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AN ARCHAEOLOGICAL SURVEY OF THE PROPOSED RECONSTRUCTION OF KY 56 WEST OF MORGANFIELD IN UNION COUNTY, KENTUCKY

by
H. William Goodman

Prepared for

KENTUCKY TRANSPORTATION CABINET

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

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ABSTRACT

On June 8 through 17, 2015, Cultural Resource Analysts, Inc., personnel conducted an archaeological survey for the reconstruction of KY 56 west of the city of Morganfield, in Union County, Kentucky. The survey was conducted at the request of David Waldner on behalf of the Kentucky Transportation Cabinet. All previously unsurveyed portions of the proposed right-of-way were surveyed for this project with the exception of a small area at the east terminus where construction activities had begun and five parcels where three landowners denied permission for the survey. This work will have to be conducted after negotiations for acquisition are finalized. The limits of the project area were defined by a corridor approximately 8.5 km (5.2 mi) long and the width of the right-of-way varies considerably along the length of the alternate but rarely exceeds 150.0 ft (45.7 m) outside the existing right-of-way. The project area encompassed approximately 44.5 ha (110.0 acres). The proposed right-of-way crossed farmland, residential, and commercial areas. Land use varied in the project area and associated surface conditions necessitated that field methods include both shovel testing at 20 m intervals and intensive pedestrian survey. Survey methods varied according to topographic setting and past and current land use practices. This interval was decreased at times to test areas around razed and extant structures and to help better define site boundaries. Portions of the project area were disturbed by road construction and buried utilities, as well as agricultural and residential use.

The archaeological survey resulted in the discovery of three archaeological sites and two prehistoric isolated finds. Site 15Un259 is a historic farm/residence dating from the late nineteenth through the mid-twentieth century that consists of a low density cultural material scatter near the location of a razed structure. Site 15Un260 is a multicomponent site that contains a historic farm/residence dating from the early to mid-twentieth century and a prehistoric open habitation without mounds of indeterminate temporal affiliation. The historic component consists of a medium density cultural material scatter near the location of a razed structure. Both of these sites exhibit a high level of disturbance from farming, road construction, and the removal of structures, leaving little topsoil. There is no evidence for the presence of intact subsurface deposits or features, and based on the paucity of artifacts recovered, Sites 15Un259 and 15Un260 have little information of research value that would be gained through additional work. Therefore, the portions of Sites 15Un259 and 15Un260 that are inside the project area are recommended not eligible for inclusion in the National Register of Historic Places, and no further work is recommended. Site 15Un261 is a historic/modern African-American cemetery with approximately 55 graves. A total of 40 grave markers and 2 unmarked depressions were documented. Thirteen additional burials were listed on the website Findagrave.com that were not observed in the field. Site 15Un261 was located immediately adjacent to but just outside of the project area. It was recorded due to the close proximity of the cemetery to the road in addition to the uncertain boundaries of the cemetery. Marked graves are located approximately 3.0 m (9.8 ft) south of KY 56 and 1 m (3.3 ft) west of Bald Hill Road West. It is possible that there are additional burials in the vicinity that may extend into the project area. Due to the extremely close proximity of the cemetery to the proposed construction area, there is a concern that avoidance will be difficult and incidental impact from heavy machinery could occur. Based on these factors, it is recommended that a geophysical survey and/or archaeological monitoring of the stripping of this area be conducted in order to confidently locate all graves that may be in the proposed right-of-way. Finally, both of the prehistoric isolated finds contained two or fewer prehistoric lithic artifacts and were the remnants of brief activities with no temporal affiliation. In summary, Sites 15Un259 and 15Un260 are recommended not eligible for listing in the National Register of Historic Places and will not be affected by the proposed KY 56 reconstruction. However, it is recommended that the denied parcels be surveyed and Site 15Un261 should undergo further investigations to determine whether burials are located within the proposed right-of-way.

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I. INTRODUCTION

Between June 8 through 17, 2015, Cultural Resource Analysts, Inc. (CRA), personnel conducted an archaeological survey for the reconstruction of KY 56 west of the city of Morganfield, in Union County, Kentucky (Figure 1). The survey was conducted at the request of David Waldner on behalf of the Kentucky Transportation Cabinet, and fieldwork was only performed once landowner permission was obtained. Will Goodman, Karen Taylor, Tommy McAlpine, and Marshall Wilson participated in the fieldwork, which required 200 hours to complete. Office of State Archaeology (OSA) Geographic Information Systems (GIS) data requested by CRA on May 26, 2015, was returned on May 29, 2015. The results were researched by Heather Barras of CRA at the OSA on June 10, 2015. The OSA project registration number is FY15_8469.

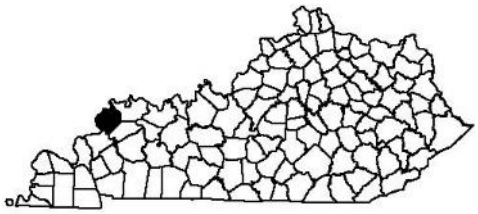

Figure 1. Map of Kentucky showing the location of Union County.

Background

The purpose of the KY 56 reconstruction project is to provide the second section of a route between the city of Morganfield/U.S. 60 and the Shawneetown Bridge over the Ohio River that will meet the "AAA" truck standards allowing KY 56 to be added to the National Trucking Network. The need for this project arises because the current route has sight distance and geometric deficiencies, poor pavement strength, and narrow shoulder-less lanes that limit truck traffic to a "AA" rating. Without this route, all "AAA" trucking loads and oversized trucks are required to travel an extra 16.1 km (10.0 mi) from U.S. 60 to the Shawneetown Bridge. This is not just an economic concern; it is also a safety concern since this existing route forces all "AAA" trucks through the small community of Sturgis using KY 109.

Project Description

The project consists of the reconstruction of KY 56 west of the city of Morganfield, in Union County, Kentucky (Figure 2). The project consists of an archaeological survey for the proposed cross country portion of the reconstruction corridor for the widening of KY 56. The project area corridor is approximately 8.5 km (5.2 mi) long and has a right-of-way (ROW) width that varies considerably along the length of the alternate but rarely exceeds 45.7 m (150.0 ft) outside the existing ROW. The project area encompassed approximately 44.5 ha (110.0 acres). The project area is located in a floodplain that consists of large agricultural fields planted in either corn or soybean as well as dissected uplands comprised mostly of a woodland environment. Some of the proposed corridor crosses steep sloping terrain along KY 56. Residential properties were scattered at different intervals throughout both the floodplain and dissected uplands. For the most part, the project area did not include the residential structures adjacent to KY 56. The ground surface visibility in the agricultural lots at times was adequate for surface collecting. Disturbance in the area included road construction, buried utilities, agricultural and residential use. Agricultural fields within and adjacent to the ROW appeared to be inundated on a regular basis. Large ditches and culverts in these fields reflected attempts to drain the field. Cypress Creek is the nearest water source situated 2.4 km (1.5 mi) south. The Shawneetown bridge crossing the Ohio River into Southern Illinois is situated 3.5 km (2.2 mi) west of the KY 56 and KY 109 intersection.

Purpose of Study

This study was conducted to comply with Section 106 of the National Historic Preservation Act. This transportation project is federally funded, and therefore considered an undertaking subject to 106 review.

The purpose of this survey was to assess any potential effects the ROW expansion might have on identified cultural resources. To do this, we pursued these objectives:

identify prehistoric and historic archaeological sites located within the project area

determine, to the extent possible, the age and cultural affiliation of sites

establish the vertical and horizontal boundaries of sites

establish the degree of site integrity and potential for intact cultural deposits to be present.

For the purposes of this assessment, a site was defined as "any location where human behavior has resulted in the deposition of artifacts or other evidence of purposive behavior at least 50 years of age" (Sanders 2006:2). Cultural deposits less than 50 years of age were not considered sites in accordance with "Archeology and Historic Preservation: the Secretary of the Interior's Standards and Guidelines" and were not assessed as part of this study (National Park Service 1983).

The following is a description of the project area, previous research and cultural history of the area, field and laboratory methods, materials recovered, and results of this study. It conforms to the Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports (Sanders 2006). Cultural material, field notes, records, and site photographs will be curated with the William S. Webb Museum of Anthropology, University of Kentucky, in Lexington.

Summary of Findings

Prior to initiating field investigations, a records review was conducted at the OSA for a 2 km radius around the entire 44.5 ha project area. The review indicated that 5 previous professional archaeological surveys had been conducted during which 12 archaeological sites were previously recorded within 2.0 km (1.2 mi) of the project area. All previously unsurveyed portions of the project corridor were surveyed during this project with the exception of 5 parcels denied by landowners. No previously recorded sites are located within the proposed project area.

The archaeological survey of the proposed project resulted in the discovery of three archaeological sites (15Un259—15Un261) and two prehistoric isolated finds (IF1 and IF2). The two isolated finds represent small prehistoric components with indeterminate temporal affiliation.

Site 15Un259 is a historic farm/residence dating from the late nineteenth through the mid-twentieth century (Figure 3a—h). All structures at this site were razed, and a fairly low density of material was recovered. Site 15Un260 is a multicomponent site that contains a farm/residence dating from the early to mid-twentieth century and a prehistoric open habitation without mounds of indeterminate temporal affiliation. All structures were razed and a low density of historic material and a very low density of prehistoric material with indeterminate temporal affiliation were recovered. Both of these sites exhibit a high level of disturbance from farming, road construction, and the removal of structures, leaving little topsoil. There is no evidence for the presence of intact subsurface deposits or features, and based on the paucity of artifacts recovered, Sites 15Un259 and 15Un260 have little information of research value that would be gained through additional work. Therefore, the portions of Sites 15Un259 and 15Un260 that are inside the project area are recommended not eligible for inclusion in the National Register of Historic Places (NHRP), and no further work is recommended.

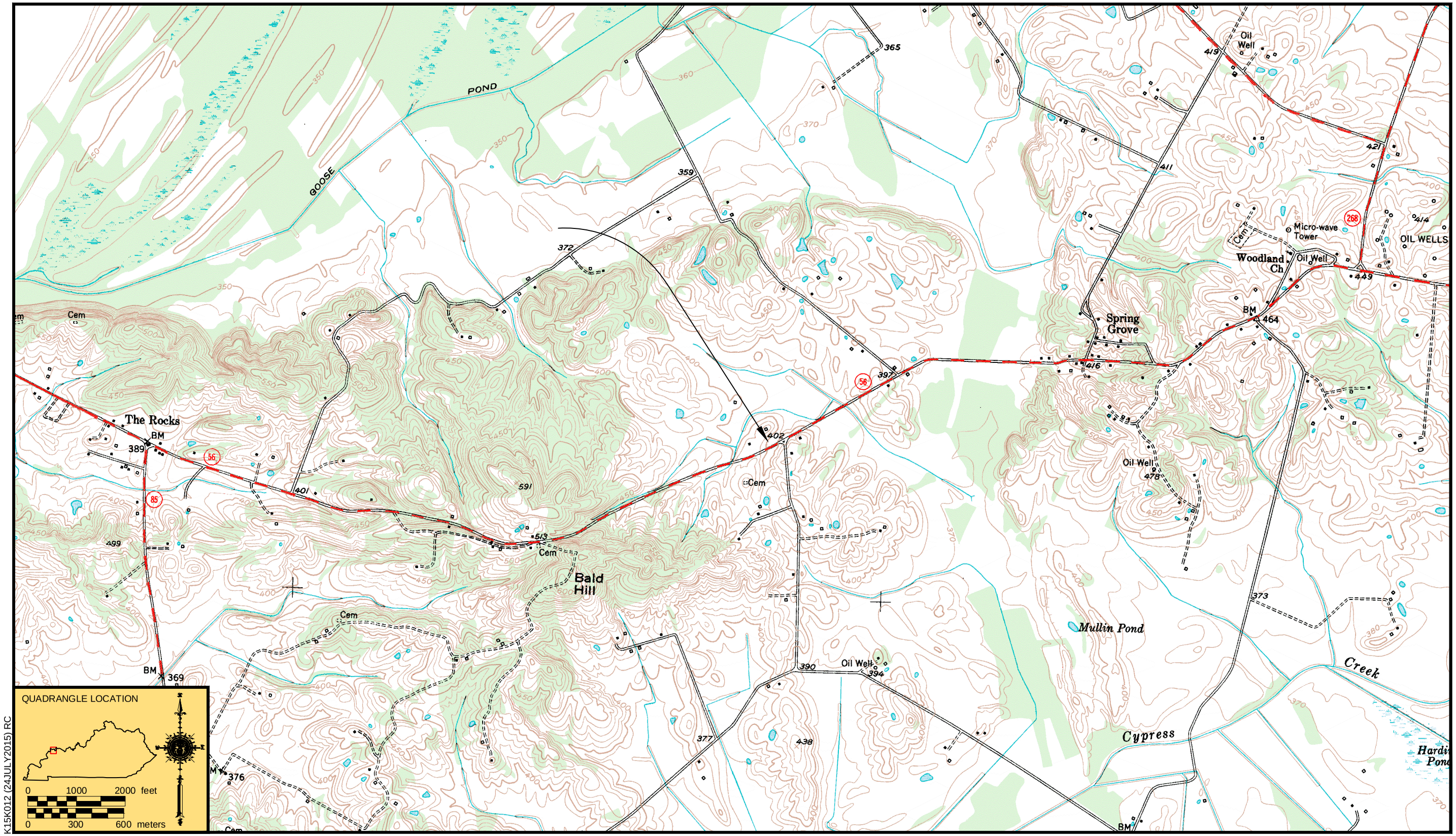

Figure 2. Location of project area on topographic quadrangle.

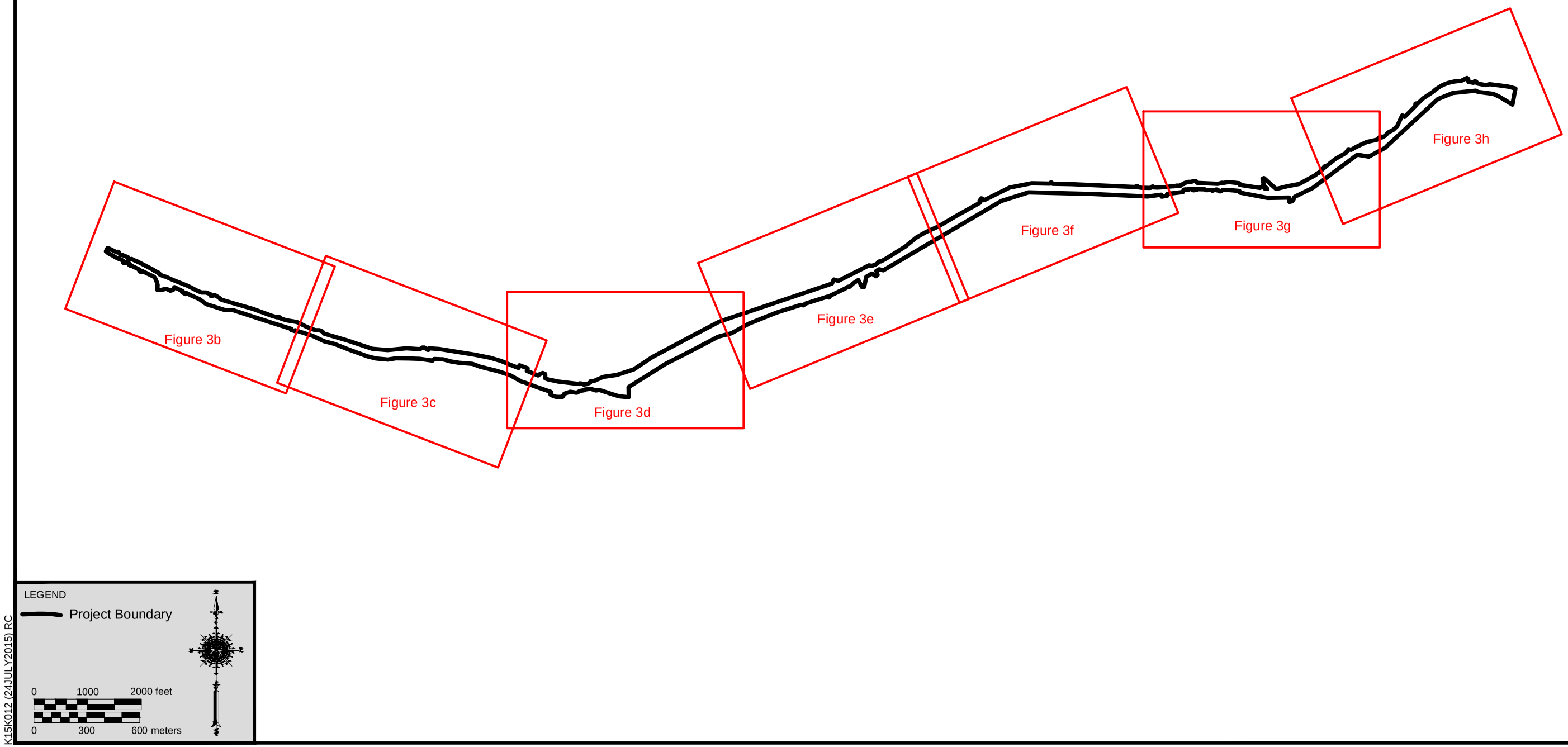

Figure 3a. Project area plan map (key).

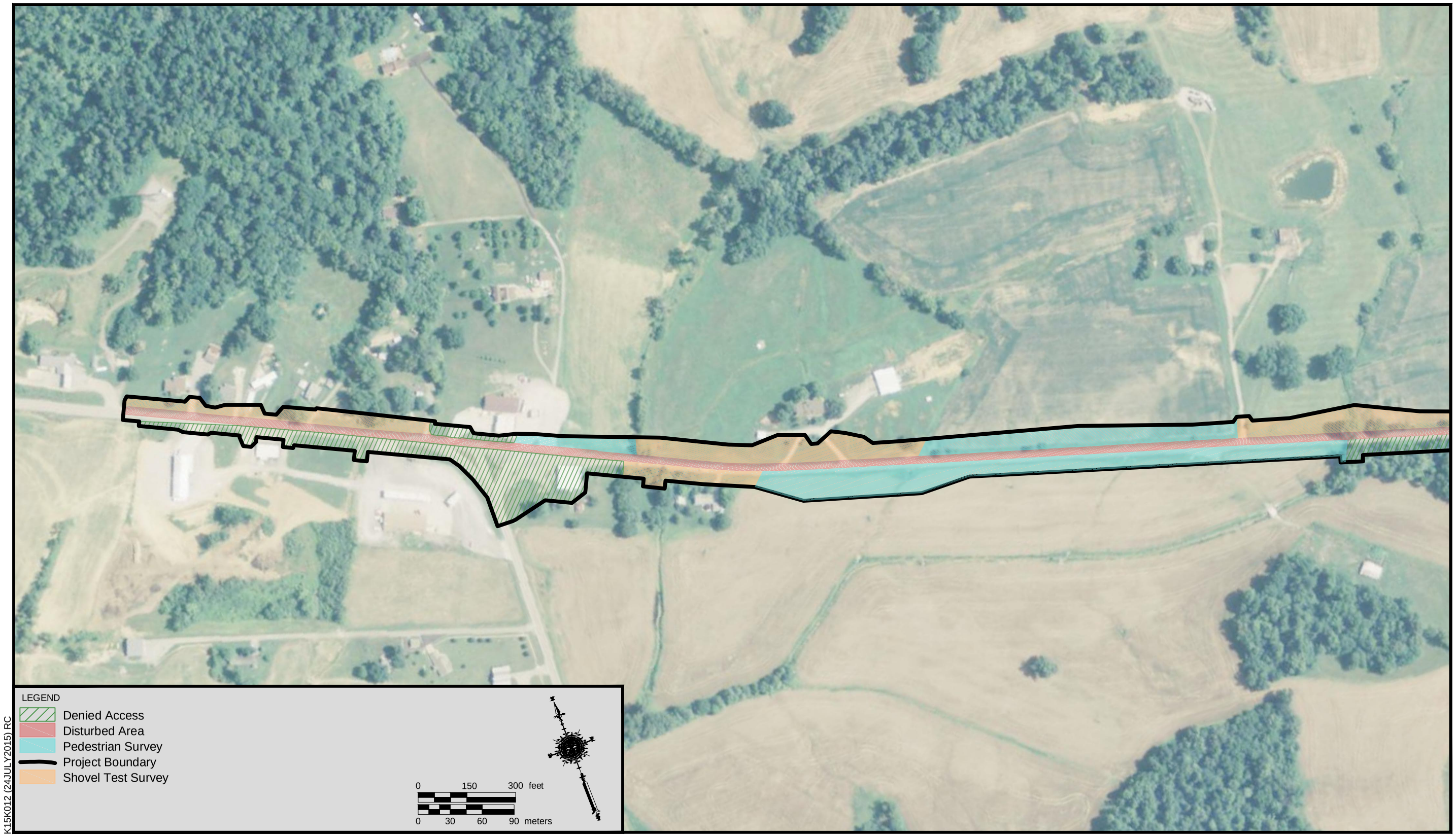

Figure 3b. Project area plan map.

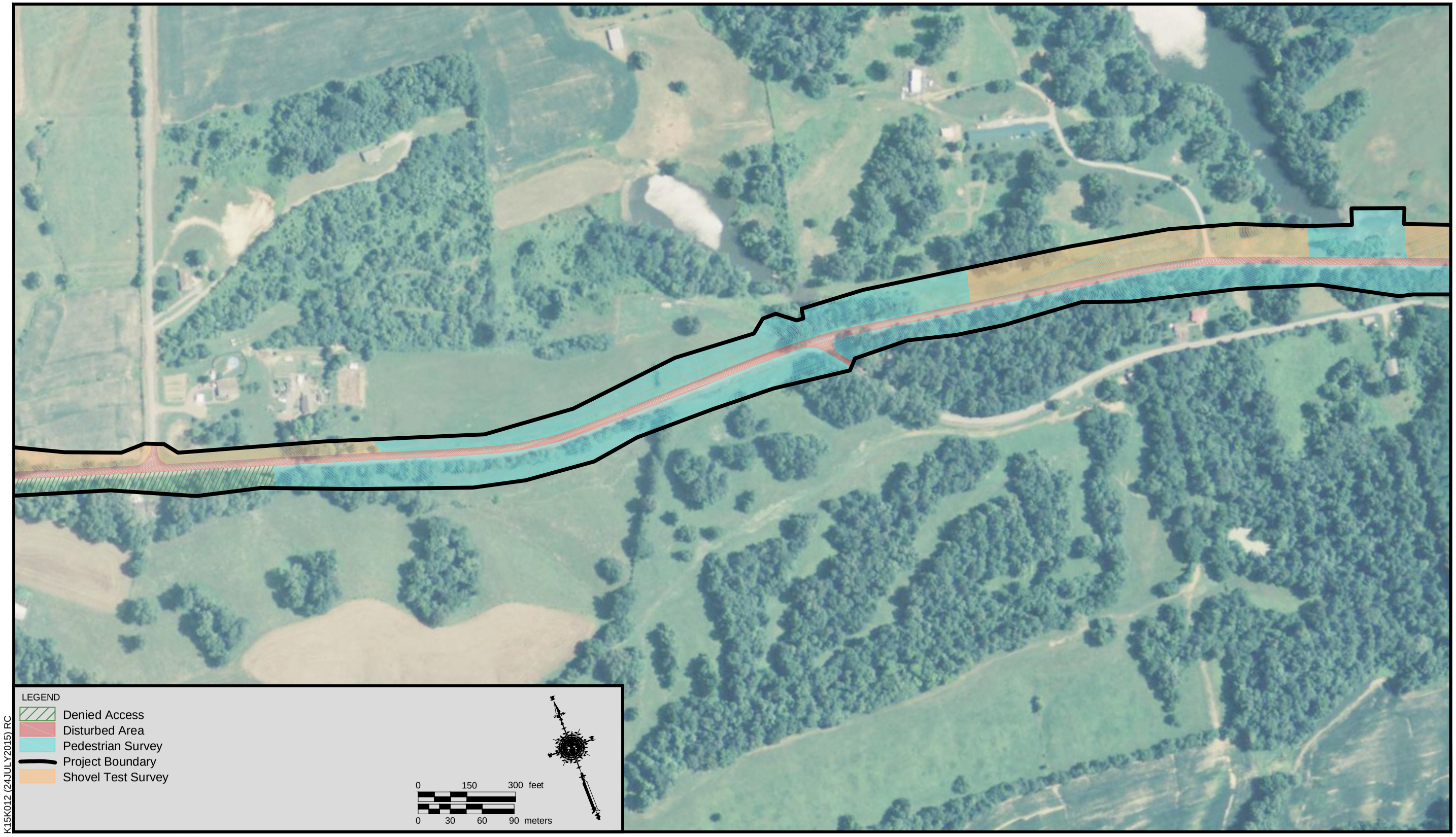

Figure 3c. Project area plan map.

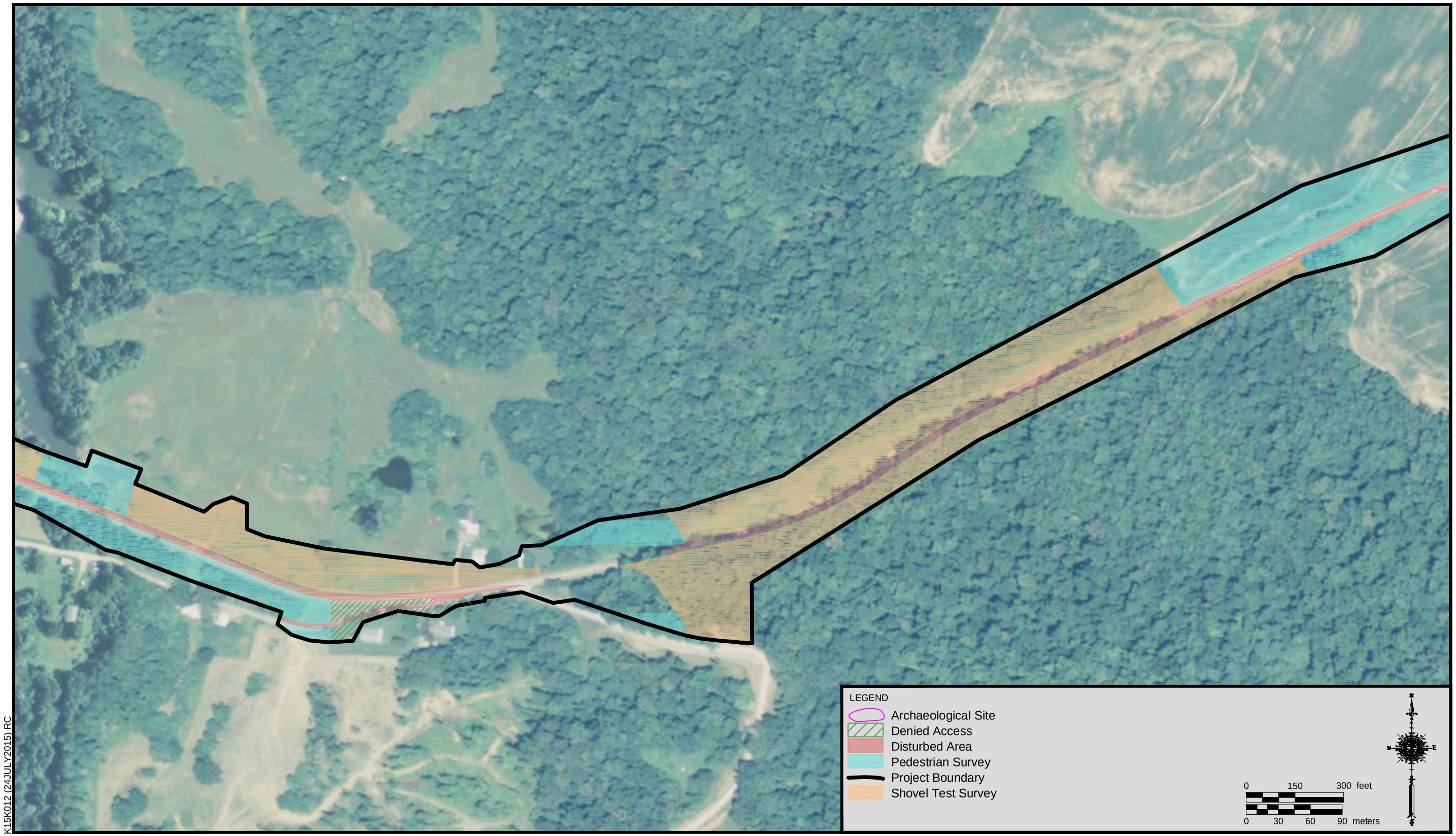

Figure 3d. Project area plan map.

