys. Harrodsburg was established soon after in 1774, followed by Boonesboro in 1775. The western movement of the American frontier pushed the Native Americans farther and farther west, and Kentucky was one of the places where they decided to take a stand. In response, Governor Dunmore (of Virginia) waged two large campaigns in the Ohio Valley (later known as Dunmore's War), and the Native Americans were defeated. Dunmore's War opened Kentucky for settlement, although some hostilities continued after this time (Nickell 1992:96–98; Stone 1992:571).

History of Hopkins County

In 1776, the Virginia General Assembly created Kentucky County from its western lands. The newly created Kentucky County had approximately the same boundaries as the state of Kentucky does today. In 1780, Kentucky County was divided into three separate counties—Fayette, Lincoln, and Jefferson—which collectively became the District of Kentucky in 1783 (Hammon 1992:495). Then, in 1792, the Kentucky District dissipated in favor of the Commonwealth of Kentucky, and the counties that comprised the district were eventually divided and subdivided into the 120 counties that presently make up Kentucky.

Established in 1806, Hopkins County was created with land appropriated from Henderson County. Hopkins County is located in western Kentucky and is situated in the Western Coal field cultural landscape (Collins 1847:350). The county was named for General Samuel Hopkins, an early settler of the region and a Revolutionary War veteran. Hopkins County is 1,429.7 sq km (552 sq mi) in size, and is bounded by McLean and Webster Counties to the north, Muhlenberg County to the east, Christian County to the south,

and Caldwell County to the west (Brown 1992a:439). Madisonville is the county seat (Brown 1992a:439).

Native Americans were the earliest inhabitants of this region. One of the last standing structures built by these early inhabitants was a rough stone structure on Fort Ridge, which has since been destroyed by strip mining in the county (Brown 1992a:439). Early European settlers arrived in the area in the late eighteenth century, arriving by way of the Ohio River and through the western and central portions of Kentucky. Many settlers of Hopkins County were Revolutionary War veterans who had received land grants from Virginia for lands southwest of Green River as compensation for their services. After moving in, these settlers began to populate and farm the region's fertile valleys (Brown 1992a:439).

Most prominent of the settlers was Freiderick Wilhelm Ludolf Gerhard Augustin, Baron von Steuben, a Prussian general who instructed Washington's army at Valley Forge during the winter of 1776–1777 (Brown 1992a:439). His land grant was for an estimated 4,451.5 ha (11,000.0 acres), and a salt spring on the grant was known as "Steuben's Lick" which, during the 1880s, became known as the community of Manitou (Brown 1992a:439–440). It has been reported that during the baron's first visit to the area, he was attacked by Native Americans, resulting in a quit-claim of the land.

Madisonville, the seat of Hopkins County, was established in 1807. Named for James Madison, who was then serving as Secretary of State, the city was created on 16.2 ha (40.0 acres) of land donated by Solomon Silkwood and Daniel McGary (Brown 1992b:603). The county's first courthouse was constructed that same year. The log structure stood at the corner of Main Street and Main-Cross, the town's primary thoroughfares. Early growth of the town was slow. In 1810, Madisonville had only 37 inhabitants, despite a total county population of 2,964 residents (Brown 1992b:603). Madisonville is located at the junction of what is now US 41 and KY 70 (Brown 1992b:603; Rennick 1984:185).

Early transportation routes in Hopkins County were primitive roads that often followed animal trails toward salt and mineral springs. The major trails located in Hopkins County were the ones that connected the county seat of Madisonville with surrounding towns, such as Henderson, Hopkinsville, and Russellville. Other trails in the county led to the mills and ferries located along the Pond and Tradewater Rivers (Brown 1992a:440).

Prior to the Civil War, agriculture was the primary source of income in the county. Most farmland was situated in the fertile river and creek bottoms, so the population remained primarily rural. The county's fertile creek valleys supported a number of small farms averaging 80.9–161.9 ha (200.0–400.0 acres) in size. Tobacco was the county's leading cash crop.

Slave ownership, which was uncommon among early nineteenth-century Hopkins County farmers, increased in prevalence in the decades immediately preceding the Civil War. Most of the county's slave owners held fewer than five enslaved African Americans, whom they employed as both farm hands and craftsmen. Steady population growth in the county also occurred during the antebellum years. According to the United States population census, the total county population had increased to 5,322 residents by 1820. By 1830, it had reached 6,763 residents. That same year, Madisonville's population rose to 112 residents.