Figure 3e. Project area plan map.

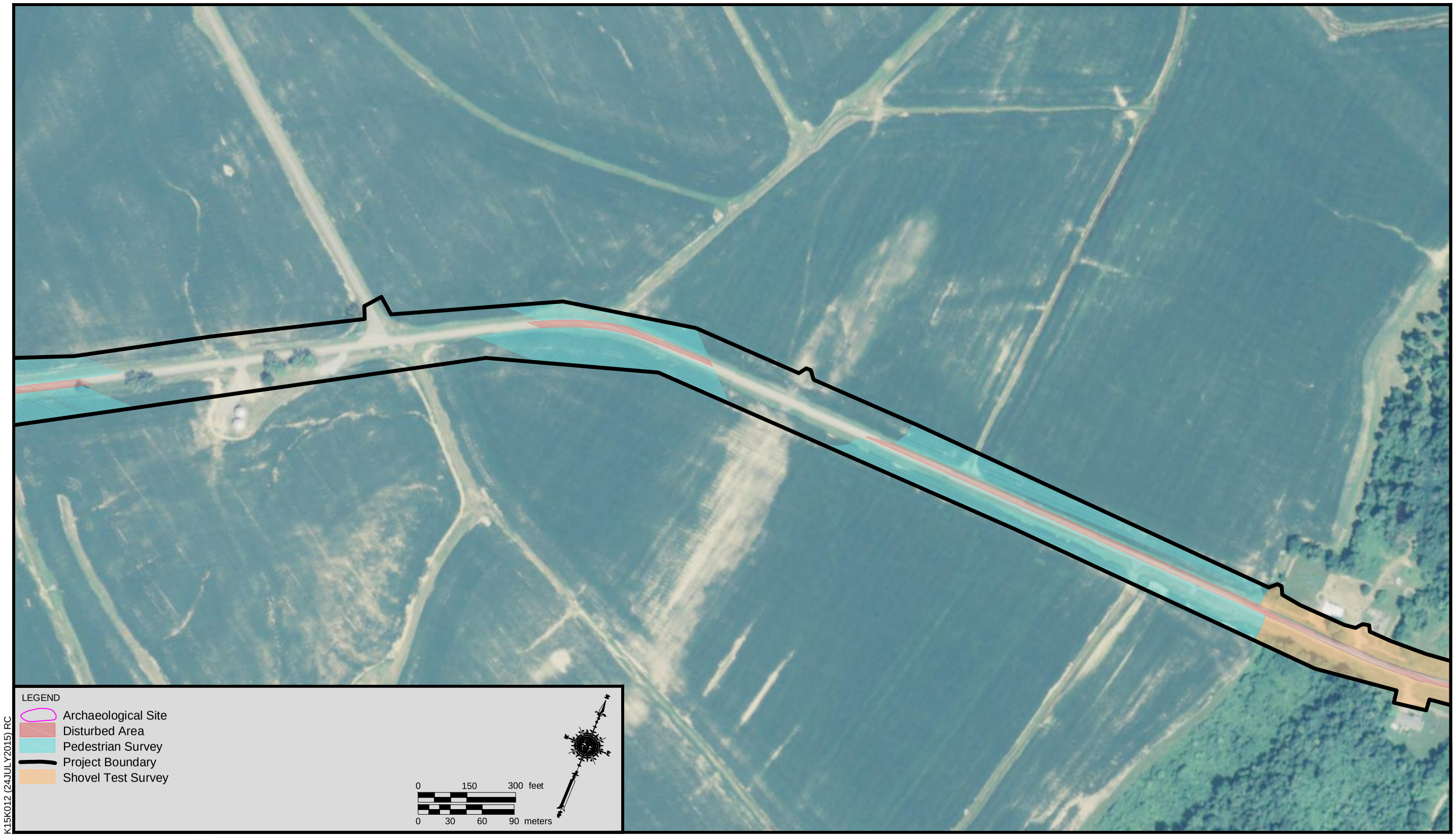

Figure 3f. Project area plan map.

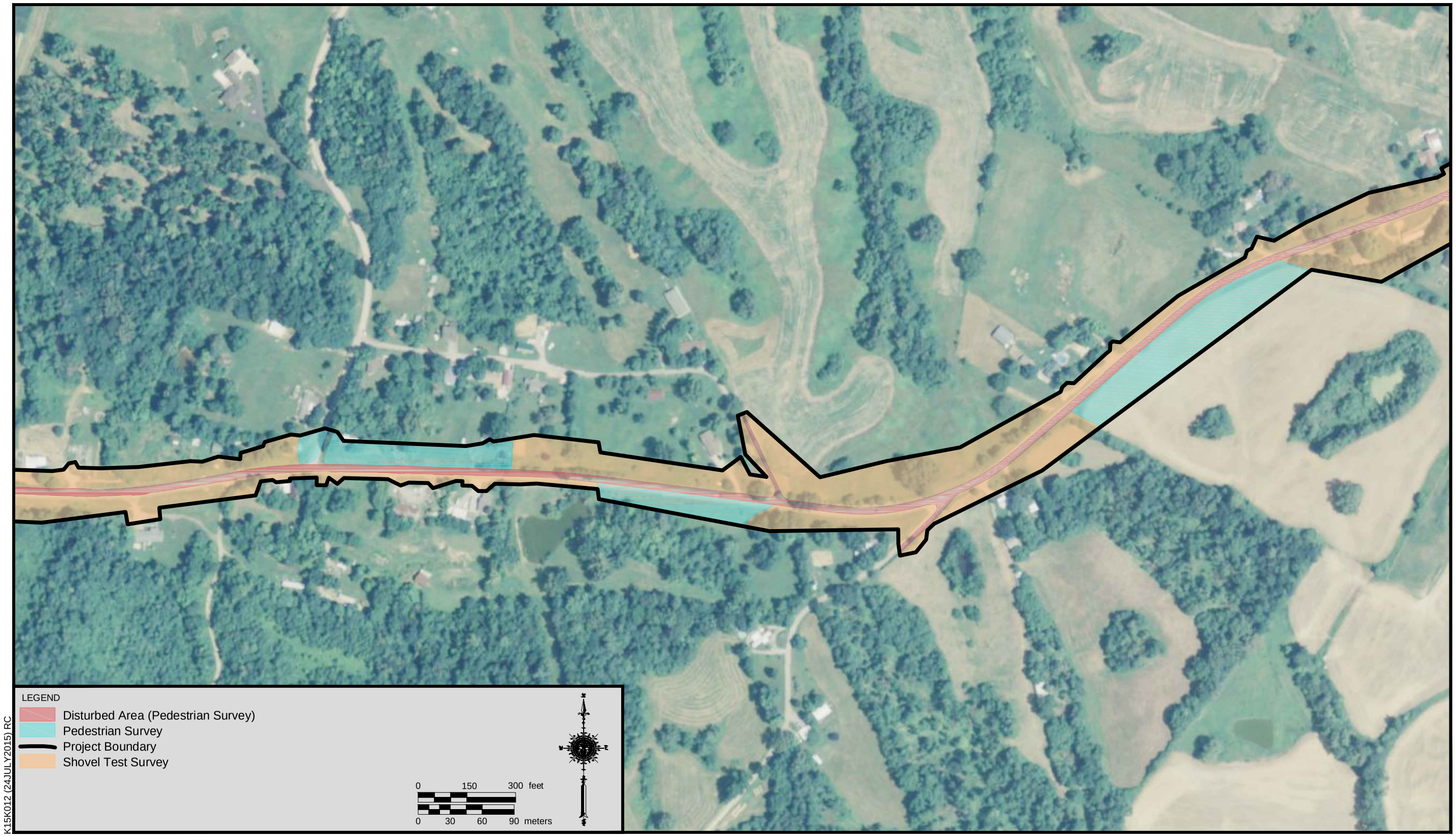

Figure 3g. Project area plan map.

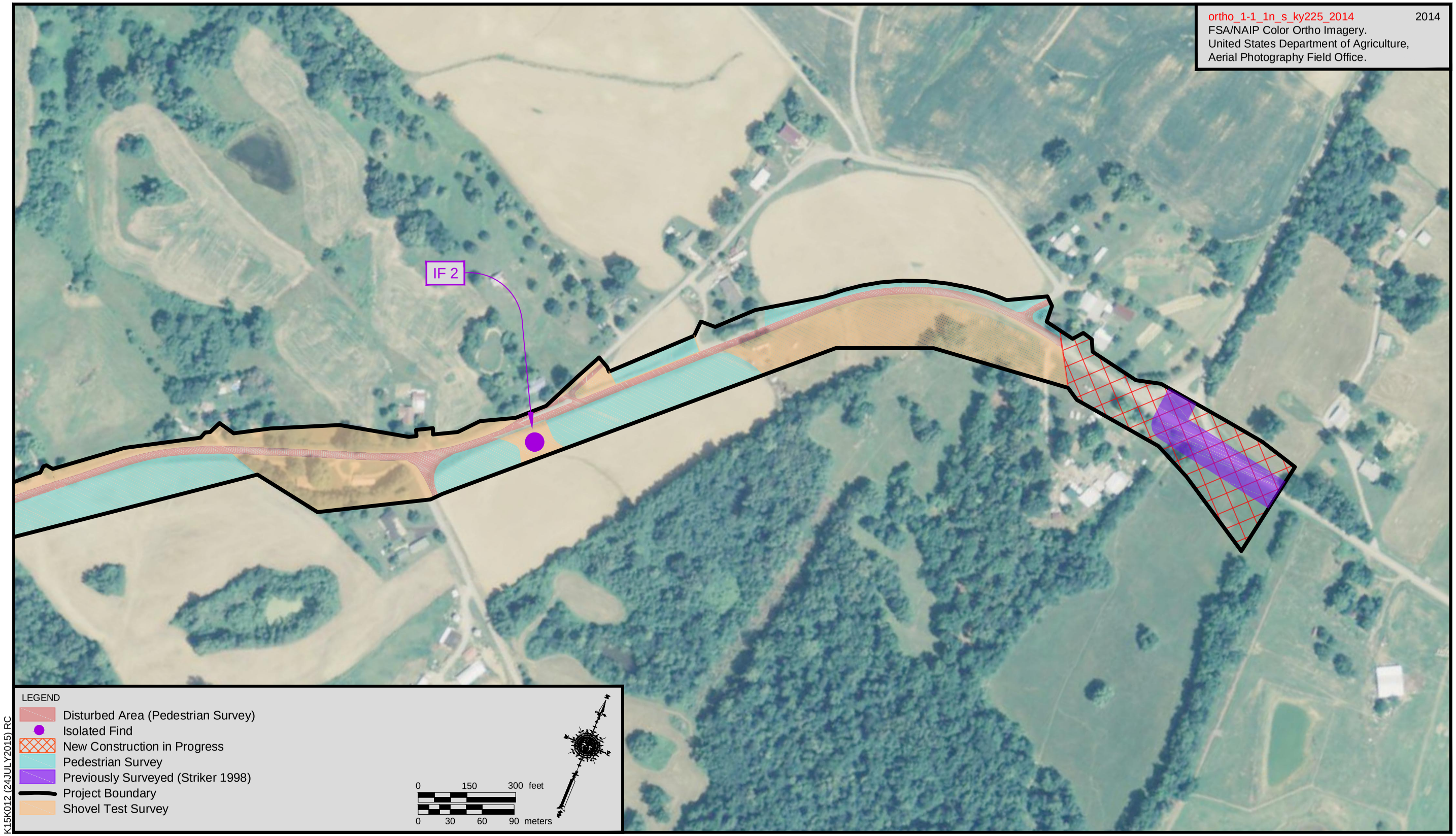

Figure 3h. Project area plan map.

Site 15Un261 is a historic/modern African-American cemetery with approximately 55 graves. A total of 40 grave markers and 2 unmarked depressions were documented. Thirteen additional burials were listed on the website Findagrave.com that were not observed in the field. This cemetery is referred to by locals as "the black cemetery." A discrepancy occurred concerning the exact name as this cemetery is referred to in historic documents as both the "Bald Hill" and "Ball Hill" cemetery. For the purposes of this report, this cemetery will be referred to as the Bald Hill cemetery. African-American cemeteries are historically known for having grave markers that may not be permanent. At a later date, these temporary markers were intended to be replaced with a permanent grave marker. This cemetery is not enclosed by any fencing and consists of graves that are scattered about, making the boundaries unintuitive. This cemetery is directly adjacent to and just outside of the project area. Some graves are located within 1 m (3.3 ft) of Bald Hill Road West and 3 m (9.8 ft) south of KY 56. Due to the extremely close proximity to KY 56 and Bald Hill Road coupled with the unknown boundaries of this cemetery and potential for unmarked burials, CRA recommends extreme caution be used in this area. To ensure marked and potentially unmarked burials are not disturbed, CRA recommends geophysical survey and/or archaeological monitoring when working in this area, especially while stripping, excavating, or using any heavy machinery. Without these steps, CRA cannot confirm that there are no additional burials in the vicinity of this cemetery. Other than these recommendations for Site 15Un261, the proposed work for KY 56 will have no adverse effect on archaeological resources listed in or eligible for the NRHP. Lastly, landowners for five parcels (Two residential properties—Parcel 24 owned by Phyllis J. Sherrod and Parcel 33 owned by Mary Patricia French—as well as three commercial properties—Parcels 14, 16, and 19 owned by Mr. Greenwell) denied permission for the survey and it is recommended that they be surveyed once they are acquired.

II. ENVIRONMENTAL SETTING

This section of the report provides a description of the modern and prehistoric 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

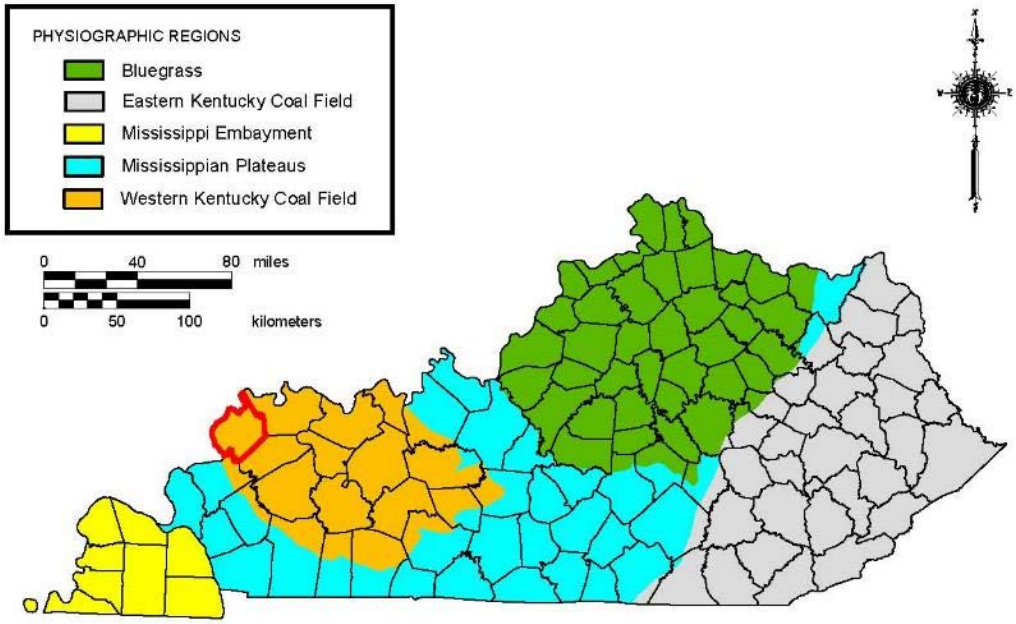

Figure 4. The Western Kentucky Coal Field region.

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.

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.

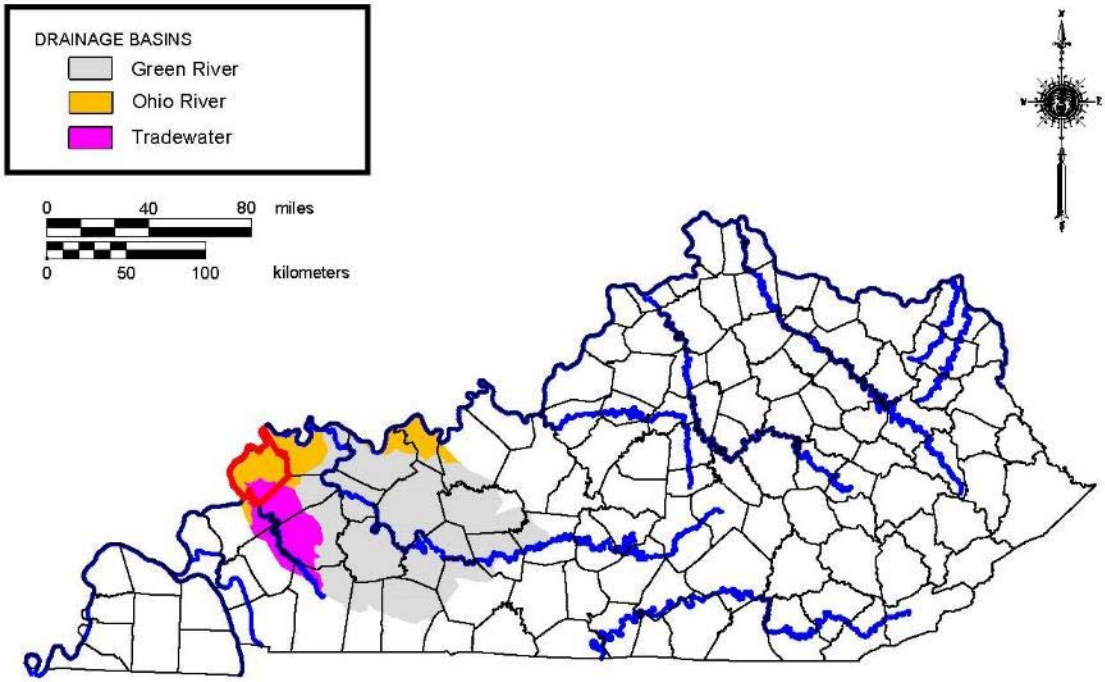

Figure 5. Rivers that drain the Western Kentucky Coal Field region.

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 prehistoric 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, which 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 or more thick 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 ped 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 prehistoric 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.

Prehistoric 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 B.P. (Anderson 2001; Delcourt and Delcourt 1987). By 15,000 B.P., 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 B.P., the boreal forest gave way to a mixed conifer/northern hardwoods forest complex. In the Early Holocene and by 10,000 B.P., 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 B.P. (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 B.P.

Prior to approximately 13,450 B.P., 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, circa 13,450–12,900 B.P, 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 (circa 12,900–11,650 B.P.), 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 (circa 12,900 to 11,600 cal. B.P.) represents one of the largest abrupt climate changes that have 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. "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" (Meeks and Anderson 2012:111; 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, "these oscillations reflect shifts between boreal/deciduous forest ecotones associated with cool/wet and cool/dry conditions, respectively" (2012:113).

Meeks and Anderson (2012:126–130) define five population events for the Paleoindian–Early Holocene transition. Population Event 1 (circa 15,000–13,800 cal. B.P.) 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 (circa 13,200–12,800 cal. B.P.) 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. B.P.). 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. B.P. 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 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 (circa 8000–5000 B.P., also referred to as the Hypsithermal) climate conditions were thought to be consistently dryer 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 B.P. and ended around 2800 B.P. 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 B.P. 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 B.P. 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 B.P. 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 B.P., 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 (circa 700–100 B.P.), which was coldest from circa 400 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 prehistoric 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 B.P.], 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 A.D. 1602 and A.D. 1900 than after A.D. 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 approximate 8.5 km length of the project area located around the community of Spring Grove, 8.0 km west of Morganfield, was surveyed intensively (see Figures 2 and 3a–h). The proposed project involves making adjustments to the road alignment on KY 56 between the intersections of KY 360 and KY 109. The project area encompassed approximately 44.5 ha. Elevations in the project area range from 110 m (360 ft) above mean sea level (AMSL) along the floodplain in the center portion of the project area to around 148 m (485 ft) AMSL in the dissected upland portion west of the floodplain. One of the highest points of Union County is Bald Hill at an elevation of 186 m (610 ft) AMSL which is located just south of the project area. The Ohio River and its tributaries drain the project area.

The project area is located in a combination of floodplain and dissected uplands. The dissected uplands were comprised mostly of woodland that supports an overstory of mixed deciduous trees and an understory of mixed brush, briars, grass, hardwood and softwood trees, and weeds (Figure 6). Some of the proposed corridor crosses sloping terrain and drainages along KY 56 (Figure 7). The floodplain consisted mostly of large agricultural fields planted in either corn (Figure 8) or soybean (Figure 9). Scattered at different intervals throughout both the floodplain and dissected uplands were residential homes and properties. For the most part, the project area did not encompass these residential structures situated adjacent to KY 56. The ground surface visibility in the agricultural lots at times was adequate for surface collecting. Several drainages and human-made culverts were in the agricultural fields (Figure 10).

Ground surface visibility in other portions of the project area was obscured by tall grass and leaf litter (Figure 11), and other portions had been disturbed previously through activities associated with standard commercial and residential activities (i.e., drainages and driveways) with buried and above ground utilities (Figures 12). The vegetation within the project area was diverse and varied depending on the presence or absence of past disturbance and elevation. Cypress Creek is the closest water source to the project area situated 2.4 km (1.5 mi) south of the project area. The Shawneetown Bridge crosses the Ohio River into Southern Illinois 3.5 km (2.2 mi) west of the project terminus at the KY 56 and KY 109 intersection.

Figure 6. Overview of project area in deciduous forest within the project area, facing northeast.

Figure 7. Overview of project area showing slope adjacent to KY 56, facing east.

Figure 8. Overview of a typical agricultural corn field, facing east.

Figure 9. Overview of a typical agricultural soybean field, facing east.

Figure 10. Overview of agricultural fields with culverts observed in the project area, facing east.

Figure 11. Overview of tall grass adjacent to KY 56, facing northeast.

Figure 12. Overview of commercial and residential area showing drainages as well as above ground and buried utilities within the project area, facing southeast.

The east terminus of the project area had an area where the reconstruction process for KY 56 already had started for a distance of 270 m (886 ft) (Figure 13). Several marked cemeteries were situated just outside the project area, and an African-American cemetery is located directly adjacent to the project area and is documented as Site 15Un261, The Bald Hill Cemetery (see Figure 3d). Some of the reviewed historic documentation refers to this as the Ball Hill cemetery.

Chert resources for the region have been previously discussed. For a more detailed analysis of chert resources see the Lithic Analysis section of this report.

Five soil series have been defined in the project area. They consist of Memphis, Patton, Wheeling, Wilbur, and Uniontown. These series are comprised of Memphis silt loam, 2 to 6 percent slopes (MoB), Memphis silt loam, 6 to 12 percent slopes (MoC), Memphis silt loam, 12 to 20 percent slopes (MpD3), Memphis silty clay loam, 2 to 6 percent slopes, severely eroded (MoB), Memphis silty clay loam, 6 to 12 percent slopes, severely eroded (MoB), Patton silt loam (Po), Wilbur silt loam (Wu), Wheeling silt loam, 2 to 6 percent (WsB), Uniontown silt loam, 2 to 6 percent (UnB). The soil series are classified by the amount of time it has taken them to form and the landscape position they are found on (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.

The Memphis, the Uniontown, and the Wheeling soil series are all Alfisols, which are found on landforms that formed during the late Pleistocene or earlier (Soil Survey Staff 1999:163–165). Archaeological deposits would only be found on or very near the ground surface on landforms mapped with Alfisols.

Figure 13. General overview of east portion where construction activities had started, facing west.

The Patton soil series are classified as Entisols, which formed very recently in unconsolidated parent material, such as sandy or recent water-deposited sediments or disturbed soil and rock material, and has not been in place long enough for pedogenic processes to form distinctive horizons except an A horizon (Soil Survey Staff 1999:389–391). Because of their recent age, Entisols rarely have buried and intact prehistoric archaeological deposits.

Sediments observed in shovel probes in upland setting typically conformed to the description for Memphis series silt loam. The surface layer generally consisted of a brown (10YR 4/3) to yellowish brown (10YR 5/4) silt loam or silty clay loam to a depth between approximately 8 and 20 cm (3 and 8 in) below ground surface (bgs). This was followed by a faint yellowish brown (10YR 5/4) silty clay loam subsoil. Discrepancies in the depths of the surface layers of the shovel probes in the uplands were generally dependent upon the degree of slope or disturbance on which they were conducted.

Soils found in shovel probes in bottomland settings were somewhat rocky and similar to the descriptions for Wilbur silt loam and Wheeling silt loam. The surface layer often consisted of a brown (10YR 5/3) to dark yellowish brown (10YR 4/4) silt loam to a depth of approximately 9–20 cm (3–23 in) bgs. The subsoil consisted of a yellowish brown (10YR 5/4) to brown (10YR 4/3) silty clay loam. Discrepancies in the depths of the surface layers of the shovel probes in the bottomland were generally dependent upon the degree of agricultural use endured in the location they were conducted.

III. PREVIOUS RESEARCH AND CULTURAL OVERVIEW

Prior to initiating fieldwork, a search of records maintained by the NRHP (available online at: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome) and the OSA (FY15_8469) 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 search of the NRHP records indicated that no archaeological sites listed on the NRHP were situated within the current project area; however, 12 archaeological sites have been recorded within a 2 km radius of the project area. The OSA file search was conducted between May 26 and June 10, 2015. The work at OSA consisted of a review of professional survey reports and records of archaeological sites for an area encompassing a 2 km radius of the project footprint. To further characterize the archaeological resources in the general area, the OSA archaeological site database for the county was reviewed and synthesized. The review of professional survey reports and archaeological site data in the county provided basic information on the types of archaeological resources that were likely to occur within the project area and the landforms that were most likely to contain these resources. The results are discussed below.

OSA records revealed that 5 previous professional archaeological surveys have been conducted within a 2 km radius of the project area. Twelve archaeological sites have been recorded in this area also. The records search revealed that one of the 12 sites in the file search area, 15Un206, is a multicomponent prehistoric open habitation and historic farm/residence. One site (15Un71) is an earth mound. Site 15Un32 is a prehistoric open habitation with a mound. Eight sites (15Un105, 15Un111, 15Un112, 15Un138, 15Un139, 15Un143, 15Un144, and 15Un172) are all prehistoric open habitations without mounds. The remaining site (15Un152) is a petroglyph site. The 2 km radius included areas within the Grove Center quadrangle.

Previous Archaeological Surveys

Heather Barras

On March 7, 1993, Arrow Enterprises personnel conducted an archaeological survey for the proposed Western Kentucky Packing Plant, Inc., in Union County, Kentucky (Schock 1993). At the request of Union County Fiscal Court, approximately 20 ha (50 acres) was surveyed via pedestrian survey and shovel testing. Two archaeological sites (15Un172 and 15Un173) were encountered. One site (15Un172) is located within the 2 km radius of the current project.

Site 15Un172 is an open habitation without mounds with Early to Late Archaic occupations. No evidence of subsurface deposits was encountered, and the site was considered ineligible for NRHP inclusion. No further work was recommended (Schock 1993).

From April 13 to 16, 1998, 3D/International, Inc., Environmental Group personnel conducted an archaeological survey of a proposed natural gas pipeline corridor in Union County, Kentucky (Striker 1998). At the request of CRC#1, LLC, 15.8 km (9.8 mi) were investigated via pedestrian survey supplemented with screened shovel testing. No sites were encountered, and project clearance was recommended.

In May and June, 2007, Gray & Pape, Inc., personnel conducted an archaeological survey for the proposed Gary Lovell Wetlands Reserve Program easement in Union County, Kentucky (Trader and Niemel 2007). At the request of the United States Department of

Agriculture Natural Resources Conservation Services, 55.6 ha (137.4 acres) were investigated with pedestrian survey supplemented with screened shovel testing and deep testing. One previously recorded site (15Un136) and five previously unrecorded sites (15Un203–15Un206 and 15Un208) were documented during the survey. One of these sites (15Un206) is located within the 2 km radius of the current project.

Site 15Un206 is a multicomponent prehistoric open habitation without mounds with a Late Woodland/Mississippian component and a nineteenth and twentieth century historic farm/residence. The site contained a dense scatter of prehistoric and historic artifacts with the potential for sub-plow zone features. Avoidance was recommended for the site, and NRHP eligibility was not assessed (Trader and Niemel 2007).

On July 2, 2007, Active Environmental Services, Inc., personnel conducted an archaeological survey for the proposed The Rocks telecommunications tower site in Union County, Kentucky (Adderley 2007). The survey was conducted at the request of Professional Services Industries, Inc., on behalf of Verizon Wireless. Approximately .14 ha (.34 acre) was investigated via pedestrian survey supplemented with screened shovel testing. No sites were encountered during the investigation, and no further work was recommended.

On May 4–7, 2010, Environment and Archaeology, LLC personnel conducted an archaeological survey for the proposed restoration of wetlands on the Lovell Heirs Wetlands Reserve Program Easement in Union County, Kentucky (Crider 2010). At the request of the United States Department of Agriculture Natural Resources Conservation Services, 81 ha (200 acres) were surveyed via pedestrian survey supplemented with screened shovel testing and deep testing. Three previously recorded sites (15Un143, 15Un205, and 15Un206) and three previously unrecorded sites (15Un219–15Un221) were encountered.

Sites 15Un143 and 15Un206 are located within the 2 km radius of the current project. Site 15Un143 was originally documented in 1983 as an open habitation without mounds of indeterminate temporal affiliation by Sherry Hilgeman based on the maps of local amateur archaeologist E. Hastings. Crider (2010) recovered diagnostic artifacts which suggested the site contained an Early Woodland and Late Woodland/Mississippian component. The site contained a high density of cultural materials and had the potential for thermal features. Avoidance or further work to assess its NRHP eligibility was recommended.

As noted, Site 15Un206 was originally recorded as a multicomponent historic and prehistoric site. Only a small portion of this site was revisited and did not recover any historic materials (Crider 2010). Only a small amount of lithic materials was recovered, and no evidence of intact deposits or features was observed. The portion of the site that extended beyond the project boundaries was not assessed for NRHP eligibility. The portion within the project boundary was not recommended for further work (Crider 2010).

Sites 15Un32, 15Un71, 15Un105, 15Un111, 15Un112, 15Un138, 15Un139, 15Un144, and 15Un152 did not have associated reports. According to the site forms found in the OSA records, Sites 15Un105, 15Un111, and 15Un112 were recorded as prehistoric open habitations without mounds by Perry Harrell of the University of Louisville in 1980. Late Archaic and Late Woodland/Mississippian components were recorded for Site 15Un105. Middle Woodland and Mississippian components were recorded for Site 15Un111, and a Late Woodland/Mississippian component was recorded for Site 15Un112. The NRHP status for Site 15Un111 was not assessed at the time. Sites 15Un105 and 15Un112 were considered inventory sites and not eligible for inclusion in the NRHP.

Sites 15Un32, 15Un71, 15Un105, 15Un112, 15Un138, 15Un139, and 15Un144 were visited by amateur archaeologist E. Hastings in August 1983. These visits were

volunteered reports recorded by Sherri Hilgeman of OSA. Site 15Un32 was recorded as a Late Woodland/Mississippian open habitation with mounds. Site 15Un71 was recorded as a Late Woodland/Mississippian earth mound. The revisit of Sites 15Un105 and 15Un112 did not offer any new information about the sites, and the occupation assignments remained the same. Sites 15Un138, 15Un139, and 15Un144 were recorded as prehistoric open habitations without mounds with indeterminate temporal affiliations. The NRHP statuses of the sites visited by E. Hastings were not assessed at the time.

Site 15Un152 was recorded as a petroglyph of indeterminate temporal affiliation by James Swauger of Carnegie Museum's Petroglyph Studies on June 14, 1984. It was considered to be an inventory site and not eligible for NRHP inclusion at the time.

Archaeological Site Data

According to available data, 220 archaeological sites have been recorded in Union County (Table 1). The site data indicate that the majority of archaeological sites recorded in Union County consist of prehistoric open habitations without mound sites (51 percent). Other site types in the county include historic farm/residence, cemeteries, and other undetermined site types.

The landform locations of sites in Union County were examined to determine the likelihood of encountering sites on similar landforms within the project area. The majority of sites in Union County are located on floodplains (50 percent) and dissected uplands (31 percent). Most of the sites situated on the floodplains were open habitation sites without mounds (68 percent), and historic farms (7 percent). Cemeteries, open habitations with mounds, and undetermined sites are also found in these areas. Site types located on dissected uplands (31 percent) are prevalent and include historic farm/residence (34 percent), open habitation sites without mounds (29 percent), and cemeteries (12 percent). Also found in these areas are earth mounds, rockshelters, and undetermined sites.

Table 1. Summary of Selected Information for Previously Recorded Archaeological Sites in Union County, Kentucky. Data Obtained from OSA and May Contain Coding Errors.

Site Type:	N	%
Cemetery	10	4.55
Earth Mound	7	3.18
Historic Farm/Residence	35	15.91
Isolated Find	8	3.64
Mound Complex	2	0.91
Open Habitation with Mounds	4	1.82
Open Habitation without Mounds	112	50.91
Other	1	0.45
Other Special Activity Area	1	0.45
Petroglyph/Pictograph	2	0.91
Rockshelter	8	3.64
Undetermined	30	13.64
Total	220	100
Time Periods Represented	**N**	**%**
Paleoindian	1	0.35
Archaic	24	8.3
Woodland	35	12.11
Late Prehistoric	47	16.26
Indeterminate Prehistoric	114	39.45
Historic	70	24.22
Total	289*	100
Landform	**N**	**%**
Dissected Uplands	68	30.91
Floodplain	110	50
Hilside	18	8.18
Terrace	24	10.91
Total	220	100

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

Survey Predictions

Considering the known distribution of sites in the county, the available information on site types recorded, and the nature of the present project area, certain predictions were possible regarding the kinds of sites that might be encountered within the project area. Prehistoric open habitation sites were the primary site types expected, but historic residences and cemeteries also were considered a possibility.

Map Data

In addition to the file search, a review of available maps was initiated to help identify potential historic properties (structures) or historic archaeological site locations within the proposed project area. The following maps were reviewed.

1880 Historical atlas of Henderson and Union Counties, Kentucky (Lake and Company 1880)

1916 Illinois-Kentucky Shawneetown, 15-minute series topographic quadrangle (USGS)

1928 Union County, Kentucky Geological Survey map (Kentucky Geologic Survey [KGS])

1937 Highway and Transportation Map of Union County, Kentucky (Kentucky Department of Highways [KDOH])

1950 General Highway Map of Union County, Kentucky (Kentucky State Highway Department [KSHD])

1953 Grove Center, Kentucky-Illinois, 7.5-minute series topographic quadrangle (USGS)

1957 General Highway Map of Union County, Kentucky (KDOH)

1959 Illinois-Kentucky, Shawneetown 15-minute series topographic quadrangle (USGS)

The available historic maps displayed 15 map structures (MS) located within or directly adjacent to the current project area. These maps included the 1880 historical atlas of Henderson and Union Counties (Lake and Company 1880), the 1916 USGS Shawneetown 15-minute series quadrangle map, the 1928 Union County Geologic Survey map (KGS 1928), the 1937 Highway and Transportation Map of Union County (KDOH 1937), the 1950 General Highway map (KSHD 1950), the 1953 USGS Grove Center 7.5-minute series quadrangle map, and the 1959 USGS Shawneetown 15-minute series quadrangle map. All relevant structures were checked in the field to determine their precise location.

Correlations between some of the structures depicted on the earlier maps compared to later maps proved difficult at times, and these inaccuracies were taken into consideration in the field. For example, when comparing earlier to later maps, it was apparent that portions of KY 56 were rerouted one or more times after 1916, which made identifying structure locations based on their proximity to the road challenging. In addition, the current project area intruded into several residential yards, but avoided the structures, leaving them just outside of the project area. Due to the close proximity and the scale of some maps, it was necessary to check these locations in the field utilizing a sub-meter grade global positioning system (GPS) handheld unit. Many of the structure locations that appeared in the project area on some maps were confirmed to be just outside the project area during the field investigation.

The first available historic map used to help identify structure locations was the 1880 historic atlas (Figure 14) (Lake and Company 1880). Eight structures are shown within or in close proximity to the project area. MS 1 is a residential structure located south of an unnamed road in an area that would later be near the intersection of modern-day KY 56 and KY 109 in the west portion of the project area. The residence is shown as having been owned by a Dr. Colbert. MS 2 is shown as a possible school house structure in the eastern portion of the project area on the east side of current-day Spring Grove Boulevard. MS 3 is a residential structure shown on the west side of the main road that would become KY 56 on property owned by Thomas McMurray. This structure is associated with Site 15Un259.

MS 4 consists of two structures, the G.R. Owen store and a structure shown as a post office next door. These two structures are adjacent to two structures designated MS 5, which are labeled “Hall & Owen.” The census records for 1880 indicate that Robert Hall was a merchant and resided next to G.R. Owen, and it is likely that these structures were stores and/or residences of these two individuals (United States Bureau of the Census [USBC], 1880, Washington, D.C.). MS 6 is a residential structure within the loop of present-day Spring Grove Boulevard across the road from MS 2. It is not known who resided there, because the

label on the map is indiscernible. Both MS 7 and MS 8 are shown as residential structures owned by M. Lynch. M. Lynch was a farmer, and it is possible that he and his wife, R.A. Lynch, resided in one of the structures while leasing out the other structure to tenants (USBC 1880).

The next map examined for the presence of historic structures was the 1916 USGS Shawneetown quadrangle map (Figure 15). MS 1–8 are consistent in presence and location with those shown on the 1880 historic atlas. One additional structure, MS 9, is shown on this map. It consists of the Bald Hill School, and this area is now part of the Bald Hill Cemetery (Site 15Un261) which is located directly adjacent to KY 56 and Bald Hill Road West. A local informant (Leroy Lovell, personal communication 2015) indicated that there once was a structure used as the African-American schoolhouse that was located in the back portion of the Bald Hill Cemetery. This small schoolhouse was razed and said to have been relocated possibly sometime before 1940. The location of this structure is now in the newer portion of the Bald Hill Cemetery, and no excavations were conducted there.

Thirteen map structures are shown on the next available map, the 1953 USGS Grove Center quadrangle (Figure 16). This map indicates the construction of KY 56 had occurred, and some of the structures on previous maps are now oriented on different sides of the roads in relation to where they had been on the 1916 quadrangle. MS 1 is still present on the west end of the project area, but by this time, KY 109 also had been built and now MS 1 is shown near that intersection. Two other residences are shown clustered together with MS 1 and are subsumed within the MS 1 designation. MS 2 is no longer present by 1953, possibly as a result of the construction of KY 56. When KY 56 was constructed, it reoriented MS 3 (location of Site 15Un259) to the south of the newly constructed road, wherein it had been on the north side of the road previously. In addition to a residence, MS 3 on the 1953 map includes an outbuilding structure, likely a barn (see Figure 16). Neither of these structures were extant at the time of the current survey.

MS 4 still includes two structures on the 1953 map, but with the construction of KY 56, they are now located on the north side of the road (see Figure 16). While the 1880 historic atlas had shown the structures as a store and post office (see Figure 14), according to a local informant, the building on the east side (likely the former post office) was said to have been an old school building that served the Spring Grove community before being turned into an auto mechanic shop. The current landowner, Richard Dean Buchanan (personal communication 2015), informed the field crew that his father operated an auto repair shop there beginning sometime around 1948. It is not known when the post office was converted into the school house, or whether any of the structures had been razed and replaced with new construction. At the time of the current survey, the building had been bulldozed due to safety hazards. The adjacent house and/or former store remains, however. No cultural remains were recovered within the project area around MS 4.

The 1953 map indicates that MS 5 is still present as two structures such as what was observed on the 1880 and 1916 maps (see Figures 14 and 15), and they are on the south side of KY 56 (see Figure 16). In the field, a wooden building with windows resembling a store front and a wooden outbuilding were observed, and local informants recalled a general store once being operated here which is consistent with the historic maps dating back as far as 1880 (see Figure 14). Field investigations determined these buildings to be located just south of the project area boundary, and no cultural material was recovered. The majority of the area within the project boundary consisted of a paved parking area that did not allow for shovel testing.

MS 6 is shown in the same location on the 1953 quadrangle map as it had appeared on previous maps (see Figures 14–16). Field investigations confirmed that the house represented by MS 6 was just outside the project area boundary. The area around this

structure, located to the south and east, recovered no cultural material. MS 7 also was oriented consistently with what had been shown on the 1880 and 1916 maps (Figures 14 and 15). The field investigations discovered the remnants of concrete porches that represented the remains of the former structure, which was located outside of the project area. A modern trailer now sits nearby.

MS 8 also was present with the same orientation to the roads as shown on previous maps (Figure 16). No cultural material was recovered in this location during the current survey. MS 9 is not shown on the 1953 quadrangle map (Figure 16). As noted previously, the Bald Hill School was razed before 1940, and the location of this former structure is now in the newer portion of the Bald Hill Cemetery.

MS 10–15 are new structures shown on the 1953 quadrangle map (Figure 16). MS 10 is shown as a residential structure on the south side of KY 56. MS 11 also is shown as a residential structure on the south side of KY 56, but it is located centrally in the project area. MS 12 is a residence shown on the north side of KY 56. It is associated with Site 15Un260, which is a multicomponent prehistoric open habitation and an early to mid-twentieth century historic farm/residence site. MS 13 is a residence located west of MS 7 on the south side of KY 56. MS 14 is a residence to the west of MS 8 at the intersection of KY 56 and Blue Road. Modern trash was spread around the location of the house, which appeared to be abandoned at the time of the current survey. No cultural material was recovered. MS 15 appears to be an outbuilding, likely a barn, on the 1953 quadrangle map (see Figure 16). At the time of the current survey, the structure had been pushed over and demolished by the landowner. No cultural material was recovered from the location of the razed structure.

The 1959 USGS Shawneetown quadrangle map examined for the current survey showed nine structures (Figure 17). MS 1 is consistent with that observed on the 1953 quadrangle map (see Figure 16). MS 3 (Site 15Un259) also is consistent except that the barn structure is no longer extant. MS 4 also is consistent with previous maps. Only one structure is shown for MS 5 on the 1959 quadrangle, and this is consistent with what was observed in the field as noted above in the discussion of this structure with regard to the 1953 quadrangle map. MS 6–8, MS 11, and MS 14 also are consistent with what is shown on the 1953 map. MS 10, MS 12 (Site 15Un260), MS 13, and MS 15 are no longer present, however.

Cultural Overview
Early Human Occupation (Before 11,050 B.C.)

The timing and actual entry point of the first humans into North America are still topics for debate. The general consensus remains that humans entered North America from Asia via the Bering Strait. Waters and Stafford (2013:557) summarized the currently available data and conclude that the First Americans originated in Central Asia and started entering the New World circa 16,000 B.P. Clovis developed later and was a New World construct.

Several sites in the southeastern United States have been suggested as pre-Clovis candidates. Among these are the Cactus Hill site in southeast Virginia (McAvoy and McAvoy 1997; Wagner and McAvoy 2004), the Topper site in South Carolina (Chandler 2001; Goodyear 1999; Goodyear and Steffy 2003), and the Debra L. Friedkin site in Texas (Waters et al. 2011). 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 (11,050–8000 B.C.)

The Paleoindian period is the earliest cultural period conclusively documented in Kentucky. The arrival of humans in the region was probably linked to the movements of the Pleistocene glaciers. During the Paleoindian period, the last of these glacial advances and retreats, called the Greatlakean Stadial (post-9900 B.C.), occurred.

Distinctive lanceolate, often fluted, hafted bifaces called "Clovis" are the hallmark of the early part of the Paleoindian period (Maggard and Stackelbeck 2008). Unifacially and bifacially chipped tools, such as knives, scrapers, spokeshaves, drills, gravers, and endscrapers with spurs, have also been recovered. Archaeologists infer that artifacts and tools of wood, bone, and shell were also used, although they were rarely preserved. While a number of archaeologists have argued that Paleoindians were predominately big game hunters (e.g., Bonnichsen et al. 1987; Kelly and Todd 1988; Stoltman and Baerreis 1983), more 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. Such indications of exploitation of megafauna in Kentucky are present at the Adams mastodon site in Harrison County, Kentucky. Here, the remains of a single mastodon with cut marks on the bones were found in association with large limestone slabs. The configuration of the skeletal remains, in addition to the above evidence, has been interpreted as representative of a possible butchering site (Duffield and Boisvert 1983; Walters 1988).

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 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 point knives, uniface tools) and those reflecting Early Archaic lifeways (i.e., more diverse subsistence, the introduction of many bifacial tool forms, and several types of sites). Morse (1973) has described two basic kinds of Dalton sites: base settlements and butchering camps. In addition, the first systematic use of rockshelters is seen during the Dalton period (Walthall 1998). Hunting remained important; however, there is evidence for the use of wild plants (fruits and nuts) as a dietary supplement during Dalton times.

The Archaic Period (8000–1000 B.C.)

The Archaic period includes a long span of time during which important cultural changes took place. These manifestations probably occurred in response to environmental changes that took place at the close of the Pleistocene epoch (Anderson 2001). The Archaic period is customarily divided into three subperiods: Early (8000–6000 B.C.), Middle (6000–4000 B.C.), and Late (4000–1000 B.C.).

Figure 14. 1880 historical atlas of Henderson and Union Counties showing MS 1-8 (Lake and Company 1880).

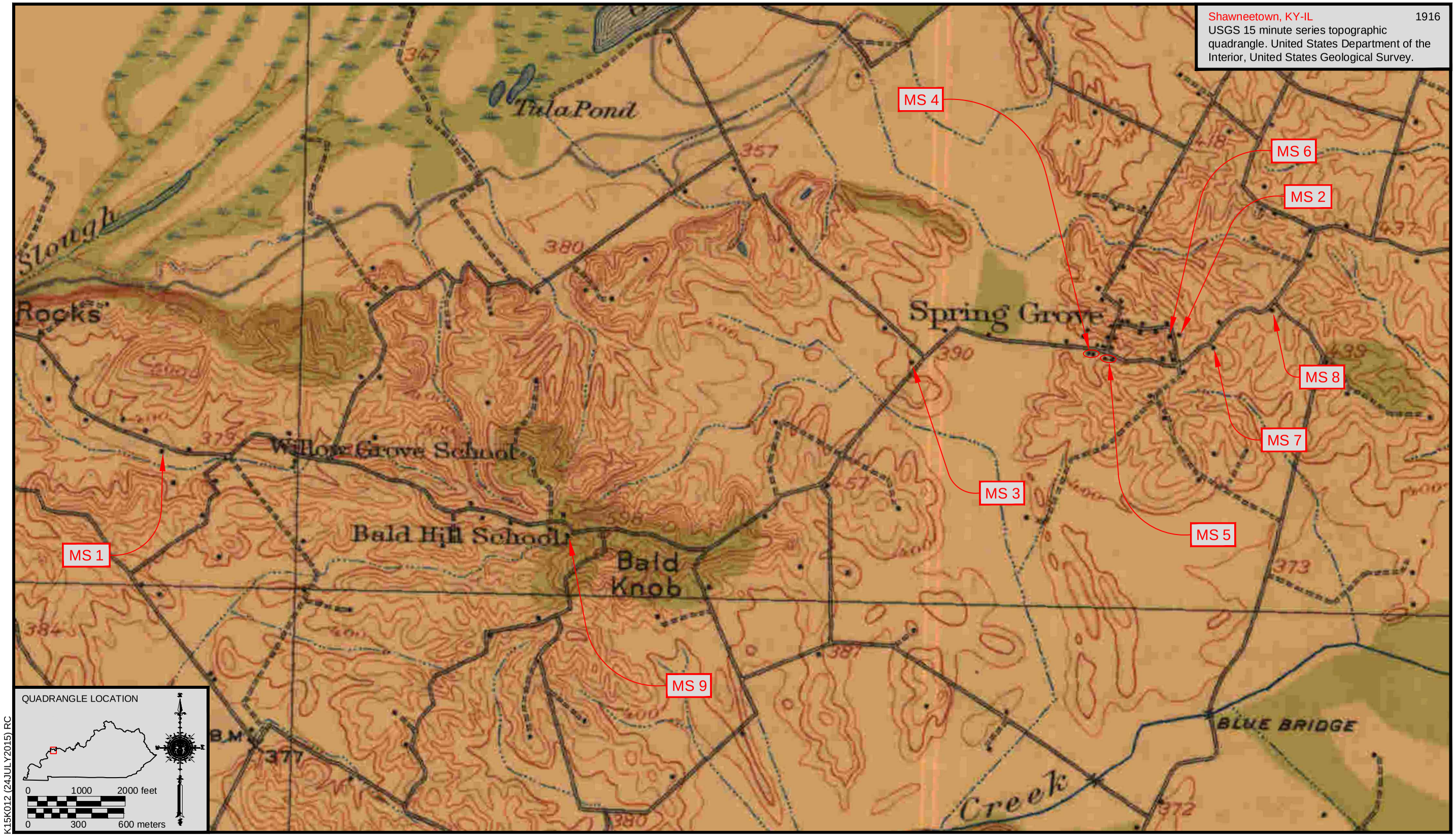

Figure 15. 1916 USGS Shawneetown 15-minute series topographic quadrangle showing MS 1-9 (USGS 1916).

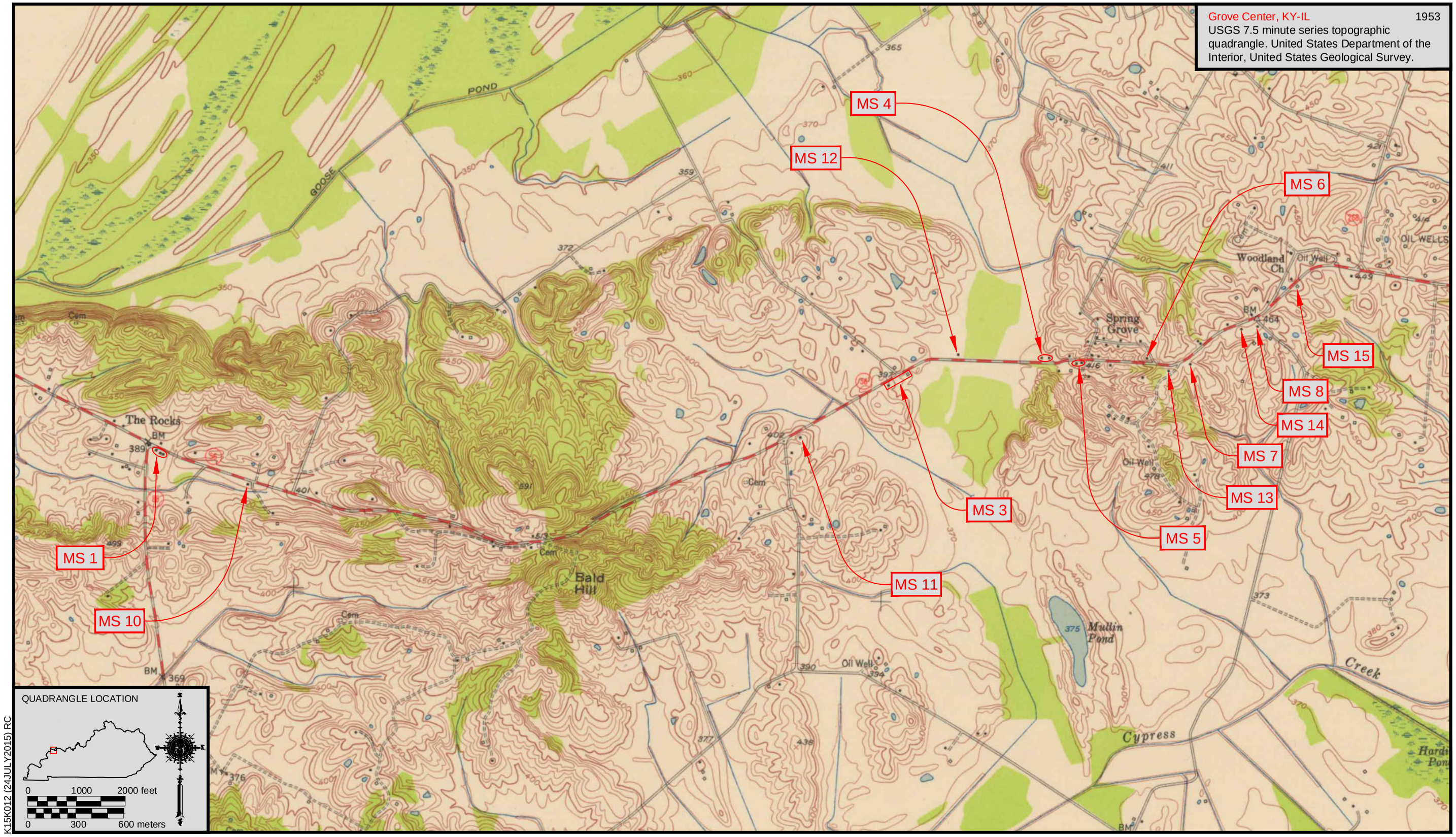

Figure 16. 1953 USGS Grove Center 7.5-minute series topographic quadrangle map showing MS 1, MS 3, MS 5-8, and MS 10-15.