The 1835 cholera outbreak and the national financial panic of 1837 caused Madisonville's population to drop to 57 residents by 1840 (Brown 1992b:603). However, the total county population continued to increase, reaching 9,171 residents in 1840. According to the 1840 census, approximately 19 percent, or 1,723 residents, were enslaved African Americans. Madisonville's population had rebounded by 1847, with 450 residents. At that time, Madisonville contained Methodist and Christian Churches, 6 lawyers, 5 stores, 4 taverns, an academy, and a female school. By 1850, Hopkins County had 12,441 residents. By 1860, Hopkins County's population had fallen slightly to 11,875 residents. Madisonville's population reached 602 by 1860. (Hopkins County Genealogical Society

and Historical Society of Hopkins County [HCGS and HSHC] 1988:24–25; Thomason 1988:E-3, 5).

The Civil War divided the population of Hopkins County, and troops for both sides were recruited. Confederates burned the county's third courthouse, a brick structure, in 1864, but Confederate general Hylan B. Lyon ordered removal of all county records prior to destruction of the courthouse (Brown 1992a:440; 1992b:603).

Soon after the Civil War, Hopkins County enjoyed a surge in economic activity. Prior to the war, James Woolfolk had found the first coal discovered in Hopkins County (Brown 1992a:440). Woolfolk, a blacksmith, found an outcropping of coal on his land; however, this discovery did not lead to the immediate mining of coal in the area. Finally, in 1869, the first successful coal mine in the county was opened by John Bayless Earle, after whom the community of Earlington is named (Brown 1992a:440).

Coal mining's importance to the county increased with the arrival of the Louisville and Nashville (L&N) Railroad in 1870. The rail line connected Madisonville to Henderson, as construction continued toward Nashville (Brown 1992a:440). A second railroad, the Elizabethtown and Paducah (E&P) Railroad, entered the county from the east in 1872. The addition of both rail lines enabled coal to be transported efficiently and relatively inexpensively from the county. As a result, a number of communities sprang up along the railroads, including Mortons Gap, Hanson, Nortonville, and White Plains (Brown 1992a:440). By 1900, coal mines had been developed near the communities of St. Charles and Ilsley (HCGS and HSHC 1988:25; Thomason 1988:E-7).

Agriculture continued to support the majority of Hopkins County's population, while tobacco continued to serve as the leading cash crop. In 1870, farmers grew 3 million lbs of tobacco in the county, making Hopkins County one of the leading producers of the crop in western Kentucky. An outgrowth of this tobacco production was the construction of tobacco warehouses and mills to serve local farmers in communities such as Nebo and Madisonville. During the second half of the nineteenth century, Nebo had over 1,000 residents, seven tobacco factories, a hotel, and several stores. The Providence Branch of the L&N passed through Nebo in 1882. The railroad further solidified Nebo's prominence in tobacco production by connecting its factories with larger markets. (Thomason 1988:E-6, E-14).

The population of Hopkins County grew steadily in the second half of the nineteenth century, rising to 13,827 residents by 1870. That same year, Madisonville's population stood at 1,022 residents. The coal boom greatly influenced the number of residents in Hopkins County, with census figures revealing an increase to 19,122 residents in 1880, 23,505 residents in 1890, and 30,995 residents in 1900. Madisonville's population reached 2,075 in 1900.

The economic success of the previous decades continued into the early 1900s. In 1907, the Nebo Consolidated Coal and Coke Company opened the Nebo Mine, and the Madisonville, Hartford, & Eastern (MH&E) Railroad had been constructed through the county by 1910 (Brown 1992b:603). In 1910, Hopkins County had 34,291 residents, while Madisonville's population expanded to approximately 7,000 residents (Thomason 1988:E-13, E-19, E-21).

In the years between 1895 and 1920, the community of Dawson Springs became the second largest town in Hopkins County. This growth was spurred by the development of several mineral springs, which turned Dawson Springs into a major resort area (Brown 1992a:440). Visitors were drawn to the area by the many medicinal claims made about the springs. In 1900, the town had 1,200 residents. That same year, approximately 51,000 tickets were sold by the Illinois Central Railroad with Dawson Springs as the destination. At least four large frame hotels and the five-story, brick New Century Hotel were constructed by 1910. Beginning in the 1920s, the rise in popularity of the automobile and improvements in medical facilities brought a yearly decline of visitors to resort towns such as Dawson Springs (Thomason 1988:E-17–18).

A general decline in tobacco processing occurred in western Kentucky after the 1920s.

The demand for locally grown dark fired tobacco lessened in the early twentieth century as light burley tobacco gained wider acceptance in Kentucky. The consolidation of larger tobacco companies also forced the closing of many smaller, locally owned tobacco-processing factories and warehouses. Hopkins County's prominence in the production of tobacco never recovered (Thomason 1988:E-15).