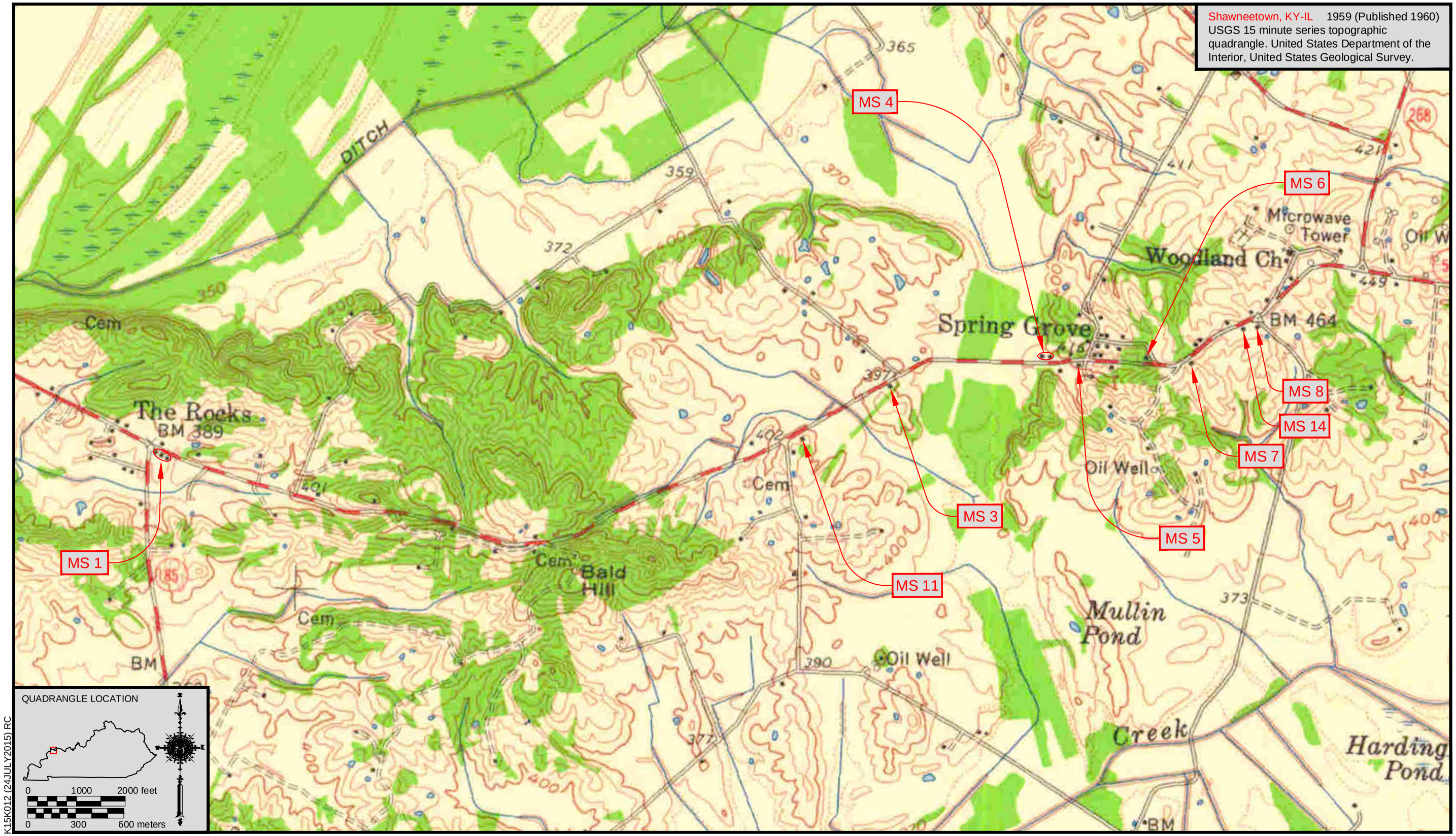

Figure 17. 1959 USGS Shawneetown 15-minute series topographic quadrangle showing MS 1, MS 3-8, MS 11, and MS 14.

Early Archaic (8000–6000 B.C.)

Except for the adoption of new hafted biface styles, Early Archaic tool kits are nearly identical to Paleoindian. The fact that these hafted biface styles are found over a very large area suggests that little regional subsistence diversity occurred during the Early Archaic subperiod. Subsistence strategies are thought to have been similar to those employed by Paleoindian peoples, although a greater variety of game was hunted. The scarcity of tools associated with the preparation of plant foods and fishing in the early part of the Archaic period indicates that hunting was probably still the major subsistence activity (Dragoo 1976:11). Archaeological investigations at a number of deeply buried sites in the Southeast, such as the Longworth-Gick site near Louisville, Kentucky (Collins 1979), have provided important information about Archaic lifeways and their changes through time.

Middle Archaic (6000–4000 B.C.)

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

New hafted biface styles appeared during this subperiod. Stemmed, side-notched, and corner-notched points and 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). Chapman (1975) has suggested that hafted bifaces were probably used in conjunction with the atlatl, a device that increases the distance and accuracy of a spear throw. The recovery in Middle Archaic contexts of bone and groundstone objects (bannerstones) interpreted as atlatl weights tends to support his 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 (4000–1000 B.C.)

The Late Archaic subperiod was a time of continued cultural expansion and growing complexity. Dragoo (1976:12–15) has discussed several Late Archaic traditions for the Eastern Woodlands. Their distinctiveness stems from varied regional responses reflected in material culture. Straight-stemmed, basal-notched, or contracted-base hafted bifaces characterize the Late Archaic subperiod. Judging from the greater number of Late Archaic sites that have been recorded, an increase in population can be postulated. In some cases, evidence of longer and more intensive site occupation suggests extended habitation within an area.

Population increase and, in some parts of Kentucky, evidence of an increase in mortuary ceremonialism have led some to suggest 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 Carlston Annis (Webb 1950), contain hundreds of human burials and evidence 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 nonlocal artifacts from Late Archaic burials (Winters 1968), which testify to the growing complexity of burial ritual and the interaction of many groups (Dragoo 1976:17).

The appearance of cultigens in Late Archaic contexts has been interpreted as evidence of early plant domestication and of use of these plants as subsistence resources. Early cultigens have been documented at such sites as Koster in central Illinois (Brown 1977:168), the Carlston Annis and Bowles sites along the Green River in west-central Kentucky (Marquardt and Watson 1976:17), and Cloudsplitter shelter in Menifee County (Cowan et al. 1981). Two plant complexes were domesticated towards the end of the Archaic: non-native plants (e.g., squash and gourd) and native plants (e.g., *chenopodium*, marsh elder, sunflower) (Struever and Vickery 1973). Watson (1985) views these plants as two different groups of cultigens—the East Mexican Agricultural Complex and the Eastern United States Agricultural Complex. The first includes squash (*Cucurbita pepo*), bottle gourd (*Legenaria siceraria*), and maize (*Zea mays*). The latter includes sunflower (*Helianthus annus*), sumpweed (*Iva annua*), chenopod (*Chenopodium* sp.), maygrass (*Phalaris* sp.), and knotweed (*Polygonum* sp.). Watson, like Struever and Vickery (1973), suggests that corn, squash, and bottle gourd were domesticated in Mexico and imported into the eastern United States by way of the Gulf of Mexico before being transported up the Mississippi River and its tributaries. Cowan et al. (1981:71), however, suggest that squash may "have evolved in situ from some distinctive North American stock" (Cowan et al. 1981:71). This interpretation seems to be substantiated by more recent investigations conducted throughout the Southeast and Midwest.

A number of hafted biface styles are considered terminal Late Archaic and appear in the Early Woodland subperiod (i.e., from approximately 2000 to 500 B.C.). They usually have been found in contexts without Woodland pottery, a situation that leads archaeologists to place them in the Late Archaic rather than the Early Woodland subperiod, which may not be the case.

The Woodland Period (1000 B.C.–A.D. 1000)

Over the two millennia of the Woodland period, cultures in the region sharply diverged from their Archaic beginnings. Kentucky shared in this development, which produced in burial mounds and earthwork enclosures some of the more notable prehistoric monuments in the area. Alongside this development came the intensification of plant domestication, the introduction and spread of pottery—first used as specialized containers and later used more widely—and the intensification of trade with distant regions of the Midwest for exotic materials used in personal life, including burial offerings (Applegate 2008).

The Woodland period, like the preceding Archaic period, is divided into three subperiods: Early Woodland (1000–300 B.C.), Middle Woodland (300 B.C.–A.D. 400), and Late Woodland (A.D. 400–1000) (Applegate 2008). Overall, and despite its distinctive features, the period witnessed a continuation and elaboration of many technologies and cultural practices that had begun during the Late Archaic subperiod. Woodland peoples became increasingly dependent on the cultivation of native plant foods, which allowed for a more sedentary lifestyle. Yet, with the exception of the latter part of the Late Woodland subperiod, subsistence practices remained similar to those of the Archaic period (i.e., a combination of hunting, plant food gathering, and fishing in a seasonal round exploitation pattern). But it is within the Woodland period that highly visible site types, such as mounds and enclosures, were constructed (Applegate 2008).

Early Woodland (1000–300 B.C.)

The Early Woodland subperiod is taxonomically separated from the preceding Late Archaic subperiod by the presence of pottery. Pottery vessels possibly first appear in central and eastern Kentucky around 1000–800 B.C. (Creasman 1995; Creasman et al. 1996) and certainly by circa 600 B.C. (Creasman 1995; Creasman et al. 1996;

Niquette 1989:124). Ceramic trends in this region of Kentucky generally follow the patterns of technological evolution and elaboration observed elsewhere in the Midwest and Northeast. Most sherds recovered from Early Woodland sites in the region are small and fragmentary. These are generally thick and coarsely tempered. Cordmarked, plain, and fabric impressed surface treatments are common (Applegate 2008:343). In contrast, Kerr (1995) recovered a relatively thin and well-made Early Woodland ceramic from the Main site in Bell County, Kentucky. The pottery is densely tempered with crushed quartzite, and the exterior surface is either plain or cordmarked. Early Woodland sites are most easily recognized by a collection of related stemmed hafted biface types. Plant domestication is evident, with squash, gourd, sunflower, maygrass, sumpweed, and giant ragweed being recovered from Early Woodland sites (Cowan 1985), although their use and cultivation had intensified from the Late Archaic subperiod.

Separate ritual (individual burials, earthen enclosures, and burial mounds) and domestic sites, each with distinctive, possibly regional, characteristics, also appear during this time (Clay 1991, 1998, 2002). Widely scattered domestic sites have been identified on the floodplains along all the major watercourses across Kentucky (Cole et al. 1951; Creasman 1995; Creasman et al. 1996) and in the adjacent uplands (Adovasio 1982; Mocas 1988; Stokes and Shields 1999). Characteristic features of the sites are deep, probable storage pits. There is some evidence for the presence of both permanent and temporary domestic structures (Cole et al. 1951:Plate XXa; Creasman 1995).

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. Caves were also extensively used for domestic, extractive (mining of gypsum, mirabilite, and epsomite), and ritualistic (burial and art) purposes during this subperiod, just as they were during the previous Late Archaic subperiod.

Middle Woodland (300 B.C.–A.D. 400)

The Middle Woodland subperiod is known by its burial mounds, except along the lower Ohio River and in the interior Mississippi Embayment. Major mound excavations have given archaeologists a detailed picture of burial customs during this period (Clay 1986, 1998). Although we have considerable excavated evidence for burial customs, the settlement system is not well understood (Clay 1998:13–19). Those responsible for the mounds may have been widely dispersed throughout the region in relatively small groups. Seen in this light, the elaborate burial sites (the burial mounds) offered essential foci for scattered groups to meet and interact. There were also small, circular enclosures, called ceremonial circles, and hilltop enclosures. Still, daily domestic sites are very poorly understood, although examples dating to the time period have been found (Kerr and Creasman 1995) and off-mound domestic areas have been identified adjacent to the mounds (Clay 1983). Small open-air domestic sites are increasingly being discovered and investigated (Kerr and Creasman 1995; Niquette and Boedy 1986; Niquette et al. 1987). Although hunting was important in the Middle Woodland subperiod, finds from rockshelters suggest that manipulation of native plants, by this time domesticated, intensified. Despite this change, the additional food supply did not create significant changes in the way people lived (Railey 1996).

For the most part, early Middle Woodland ceramics tend to have plain exterior surfaces, except in the Mississippi Embayment, where fabric marking persists, and the hafted bifaces consist of Adena and other similar stemmed forms (Applegate 2008; Niquette 1989). Late Middle Woodland pots are commonly cordmarked or plain, but small numbers of Hopewellian style simple stamped or checked stamped sherds from this period are also

known (Webb 1942). Crosshatched rims and cord-impressed decoration were added to the earlier fabric-impressed surfaces. Late Middle Woodland hafted bifaces are weakly shouldered, expanded, or shallow side-notched forms. Alongside these other changes, a decline in the building of burial mounds was seen during the Middle Woodland (Applegate 2008).

Middle Woodland peoples continued the technologies developed in the Archaic and Early Woodland subperiods; 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).

Late Woodland (A.D. 400–1000)

After circa A.D. 400, earthen burial mounds went out of style in the region. The construction and use of earthen or stone enclosures also ceases by approximately A.D. 500. Simpler communal burial sites, generally involving stone constructions or coverings, became widespread, perhaps as a replacement for the mounds (Brown 1981; Clay 1984). The nature of human settlement also changed. Evidence from sites of the subperiod indicates that Native-American groups often returned repeatedly to the same location or congregated in larger groups. However, the possible lack of permanent shelter at these sites suggests that the use of these places was sporadic, possibly seasonal, perhaps still related to certain group ceremonies (Clay 2002:174–182). Rockshelters continued to be used during this subperiod as short-term habitations or temporary hunting locales.

The economy continued to emphasize hunting, gathering, and the utilization of a variety of locally domesticated plants. While maize (i.e., corn) was introduced in the region during the Middle Woodland period, it did not become an important part of the diet until around A.D. 800. The importance of maize is more pronounced in the western portions of Kentucky at this time.

Like the Middle Woodland subperiod, the Late Woodland subperiod is often divided into early and late subdivisions. Early Late Woodland ceramic assemblages are generally cordmarked and are similar to late Middle Woodland assemblages; however, there is usually a lack of Hopewellian style decorated ceramics. Ceramics consist mainly of subconical and subglobular cordmarked jars (Applegate 2008:345–346). Early Late Woodland hafted bifaces are typically expanding stem or crude side-notched forms.

The late Woodland subperiod saw increased regional variability in ceramic styles, subsistence strategies, and social organization (Applegate 2008), although there are distinct continuities expressed in settlement organization (Clay 2002). Ceramics exhibit cordmarked and now some plain surface treatments; some vessels have angular shoulders; and rims display special treatments, like collars, carinations, and castellations. In the lower Ohio River valley and far western Kentucky, necks of vessels exhibit zoned, incised, geometric designs; pan-shaped vessels are present; and red slipping occurs, but only rarely. Late Woodland projectile point forms include corner-notched, side-notched, and large triangular forms. Small triangular projectile points appear in artifact assemblages by A.D. 800 and may represent the first appearance of the bow and arrow.

Late Prehistoric Period (A.D. 1000–1650)

In addition to an increase in cultural integration and cultural complexity, the Late Prehistoric period witnessed a rapidly growing dependence upon horticulture in the subsistence activities of native populations. Cultural materials assigned to the Late Prehistoric period include pottery that incorporated mussel shell as tempering material and small triangular projectile points. Some of the pottery is also much more

elaborately decorated, has special attributes such as the addition of handles, and increasingly new vessels forms are introduced.

The Late Prehistoric period in far western Kentucky has been associated with Mississippian cultures easily recognized in the Mississippi 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 (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).

In the middle Ohio River area, a culture with a similar level of development has been called Fort Ancient (Henderson 2008). Subsistence practices of this culture also focused on the cultivation of maize, beans, and squash. This was supplemented with hunting, fishing, and wild plant collecting. Many Fort Ancient villages were circular or elliptical and "exhibit[ed] distinct activity areas that encircle a central plaza: domestic/habitation, storage/trash disposal, and mortuary" (Henderson 2008:745). Some, but not all, of these circular villages were surrounded by a palisade. Unlike Mississippian sites, however, Fort Ancient sites lack large ceremonial centers and earthworks, although some had burial mounds. Large village sites are usually situated in valley bottoms along the main stems of the region's larger drainages. On the other hand, smaller sites tend to be located throughout tributary drainages and are thought to represent seasonal camps and resource procurement activity stations. Again, rockshelters continued to be used as short-term habitation sites during this subperiod, or at least as temporary hunting locales.

Protohistoric and Historic Period (A.D. 1650–1800s)

At the beginning of the seventeenth century A.D., Kentucky was populated by several sedentary Native-American cultural groups (Schwartz 1967). However, the Beaver Wars of the mid-seventeenth century had almost completely disrupted and uprooted these groups by about 1680 (Hunt 1940). Even prior to the Beaver Wars, Native-American residential populations were affected by European diseases and technology through indirect contact with Europeans from the eastern seaboard. Afterwards, the area was used primarily as hunting land, and later the use of the region was reshaped in the wake of shifting fur trade patterns. Resident aboriginal groups were increasingly being displaced by newly arriving Native-American groups as a result of this shifting pattern (Hunter 1978:588).

In the early eighteenth century, Native-American tribes, who we can identify as the Shawnee, were present in most areas of Kentucky, having been pushed westward from the east (i.e., from the Susquehanna drainage of Pennsylvania) by the expansion of European settlement (McConnell 1992:21). Other established tribes in Kentucky at the time include the Cherokee in the Upper Cumberland River valley area and the Chickasaw in the Lower Tennessee and Cumberland River valleys and far western Kentucky. Conflicts between these and other groups in the region lasted through the War of 1812. They were 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 further and further 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 Union County

Union County is located in western Kentucky and is part of the Western Kentucky Coal Field cultural landscape (Bryant 1992a:907). The county's formation can be historically traced to the late eighteenth century, when Kentucky was a part of Virginia called the Kentucky District. This district contained three counties, Fayette, Lincoln, and Jefferson, which eventually became the Commonwealth of Kentucky on June 1, 1792 (Clark 1992:92). These three counties were later divided and subdivided into the 120 counties that presently make up Kentucky.

Union County was established on January 15, 1811, on land appropriated from Henderson County. The county encompasses 883 sq km (341 sq mi) and is bordered by the Ohio and Tradewater Rivers, as well as Crittenden, Henderson, and Webster Counties. The county was allegedly named for its residents' combined desire to form a new county. The county seat of Union County is Morganfield (Bryant 1992a:908; Rennick 1984:301).

Morganfield was established in 1812 and was built around Morgan Springs. Morgan Springs was a major water source for early residents. This town was built on land aquired from the heirs of General Daniel Morgan, a Revolutionary War officer (Bryant 1992b:653).

Native Americans were the earliest residents of the land now occupied by Union County, but the first European-American settlers arrived in this area during the westward migration following the Revolutionary War. Early towns in the county included Caseyville, Unionville, Sturgis, Morgantown, and Waverly. Transportation was provided to the early residents by the bordering rivers. These waterways allowed for travel, as well as the import and export of goods to Union County (Bryant 1992a:908).

The population steadily increased throughout the first half of the nineteenth century, and the enslaved population kept pace. In 1820, the total population of Union County was 3,470. The total enslaved African-American population was 1,035. In 1830, the population had grown by more than 1,000 to 4,764, and the enslaved population was 1,355. By 1840, the total population was 6,673, and the enslaved population had grown to 1,728. By 1850, the population had increased by more than 30 percent to 9,012. The enslaved African-American population had also

increased by more than 30 percent to 2,292 (USBC 1820–1850).

The Civil War had an impact on Union County in the early years of the fighting. Colonel Nathan Bedford Forrest and his troops entered Union County in late 1861 and defeated a Union detachment in a battle at Morganfield in the fall of 1862. Due to the large enslaved African-American population in Union County, the residents for the most part were Confederate supporters, and in the summer of 1862, Union troops held all of the residents of Caseyville captive, and charged them with treason (Bryant 1992a:908).

The Civil War seemed to have little effect on the population size of Union County, however. In 1860, the population had increased to 12,791; the enslaved African-American population had increased to 3,105; and 485 slaveholders were present in the county. By 1870, after the close of the war, the population of the county still increased to 13,640. The farming industry also remained strong, with 848 farms listed in the county. By 1900, the total population was 21,326, and the number of farms had grown by more than 100 percent to 2,279 (USBC 1860–1900; USBC Agricultural Schedule [AS], 1870).

Shortly after the end of the Civil War, the Louisville & Nashville Railroad (now CSX) brought passenger and freight service to Union County. This spurred the growth of both transportation and industry in the county (Bryant 1992a:908).

Oil and gas exploration began in western Kentucky in the first half of the twentieth century. Large amounts of both of these resources were found in Union County. Along with neighboring counties, Union County's oil production helped spur this industry throughout the rest of Kentucky. By the late twentieth century, crude oil production in Union County had reached 560,919 barrels (Walker 1992:692).

The twentieth century was a period of growth in Union County; many new businesses arose, and in 1905 an opera house was constructed in Morganfield. Camp Breckenridge, a military training center, was built near Morganfield during World War II. More than 30,000 infantry recruits were trained at this facility, and both German and Italian prisoners of war were kept there. A Job Corps Center was built in Union County in the late 1960s. This facility provided a large labor pool to the county (Bryant 1992a:908).

Transportation needs in the second half of the twentieth century were met by the Tradewater Railway Company, the Paducah & Louisville Railroad, CSX Transportation, and a 2.74-m (9-ft) navigation channel on the Ohio River. The development of U.S. 60 also allowed for travel across the county (Bryant 1992a:908).

Today, tourism and recreation in Union County offer many opportunities for the whole family. Many wildlife and recreation areas in the county, including Higgen-Henry Wildlife Area, Moffitt Lake Recreation Area, and the Jenny Hole-Timber Slough Wildlife Area, provide year-round entertainment. The Camp Breckinridge Museum also provides entertainment to visitors and residents of Union County (Union County Economic Development Foundation 2009).

Education in the twenty-first century in Union County is directed by the Union County Board of Education. The county public school system consists of three elementary schools, one middle school, and one high school. Other educational opportunities in the county include an adult high school, as well as an alternative school (Union County Schools 2009).

Although business and industry grew steadily throughout the twentieth century, the population did not drastically change. From 1900 to 1920 the population dropped by more than 3,000 residents to 18,040. The total number of farms in the county also decreased to 1,809. By 1950, the total population had decreased by another 3,000 to 14,893. The number of farms that year also dropped to 908. By 1960 the population had decreased slightly to 14,537. In 1990, the population had increased to 16,557 (USBC 1900–1990).

The population in the twenty-first century continued to slightly decrease. In 2000, the population was 15,637. This was down by nearly 1,000 since 1990. By 2002, the population had slightly decreased again to 15,626. In 2006, the population slightly decreased again to 15,371 (USBC 2000–2006).

IV. METHODS

This section describes the methods used during the survey. Site-specific field methods are discussed in further detail in the Results section of this report. Laboratory methods specific to the individual analyses are discussed in the specific analysis sections of this report.

Field Methods

The project area boundaries were determined by maps provided by the client and by a MobileMapper GPS handheld unit, capable of sub-meter accuracy, in the field. Some portions of the project area ROW had been staked during the time of the current survey. The ROW impacts 97 Parcels in the project area. These parcels were privately owned land in the process of acquisition by KYTC and negotiations are ongoing. Land owner permission was acquired for the privately owned land parcels before initiating fieldwork. The entire project area was investigated except for five parcels of land. These included Parcels 14, 16, and 19 in the west portion of the project area owned by the Gateway One Stop, LLC owner, Mr. Greenwell. This area has several commercial properties situated on both sides of KY 56 including two gas stations (Smokin Joes's and a Marathon), a fireworks store, and other warehouse/storage buildings near the intersection of KY 56 and KY 109. In addition, Phyllis J. Sherrod, who owns Parcel 24, and Mary Patricia French, who owns Parcel 33, denied CRA personnel access for the survey. The KYTC District 7 Environmental Coordinator, Tim Foreman, as well as the Director of ROW for Palmer Engineering, Keith McDonald, have been contacted about these denied entries. Road construction actually had already started at the time of this survey. The affected area was located 270 m (886 ft) from the east terminus and had construction already installing those exhibitions.

A large portion of the project area was subjected to intensive pedestrian survey. Areas included ground surface disturbances, slope greater than 15 percent, and/or ground surface visibility greater than 50 percent. Pedestrian survey was conducted by walking parallel transects along natural contours (see Figure 3a—h). Areas not subject to pedestrian survey were shovel tested. Shovel test probes were excavated at 20 m (66 ft) intervals where the slope was less than 15 percent and ground surface visibility was less than 50 percent. This interval was decreased to 5 m (16 ft) or 10 m (33 ft) when examining the area around extant and razed structures. Shovel test probes measured no less than 35 cm (14 in) in diameter and extended well into the subsoil. The excavated soil from the tests was screened through .64 cm (.25 in) mesh hardware cloth, and the sidewalls and bottoms were examined for archaeological features and cultural materials. Shovel tests were excavated in levels. The plow zone was removed as one level. After the plow zone was removed, 10 cm (4 in) arbitrary levels were excavated. All artifacts recovered from shovel tests were bagged by shovel test number and level.

Disturbances in the project area included the previous highway and utilities construction. Additional disturbances included garden plots and landscaping associated with residential lots; agricultural fields associated with farms; and driveways leading to these areas from the main road.

Laboratory Methods

All cultural material recovered from the project was transported to CRA for processing and analysis. Initial processing of the recovered artifacts involved washing all artifacts, sorting the artifacts into the major material classes (i.e., ceramic, faunal, historic, and lithic) for further analysis, and assigning catalog numbers. Catalog numbers consisted of the

site number and a unique number for each provenience lot or diagnostic specimen. Each prehistoric modified implement (e.g., biface, uniface) or diagnostic pottery sherd received a unique catalog number. Historic artifacts received a unique catalog number for each material group and class by provenience. Non-diagnostic material, such as flake debris, was cataloged by provenience lot where all flakes in the same provenience received the same number.

The methods, specifics, and results of subsequent analysis are discussed in each of the specific analysis sections of this report. All cultural materials, field notes, records, and site photographs will be curated at the University of Kentucky's William S. Webb Museum of Anthropology.

V. MATERIALS RECOVERED

Prehistoric materials were recovered from Site 15Un260 and IF1 and IF2; and historic materials were recovered from two previously unrecorded archaeological sites (15Un259 and 15Un260). The assemblages from each site are described below. In addition, an inventory of materials recovered from the sites listed by provenience is presented in the individual site descriptions section of this report.

Lithic Analysis

Karen S. Taylor

Lithic remains recovered from the KY 56 survey consist of five pieces (8.2 g) of flake debris, one piece (1.8 g) of thermal shatter, and a hafted biface. These items came from one site (15Un260) and two isolated finds (IF1 and IF2) (Table 2).

The biface (IF2) is a thin biface with regular outline and sharp edges but irregular faces. Both basal corners, one shoulder, and most of one lateral edge is missing as a result of trampling or other post depositional damage. These breaks are less weathered than the rest of the biface surface. The raw material is Ste. Genevieve chert.

The analysis of flake debris involved the recording of several attributes, including flake size, weight, raw material type, presence of cortex, and probable stage of lithic reduction during which the flake was produced. Reduction stage follows Magne's (1985) definitions and was determined by the number of facets on the platform or the number of flake scars on the dorsal surface. Early stage reduction is defined as core reduction, middle stage as the first half of tool production, and late stage as the second half of tool production and subsequent maintenance. For flakes that retain platforms, zero to one facet on the platform indicates early stage, two facets indicate middle stage, and three or more facets indicate late stage. Biface thinning is a specialized form of late stage reduction. A biface thinning flake is defined as a flake with a lipped platform having three or more facets. For non-platform bearing flakes, dorsal flake scars were counted instead of platform facets; zero to one dorsal flake scars indicate early stage, two scars middle stage, and three or more flake scars late stage. Stage of reduction was not determined for blocky debris or flakes smaller than .25 inch.

Two of the five pieces of flake debris are smaller than .25 inch. The remaining three pieces are all from 15Un260. These are biface thinning flakes of Newman chert, a biface thinning flake of Ste. Genevieve chert, and a piece of Newman chert blocky debris. The blocky debris has two long, parallel flake scars and could be a fragment of a blade core. However, there is not enough left to tell.

Material type was determined by comparison with a sample collection housed at Cultural Resource Analysts, Inc. Two chert types were identified. These are Newman and Ste. Genevieve.

Newman chert is highly variable, and exposures of Newman Limestone are scattered over a wide area of Western Kentucky. Two varieties of Newman that have been described as different chert types are Paoli and Haney. Paoli chert typically exhibits a semi-vitreous

Table 2. Prehistoric Artifacts Recovered According to Flake Type.

Site	Unit	Count	Wt(g)	Stage or Class	Material	Comments
15UN260	GSC	1	0	NA (<1/4 inch flake)		Weighs less than .1 g
15UN260	GSC	1	1.1	Thinning	Ste. Genevieve	
15UN260	STP 1	1	1.6	Thinning	Newman	
15UN260	STP 8	1	1.8	Thermal Shatter	Indeterminate Burned chert	
15UN260	STP 8	1	5.3	Blocky	Newman	Possible blade core fragment
IF 1	GSC	1	0.2	NA (<1/4 inch flake)		
IF 2	GSC	1	3.5	Hafted Biface	Ste. Genevieve	Indeterminate cluster/type
	Total	7	13.5			

to vitreous luster and is generally medium to fine-grained. It is brownish red to medium red, light tan, and/or bluish white. It typically occurs as cannonball nodules and occasionally has concentric banding (Gatus 1985). Gatus (1985) describes the "Haney" variety of Newman as having a semi-vitreous to vitreous luster. It is generally a medium to fine-grained chert that is light tan to light medium blue. It is sometimes very oolitic and may have small fossil fragment inclusions.

Ste. Genevieve chert is described as having a moderate luster, and the texture is usually fine to medium-grained (Gatus 1980). Its color is typically light to medium blue, olive gray to yellowish gray in concentric zones beneath the cortex, and it often has inclusions of chalcedony and calcite. Ste. Genevieve is found in the form of nodules or tabular blocks and can be procured from outcrops of the Mississippian Ste. Genevieve Limestone formation in the Eastern Knobs, south-central Kentucky, and western Kentucky (Gatus 1980).

Lithic artifacts recovered from the current survey appear to be the result of short-term occupations. Flakes are the result of several tool production and/or maintenance episodes. Due to the low density of material recovered and lack of datable material nothing important can be said about Site 15Un260 or the isolated finds (IF1 or IF2).

Historic Analysis

Tanya A. Faberson

Methods

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. For our purposes, artifacts are grouped into the following categories: domestic, architecture, arms, furnishings, clothing, personal, communication and education, maintenance and subsistence, biological, and unidentified. The artifacts recovered during this project are summarized in Table 3.

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 perhaps observe whether the distribution of specific artifact groups would produce interpretable patterns related to activity areas or structure types. Each one of these groups and associated artifacts is discussed in turn.

Information on the age of artifacts as described in the artifact tables 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 attribute changes 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 new technology took hold and the older manufacturing processes are 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 follows. A complete inventory of the historic artifacts can be found in Appendix A.

Table 3. Historic Artifacts Recovered According to Functional Group.

Group	15Un259	15Un260	Total	Percent
Architecture	5	37	42	28.19
Domestic	8	86	94	63.09
Maintenance/Subsistence	0	4	4	2.68
Personal	0	4	4	2.68
Transportation	0	1	1	0.68
Unidentified	0	4	4	2.68
Totals	13	136	149	100

Materials Recovered by Functional Group

There were 149 historic artifacts recovered during the current survey. The following provides a descriptive discussion of the types and age of artifacts recovered from Sites 15Un259 (n = 13) and 15Un260 (n = 136).

Architecture Group (N = 42)

The architecture group is comprised of artifacts directly related to buildings, as well as those artifacts used to enhance the interior or exterior of buildings. These artifacts consisted of construction materials, fittings and hardware, flat glass, and nails. The architecture group items are discussed below.

Construction Materials (n = 5)

Construction materials refer to all elements of building construction. For this project, the building materials collected included brick fragments, corrugated metal, and caulk (Table 4). The bricks (n = 3) were separated into hand-made (n = 1) and machine-made brick fragments (n = 2). The brickmaking industry was one of the most localized of all nineteenth century industries (Walters 1982:125). It was far less expensive to produce bricks on site than to pay to ship the bricks from another location. In fact, a brickmaker could transport everything needed to produce enough bricks for a large building in two wagons. Although brickmaking was present in the United States by the late eighteenth century, this industry did not become popular until circa 1800. Hand-made bricks manufactured at the construction site continued to be popular as late as the 1880s (Walters 1982:126–128).

Hand-made bricks were typically 5:1 bricks because five sides were identical and the sixth side exhibited distinctly different markings. Linear marks were usually found on the sixth side and were caused by the brickmaker when excessive clay was removed from the top of the mold. The remaining five sides of hand-made bricks usually exhibit a gritty/sandy texture from the sand-coated mold (Walters 1982:128). The paste of hand-made bricks is usually more porous than machine-made bricks. Most hand-made bricks manufactured in the nineteenth century were close in size to the standard adopted by the National Brickmakers Association. However, some irregularity did occur accidentally (Walters 1982:130).

Table 4. Summary of Architecture Group.

Class	Type	15Un259	15Un260	Total
Construction material				
	Hand-made brick	0	1	1
	Machine-made brick	1	1	2
	Corrugated metal roofing/siding	0	1	1
	Caulk	0	1	1
Fittings and Hardware				
	Door hardware	1	0	1
	Pipe fitting	0	1	1
	Stoneware water pipe	0	3	3
Flat glass				
	Window glass	2	3	5
	Plate glass	0	13	13
	Privacy glass	0	1	1
	Security glass	0	1	1
Nails				
	Wire nails	1	11	12
	Totals	5	37	42

The shift from hand-made bricks to machine-made bricks occurred circa 1880. Although machine-made bricks were produced in factories in most major cities in the United States by the mid-nineteenth century, this process was not standardized or popularized until the last two decades of the nineteenth century (Holley 2009:97). The creation of the National Brick Manufacturers Association in 1886 allowed for an industry-wide discussion of standardization. This push came mostly from architects and building contractors who needed a better standard for quantity and project cost estimations (Holley 2009:97). Machine-made bricks will often have marks in the clay related to the machine manufacturing process (Greene 1992; Gurcke 1987). This brick type is typically more uniform in shape, and the paste is more consistent throughout.

It should also be noted that firebricks and molded ornamental bricks became largely popular in the late nineteenth century. Large fires destroyed huge portions of major American cities throughout the latter half of the nineteenth century. This prompted many cities to develop building ordinances that required fireproof brick construction. Ornamental bricks became largely popular between the 1893 and 1904 world's fairs. Unfortunately, the production of these types of bricks declined after 1904 when the extruded method of brick production became more popular than the dry-press method (Broeksmit and Sullivan 2006). Paving bricks typically are heavier and larger than the other bricks described above, and they were manufactured to construct roadways. Hence, they needed to be manufactured to withstand the weight and wear of daily traffic. Brick paving became popular in the 1890s (Hockensmith 1997:158).

One of the bricks recovered during the current project was hand-made, and the other two were machine-made. One of the machine-made bricks displayed evidence of having been made with an early soft-mud machine and dates between 1880 and 1940 (Gurcke 1987; Hockensmith 1997). The remaining materials in this class were identified as a small piece of corrugated metal roofing/siding dating after 1850 and a dried piece of white caulk (Phillips 1989:140). The caulk was not assigned a specific date.

Fittings and Hardware (n = 5)

This class of artifacts includes fittings for structures, such as plumbing pipes and other architectural hardware. These items consisted of one porcelain door-knob fragment dating between 1820 and 1910, one iron/steel pipe fitting, and three stoneware water pipe fragments (Table 4) (Faulkner 2000). The iron/steel pipe fitting and the stoneware water pipe fragments were not assigned specific dates.

Flat Glass (n = 20)

Cylinder glass was developed in the late eighteenth century to enable the inexpensive production of window glass. With this method, glass was blown into a cylinder and then cut flat (Roenke 1978:7). This method of producing window glass replaced that of crown glass production, which dates back to the Medieval period and was capable of fabricating only very small, usually diamond-shaped, panes (Roenke 1978:5). Cylinder glass was the primary method of window glass production from the late eighteenth century through the early twentieth century, at which time cylinder glass windows were slowly replaced by plate glass windows. Plate glass window production became mechanized after 1900 but did not become a commercial success in the United States until around 1917 (Roenke 1978:11).

Cylinder window glass has been shown to gradually increase in thickness through time and can be a useful tool for dating historic sites. Several dating schemes and formulas have been devised that use average glass thickness to calculate building construction or modification dates. These include Ball (1984), Roenke (1978), and Chance and Chance (1976) to name a few. Like previously derived formulas, Moir (1987) developed a window glass dating formula to estimate the initial construction dates for structures built primarily during the nineteenth century. Although Moir (1987:80) warns that analysis on structures built prior to 1810 or later than

1915 have shown poor results, most research in this area shows the regression line extending back beyond 1810 (Moir 1977; Roenke 1978). Hence, dates calculated back to 1785 were considered plausible. Sample size is also a consideration when using the Moir window glass regression formula. According to Moir (1987:78), sample sizes also need to be "reasonable and not collected from a point or two" in order to accurately date the construction of a building. For the purposes of this investigation, a "reasonable" sample size is considered 25 window glass sherds.

Each fragment of flat glass was measured for thickness and recorded to the nearest hundredth of a millimeter using digital calipers. The differences between cylinder window glass, mirror glass, and plate glass were in part determined by the thickness and wear of each flat glass fragment. Although Moir (1987:80) states that dating window glass after 1915 is not as reliable for dating sites, for our purposes, window glass that measured 2.41 mm (dating to 1916) was included in the calculations because according to Roenke (1978:11), plate glass does not become widely or successfully produced in the United States until 1917.

A total of 20 flat glass sherds were recovered during the current investigation (Table 4). Five were identified as window glass, and Moir's window glass technique was used to date them, which ranged from 1894 to 1903. The technique, which relies on statistically meaningful samples from discreet contexts for accuracy, also was used to calculate a tentative mean date of 1898 for the window glass sherds in the survey assemblage. Thirteen flat glass sherds were identified as plate glass and date from 1917 to the present. Once piece of security glass dating after 1891 also was recovered, in addition to 1 piece of privacy glass, which was not assigned a specific date (IMACS 1992).

Nails (n =12)

There are three stages recognized in the technological chronology of nails: wrought nails, cut nails, and wire-drawn nails. Wrought nails were handmade and were the primary type of construction fastener in the eighteenth and early-nineteenth centuries. Their use ended around 1810 with the widespread use of square cut or machine cut nails (Nelson 1968:8).

The cut nail, introduced in approximately 1800, originally had a machine-cut body with a hand-made head. Around 1815, crude machine-made heads replaced hand-made heads on cut nails, and overall, cut nails replaced wrought nails in the construction industry. Early fully machine-cut nails exhibit a "rounded shank under the head," and therefore, often appear pinched below the head of the nail (Nelson 1968:8). By the late 1830s, these "early" fully machine-cut nails were replaced with "late" fully, or modern, machine-cut nails.

The first wire-drawn nails were introduced into the United States from Europe by the mid-nineteenth century. These early wire nails were primarily used for box construction and were not well adapted for the building industry until the 1870s. Although the cut nail can still be purchased today, the wire nail nearly universally replaced it by the turn of the twentieth century (Nelson 1968:8).

A total of 12 nails were recovered from the project area (Table 4). All of the nails were wire-drawn. Of the nails recovered, only 1 was complete and could be classified as per pennyweight and condition. It was an unaltered 3d roofing nail (Figure 18a). The rest of the wire nails were fragmentary.

Domestic Group (N = 94)

Artifacts included in the domestic group consisted of ceramics (n = 34), container glass (n = 56), glass tableware (n = 1), and container closures (n = 3) (Table 5).

The ceramic inventory consisted of a variety of refined and utilitarian wares dating from the nineteenth century through the twentieth century. A full description of ceramic types recovered from the project area is listed below, followed by descriptions of the other domestic group artifacts.

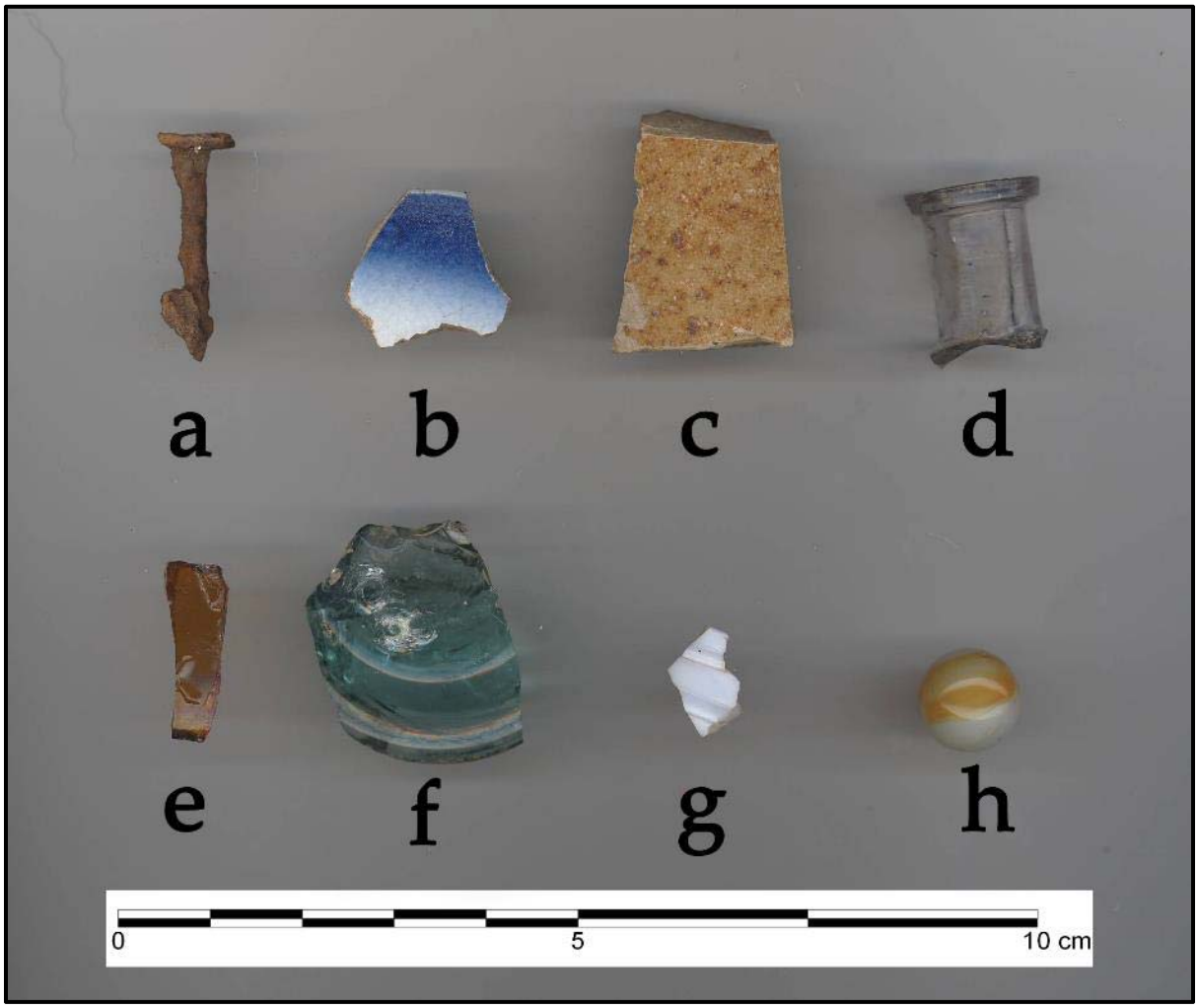

Figure 18. Historic materials recovered: (a) 3d roofing nail recovered from 15Un259 STP 1 Zone I; (b) flow-blue whiteware plate rim from 15Un259 general surface; (c) salt-glazed stoneware crock fragment from 15Un259 general surface; (d) amethyst BIM glass tooled medicine bottle finish/neck from 15Un259 general surface; (e) amber ABM glass embossed Clorox bottle body sherd from 15Un260 STP 2 Zone I; (f) aqua-green glass insulator fragment from 15Un260 general surface; (g) modern plastic cosmetic container threaded finish from 15Un260 general surface; and (h) white, orange, and yellow swirl Peltier marble from 15un260 general surface.

Table 5. Summary of Domestic Group Items.

Class	Type	15Un259	15Un260	Total
Ceramics				
	Whiteware	3	22	25
	Ironstone	1	2	3
	Stoneware	2	4	6
Container glass				
	BIM	1	4	5
	ABM	0	49	49
	Undiagnostic container	0	2	2
Glass tableware				
	Press-molded	1	0	1
Container closures				
	Canning jar lid liner	0	3	3
	Totals	8	86	94

Ceramics (n = 34)

The ceramics recovered were grouped into three major ware types: whiteware (n = 25), ironstone (n = 3), and stoneware (n = 6). Ceramics within each of these ware groups were separated into decorative types that have temporal significance. Each of these ware groups is reviewed below, followed by discussions of associated decorative types.

Whiteware (n = 25)

As a ware type, whiteware includes all refined earthenware that possesses a relatively non-vitreous, white to grayish-white clay body. Undecorated areas on dishes exhibit a white finish under clear glaze. This glaze is usually a variant combination of feldspar, borax, sand, nitre, soda, and china clay (Wetherbee 1980:32). Small amounts of cobalt were added to some glazes, particularly during the period of transition from pearlware to whiteware and during early ironstone manufacture. Some areas of thick glaze on whiteware may, therefore, exhibit bluish or greenish-blue tinting. Weathered paste surfaces are often buff or off-white and vary considerably in color from freshly exposed paste (Majewski and O'Brien 1987).

Most whiteware produced before 1840 had some type of colored decoration. These decorations are often used to designate ware groups (i.e., edgeware, polychrome, and colored transfer print). Most of the decorative types are not, however, confined to whiteware. Therefore, decoration alone is not a particularly accurate temporal indicator or actual ware group designator (Price 1981).

The most frequently used name for undecorated whiteware is the generic "ironstone," which derives from "Ironstone China" patented by Charles Mason in 1813 (Mankowitz and Haggar 1957). For purposes of clarification, ironstone will not be used when referring to whiteware. Ironstone is theoretically harder and denser than whiteware produced prior to circa 1840. Manufacturer variability is, however, considerable and precludes using paste as a definite ironstone identifier or as a temporal indicator. Consequently, without independent temporal control, whiteware that is not ironstone is difficult to identify, as is early vs. later ironstone. For our analysis, the primary determining factor in classification of a sherd as whiteware was the hardness and porosity of the ceramic paste. Decorative types observed on the whiteware sherds in our assemblage are summarized and defined in the following discussions.

PLAIN/UNDECORATED (N = 13)

This decorative type includes vessels with no decoration. While some researchers such as Lofstrom et al. (1982:10) and Wetherbee (1980) include molded designs with "plain" whiteware, we agree with Majewski and O'Brien (1987:153) that molded vessels should be grouped on their own. Plain whiteware vessels became very popular following the Civil War and continued in popularity throughout the late nineteenth and early twentieth centuries (Faulkner 2000). Bacteriological research emerged after the Civil War, and it was not long before it became widely known in the medical community that there was a link between bacteria and disease (Duffy 1978:395). Bacteria could not be seen with the naked eye, however, and in spite of efforts by health officials to educate the public with regard to the connection between illness and bacteria, most people still held to the filth and miasmic theories of disease (Rogers 1997:550). As the public became more educated on the subject, these ideas merged, and it became commonly thought that plain, undecorated wares were best suited for maintaining and serving bacteria-free food. That is, the public equated the simple, "clean" appearance of undecorated wares with the purity (i.e., bacteria-free) and cleanliness of what they were eating. The ceramic manufacturing industry followed suit in this line of thinking and met market demands, producing primarily plain wares which resulted in increased competition between whiteware and ironstone manufacturers.

Purity crusades also indirectly helped increase the popularity of plain, white vessels

in the late nineteenth and early twentieth centuries as social reformers—many of whom were white and middle class—focused on cleaning up city streets, improving sanitation, and ridding cities of disease epidemics. Part of this crusade was the public promotion of purity at the dinner table. Unfortunately, many of these white public health reformers were also motivated by Social Darwinist ideas, and sanitation problems and disease epidemics were often blamed on African Americans and East-European immigrants who were stereotyped as being the harbingers of disease and social decay (Friedman 1970:123).

Thirteen undecorated and/or plain whiteware sherds were recovered during the current project. Four of these sherds were large enough to appear to have been plain vessels without decoration, and they were assigned dates of 1860–1930 (Majewski and O'Brien 1987:119). The other nine sherds were too small to determine whether they were from plain vessels or whether they were undecorated parts of decorated vessels. These sherds were assigned a general date range of 1830 to the present (Majewski and O'Brien 1987:119). Identifiable vessel forms among the plain and undecorated whiteware sherds included bowls (n = 2), a saucer (n = 1), plates (n = 6), and teacups (n = 4).

MOLDED/EMBOSSED (N = 7)

As transfer printing became popular on pearlware, molded designs were simplified. Molded designs were revived with the introduction of whiteware in the late 1830s, but they did not attain the elaborateness of previous forms. Specialized moldings for whiteware were common in the 1840s when the ware had a more limited and generally more affluent market. During the 1860s, molding tended to become softer in relief as opposed to the angular and sculpted forms of the 1840s and 1850s (Wetherbee 1980). During the 1870s and 1880s, molded decorations occupied smaller areas on dishes, with elaboration confined to handles and lids. British stylistic trends dominated the embossed and molded whiteware industry throughout most of the nineteenth century (Wetherbee 1980).

There were seven whiteware sherds with embossed/molded decoration in the project assemblage. Two of the sherds were molded/embossed with an applied transparent green glaze. These were assigned a date range of 1860 to the present. The remainder of the molded/embossed sherds date after 1830 (Faulkner 2000; Majewski and O'Brien 1987:119; Wetherbee 1980). Identifiable vessel forms included saucers (n = 2), a plate (n = 1), and a teacup (n = 1).

FLOW DECORATED (N = 1)

Flowed decoration is a variant of transfer printing and was popular from 1839 to 1908 (Lange and Carlson 1985; Majewski and O'Brien 1987:142–143; Samford 1997:20). One peak period of production was approximately 1850–1860 (Freeman 1954:8); another was in the late nineteenth/early twentieth century. Little (1969:21) indicates that "flowing" or "flown blue" was developed in England during the 1820s. Some modern varieties of flow decorated wares occur and often exhibit gilding or molding. These decorations are not normally found on whiteware.

The term "flow blue" is derived from the fact that the transfer print, or other underglaze decoration, actually flows or blends with the clear glaze during the glost firing. The effect is a blurring of print or hand-painted details and a deep creamy glaze. Many have attributed its success to the reduction in the mechanical effect of the print. The "flowing" was obtained by placing either a flow powder or cups of a flow liquid in the saggers during the glost firing. The "flowing" compound was usually a volatilizing mixture such as lime or chloride of ammonia, which would evolve chlorine at the glost firing temperature. As chlorine evolved from the mixture, it combined with the cobalt glaze, in effect rendering it soluble in the glaze (Dodd 1964:117; Little 1969:21). It is also possible to find black decorated ware types with a flown decoration.

It should be noted that there is disagreement as to what should actually be classified as flow decorated. Some individuals (often collectors and antique dealers) base classification on pattern and maker's marks. This frequently results in pieces with dark transfer-print designs being classified as flow blue. For our purposes, as well as to set a standard of consistency within the CRA lab, only sherds that exhibit a blurred look due to excess dye or ink were classified as flow decorated.

One blue sherd was classified as flow decorated (Figure 18b). It was assigned a date range of 1839–1908 (Majewski and O'Brien 1987; Samford 1997).

CHROMATIC GLAZE (N = 4)

Solid colored, or chromatic, glazed ceramics became popular during the second quarter of the twentieth century (Majewski and O'Brien 1987:164). As chain stores dealing in five- and ten-cent merchandise, groceries, drugs, and clothing sought to provide an increased array of cheap merchandise for consumers, pottery companies expanded their production efforts with the use of tunnel kilns. These kilns, which contained continuous flow ovens, allowed pottery manufacturers to significantly increase the output of cheap dishes available to chain stores, and ultimately, consumers (Blaszczyk 2000:120–121).