The Great Depression took a heavy economic toll on Hopkins County and Madisonville. All but two of Madisonville's banks failed during the Depression years. Area mines were forced to close due to lack of demand. A number of other businesses also closed, including many of the tobacco factories. Furthermore, by the time of the Great Depression, the popularity of Dawson Springs and its health resorts had faded (Brown 1992a:440).

Most of the underground coal mines in the county had closed by the 1930s; the Nebo Mine had closed in 1916, and the Fox Run Mine near St. Charles had closed in 1940. With many coal seams exhausted, new techniques, such as strip mining, took the place of older underground mines. The populations of the coal mine boom towns declined in the aftermath of the mine closures (Thomason 1988:E-13).

In 1920, the population of Hopkins County stood at approximately 34,133 residents. By 1930, the census recorded 37,449 residents. Little growth occurred over the next decade, and in 1940 the population was 37,789 residents. Agriculture remained an economic mainstay in the northern part of the county where soybeans, corn, and tobacco continued to be the major crops produced, whereas coal mining remained prominent in the southern part of Hopkins County (Brown 1992a:439; Currens and McGrain 1979:40).

Although still reliant on the coal industry, county officials began luring manufacturing jobs to Hopkins County in the post-World War II years. The number of manufacturing jobs increased from 500 to 3,500 between 1960 and 1980. Companies such as Goodyear Tires and General Electric established manufacturing plants in the county, and the Regional Medical Center opened in Madisonville during this period, becoming the city's largest employer (Brown 1992b:602–603; Thomason 1988:E-13).

The census figures for 1950, 1960, and 1970 were 38,815, 38,458, and 38,167 residents, respectively (HCGS and HSHC 1988:30–31). By the 1970s, Hopkins County was the second largest coal producer in the state of Kentucky. At the same time, oil production in Hopkins County was ranked fifth in the state. The continual increase in production of these two resources was significantly aided by the construction of the Pennyrile Parkway through Hopkins County in the early 1970s. The Western Kentucky Parkway was also constructed during this time (Brown 1992a:440). Agriculture maintained its importance through the late 1980s, as 41 percent of the land area of the county was occupied by farms.

Madisonville's population reached 16,979 residents in 1980, but decreased slightly in 1990 to 16,200 residents. Hopkins County's population grew substantially between 1970 and 1980, reaching 46,174 residents in 1980. The county population plateaued, remaining at 46,126 and 46,519 in 1990 and 2000 (Brown 1992b:603; HCGS and HSHC 1988:30-31). By 2020, it had lowered to 45,423 inhabitants (USBC 2020).

IV. METHODS

This section describes the methods used during the field investigation and the methods used in the laboratory to analyze the artifacts. Site-specific field methods are discussed in further detail in the Results section of this report. The methods used in the laboratory to analyze the artifacts are discussed in the specific analysis section of this report.

Field Methods

Prior to the field survey, a map and a geodatabase were created in ArcGIS 10.8.1 and uploaded to an interactive map forum in ArcGIS online. This map included layers such as collection unit points (e.g., shovel tests, datums, piece plots [PPs]), lines (e.g., transect, railroad, contour), and areas of collection such as site boundaries. The layers were added to and edited

by CRA personnel in the field with the Field Maps for ArcGIS application on an iPhone SE. All Global Positioning System (GPS) data was recorded in UTM NAD 83 and later converted to Kentucky State Plane for reporting. Photographs were taken with a digital camera having a resolution of greater than 10 megapixels.

Field methodology was determined by ground surface visibility, the slope of the landforms, and previous disturbances. The majority (5.9 ha) of the project area was investigated with systematic shovel testing. The systematic shovel testing survey involved excavating grids of shovel test probes (STPs) spaced at 20 m (66 ft) transect intervals. The grids were aligned with magnetic north. In all cases, shovel tests measured no less than 35.0 cm (13.8 in) in diameter and extended well into the subsoil or encountered impenetrable fill. All fill removed from the shovel tests was screened through 0.64 cm (0.25 in) mesh hardware cloth, and the sidewalls and bottoms were examined for cultural material and features. General soil characteristics (e.g., texture or Munsell colors) were recorded by individual level for unique shovel test profiles and all positive shovel tests.

As previously mentioned, a portion of the northern section of the project area has been previously disturbed by the leveling/raising of the land and the construction of access roads to the nearby industrial complex in the northeast corner (see Figures 6 and 10). The locations of disturbance were verified using historical aerial photographs available on Google Earth and confirmed in the field by visually inspecting the surface at no greater than 10 m intervals. The previously disturbed areas accounted for approximately 1.8 ha, of which 0.4 ha was still shovel tested given the proximity to Site 15Hk318 (see Figure 3).