One of the first well known and popular styles to be produced in the 1920s had a yellow or ivory glaze, with or without decals (Blaszczyk 2000:121). By the 1930s, other chromatic glazes in colors such as red, cobalt blue, and green also became popular, as exemplified by the excitement surrounding Homer-Laughlin's introduction of Fiesta tableware to the consumer market in 1936 (Gonzalez 2000). Over time, other colors were added to the chromatic glazed tablewares available to consumers, and although chromatic-glazed vessels are still available today, the height of their popularity was seen between the 1920s and 1960s.

It should be noted that sherds identified as having solid color glazing can date to the nineteenth century. However, these sherds are usually undecorated fragments from dip-glazed vessels (such as annular and mocha-decorated wares) and should be noted as such.

Four sherds were recovered with a solid-colored glaze. One was a cobalt-blue bowl sherd, and it dates from 1930 to 1970 (Gonzalez 2000). Another sherd had a gray exterior and a white interior. The two other sherds displayed a light green glaze and a kelly-green glaze. These sherds date from 1920 to 1970 (Blaszczyk 2000:121). The kelly-green sherd had been part of a plate.

Ironstone (n = 3)

Ironstone is a white or gray-bodied, refined stoneware with a clear glaze. It is often indistinguishable from whiteware. Ironstone differs from whiteware in that the body is more vitreous and dense. In addition, a bluish tinge or a pale blue-gray cast often covers the body. In some cases, a fine crackle can be seen in the glaze; however, this condition is not as common as it is in whiteware (Denker and Denker 1982:138).

Confusion in the classification of white-bodied wares is further compounded by the use of the term as a ware type or trade name in advertising of the nineteenth century. Both ironstones and whitewares were marketed with names such as "Patent Stone China," "Pearl Stone China," "White English Stone," Royal Ironstone," "Imperial Ironstone," "Genuine Ironstone," "White Granite," and "Granite Ware" (Cameron 1986:170; Gates and Ormerod 1982:8). These names do not imply that true ironstone was being manufactured. Some investigators avoid the distinctions entirely by including ironstones as a variety of whiteware. Others, however, such as Wetherbee (1980), refer to all nineteenth-century white-bodied earthenwares as ironstone. For this analysis, the primary determining factor in classification of a sherd as ironstone was the hardness and porosity of the ceramic paste. Sherds with a hard vitreous paste were classified as ironstone.

Charles James Mason is usually credited with the introduction of ironstone (referred to as Mason's Ironstone China) in 1813 (Dodd 1964:176). Others, including the Turners and Josiah Spode, produced similar wares as early as 1800 (Godden 1964). As a competitive response to the highly popular oriental porcelain, British potters initiated this early phase of ironstone production. The ironstone of this early phase bears a faint blue-gray tint and oriental motifs, much like Chinese porcelain. A second phase of ironstone began after 1850 in response to the popularity of hard paste porcelains produced in France. This variety of ironstone had a harder paste and reflected the gray-white color of French porcelains.

While some ironstones continued to use oriental design motifs after 1850, the general trend was toward undecorated or molded ironstones (Collard 1967:125–130; Lofstrom et al. 1982:10). Ironstone continued to be produced in England, and after 1870, it was also manufactured by numerous American companies. For many years, classic ironstone—the heavy, often undecorated ware—had been frequently advertised as being affordable and suitable for "country trade" (Majewski and O'Brien 1987:121). By the late 1800s, these thick, heavy ironstones began losing popularity and were often equated with lower socio economic status (Collard 1967:13). At the same time, ironstone manufacturers began shifting to thinner, lighter weight ironstones. As a result, this type of ironstone became popular tableware in American homes during most of the twentieth century (Majewski and O'Brien 1987:124–125). In spite of the shift towards thinner and lighter ironstones, heavy ironstone remained on the market and continues to be popular in hotel/restaurant service (hence, this heavy, twentieth-century ironstone is sometimes called "hotelware"). However, its production for home use all but ceased by the second decade of the twentieth century (Lehner 1980:11).

Three plain/undecorated ironstone sherds were recovered from the project area (Table 5). These sherds date from 1830 to the present (Majewski and O'Brien 1987:122). All three sherds had been parts of teacups.

Stoneware (n = 6)

Stoneware served as the "daily use" pottery of America, particularly rural America, after its introduction during the last decade of the eighteenth century. By 1850, this ware generally replaced coarse redware as the primary utilitarian ware used in American households. Stoneware is a semi-vitreous ware manufactured of a naturally fine, but dense, clay. The pottery was fired longer and to a higher temperature than earthenwares; a kiln temperature of at least 1,200 to 1,250 degrees celsius had to be obtained (Cameron 1986:319; Dodd 1964:274–275). As a result, stoneware generally exhibits a hard body and a very homogeneous texture. The paste may vary from gray to brown, depending on the clay source, and length and intensity of the firing.

Because this ware is fired at such high temperatures, its body is nonporous and well suited to liquid storage. Stoneware, as mentioned, was not typically manufactured as a refined ware (such as its cousin, ironstone, or eighteenth-century refined white salt-glazed stoneware), and hence, it was, for the most part, utilized for utilitarian activities associated with jars, churns, crocks, tubs, jugs, mugs, pans, and pots. These vessels were typically glazed, with salt glazing and slip glazing most common.

Although refined salt glazing was practiced in England during the eighteenth century, by 1780, the production of English salt-glazed tableware had been virtually supplanted by the manufacture of cream colored earthenwares (Lewis 1950:29). The salt-glazing technique continued to be utilized for utilitarian vessels, however, and was eventually introduced to the United States in the early-nineteenth century. Salt glazing was accomplished by introducing sodium chloride into the kiln during the firing process, at which point the salt quickly volatilized. The vapor reacted with the clay to form a sodium aluminum silicate glaze (see Billington 1962:210; Dodd 1964:239). The surface of the

glaze is typically pitted, having what is commonly known as an "orange peel" effect.

Stoneware may also be coated with a colored slip (a suspension of fine clay and pigment). The Albany slip—named after the rich brown clay found near Albany, New York—first appeared in the 1820s. Initially, it was mainly used for the interior of stoneware vessels. However, by the 1850s, it was also used as an exterior glaze. Bristol glaze, an opaque white slip, was introduced late in the nineteenth century. When used in combination with Albany slip, Bristol-glazed stoneware vessels have a general date range of 1880–1925 (Ketchum 1983:19; Raycraft and Raycraft 1990:5).

A third glaze often used on stoneware is the alkaline glaze. Like the Albany slip, it was developed in the 1820s. The basic alkaline glaze is made up of wood ash, clay, and sand. Other additions may be slaked lime, ground glass, iron foundry cinders, or salt. These additions affected the color and texture of the glaze. Colors vary from olive to brown to a gray-green or yellowish hue, depending on adjustments in proportion of ingredients (Ketchum 1991:9). Although not as prevalent, alkaline glazing has been used in combination with salt glazing. This causes the stoneware vessel to exhibit the colors of alkaline glazing with the pitted texture of a salt glaze.

The stoneware sherds recovered during the current project reflect several of the glazes described above in a variety of combinations (Table 5). The most common exterior treatment was Bristol slip (n = 3). The other exterior treatments identified were Albany slip (n = 1) and salt glaze (n = 1) (Figure 18c). One sherd exterior was unglazed. As discussed above, the recovered stoneware dates from the nineteenth century through the early twentieth century.

Container Glass (n = 56)

A variety of container glass was recovered during the current investigations. Research by Baugher-Perlin (1982), Jones and Sullivan (1985), Lindsey (2015), and Toulouse (1972) was used to date glass containers. Glass color was the only attribute that could be used for dating those fragments that were not identifiable as to type of manufacture.

The approximate date of manufacture for bottles and bottle fragments recovered from the project area was established by determining the manufacturing process associated with the bottle (i.e., creation of the base and lip of the container) and using any patent or company manufacturing dates embossed on the bottle.

When examining glass vessels, bottle lips can be informative. A lipping tool, patented in the United States in 1856, smoothes and shapes the glass rim into a more uniform edge than a hand-smoothed lip or "laid-on ring." Certain types or styles of lips were associated with specific contents; for example, medicines were often contained in bottles with prescription lips (Jones and Sullivan 1985). A "sheared," or unfinished, bottle lip typically dates before 1880.

Lipping tools were used throughout the middle and end of the nineteenth century until the advent of the fully automatic bottle machine (ABM) in 1903. It should be noted, however, that as automated bottle manufacture became available after the turn of the twentieth century (see below), tooled finishes continued to be produced—albeit in steadily decreasing numbers. That is, there is a lag time between tooled finishes and ABM finishes, and although ABM glass is given an incept date of 1903, most tooled-glass vessel sherds will be given a terminal date around the 1920s due to this lag time, unless other diagnostic characteristics are observed enabling one to give it an earlier terminal date.

The manufacturing process can be roughly divided into three basic groups including free blown, blown in mold (BIM), and automatic bottle machine manufactured (ABM) vessels (Baugher-Perlin 1982:262–265). BIM and ABM glass were recovered from the current project. Each process is discussed separately below.

Blown in Mold (BIM) (N = 5)

Most molded bottles are constructed in pieces and have distinctive seams. The dip mold was used from the late seventeenth through the mid-nineteenth century (Baugher-Perlin 1982:262). It leaves no seams, unless glass adhered to the edges of the bottle mold as it was attached to the free blown shoulder and bottle neck. The key mold, on the other hand, was a type of two-piece mold that was used from about 1750 to 1880 (Jones and Sullivan 1985:27). Key mold seams cross the base and are concealed in the corners of a flat-sided body.

The turn paste mold was used from circa 1870 to the early twentieth century and does not contain seams because the glass is blown into a container that is spun. The glass conforms to the mold from the centrifugal force produced. Vessels formed from this process usually have faint horizontal lines from the spinning process. The three-part mold has seams running around the shoulder of the vessel and partially up the neck of the vessel. This style of mold lost popularity around 1870. The blow back mold was another mold type, and this was used in the manufacture of jars such as the distinctive Mason jar, which was patented in 1858.

Embossing on container glass vessels was made possible by engraving the mold the glass was blown into. This was first conducted in the mid-eighteenth century and continued into the twentieth century. The panel bottle came into popular existence around 1860, and the shape of this vessel was useful because the name of the commodity or the manufacturing company could be changed on the bottle form by substituting a different "slug-plate" into the mold. This process can be identified through the distinctive seams, since they follow the rectangular shape of the nameplate. The date of the manufacturer's patent on the bottle and the name of the company, when present, can often be utilized to determine a date of manufacture for the container.

The finish is the top part of the neck of a bottle or jar made to fit the cork or other closure used to seal the vessel. The finish is often simply referred to as either the lip or rim. Glass factories in the late-nineteenth and early-twentieth centuries produced a wide variety of finishes for their containers (Jones and Sullivan 1985:78). Finishes were formed by manipulating the glass at the end of the bottle neck, by shaping glass added to the end of the neck, by the lipping tool, or by being blown into a mold (Jones and Sullivan 1985:79). The term "finish" originated with the mouth-blown bottle manufacturing process where the last step in the completion of a finished bottle was to "finish the lip."

Mouth-blown bottles were removed from the blowpipe by two primary methods: either through the cracking-off process or by shearing the neck off of the blowpipe. Once this was completed the bottle was reheated in a furnace to smooth out the sharp edges where the blowpipe was detached (Lindsey 2015). This method, referred to as fire polishing, was completed even if no specific finish was to be formed. Once this method was complete a finish could be either added or formed on the top of the bottle neck. These finish types included a laid-on ring, a rolled finish, a flared or flanged finish, an applied finish, and a tooled finish. The most commonly found finish types are the applied finish and the tooled finish. An applied finish was created when applied hot glass is added at the point where the blowpipe was removed. This applied hot glass was manipulated with various tools in order to form a wide variety of finish styles (Lindsey 2015). A tooled finish was created by reheating the severed end of the bottle near the neck. Once reheating or refiring the end of the neck was accomplished, a lipping tool was inserted into the neck of the bottle and rotated while squeezing the jaws to form the finish desired.

A total of five pieces were assigned to the BIM category (Table 5). One lip/rim type was identified. It was a late applied amethyst prescription lip of a medicine bottle dating from 1870 to 1920 (Figure 18d) (Fike 1987:4). The other BIM glass fragments were body sherds. Three were aqua and one was clear. They represented canning jars (n = 2), a

miscellaneous jar (n = 1), and a miscellaneous bottle (n = 1).

Automatic Bottle Machine (ABM) (n = 49)

The Owens automatic bottle-making machine was patented in 1903 and creates suction scars and distinctive seams that run up the length of the bottle neck and onto the lip. Bottles were being manufactured regularly with this machine by 1905, and by 1907, it was utilized to produce significant quantities of container glass vessels (Lindsey 2015; Miller and McNichol 2002). Hence, the ABM mold provides a firm manufacturing date at the beginning of the twentieth century. Another automatic bottle machine called the Individual Section was also used in the commercial production of bottles. This machine was widely used starting in 1925 and by 1940 became the most widely used bottle manufacturing device (Jones and Sullivan 1985:39). This bottle machine was more cost effective than the Owen's machine, which was no longer used after 1955.

There were 49 glass fragments assigned to the ABM category during the current project, and many of these had multiple distinguishing characteristics (Table 5). One base type was found, and it was a cup bottom mold. This was represented by an embossed cobalt glass Vicks VapoRub jar base that dates between 1920 and 1960 (Hinds-Brown 2007). Two body types were identified. The embossed body sherds were clear, 2 were amber, and 1 was aqua. One clear sherd was embossed with an "8," and the other clear sherd was embossed with a partial unknown symbol and was stippled. One amber sherd had unknown embossing, and the other was embossed with an "X" as part of a Clorox bottle (Figure 18e). The Clorox bottle sherd dates between 1940 and 1962 (Clorox Company 2015). The aqua sherd was embossed with part of a "B" from a Ball Mason jar. The other body type was recessed panel. It was a clear recessed panel medicine bottle fragment. Only one finish type was identified. It was a threaded finish of a clear miscellaneous jar. With the exception of the Clorox bottle fragment, all of the ABM sherds listed above were given a date range of 1903 to the present.

The remaining ABM body sherds totaled 41 and consisted of a variety of colors. These included amber (n = 2), aqua (n = 1), clear (n = 34), cobalt (n = 1), and light green (n = 3). Vessel forms included a canning jar (n = 1), indeterminate bottles/jars (n = 10), miscellaneous bottles (n = 16), and miscellaneous jars (n = 3). All of these sherds were assigned dates of 1903 to the present.

Undiagnostic Container Glass (n = 2)

When no other diagnostic features were present, the color of the glass was noted, although there is some subjectivity inherent in color classification. Jones and Sullivan (1985) observed that chemicals color glass, either as natural inclusions or additions by the manufacturer. The concern here was primarily to note the presence of purple or "amethyst" glass, selenium glass, cobalt glass, and "milk" glass. Only 2 of the container glass sherds were not diagnostic (Table 5). Both were clear.

Glass Tableware (n = 1)

Press molding was first used (although on a very small scale) in England in the late-seventeenth century to make small solid glass objects, such as watch faces and imitation precious stones (Buckley 1934). By the end of the eighteenth century, decanter stoppers and glass feet for objects were also being produced (Jones and Sullivan 1985). The production of complete hollowware glass objects did not become possible until there were innovations in press-molded techniques in the United States during the late 1820s (Watkins 1930). Mass production of press-molded glassware was well established by the 1830s (Watkins 1930).

Earlier press-molded glass objects were predominately made of colorless lead glass (Jones and Sullivan 1985). William Leighton of the Hobbs-Brockunier Glass Works in Wheeling, West Virginia, invented lime glass. This type of glass looked like lead glass, had superior pressing attributes, and was much more inexpensive than lead glass (Revi 1964).

Advancements in mold technology in the 1860s and 1870s led to the application of steam-powered mold operation. This in turn led to increased production and reduced costs (Revi 1964). Modern press molding is conducted entirely by machine (Jones and Sullivan 1985).

Press-molded table glass was made by dropping hot pieces of glass into a mold. A plunger was then forced into the mold, pressing the hot glass against it. The outer surface of the glass took on the form of the mold, while the inner surface of the glass was shaped by the plunger. The plunger was withdrawn and the glass object was removed from the mold. The surface of the glass was often fire polished to restore the brilliance of the glass surface that was disturbed by its contact with the mold (Jones and Sullivan 1985).

Press-molded glass may be recognized by several characteristics. Usually, the glass object must be open-topped in order for the plunger to be withdrawn from the mold. Narrow mouthed vessels were produced, but additional manipulation of the glass was necessary after the plunger was removed from the mold. Evidence of this manipulation should be present on the vessel (Jones and Sullivan 1985). There is no relationship between the exterior shape and design of a press-molded vessel to the interior shape and design because the plunger shapes the interior of the object most often leaving behind a smooth surface. This differs from earlier glass vessel production techniques like blown glassware, where interior shape was related to the exterior shape and design (Jones and Sullivan 1985).

Another characteristic of press-molded containers was that mold seams were generally present. The seams were sharp and distinct, unless steps had been taken to deliberately remove them. The texture of the glass surface of press-molded glass was disturbed and often disguised by an all-over stipple design. The edges of the designs on press-molded glass had a predisposition toward rounded edges. The bases of press-molded objects were usually polished. The quality of the designs on press-molded glassware was precise and the design motifs were numerous (Jones and Sullivan 1985).

In contrast to press-molded glass, cut glass generally had a polished, smooth, and glossy surface texture. The design edges were sharp and distinct. Cut glass designs consisted mostly of panels, flutes, and miters. The designs were often slightly uneven and asymmetrical. Mold seams were usually absent; they were polished off prior to cutting (Jones and Sullivan 1985). Contact-molded glass also differs from press-molded glass in that the exterior and interior of the vessel will portray parallel patterns. The interior of the vessel is also generally much more diffuse towards the base.

Only 1 glass tableware sherd was recovered during the current project (Table 5). It was a clear unleaded press-molded lid fragment for a covered server. It displayed an unknown pattern decoration along the rim. It dates from 1864 to the present (Jones 2000).

Closures (n = 3)

Bottle closures serve both to prevent the spilling of a bottle's contents and to protect a bottle's contents from contamination and evaporation (Berge 1980). Closures have been used almost as long as animal skins and bottles have been employed to contain liquids. Closures range from a utilitarian piece of paper or cloth stuffed into the mouth of a bottle to a delicately crafted crystal stopper for a decanter. There are three primary closure types: caps, stoppers, and seals (Berge 1980).

Caps are secured to a bottle by overlapping the outside edge of the finish or mouth. Common cap types include external screw, lugs, crown, and snap-on. External screw caps were first introduced in the mid-nineteenth century (Jones and Sullivan 1985; Toulouse 1977). External thread caps were attached to bottles by means of grooves in the cap that screwed down on continuous glass threads on the finished exterior of a bottle. External thread caps were first produced using metal in 1858 (Jones and Sullivan 1985;

Toulouse 1977). Advances in technology led to the introduction of a Bakelite external thread cap around 1922 (Berge 1980; Meikle 1995), an aluminum shell roll-on cap in 1924 (Berge 1980; Rock 1980), and modern plastic caps in the mid-1930s (Meikle 1995). Examples of the external thread cap include canning jar, mayonnaise jar, and pickle jar lids.

The crown cap was patented on February 2, 1892, by William Painter of Baltimore, Maryland (Rock 1980). The crown cap was placed over the finish, and then crimped around a lip or groove in the finish to seal the container. This closure was lined with cork from 1892 until circa 1965 (IMACS 1992; Riley 1958; Rock 1980). Crown caps with composition liners appeared in 1912, and both cork and composition liners were gradually phased out following the introduction of the plastic liner in 1955 (IMACS 1992; Riley 1958). The majority of commercially produced glass soda bottles have crown cap closures.

Stoppers, the second major closure type, are secured to the finish interior of bottles, usually by forcing a portion of the stopper into the bore of the finish. Stopper types include cork, glass, inside screw, porcelain-top, Hutchinson Spring, Electric, Pittsburgh, and Lightning. Cork stoppers were the most common historic closure type. Most glass stoppers use ground or roughened tapered stems along with a roughened finish inside to seal bottles. The "modern" ground and tapered glass stopper was developed in Europe around 1725 (Holscher 1965). Glass stoppers came in many shapes, sizes, and styles and were used as closures in many different types of bottles. As with the cork stopper, the glass stopper was phased out in the 1920s with the advent of the crown cap closure (Berge 1980; Jones and Sullivan 1985).

Seal closures utilized the vacuum on the interior of the glass container. The heating and then cooling of the bottle's contents created the vacuum. Seal closures, although dating back to 1810, did not become popular until the mid-twentieth century. These closures were most often used in food jars (Berge 1980). There were several types of seal closures including Phoenix, Sure Seal, Giles, spring seal, and disc seal.

The disc seal was used as early as 1810 by Nicholas Appert (Berge 1980). John L. Mason used this type of closure on his patented fruit jar in 1858 (Berge 1980). Mason's closure was made of zinc and was held in place with an exterior screw cap ring. Unfortunately, the zinc reacted with the contents of the jars, giving the contents an unpleasant metal taste (Jones and Sullivan 1985). Glass liners were then developed and added to the disc around 1869 by Lewis R. Boyd (Toulouse 1969, 1977). These liners prevented the zinc from reacting with the contents of the jar. To aid in opening, Boyd added a handle to the disc circa 1900 (Toulouse 1977). Both of these disc seal types were used until around 1950 (Jones and Sullivan 1985; Toulouse 1969, 1977). In 1865, the Kerr two piece seal was patented. This system utilized a metal seal disc held in place by an exterior screw cap with no center. This seal and cap type system is still in use today.

The closure artifacts recovered from the project area consisted of 3 milk glass canning jar lid liners. They date from 1869 to 1950 (Jones and Sullivan 1985; Toulouse 1969, 1977).

Maintenance and Subsistence Group (n = 4)

The maintenance and subsistence group contains artifacts related to general maintenance activities on a farmstead. These artifacts are grouped into classes containing non-food containers, electrical, farming and gardening, hunting and fishing, stable and barn activities, general hardware, general tools, transportation, and fuel-related items such as coal. Two of these classes were represented in the historic assemblage recovered during the current survey (Table 6).

Table 6. Maintenance and Subsistence, Personal, Transportation, and Unidentified Artifacts Recovered.

Class	Type	15Un259	15Un260	Total
General hardware				
	Eye bolt	0	1	1
Electrical				
	Glass insulator	0	3	3
Health and grooming				
	Cosmetic container	0	2	2
Toys and games				
	Marble	0	2	2
Motorized vehicle				
	Tempered glass	0	1	1
Metal				
	Iron/steel	0	2	2
Glass				
	Amorphous	0	1	1
Plastic				
	Modern	0	1	1
	Totals	0	13	13

General Hardware (n = 1)

This class of artifacts includes a wide variety of hardware fasteners and items used for a variety of purposes. Only one general hardware item was recovered, and it was a corroded eyebolt. It was not assigned a specific date.

Electrical (n = 3)

Items in this class of artifacts include insulators, electrical wire, batteries, electrical tape, and any other item associated with electricity. All three electrical items were glass insulator fragments. One was opaque white glass, and the other two were aqua-green (Figure 18f). They date after 1875 (Whitten 2015).

Personal Group (n = 4)

The personal group includes artifacts assumed to have belonged to individuals. This category of artifacts includes health and grooming items, jewelry and beads, coins, music and art items, personal items, toys, and games. Tobacco products are also subsumed into this category. Artifacts related to health and grooming (n = 2) and toys (n = 2) were recovered from the project area (Table 6).

The health and grooming artifacts consisted of cosmetic container fragments. One was opaque white glass with unknown embossing. It appeared machine made and was assigned a date range of 1903–1960 (Jones 2000). The other cosmetic container fragment was a modern plastic threaded finish for a bottle or jar (Figure 18g), and it dates after 1930 (Meikle 1995). Both toy artifacts consisted of marbles. One was a Peltier white, orange, and yellow swirl marble dating after 1920 (Figure 18h) (Basinet 2015). The other was a National Line "Rainbo (Liberty)" marble that had a white base with red and blue swirls. It dates after 1935 (Basinet 2015).

Transportation Group (n = 1)

This class of artifacts includes various parts associated with engines, automobiles, railroads, wagons, carriages, and other modes of transportation. One automobile item was recovered during the current project. The automobile was originally a European invention, but Americans became interested in the auto industry in the late nineteenth century. Three types of engines were introduced, including the steam engine, the electric engine, and the internal-combustion engine. The first automobiles were popular among the upper class. The automotive

industry began constructing vehicles for the middle class in the early twentieth century, contributing to the popularity of the automobile (Marcus and Segal 1989:208–212). The automobile item recovered consisted of a red tempered glass circular tail light fragment (Table 6). It was assigned a tentative date range of 1940 to the present.

Unidentified (n = 4)

This category contains artifacts that could not be identified beyond the material from which the artifact was made. There were three material classes within this group, including glass (n = 1), metal (n = 2), and plastic (n = 1) (Table 6). The glass consisted of one clear amorphous glass fragment. The metal consisted of a flat, thin piece of iron/steel and a flat, thick piece of iron/steel. The plastic consisted of a piece of an unknown red modern plastic item/part. It was assigned a date of 1930 to the present (Meikle 1995).

Discussion

There were 149 historic artifacts recovered during the current survey. The material collected is discussed in detail above, and summarized below in the site discussions.

Site 15Un259: Thirteen historic cultural materials were recovered from 15Un259. These were divided into the architecture (n = 5) and domestic (n = 8) groups. The architectural items consisted of a machine-made brick fragment, a 3d wire roofing nail, and two pieces of window glass. These tentatively date to 1902 and 1903.

The domestic artifacts consisted of ceramics (n = 6), container glass (n = 1), and glass tableware (n = 1). The ceramics included whiteware (n = 3), ironstone (n = 1), and stoneware (n = 2). One of the whiteware sherds was flow-blue decorated and dates between 1839 and 1908. The other two whiteware sherds were plain/undecorated. All of the whiteware sherds were plate fragments. The single ironstone sherd also was undecorated, and it dates after 1830. It had been part of a teacup. Surface treatments on the stoneware sherds included Bristol slip exterior/Albany slip interior (n = 1) and salt glazed/slipped (n = 1). The Bristol-slip sherd dates between 1880 and 1925, and the salt-glazed sherd dates between 1800 and 1925. The salt-glazed sherd had been part of a crock. While the ceramic assemblage was small, a mean ceramic date of 1886 was calculated. The container glass recovered from 15Un259 consisted of an amethyst BIM medicine bottle fragment dating between 1870 and 1920. The glass tableware consisted of a clear press-molded covered server lid that dates after 1864.

The average date range of the 15Un259 assemblage is 1858–1930, and the mean is 1894. The dominance of the architectural and domestic group artifacts supports the known use of the site as a domestic farmstead/residence. The first map showing a domestic structure in the location of 15Un259 dates to 1880, and it also is present on maps dating to 1916 and the 1950s. It likely was razed sometime in the latter half of the twentieth century. While the artifact assemblage is small, the mean ceramic date (1886) and the mean date of the site assemblage (1894) are consistent with the house having been constructed and occupied by the late nineteenth century. The domestic artifacts indicate that the former residents utilized both refined and utilitarian wares, and the glass tableware suggests that the display and use of decorative dishes were important in their daily lives. The medicine bottle fragment also suggests that the residents purchased proprietary medicines. Unfortunately, little more can be said regarding the occupation of Site 15Un259 based solely on the historic material culture.