The approximate location of MS 1 and Site 15Hk381 were subjected to reduced interval shovel testing at 10 m intervals. Best and most reasonable efforts were made to identify these locations utilizing the standard archaeological methods as described above.

V. MATERIALS RECOVERED

Historic Artifact Analysis Methods

Lisa Kelley completed the historic artifact analysis. The historic assemblage includes artifacts classified and grouped according to a scheme originally developed by Stanley South (1977). South believed that his classification scheme would present patterns in historic site artifact assemblages that would provide cultural insights. Questions of historic site function, the cultural background of a site's occupants, and regional behavior patterns were topics to be addressed using this system.

South's system was widely accepted and adopted by historical archaeologists. However, some have criticized South's model on theoretical and organizational grounds (Orser 1988; Wesler 1984). One criticism is that the organization of artifacts is too simplistic. Swann (2002) observed that South's groups have the potential to be insufficiently detailed. She suggested the use of sub-groups to distinguish between, for example, candleholders used for religious purposes and those used for general lighting. Others, such as Sprague (1981), have criticized South's classification scheme for its limited usefulness on late nineteenth- and early twentieth-century sites, sites which include an array of material culture—such as automobile parts—not considered by South. Despite its shortcomings, most archaeologists recognize the usefulness of South's classification system to present data.

Stewart-Abernathy (1986), Orser (1988), and Wagner and McCorvie (1992) have subsequently revised this classification scheme. In this report, artifacts were grouped into the following categories: architecture, biological, domestic, maintenance and subsistence, and unidentified. Grouping artifacts into these specific categories makes it more efficient to associate artifact assemblages with historic activities or site types. One primary change associated with the refinement of these categories is reassigning

artifacts associated with the "Miscellaneous and Activities" under South's (1977) original system. Considering the potential variety of historic dwellings and outbuildings within the project area, a refinement of the artifact groupings was considered important to observe whether the distribution of specific artifact groups would produce interpretable patterns related to activity areas or structure types.

Information on the age of artifacts is derived from a variety of sources cited in the discussion of the materials recovered. The beginning and ending dates cited need some clarification. Usually, an artifact has specific attributes that represent a technological change, an invention in the manufacturing process, or simple stylistic changes in decoration. These attributes usually have associated dates derived from historical and archaeological research. For example, bottles may have seams that indicate a specific manufacturing process patented in a certain year. The bottle then can be assigned a "beginning," or incept, date for the same year of the patent. New technology may eliminate the need for the same patent and the bottle would no longer be produced. The "ending," or terminal, date will be the approximate time when the newer technology took hold and the older manufacturing processes were no longer in use.

Specific styles in ceramic decorations are also known to have changed. Archaeological and archival researchers have defined time periods when specific ceramic decorations were manufactured and subsequently went out of favor (e.g., Lofstrom et al. 1982; Majewski and O'Brien 1987). South's (1977) mean ceramic dating technique uses this information. The dates presented here should not be considered absolute but are the best estimates of an artifact's age available at this time. A blank space indicates that the artifact could not be dated or, alternately, that the period of manufacture was so prolonged that the artifact was being manufactured before America was colonized. An open-ended terminal date was assigned for artifacts that may be acquired today. The rationale for presenting dates for the artifacts recovered is to allow a more precise estimate of the time span the site was occupied, rather than the mean occupation date of a site.

A summary of the artifacts recovered from the site is presented in the individual site description section in the Results chapter of this report. A complete inventory of historic artifacts can be found in Appendix A.

VI. RESULTS

One previously recorded archaeological site (15Hk318) was reinvestigated during the current survey. No archaeological deposits were identified in the remainder of the project area. A brief summary of the soils seen in the shovel-tested part of the project area is first provided, followed by a brief description of these sites. The site location is depicted in Figures 2 and 3.

Summary of Soils and Shovel Testing

Portions of the project area surrounding Site 15Hk318 had been previously disturbed, and deviations from the natural soil profiles were commonly noted. In many instances, the natural soil horizons had been mixed, and unnatural inclusions, such as gravel, were present. A shovel test in the previously disturbed area, located directly to the west of the access road, had a yellowish-brown (10YR 5/4) silty clay loam with prominent dark gray (10YR 4/1) mottles from the ground surface to approximately 26 cm below ground surface (bgs). This was typically underlain by a light brownish-gray (10YR 6/1) silty clay loam with prominent dark gray (10YR 4/1) mottles to approximately 39 cm bgs, when an impenetrable layer of gravel fill was reached. An additional STP located to the east of the access road revealed a yellowish-brown (10YR 5/6) silty clay loam from the ground surface to approximately 17 cm bgs. This was underlain by a dark yellowish-brown (10YR 4/4) silty clay loam with gray (10YR 5/1) mottles to approximately 33 cm bgs. All of these soils represent fill.

The remainder of the project area did not exhibit any obvious disturbance and was subjected to systematic shovel test grids. The shovel tests to the south of Site 15Hk318 conformed to the range of characteristics and

attributes of the mapped Robbs soil series. Shovel tests in this area generally consisted of a brown (10YR 5/3) silt loam extending from the ground surface to approximately 19 cm bgs. This was underlain by a pale brown (10YR 6/3) silt loam to 33 cm bgs.

The Hosmer silt loam series is mapped to the west of Site 15Hk318, and the corresponding soil profiles reflect this. Along the western boundary of the project area, a typical profile consisted of a brown (10YR 4/3) silt loam from the ground surface to approximately 17 cm bgs. This was underlain by a yellowish-brown (10YR 5/4) silt loam.

15Hk318

Elevation: 137 m AMSL
Component(s): Historic
Site type(s): Historic scatter
Size: 13,607 sq m
Distance to nearest water: 135 m
Direction to nearest water: East
Type and extent of previous disturbance: Agricultural activities; road construction/maintenance; and land raising
Topography: Undissected upland
Vegetation: Sparse weeds and tall grasses
Ground surface visibility: Varying between 60 and 90 percent and 0 and 20 percent
Recommended NRHP status: Not eligible; No further work

Previous Investigation

This site was recorded as a historic artifact scatter by CRA (Bundy et al. 2008). Site 15Hk318 was documented south of US 41A and across the road from the GE Aircraft Engine Plant on a broad upland ridge. The site was identified through surface investigation and shovel testing, all within a cultivated field that had recently been planted with winter wheat. As initially recorded, the site dimensions were a maximum of 100 m north–south by 140 m east–west for an estimated total of 14,000 sq m. This estimated site size was determined by the extent of observed surface scatter; however, this boundary included areas outside of the pervious project area, which were not investigated or assessed during this previous survey. Therefore, the majority of the portion reinvestigated during the current survey was unassessed.

During the initial survey, a total of 42 collection cells were investigated to delineate the boundaries of the site, with 30 of the cells containing artifacts. Additional shovel tests excavated within the site boundaries suggested that the area had been impacted by agricultural activity and erosion. In total, 262 artifacts were recovered from Site 15Hk318. The artifacts were consistent with those found at a typical domestic occupation from the mid-nineteenth to twentieth century.

The portion of Site 15Hk318 investigated during the previous survey was ultimately recommended not eligible for inclusion in the NRHP.

Current Site Description

Site 15Hk318 is a historic artifact scatter associated at the location of a non-extant mapped structure. This site is south of US 41A, approximately 248 m west of the intersection of US 41A and Lovers Road. The site is on a dissected upland ridgetop at an elevation of approximately 137 m AMSL. The closest natural water source is an unnamed intermittent tributary to Grassy Creek, which is approximately 135 m east of the site.

The current vegetation at the site varies, with some portions having sparse weeds and grasses while others are void of surface vegetation (Figures 12 and 13). Ground surface visibility varied across the site, from 60 to 90 percent to 0 to 20 percent. Disturbances to the site were prevalent and associated with the expansion of US 41A and the construction of an access road. Significant mechanical earthmoving has also occurred at the site. For example, large push piles of concrete, asphalt, gravel, and other rubble are present throughout the site (Figure 14). Overall, the majority of the site has been affected by these disturbances, with the least disturbed portion being along the western edges of the site boundary.

Figure 12. Overview of grasses and weeds along the northern border of Site 15Hk318, facing south.

Figure 13. Portion of Site 15Hk318 with good ground surface visibility due to disturbance, facing east.

Figure 14. Large gravel push piles along the northern border of Site 15Hk318, facing west.

The site was identified based on the presence of historic artifacts on the surface within the project area. The current dimensions of the site were redefined at a maximum of 136 m north–south by 134 m east–west, encompassing 13,607 sq m.

Investigation Methods

The majority of the previously investigated portion of Site 15Hk318 that overlaps with the current project area was not reinvestigated (Figure 15). Considering the varying ground surface visibility across the site, a combination of systematic shovel testing survey, visual inspection, and pedestrian survey were utilized. STPs were initially excavated at 10 m intervals, aligned east–west, throughout the site boundary. Approximately 26 STPs were excavated during the investigation of this site. All STPs were negative.