Site 15Un260: A total of 136 historic artifacts were recovered from this site. These were divided into the architecture (n = 37), domestic (n = 86), maintenance and subsistence (n = 4), personal (n = 4), transportation (n = 1), and unidentified (n = 4) groups. The architectural items consisted of construction material (n = 4), fittings and hardware (n = 4), flat glass (n = 18), and nails (n = 11). The construction material included a hand-made brick fragment, a machine-made

brick fragment, a piece of corrugated roofing/siding, and a dried piece of white caulk. The fittings and hardware included an iron/steel pipe fitting and three stoneware water pipe fragments. Of the flat glass, there were 3 pieces of window glass, 13 pieces of plate glass, 1 piece of privacy glass, and 1 piece of security glass. The window glass sherds dated between 1894 and 1895, and the plate glass dated after 1917. The security glass dated after 1891, and the privacy glass was not assigned a specific date. All 11 of the nails were wire-drawn and fragmentary. They dated after 1880.

The domestic items consisted of ceramics (n = 28), container glass (n = 55), and container closures (n = 3). The ceramics included whiteware (n = 22), ironstone (n = 2), and stoneware (n = 4). Seven of the whiteware sherds were molded/embossed, and vessel forms included saucers (n = 2), a plate (n = 1), and teacups (n = 2). Three of the whiteware sherds were plain, and 8 were undecorated. Vessel forms included bowls (n = 2), teacups (n = 4), plates (n = 4), and a saucer (n = 1). Four of the whiteware sherds were chromatic glazed. Colors included cobalt (n = 1), gray/white (n = 1), light green (n = 1), and kelly green (n = 1). The cobalt chromatic-glazed sherd dates between 1930 and 1970, and the remainder of the chromatic-glazed sherds date between 1920 and 1970. The ironstone sherds were plain teacup rims, and they date after 1830. Surface treatments on the 4 stoneware sherds included Albany slip/Albany slip (n = 1), Bristol slip/Albany slip (n = 2), and unglazed/Albany slip (n = 1). With the exception of the Bristol-slip sherds which date between 1880 and 1925, the stoneware dates between 1830 and 1925. Three of the 4 stoneware sherds were identified as having been parts of jugs at one time. The mean ceramic date is 1903.

The container glass recovered from 15Un260 consisted of BIM (n = 4), ABM (n = 49), and undiagnostic container glass (n = 2). The BIM glass consisted of 1 clear miscellaneous jar fragment, 1 aqua miscellaneous bottle fragment, and 2 aqua canning jar fragments. The ABM included a cup bottom mold Vick VapoRub jar base dating between 1920 and 1960, 2 clear embossed sherds, 2 amber embossed sherds, 1 of which had been part of a Clorox bottle dating between 1940 and 1962, 1 aqua embossed Ball mason jar fragment, and 1 clear recessed panel medicine bottle fragment. One clear miscellaneous jar external thread finish also was recovered. The remaining 41 ABM sherds were classified according to color: amber (n = 2), aqua (n = 1), clear (n = 34), cobalt (n = 1), and light green (n = 3). Identifiable vessel forms included a canning jar (n = 1), indeterminate bottles/jars (n = 10), miscellaneous bottles (n = 16), and miscellaneous jars (n = 3). They were assigned dates of 1903 to the present. The undiagnostic container glass fragments were clear (n = 2). The container closures consisted of three milk glass canning jar lid liners dating between 1869 and 1950.

The maintenance and subsistence artifacts consisted of an eyebolt (n = 1) and 3 glass insulators dating after 1875. The personal items included cosmetic containers (n = 2) and glass marbles (n = 2). One of the cosmetic container fragments was milk glass and dates between 1903 and 1960. The other cosmetic container was modern plastic and dates after 1930. The glass marbles date after 1920 and 1935, respectively. The transportation item was a red tempered glass automobile tail light and dates after 1940. The unidentified group items consisted of metal (n = 2), plastic (n = 1), and glass (n = 1).

The average date range of the 15Un260 assemblage is 1886–1955, and the mean is 1920. The dominance of the architectural and domestic group artifacts supports the known use of the site as a domestic farmstead/residence. The first map showing a domestic dwelling in the location of the site dates to 1953, and it likely was demolished sometime within the same decade as this structure no longer appears on the 1959 Shawneetown 15-minute topographic quadrangle. The architectural artifacts in the site assemblage suggest that the structure could have been constructed by the 1880s or 1890s, but it should be noted that this structure

is not shown on an available 1916 map. Hence, it is more probable that the house shown on the 1953 map was constructed in the late 1910s or 1920s. One may question whether there had been a previous structure in that location that had been razed before 1916, but an overview of the other artifacts recovered from the site—including the domestic, maintenance and subsistence, personal, and transportation items—more strongly supports an early twentieth-century occupation than a late nineteenth-century occupation. With regard to the lifeways of the former site occupants, they used refined and utilitarian ceramics, and appear to have practiced food preservation via canning. They purchased commercial household cleaners as well as medicinal ointments and cosmetics, and considering the occupation period, it is not surprising to find that they owned an automobile. Children may also have resided there based on the presence of marbles, but adults have historically been known to play and/or collect marbles as well. Based on the historic artifact assemblage alone, little more can be said regarding the occupation of Site 15Un260 at this time.

VI. RESULTS

During the course of the current survey, three previously unrecorded archaeological sites (15Un259–15Un261) were documented as well as two prehistoric isolated finds (IF1–IF2). A description of all sites and isolated finds is presented below, and the locations of all are depicted in Figures 2 and 3a–h. A description of the three newly recorded sites and isolated finds are presented below.

15Un259

Elevation: 119 m (390 ft) AMSL
Component(s): historic
Site type(s): farm/residence
Size: 2,900 sq m (31,215 sq ft)
Distance to nearest water: 2.9 km (1.8 mi)
Direction to nearest water: south
Type and extent of previous disturbance: Extensive disturbance from removal of main structure and road construction
Topography: Floodplain
Vegetation: corn field and pasture grasses
Ground surface visibility: 75 percent
Aspect: level
Recommended NRHP status: not eligible

Site Description

Site 15Un259 is a historic farm/residence dating from the late nineteenth through the mid-twentieth century. The site is located just south of KY 56 and 1.4 km (0.9 mi) to the east-southeast of the community of Spring Grove in Union County, Kentucky (Figures 2 and 19). This site was identified while surface collecting a plowed agricultural field on a level floodplain at an elevation of 119 m (390 ft) AMSL. Vegetation consisted of a recently planted corn crop, and ground surface visibility was approximately 75 percent. The vegetation outside of the agricultural field consisted of pasture grasses and weeds with no surface visibility.

Comparing the map data for this area on the 1880 historic atlas (Figure 14) and the 1916 USGS Shawneetown, Kentucky-Illinois, 15-minute topographic quadrangle (Figure 15) with later topographic maps from the 1950s reveals that KY 56 was rerouted sometime between the late 1910s and the 1950s. The 1880 historic atlas shows MS 3 and the site as the residential location of Thomas McMurray. The 1916 USGS map (Figure 15) shows the same structure but no name is shown on the map. After KY 56 was constructed, Site 15Un259 and MS 3 were reoriented south of the road. The location of MS 3 is consistent on the 1953 USGS Grove Center, Kentucky-Illinois, 7.5-minute topographic map (Figure 16) and on the 1959 USGS Shawneetown, Illinois-Kentucky, 15-minute topographic map (Figure 17). In addition, an outbuilding structure is shown near this location on the 1953 map but is not present on the 1959 map suggesting it was razed during this six year period. The area around the solid square (often indicating a residential structure) was located

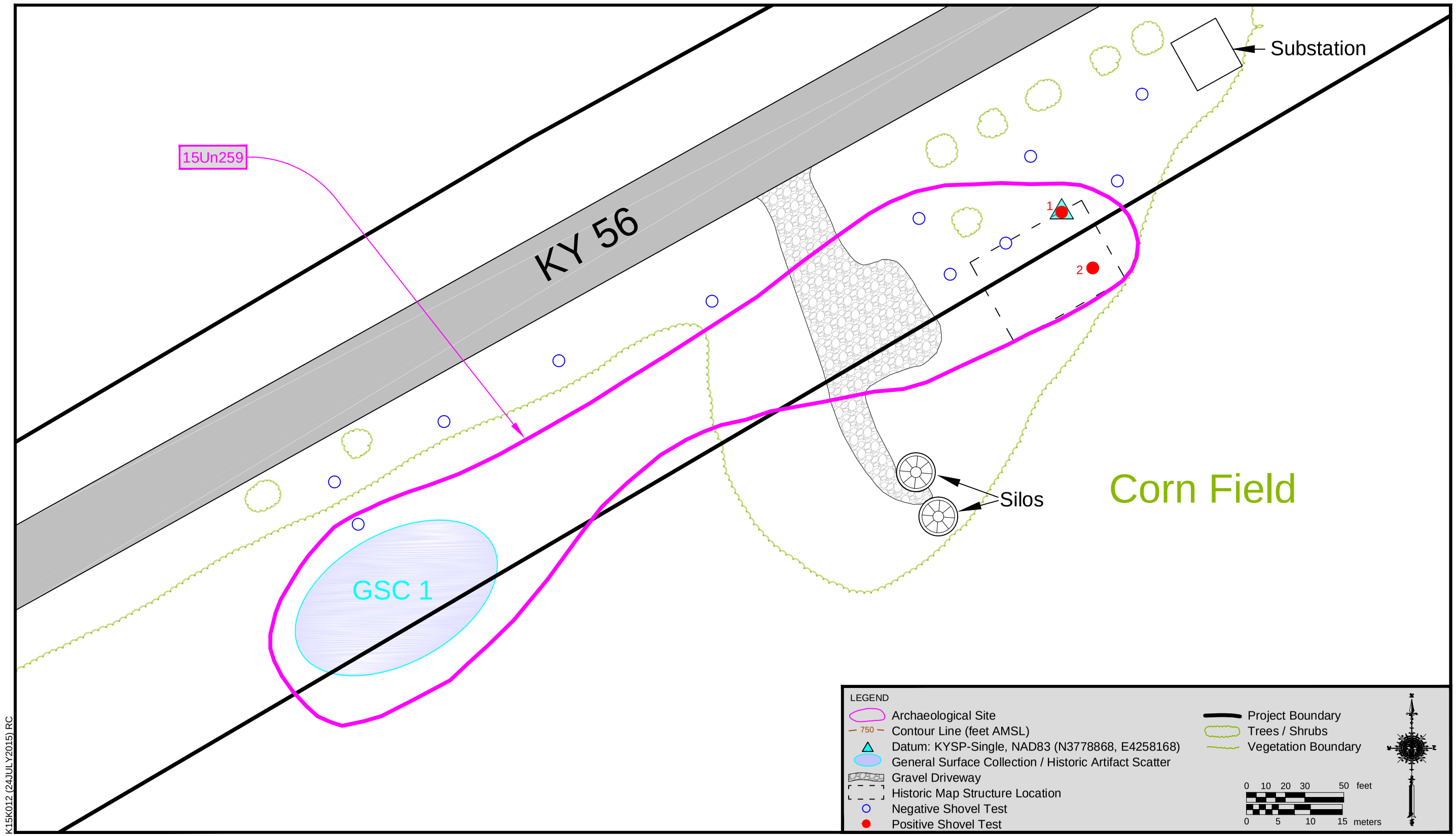

Figure 19. Schematic plan map of Site 15Un259.

in the field, and this structure was razed sometime after 1959. This area is now a flat grassy area between corn fields where some shade trees were present at the time of the survey (Figure 20). The location of the hollow square (often indicating a barn/outbuilding) was relocated and is now located in a corn field (Figure 21).

Soil development within the site boundary is extremely eroded and indicates mechanical scraping likely occurred during the removal of the structures. An electrical substation is fenced off northeast of this location. A gravel driveway leading to two large silos just south of the project area is located between the razed structure and the ground surface collection (GSC) area (Figure 22).

Approximately 100 m (328 ft) west, within another corn field, a concentration of historic artifacts was recovered from a 50 m wide area. Surface collection consisted of a light density of late-nineteenth to mid-twentieth century artifacts. This portion of the field was also adjacent to several shade trees; however, no map structures are indicated in this location on any of the historic maps. An unmapped structure—or activities such as dumping—may have occurred in this location at one time; however, agricultural use may have moved and dispersed these artifacts. Disturbances to the site consisted of agricultural plowing, the razing of structures, construction/restructuring of KY 56, and underground utilities. Site 15Un259 measures 165 m (541 ft) north–south by 20 m (66 ft) east–west, covering 2,900 sq m (31,215 sq ft). Site boundaries were defined by the absence of cultural material to the east and west, KY 56 to the north, and the project boundary to the south. It should be noted that it is possible the site extends outside the project boundary to the south.

Figure 20. Overview of Site 15Un259, facing northeast. This is the location of the residence (MS 3) shown on historic maps.

Figure 21. Overview of former barn/outbuilding area at Site 15Un259, facing south.

Figure 22. Gravel entrance and the location of the historic scatter at Site 15Un259, facing west.

Depositional Context

Nearly all shovel tests within the vicinity of the site revealed disturbed soils with a mixture of topsoil and subsoil in the plow zone (Ap horizon) to a depth of approximately 0–25 cm bgs. Soil development was eroded in many portions. Memphis series silt loam was mapped for the location of the site and Ap horizon soils were eroded and mixed with sub soil due to heavy agricultural use. Sub soil was consistent with Memphis series silt loam. A typical undisturbed soil profile consisted of an Ap horizon of a brown (10YR 4/3) to light yellowish brown (10YR 6/4) silt loam to depths between 10 and 30 cm bgs, followed by a subsoil of a strong brown (7.5YR 5/6) silty clay loam excavated to between 10 and 40 cm bgs (Figure 23). This shovel test represents the undisturbed area west of the disturbed location of the razed structure, where soils were extremely shallow. Shovel tests showed soil development was very eroded in the site area near the location of the map structures.

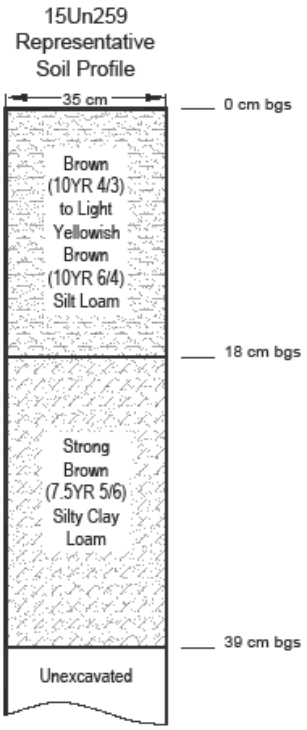

Figure 23. Representative soil profile from an undisturbed area at Site 15Un259.

Despite good ground surface visibility in the agricultural field, surface collecting was supplemented with shovel testing to assess soil stratigraphy, artifact density, test for activity/feature locations, to help determine boundaries, and to test the grassy portion between agricultural fields. Thirteen shovel tests were excavated within the site boundaries at 10 m (33 ft) intervals around the ground surface collection area and the razed residential structure. An additional five shovel tests were placed around the location of the razed outbuilding/barn structure; however, no cultural material was recovered. This outbuilding/barn structure is east of the residential structure and is not included in the site schematic (Figure 19) as no material was recovered in this location.

Artifacts

Artifacts were recovered from the ground surface and from the upper zone of two positive shovel tests (Table 7). Materials recovered consisted of a low density of historic materials recovered from two functional groups including the architecture [(n = 5) Table 4] and domestic [(n = 8) Table 5] groups. The architectural items consisted of a machine-made brick fragment, a 3d wire roofing nail, and two pieces of window glass. These tentatively date to 1902 and 1903. While the ceramic assemblage was small, a mean ceramic date of 1886 was calculated. The container glass recovered from 15Un259 consisted of an amethyst BIM medicine bottle fragment dating between 1870 and 1920. The glass tableware consisted of a clear press-molded covered server lid that dates after 1864. The average date range of the 15Un259 assemblage is 1858–1930, and the mean is 1894. The artifacts recovered from the site are consistent with a domestic occupation that could span as early as the late nineteenth century through the mid-twentieth century.

Table 7. Artifacts Recovered from Site 15Un259 by Provenience.

Unit	Zone	Depth	Group	Class/Type	N =
STP 1	I	0–5 cm bgs	Architecture	Nail	1
STP 2	I	0–13 cm bgs	Architecture	Window glass	2
GSC		Surface	Domestic	Ceramics, BIM, glass tableware	8
GSC		Surface	Architecture	Brick, door knob	2
				Total	13

Archival Data

John Dickerson

The information available concerning the history of ownership and occupancy of Site 15Un259 was limited. In order to establish the historic context of the sites, various archival records and historic maps were examined. Deed records for the property were available at the Union County Clerk's Office [UCCO] in Morganfield, Kentucky, from the mid-nineteenth century to the present. In order to identify any potential occupants of the site, federal census records were consulted. Other documents, such as death records, land grants, and marriage records, were used when available. Historic topographic maps also were examined in order to explore the history of the architectural landscape at the site. Due to a lack of available records, the landowner history of the site was not recovered for the project before 1899. Table 8 presents a summary of the ownership and occupancy of Site 15Un259.

The first recorded landowner that can be associated with Site 15Un259 is Thomas McMurray. In 1880, Thomas McMurray, age 55, is recorded as living in the Raleigh Precinct in Union County, Kentucky. His household included his wife Bettie, 36; and his three children: Arthur, 6; John S., 3; and Ellen D., 4 months (USCB 1880). Map data from 1880 indicates that Thomas McMurray and his family were residing on the property at Site 15Un259 (see MS 3 on Figure 14) (Lake and Company 1880). The census data recorded Thomas McMurray as being a farmer during that time.

On April 29, 1899, Willis B. Boswell, one of the sons of Dolly and J.W. Boswell, purchased 17.4 ha (43.0 acres) from Thomas and Bettie McMurray along the Spring Grove and Raleigh Road for the sum of $1,700 (UCCO Deed Book [DB] 52:618). Census information relating to Willis Boswell indicates that he was living near the town of Raleigh along the Morganfield and Shawneetown Road. The Morganfield and Shawneetown Road was previously recorded as the Raleigh and Spring Grove Road, and is known today as Goose Pond Road. In 1910, Willis B. Boswell, age 44, was recorded as a farmer who owned his own residence. His household included his wife, Bessie, 30; his daughter, Dolly E., 6; and his son, William B., 1 (USBC 1910). Based on the identities of neighbors recorded on the 1910 census schedule, it seems likely that Willis B. Boswell and his family were residing at Site 15Un259.

On December 10, 1923, after the death of Dolly Boswell, a division of real estate deed was issued to W.H. Boswell, H.W. Boswell, Rebecca Boswell, and Mrs. A.E. Priest, all of which were the children of J.W. and Dolly Boswell. The real estate to be transferred totaled 93.99 ha (253.25 acres) (UCCO DB 86:330).

Table 8. Summary of Ownership and Occupancy History of Site 15Un259.

Years	Owner/s	Occupation of Owner/s	Price/Value	Resident/s	Occupation of Resident/s
?-1899	Thomas McMurray	unknown	$1,700	Thomas McMurray	unknown
1899-1936	Willis B. Boswell	farmer	unknown	Willis B. Boswell and family	farmer
1936-1988	William Boswell	farmer	unknown	unknown	unknown
1988-2000	Blanche [Boswell] Luckett	unknown	unknown	n/a	n/a
2000-2011	Patricia C. Hetrick	unknown	unknown	n/a	n/a
2011-present	Rebecca Hite et al	unknown	unknown	n/a	n/a

In 1930, Willis B. Boswell, age 64, is recorded as living in Morganfield, Kentucky and owning his house. During this time, he is listed as not living on a farm, but his occupation is still listed as a farmer. His household included his wife Bessie, 49; and his children: William, 20; Blanche, 19; and Bensen, 17 (USBC 1920). It appears that during this time Willis B. Boswell was not residing on the property associated with Site 15Un259, and that he and his family were residing within the city limits of Morganfield, Kentucky, having moved from Site 15Un259 sometime after 1910. On November 22, 1925, D.S. Boswell "and others" conveyed 253 acres to Willis B. Boswell (UCCO DB: 52:618). It is unclear who may have occupied the structure at Site 15Un259 after Mr. Boswell and his family left this house to move to Morganfield sometime after 1910. By 1930, he had three children who were between the ages of 17 and 20, since this is a common age to move out from a parent's household, it is possible that one of these children occupied the residence at Site 15Un259. Also, since this area was still being farmed, perhaps farm tenants or just other renters were occupying this structure during this time.

On April 5, 1935, Willis B. Boswell died intestate, prompting the formation of a deed of division for 253 acres among Bessie Boswell, Blanche Boswell, Hugh B. Boswell, William Boswell, Dorothy Boswell Hetrick and her husband Lester R. Hetrick. Map data depicting the "W.B. Boswell Estate" shows the property as "Boswell Bro," which suggests the property in question was being held in joint ownership by the sons of Willis B. Boswell after his death (Figure 24). This map also designates a residence and a barn at the location of Site 15Un259.

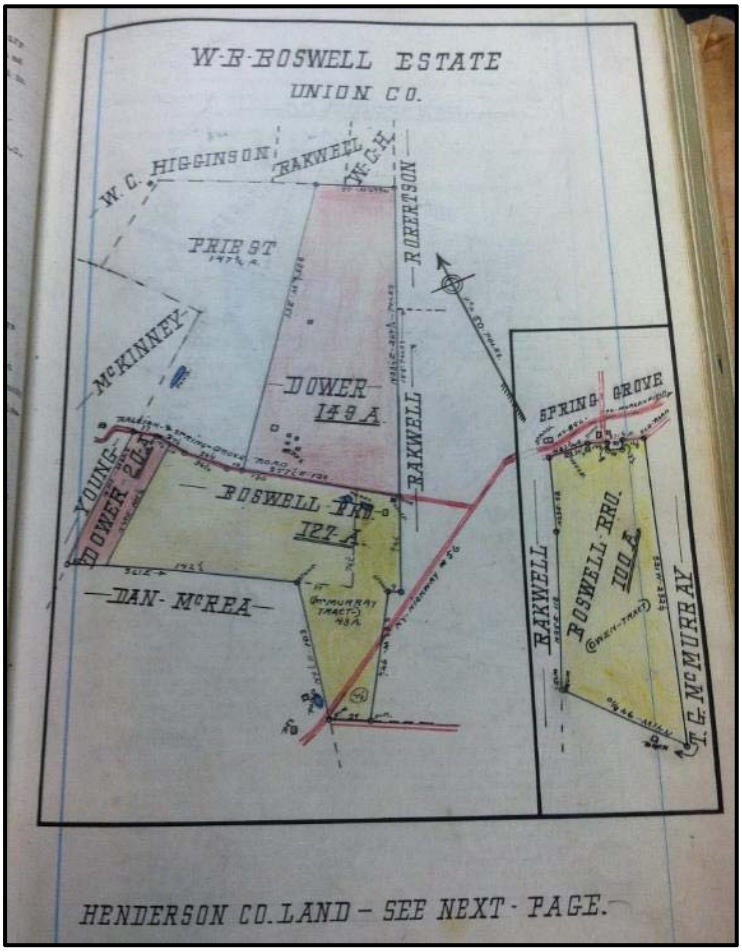

Figure 24. W.B. Boswell Estate, 1936.

On February 28, 1986, William Boswell sold the "300 or 330 acre" tract to Blanche Boswell Luckett and her husband Joseph C. Luckett for the sum of $20,000. Blanche Luckett is the younger sister of William Boswell and the daughter of Willis B. and Bessie Boswell. Shortly after the initial sale of land to his sister, William Boswell sold an additional 253 acres of land, which included Site 15Un259, to this same sister and her husband for the sum of $1 cash in hand (UCCO DB 256:98). Census information relating to Blanche and Joseph C. Luckett was very limited, and it is unclear if these individuals ever resided on the land associated with Sites 15Un259.

On May 2, 2000, Blanche Luckett sold 253 acres, including the location of Site 15Un259, to Patricia C. Hetrick, for $1 cash in hand. Patricia C. Hetrick is listed as an "unremarried widow" living at 206 W. O'Bannon Street, in Morganfield, Kentucky (UCCO DB 299:56). Census data relating to Patricia C. Hetrick was not available. On June 11, 2011, Rebecca Hite, Berry Chandler, and Richard Hetrick, as successor trustees of the Patricia A. Hetrick revocable trust, became the current owners of the 253 acres containing Site 15Un259.

Map data indicates that at least one structure was present at Site 15Un259 by 1880, and the recovered materials from Site 15Un259 are most likely associated with a domestic occupation of the site sometime in the late nineteenth through the mid-twentieth century.

Summary and National Register Evaluation

Site 15Un259 is a historic farm/residence dating from the late nineteenth through the mid-twentieth century. According to historic maps, a residential structure is shown as early as 1880 on a historic atlas of Union and Henderson Counties, and it is still shown extant on the 1959 topographic quadrangle map. As noted, the construction of KY 56 reoriented the residence in relation to the road, and this road restructuring has contributed to the shallow disturbed soils in this area. The residential structure was likely razed sometime in the latter half of the twentieth century. The outbuilding shown east of the residence on the 1953 USGS quadrangle map was razed before 1959.

The historic artifact assemblage had an average date range of 1858–1930, and the mean date is 1894. All of the items recovered are from the architecture and domestic functional groups, supporting the known use of the site as a farm/residence. Not much definitive information can be derived from the historic artifact assemblage alone due to the low density of historic artifacts (n = 13) recovered, but the artifact types and dates are consistent with a domestic occupation from the late nineteenth century through the mid-twentieth century. As previously discussed, the 1880 historic atlas (Figure 14) shows the area around this site containing MS 3 as belonging to Thomas McMurray. A structure continues to be displayed in this location on a 1916 map (Figure 15) and on two maps from the 1950s. This structure was likely razed sometime after 1959, the last time a structure in this location appears on the map data. An associated outbuilding near this residence was in this location on the 1953 map (Figure 16) and no longer appears on the 1959 map (Figure 17) suggesting its removal during this time. In general, the map data available for the current project is consistent with the cultural materials recovered from the site.

The majority of shovel tests at the site area revealed soils that appeared disturbed from years of agricultural use, the installation/reconstruction of KY 56, and associated buried utilities. There was heavy mixing of topsoil and subsoil within the plow zone. It is possible that the site extends outside the project boundary to the north or south. The portion of Site 15Un259 within the project area does not have the potential to provide significant information about the early settlement of Union County or the development of the community of Spring Grove. As currently defined, the portion of Site 15Un259 within the current project boundary has little archaeological integrity and is recommended not eligible for inclusion in the NRHP. No further work is recommended.