Pedestrian survey/visual inspection was conducted in the portions of the site that had good ground surface visibility, though it is acknowledged that this visibility was due to disturbance rather than plowing. Transects were placed at 10 m intervals, facing north–south, and were terminated upon reaching the project area boundary or portions with unsatisfactory ground surface visibility. All artifacts identified during the surface inspection were recorded as individual PPs and then collected together as a general surface collection (GSC). A total of 18 PPs were identified during this investigation. The location of the first PP was recorded as the site datum, and the locations of the PPs, STPs, and disturbances were plotted on a site plan map (see Figure 15).

Depositional Context

This site is located on a landform that is mapped within the Hosmer-Robbs-Zanesville series in the modern soil survey, and the Loring-Grenada-Calloway series in the 1977 survey (Fehr et al. 1977; Soil Survey Staff 2024). As previously discussed, the eastern portion of the site has undergone extensive reworking and, as a result, these soils have evidence of disturbance. A typical shovel test exhibited a yellowish-brown (10YR 5/4) silty clay loam with very dark grayish-brown (10YR 3/2) mottles that transitioned to a light brownish-gray (10YR 6/1) silty clay loam with increasing mottles of very dark grayish-brown (10YR 3/2) and unnatural gravel inclusions. Some shovel tests conducted within the northern portion of the project area revealed a similar profile; however, these tests had to be terminated due to becoming inundated with water.

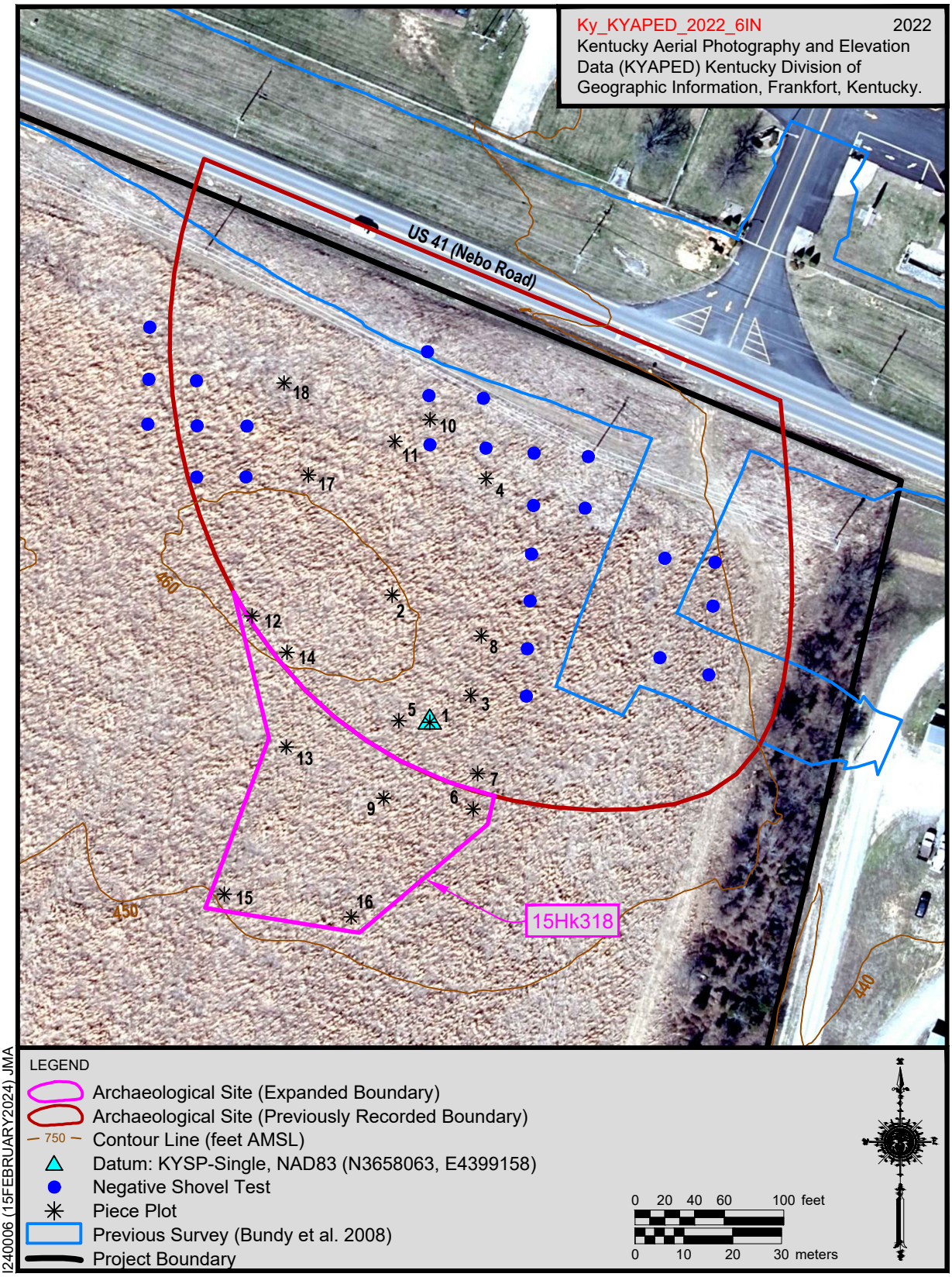

Figure 15. Site 15Hk318 schematic showing location of PPs, STPs, previously recorded site boundary, and newly recorded site boundary.

Although disturbances were prevalent across the site, additional shovel tests located along the western edge of the site, and off of the previously disturbed landform, exhibited a brown (10YR 5/3) silt loam extending to approximately 18 cm bgs. This was underlain by a pale brown (10YR 6/3) silt loam to 35 cm bgs. This test was recorded in a portion of the site mapped within the Hosmer soil series, and the recorded soil profile is consistent with the expected range of attributes and characteristics.

Due to a combination of the limited potential for intact subsurface deposits and previous disturbances, this site is considered to have poor depositional integrity.

Artifacts

A total of 33 historic artifacts were recovered from the ground surface in GSC 1 at Site 15Hk318 (see Appendix A). Artifacts classified within the domestic (n = 31) and unidentified (n = 2) groups are present in the assemblage recovered from this site.

Domestic group materials recovered from this site include ceramics (n = 25), container glass (n = 4), and glass tableware (n = 2). The ceramic assemblage from the site includes Albany-slipped stoneware (n = 2; 1820–1925), Bristol/Albany-slipped stoneware (n = 1; 1880–1925), undecorated whiteware (n = 20; post-1820), molded whiteware (n = 1; post-1830), and blue flow decorated (n = 1; 1839–1908) (Figures 16a and 16b). Five of the undecorated whiteware sherds were burned, and two fragments had unidentifiable maker's marks (Figures 16c–16e).

The container glass is all automatic bottle machine (ABM) fragments. In general, ABM glass dates from 1903 to the present (Jones and Sullivan 1985). One of the ABM glass pieces is from the body of a hobbleskirt Coke bottle that dates after 1916 (Figure 16g) (Lindsey 2021).

Figure 16. Representative artifacts recovered from GSC 1 at Site 15Hk318: (a) Bristol stoneware; (b) blue flow whiteware (c) burned undecorated whiteware; (d) unidentified maker's mark; (e) unidentified maker's mark; (f) unidentified ceramic item/part; (g) hobbleskirt Coke bottle body sherd.

The unidentified group items include an item/part of iron/steel that resembles a latch and a rounded piece of unglazed whiteware that has spawled off a larger unidentified vessel (Figure 16f). Neither of these artifacts were assigned dates.

The historic artifacts recovered from this site were manufactured from the early nineteenth century through the present. However, these items taken in context were most popular from the late nineteenth century through the mid-twentieth century. The lack of architectural materials does not lead to an inference into when any structures may have been erected onsite. The stoneware and the flow decorated whiteware suggest a deposition that occurred prior to 1925; However, the presence of only ABM glass in the assemblage lends more toward a primary twentieth-century depositional context. The types of materials recovered from this location lend little inference into the use of this site or any potential occupants. In addition, the artifacts have an inability to convey the site's significance or context, and therefore have little research value.

Map Data

A historic residence was mapped at this location from 1907 to 1954 (USGS 1907, 1954). This structure is listed as MS 1 on Figure 11 in Section III of this report. Aerial images from 1950, 1952, and 1955 show a structure at a similar location as depicted on the earlier topographic maps (NETR 2024). Any structure near this site was demolished by 1962, and significant earthmoving associated with the US 41A road expansion can be seen near this site beginning in 2023 (Google Earth 2024).

Summary and National Register Evaluation

Site 15Hk318 is a mid- to late nineteenth-century through twentieth-century historic artifact scatter associated with a non-extant historic farmstead/residence. The farmstead/residence associated with this site is first shown near this location in 1907, and the historic structures at this site were demolished by 1982. A significantly fewer amount of artifacts were present at the site during the current recording in comparison to the one from 2007. This is likely representative of much of the material from the site being removed or moved during the recent disturbance. Given the results of the shovel tests and the extensive disturbance, it is unlikely that there are unlocated and/or buried features present. The depositional context of the site also appears to have been mixed and disturbed by the recent earthmoving and demolition that have occurred.

Given the extensive disturbance and the paucity of the remains recovered, the site is considered to have little research potential beyond the data which has already been obtained. Thus, Site 15Hk318 is still recommended not eligible for inclusion in the NRHP, and no further work is recommended for this site.

VII. CONCLUSIONS AND RECOMMENDATION

Betweeen January 17 and 25, 2024, CRA personnel completed a phase I archaeological survey for the proposed build ready site in Hopkins County, Kentucky. The survey was conducted at the request of Ronald Johnson and Associates, P.S.C., on behalf of the City of Madisonville. The proposed project area encompasses approximately 8.1 ha (20.0 acres), which was surveyed in its entirety. The entire project area was surveyed for archaeological resources using methods that included systematic screened shovel testing, pedestrian survey, and visual inspection of obviously disturbed areas.

Prior to initiating field investigations, a records review was conducted at the OSA for a 2.0 km (1.2 mi) radius around the proposed project area. The records on file at the OSA indicated that one previous survey overlaps with the current project area. The review also showed that one archaeological site (15Hk318) has been previously documented within the proposed project area.

During the previous survey, only a portion of the current project area was investigated and evaluated, and as a result the extent of the site boundary shown outside of the previous survey was only estimated. The portions of Site

15Hk318 not surveyed in 2007 were investigated as a result of the current reconnaissance. This site has been significantly disturbed and there is little to no integrity remaining. Therefore, Site 15Hk318 is recommended not eligible for inclusion in the NRHP. No further archaeological work is recommended for the project.

Note that a principal investigator or field archaeologist cannot grant clearance to a project. Although the decision to grant or withhold clearance is based, at least in part, on the recommendations made by the field investigator, clearance may be obtained only through an administrative decision made by the lead federal agency in consultation with the State Historic Preservation Office (the Kentucky Heritage Council).

If any previously unrecorded archaeological materials are encountered during construction activities, the KHC should be notified immediately at (502) 564-6662. If human skeletal material is discovered, construction activities should cease, and the KHC, the local coroner, and the local law enforcement agency must be notified, as described in KRS 72.020.

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APPENDIX A. HISTORIC ARTIFACTS

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Table A-1. Historic Artifact Inventory.

Bag	Site	Unit #	Dep	Cat #	Group	Class Definition	Type Definition	Attr 1a Definition	Attr 1b Definition	Attr 2a Definition	Burned	Discard	Count	Weight	MinDate	MaxDate	References	Comments
001	15Hk318	GSC 1	- Surface	001	D	Ceramics	Stoneware	Albany slipped exterior		Albany slipped interior	FALSE	FALSE	2		1820	1925	Greer 1999; Ketchum 1983	
001	15Hk318	GSC 1	- Surface	002	D	Ceramics	Stoneware	Albany slipped exterior		Bristol slipped interior	FALSE	FALSE	1		1880	1925	Faulkner 2000; Greer 1999; Ketchum 1983	
001	15Hk318	GSC 1	- Surface	003	D	Ceramics	Whiteware	Undecorated			FALSE	FALSE	13		1820		Miller et al. 2000:13; South 1977:211	
001	15Hk318	GSC 1	- Surface	004	D	Ceramics	Whiteware	Molded			FALSE	FALSE	1		1830		Wetherbee 1980	
001	15Hk318	GSC 1	- Surface	005	D	Ceramics	Whiteware	Undecorated			TRUE	FALSE	5		1820		Miller et al. 2000:13; South 1977:211	
001	15Hk318	GSC 1	- Surface	006	D	Ceramics	Whiteware	Flow decorated	Blue		FALSE	FALSE	1		1839	1908	Samford 1997:24	
001	15Hk318	GSC 1	- Surface	007	D	Ceramics	Whiteware	Undecorated			FALSE	FALSE	2		1820		Miller et al. 2000:13; South 1977:211	Two unidentified maker's marks
001	15Hk318	GSC 1	- Surface	008	D	Container Glass	Automatic Bottle Machine		Clear glass		FALSE	FALSE	3		1903		Jones and Sullivan 1985; Lindsey 2021	
001	15Hk318	GSC 1	- Surface	009	D	Glass Tableware	Undiagnostic fragment		Opaque white glass		FALSE	FALSE	2		1830	1960	Fike 1987:13; Husfloen 1992:163	These could also be cosmetic jar fragments.
001	15Hk318	GSC 1	- Surface	010	D	Container Glass	Automatic Bottle Machine		Light green glass		FALSE	FALSE	1		1916		Lindsey 2021	Hobbleskirt body frag
001	15Hk318	GSC 1	- Surface	011	U	Ceramic	Refined white-bodied earthenware		Item / part		FALSE	FALSE	1					spawl off larger unidentified object
001	15Hk318	GSC 1	- Surface	Discard	U	Metal	Iron / Steel		Item / part		FALSE	TRUE	1	65.9 g				Looks similar to a latch