15Un260

Elevation: 110 m (360 ft) AMSL
Component(s): multicomponent
Site type(s): farmstead/residence and indeterminate open habitation without mounds
Size: 2,176 sq m (23,422 sq ft)
Distance to nearest water: 3.0 km (1.9 mi)
Direction to nearest water: south
Type and extent of previous disturbance: Extensive disturbance from removal of main structure
Topography: Floodplain
Vegetation: corn and soybean fields
Ground surface visibility: 75 percent
Aspect: level
Recommended NRHP status: not eligible

Site Description

Site 15Un260 is a multicomponent prehistoric open habitation without mounds of indeterminate temporal affiliation and a historic farm/residence dating from the early to mid-twentieth century. The site was located approximately .8 km (.5 mi) east of the community of Spring Grove and is bisected by KY 56 (Figures 2 and 25). The site was identified while surface collecting a plowed and recently planted agricultural field on a level floodplain at an elevation of 110 m (360 ft) AMSL. Vegetation consisted of soybean (Figure 26) crop in the field north of KY 56 and corn crop (Figure 27) in the field to the south of KY 56. Ground surface visibility was approximately 75 percent. Map data from the 1953 USGS Grove Center, Kentucky-Illinois, 7.5-minute series topographic quadrangle indicates a structure (MS 12) near the location of the soybean field (Figure 16); however, this structure no longer appears on the 1959 USGS Shawneetown, Illinois-Kentucky, 15-minute topographic quadrangle, suggesting this structure was razed during this six year period (see figure 17). Disturbances to the site consisted of agricultural plowing, the razing of a structure, and construction/restructuring of the adjacent KY 56, as previously discussed. Site 15Un260 measured 50 m (164 ft) north–south by 70 m (230 ft) east–west, covering 2,176 sq m (23,422 sq ft). Site boundaries were defined by the absence of cultural material to the east and west, and by the project boundary to the north and south.

Depositional Context

All shovel tests within the vicinity of the site contained disturbed soils with a mixture of topsoil and subsoil in the plow zone (Ap horizon) to a depth of approximately 0–25 cm bgs. Soil development was eroded in many portions. Wilbur series silt loam was mapped for the location of the site and differed for the Ap horizon soils that were eroded and mixed with sub soil due to heavy agricultural use. Sub soil was consistent with Wilbur series silt loam. A typical soil profile consisted of an Ap horizon of brown (10YR 4/3) silt loam to depths between 12 and 30 cm bgs followed by a subsoil of a dark yellowish brown (10YR 4/6) silty clay loam between 13 and 35 cm bgs (Figure 28). Despite good ground surface visibility, shovel testing was conducted to assess soil stratigraphy, artifact density, to test for activity/feature locations, and to help determine boundaries. Thirty-four shovel tests were excavated within the site boundaries at 10 m (33 ft) intervals.

Artifacts

Artifacts were recovered from the ground surface and from the Ap horizon in 11 shovel tests (Table 9). Prehistoric artifacts consisted of 5 pieces of lithic debitage, and no diagnostic lithics, burned clay, FCR, or charcoal were identified. There were no concentrations of prehistoric artifacts. A historic trash scatter was present on the surface and in the upper soil zones for a distance of 75 m (246 ft) within the site area. Agricultural use likely contributed to dispersing these artifacts. The historic artifact assemblage was comprised of 136 cultural material items. Functional groups represented by the historic assemblage included architecture, domestic, maintenance and subsistence, personal, transportation, and unidentified groups.

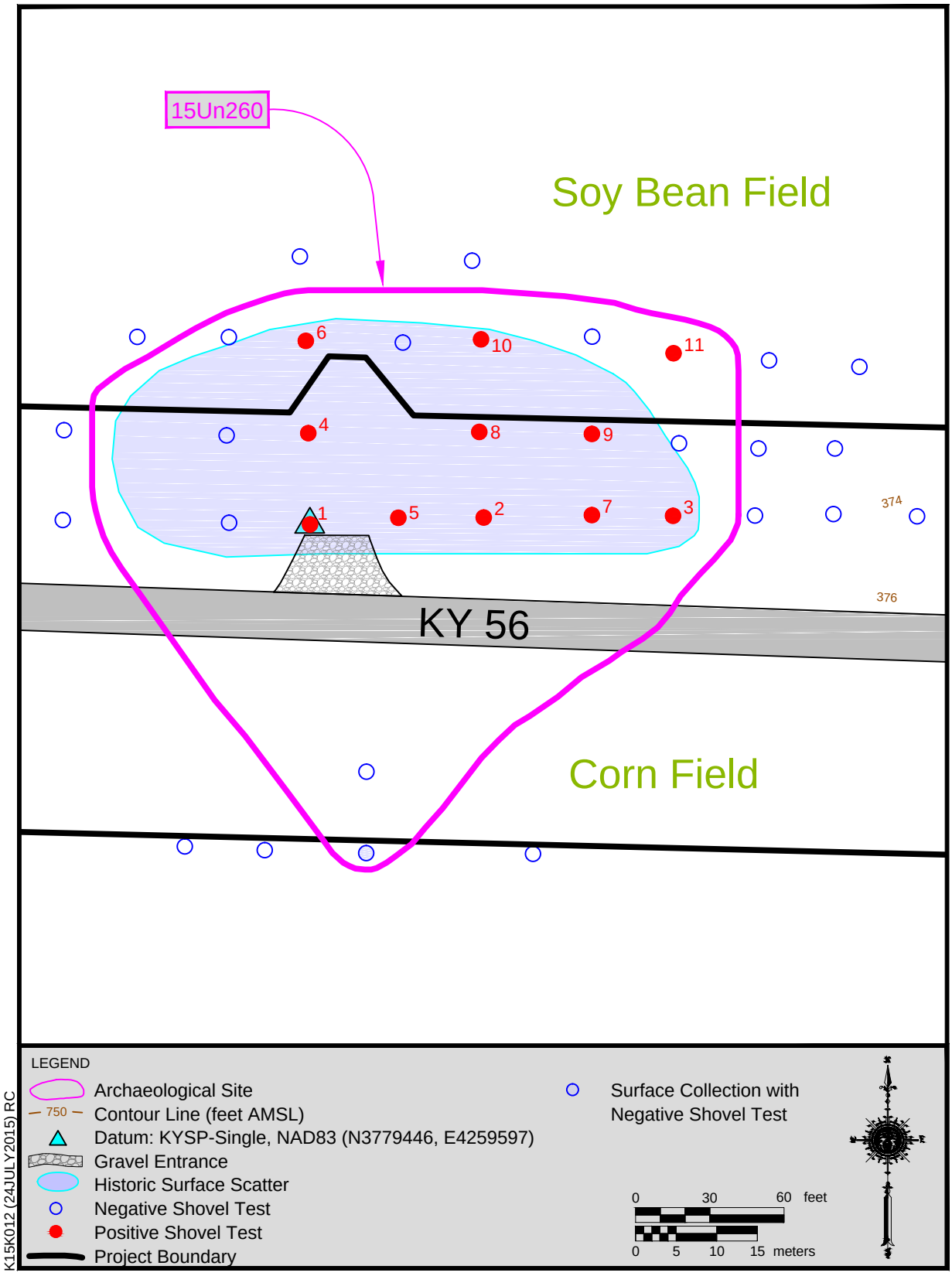

Figure 25. Schematic plan map of Site 15Un260.

Figure 26. Location of historic surface scatter in soybean field near MS 12 and Site 15Un260, facing north.

Figure 27. Location of the prehistoric flake found on the surface in the corn field south of KY 56 at Site 15Un260, facing south.

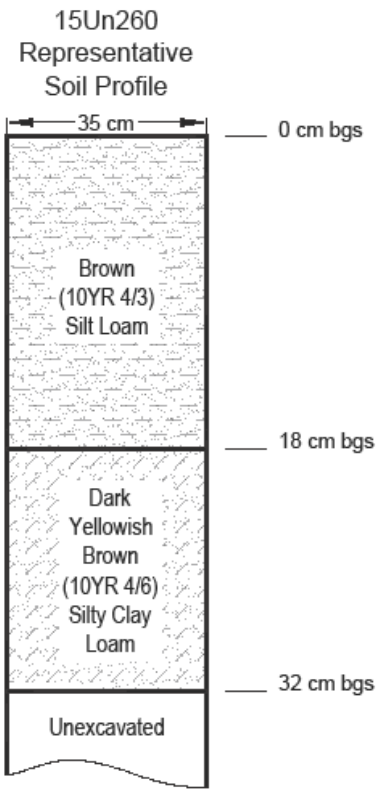

Figure 28. Representative soil profile from Site 15Un260.

The ceramic assemblage consisted of 28 items with a mean ceramic date of 1903. The container glass recovered from 15Un260 consisted of BIM, ABM, and undiagnostic container glass. The container closures consisted of three milk glass canning jar lid liners dating between 1869 and 1950. The dominance of the architectural and domestic group artifacts (90 percent) strongly supports the use of these sites as a domestic farmstead/residence. While some architectural artifacts in the site assemblage suggest that the structure could have been constructed by the late nineteenth century, the remaining artifacts—including the domestic, maintenance and subsistence, personal, and transportation items—more strongly supports an early to mid-twentieth century occupation than an occupation that dates as early as the late nineteenth century.

The prehistoric assemblage is comprised of five lithic artifacts with no temporal affiliation. Cherts represented included Ste. Genevieve, Newman, and indeterminate. Lithic artifacts recovered from this site appear to be the result of short-term occupations. Flakes are the result of one or more tool production and/or maintenance episodes. Due to the low density of material recovered and lack of datable material nothing important can be said about this site based on the lithic assemblage.

Archival Data

John Dickerson

The information available concerning the history of ownership and occupancy of Site 15Un260 was limited. Due to a lack of available records, the landowner history of the site is not known for the project before 1907. Table 10 below presents a summary of the ownership and occupancy of the site.

The first landowner that can be linked with the ownership of the land associated with Site 15Un260 is Joseph B. Bakewell in 1907. Joseph B. Bakewell was a resident of St. Louis, Missouri, with his family, and it is unknown when and in what manner he acquired the land containing 15Un260 in Union County, Kentucky (USBC 1880). However, Joseph Bakewell's last will and testament dating to 1907 mentions the property. The document names the St. Louis Union Trust Company as the Trustee to his estate in 1907 (UCCO DB 173:191, WB G:351).

Joseph B. Bakewell and his family never resided on the land associated with Site 15Un260. It seems that the St. Louis Union Trust Company served as the trustee of the property from the execution of Joseph B. Bakewell's will on April 6, 1910, until it was sold in 1963. Based on historic maps, a structure was likely built at the site sometime after 1916. The 1953 topographic map has a structure in the site location (MS 12; see Figure 17); however, the 1959 topographic map no longer depicts a structure at that location, and it was probably razed sometime prior to this. It is not known who resided at Site 15Un260 from the late 1910s or 1920s to sometime between 1953 and 1959.

Table 9. Artifact Recovered from Site 15Un260 by Provenience.

Unit	Zone	Depth	Group	Class/Type	N =
GSC		Surface	Architecture	Brick, plate glass, stoneware water pipe	7
GSC		Surface	Domestic	Ceramics, BIM, ABM, container closures	25
GSC		Surface	Maint/Sub	Glass insulator	1
GSC		Surface	Personal	Cosmetic containers, marbles	4
GSC		Surface	Transportation	Automobile tail light	1
GSC		Surface	Lithic	Ste. Genevieve chert	1
GSC		Surface	Lithic	indeterminate chert	1
STP 1	I	0–32 cm bgs	Architecture	Brick, caulk, nails, plate glass, privacy glass, metal roofing/siding, stoneware water pipe	13
STP 1	I	0–32 cm bgs	Domestic	Ceramic, ABM	11
STP 1	I	0–32 cm bgs	Maint/Sub	Eyebolt, glass insulator	2
STP 1	I	0–32 cm bgs	Lithic	Newman chert	1
STP 2	I	5–15 cm bgs	Domestic	ABM	8
STP 3	I	5–15 cm bgs	Architecture	Nail	1
STP 3	I	5–15 cm bgs	Domestic	ABM	1
STP 3	I	5–15 cm bgs	Unidentified	Metal	1
STP 4	I	0–18 cm bgs	Domestic	Ceramic, ABM	5
STP 5	I	0–17 cm bgs	Architecture	Plate glass	3
STP 5	I	0–17 cm bgs	Domestic	ABM	2
STP 5	I	0–17 cm bgs	Unidentified	Metal, plastic	2
STP 6	I	5–15 cm bgs	Architecture	Plate glass	1
STP 6	I	5–15 cm bgs	Domestic	Ceramics, ABM	5
STP 7	I	0–26 cm bgs	Architecture	Nails, plate glass	4
STP 8	I	0–22 cm bgs	Architecture	Stoneware water pipe	1
STP 8	I	0–22 cm bgs	Domestic	Container Glass	3
STP 8	I	0–22 cm bgs	Unidentified	Glass	1
STP 8	I	0–22 cm bgs	Lithic	indeterminate burnt chert	1
STP 8	I	0–22 cm bgs	Lithic	Newman chert	1
STP 9	I	0–34 cm bgs	Domestic	Ceramics, undiag container glass	3
STP 10	I	0–30 cm bgs	Architecture	Nails, window glass	5
STP 10	I	0–30 cm bgs	Domestic	Ceramic, ABM, undiag container glass	9
STP 10	I	0–30 cm bgs	Maint/Sub	Glass insulator	1
STP 11	I	0–32 cm bgs	Architecture	Security glass, pipe fitting	2
STP 11	I	0–32 cm bgs	Domestic	Ceramics, BIM, ABM	14
				Total	141

Table 10. Summary of Ownership and Occupancy History of Site 15Un260.

Years	Owner/s	Occupation of Owner/s	Price/Value	Resident/s	Occupation of Resident/s
?-1910	Joseph B. Bakewell	unknown	unknown	unknown	unknown
1910-1963	St. Louis Union Trust Company	n/a	unknown	unknown	unknown
1963-1988	H.B. Boswell	farmer	$42,000	unknown	unknown
1988-2000	Blanche Luckett	unknown	unknown	unknown	unknown
2000-2011	Patricia C. Hetrick	unknown	unknown	unknown	unknown
2011-Present	William Boswell et al.	unknown	unknown	unknown	unknown

On February 26, 1963, Hugh B. Boswell purchased "300 or 330 acres" from the St. Louis Union Trust Company, the designated trustee under the will of Joseph B. Bakewell, for the sum of $42,000 (UCCO WB G:351). The Bakewell property was situated adjacent to the Boswell Brothers property shown on the 1936 Boswell Estate map (see Figure 24), and was located on the northern and southern side of KY 56. The property remained under the ownership of Hugh B. Boswell until he died on November 11, 1980. Following his death, his brother, William Boswell, gained control of the majority of the Boswell estate located along KY 56 and the Raleigh and Spring Grove Road, including what is described in the deed information as Tract 5, which included the properties containing Sites 15Un259 and 15Un260. From that point forward, the ownership of the property containing the sites are the same. For more information pertaining to the 15Un260 ownership history, please refer to the Site 15Un259 archival section.

Summary and National Register Evaluation

Site 15Un260 is a multicomponent prehistoric open habitation without mounds of an indeterminate temporal affiliation and an early to mid-twentieth century historic farm/residence. According to historic maps, a residential structure was shown at the site on the 1953 USGS Grove Center 7.5-minute series topographic quadrangle (Figure 16) near the location of what is now a soybean field; however, this structure no longer appears on the 1959 USGS Shawneetown 15-minute topographic quadrangle (Figure 17) suggesting it was during this six year period that this structure was razed. No structure is shown on the 1916 USGS Shawneetown 15-minute series topographic quadrangle (Figure 15), suggesting it was likely built after 1916.

The historic artifact assemblage is comprised of 136 materials and is consistent with a domestic farmstead/residence site dating from the early to mid-twentieth century. In addition, a small prehistoric component that consisted of 5 non-temporal flakes made of Ste. Genevieve, Newman, and indeterminate chert was recovered from the surface and upper soil zones. Lithic artifacts recovered from Site 15Un260 appear to be the result of short-term occupations. Flakes are the result of one or more tool production and/or maintenance episodes. Due to the low density of material recovered and lack of datable material, little can be said about the prehistoric component of Site 15Un260.

The majority of shovel tests revealed soils that appeared disturbed from years of agricultural use, the installation/reconstruction of KY 56, and associated buried utilities. There was heavy mixing of topsoil and subsoil within the plow zone. It is possible that the site extends outside the project boundary to the north or south. Neither the prehistoric nor historic components of Site 15Un260 within the project area have the potential to provide significant information regarding the settlement of Union County or the development of the community of Spring Grove. As currently defined, the portions of Site 15Un260 within the current project boundary have little archaeological integrity, and the site is recommended not eligible for inclusion in the NRHP. No further work is recommended.

15Un261 (Bald Hill Cemetery)

Elevation: 148 m (485 ft) AMSL
Component(s): historic/modern
Site type(s): Cemetery
Size: 2,650 sq m (28,524 sq ft)
Distance to nearest water: 2.7 km (1.7 mi)
Direction to nearest water: south
Type and extent of previous disturbance: some headstones have been moved or toppled
Topography: dissected upland
Vegetation: tall grass
Ground surface visibility: 0 percent
Aspect: level
Recommended NRHP status: not assessed

Site Description

Site 15Un261 is a historic/modern African-American cemetery located at the intersection of KY 56 and Bald Hill Road West (Figures 2 and 29). This intersection is 2.5 km (1.6 mi) southeast of the community of the Rocks, and 3.6 km (2.2 mi) southwest of the community of Spring Grove. The site contained marked graves approximately 7 m (23 ft) south of KY 56 and other marked graves 1 m (3.3 ft) west of Bald Hill Road West (Figures 30 and 31). The cemetery is positioned on a relatively level portion in a dissected upland topography at an elevation of 148 m (485 ft) AMSL. As currently defined, Site 15Un261 measures approximately 65 m (213 ft) east–west and 75 m (246 ft) north–south. The site area covers 4,875 sq m (52,474 sq ft). Vegetation consisted of an open grassy area and a wooded portion of secondary growth forest and understory vegetation. The open areas had tall grass that obscured the headstones, easily overlooked by persons unaware of this cemetery or its boundaries (Figures 32 and 33). Other headstones were obscured by different vegetation including understory growth (Figure 34) and groupings of ornamental flowers (Figure 35). The ground surface visibility was less than 10 percent due to grass and leaf cover.

There is some discrepancy in the name of this cemetery and historical documentation refers to this cemetery as either the "Bald" or "Ball" Hill Cemetery, and this is discussed in greater detail below. For the purposes of this report, it will be referred to as the Bald Hill Cemetery. Disturbances to the site were difficult to determine; however, some headstones were moved or toppled and now rest on their backs or sides (Figures 35 and 36), and not in their original location/position. There were several groupings of headstones with a wooded area in between.

Information regarding this cemetery was provided in some part by Mr. Harris (personal Communication 2015), a local preacher that has spent time maintaining this and another local African-American cemetery. The grass was overgrown when the field crew first encountered the cemetery, and it was later mowed by Mr. Harris. This provided a perspective that shows how easily marked graves could be overlooked.

Other information was provided by Mr. Leroy Lovell (personal communication 2015). He was 91 at the time of the survey and owns the land that was accessed by the Bald Hill Road West. He also grew up there. According to Mr. Lovell and observations of interment dates, the grouping of headstones in the north portion and closest to the road is the older section of the cemetery. Mr. Lowell recalls a structure in the southern portion of the site area that served as the Bald Hill School. This African-American school appears on the 1916 USGS 15-minute series topographical quadrangle (MS 9 on Figure 15) and later on the 1928 Union County, Kentucky, Geological Survey map (KGS 1928). Mr. Lovell indicated that a one-room school house structure was razed, and perhaps relocated, sometime before 1940. This cemetery is well known to the locals as "a black cemetery." This cemetery does not appear on the map data as a cemetery until it is depicted so on the 1953 USGS Grove Center 7.5-minute series topographic quadrangle (Figure 16). The oldest interment date for the northern older section is 1924. In the southern newer section the oldest interments date to 1960. The most recent death date is 2008 indicating that this cemetery has been used in the recent past.

The site area is defined by 42 burials signified by above-ground markers and/or depressions. Grave markers included inscribed (n = 39) and uninscribed headstones (n = 1) and footstones made of stone (mostly granite) and one metal headstone. Two sunken areas that likely represent two unmarked graves with no associated headstone are included in this count. Five of the headstones had no death date inscribed, leaving some question as to whether these persons are buried here, or whether their headstones were never completed after death. The remaining 34 had death dates on the headstone that ranged from 1924 to 2008.

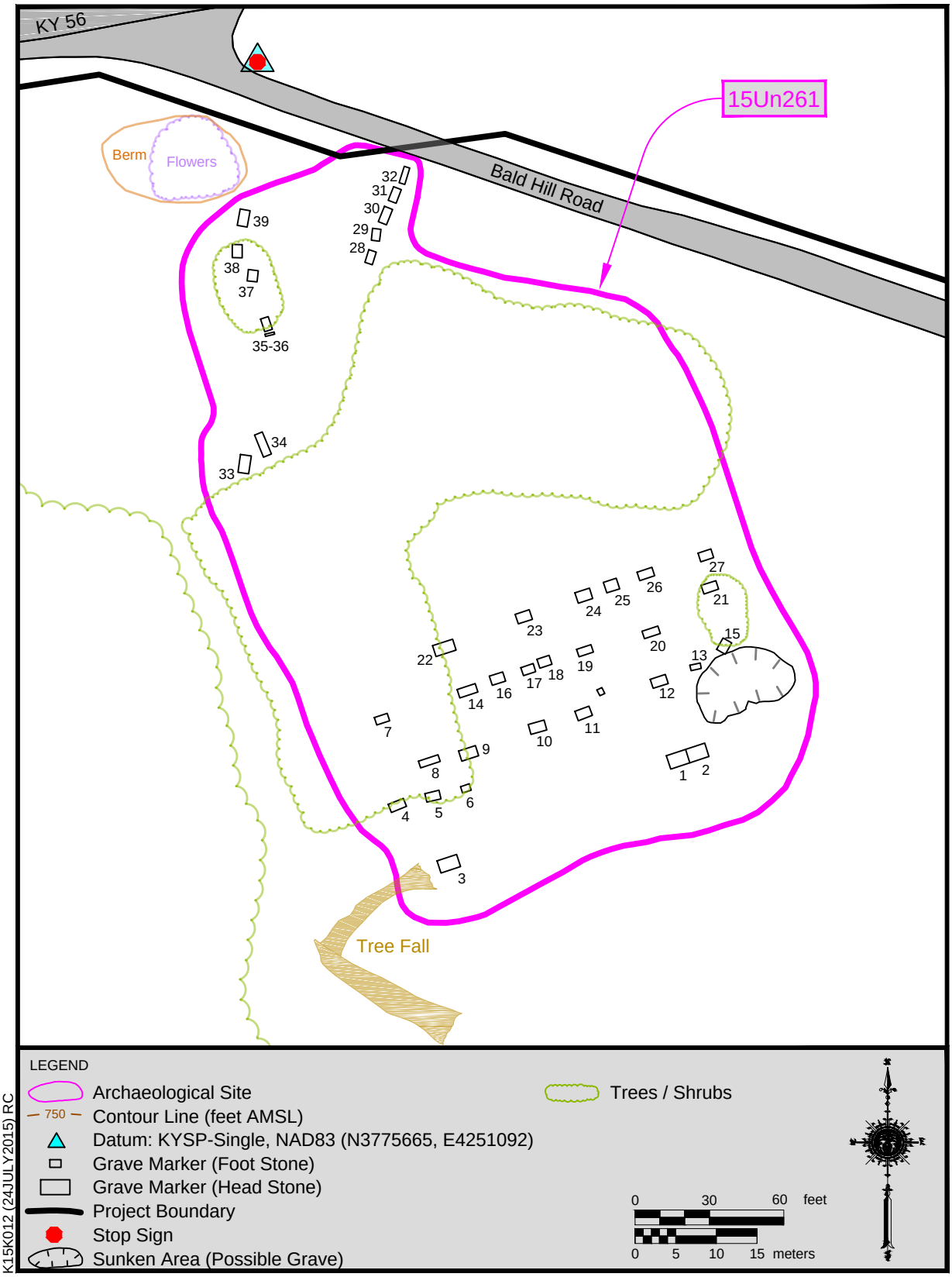

Figure 29. Schematic plan map of Site 15Un261.

Figure 30. Location of graves from Site 15Un261 adjacent to Bald Hill Road W. in tall grass, facing east.

Figure 31. Location of graves from Site 15Un261 adjacent to Bald Hill Road W. after being mowed, facing east.

Figure 32. Location of graves from Site 15Un261 in tall grass, facing south.

Figure 33. Location of graves from Site 15Un261 after being mowed, facing north.

Figure 34. Location of graves from Site 15Un261 obscured by vegetation, facing west.

Figure 35. Location of graves from Site 15Un261 obscured by vegetation, facing north.

Figure 36. Gravestone at Site 15Un261 that has been moved/toppled, facing south.

Figure 37. Gravestones at Site 15Un261 that have been moved/toppled, facing southeast.

The oldest interment date was 1924 and belonged to Peter Tyler. A death certificate lists him as a black man from Union County that died of 'old age' at 100 years old (Ancestry.com 2007). Additional information was found on Ancestry.com regarding many of the 39 persons with names on headstones observed at the cemetery. Thirty-six persons had documentation (census records, military records, social security information, birth certificates, or death certificates that provided additional information.

Twenty-six persons listed on Ancestry.com had some sort of documentation that listed them as "black, negro, or mulatto." Seven persons had documentation that they either enlisted or served in some branch of the military. The surnames Howell (n = 5) and Johnson (n = 4) had the most numerous representations, and the surname Rudd and Tyler had the next largest with 3 representations each. An additional 18 surnames are represented with 2 or fewer burials. This suggests that this cemetery served a community as opposed to a particular family. One of the burials was represented by an uninscribed stone. Some graves appeared to have been marked by a temporary fieldstone before receiving a more permanent replacement headstone. The remaining 2 possible burials were indicated by shallow depressions lacking markers. Although the field investigation determined the burial count as 42, it is likely that the actual burial count differs, especially taking into consideration that it was not uncommon for African-American graves to have not been permanently or distinctly marked during this time period. This theory is supported with information attained from the website Findagrave.com which lists 13 additional burials that were not recorded in the field. Only 2 of these additions had photos attached.

An effort was made to contact all of the Findagrave.com members via email that had contributed information to this cemetery, in order to ask about the additional burials as well as to clear up the confusion regarding the cemetery name. Nobody knew for certain the correct name of the cemetery ("Ball" or "Bald" Hill), but everyone deduced that it was most likely a grammatical mistake made at some point. One Findagrave.com member that was contacted (Karen Thomas, personal communication 2015) had listed several of these additional graves. Her response to the inquiry was that all the names she listed had markers at the time she searched the area in the 1970s–1980s. Photos were not taken because she did not find the family she was searching for in addition to the high price of film at that time. She stated that she had revisited several cemeteries in Union County to find headstones/markers have been moved/removed.

Another Findagrave.com member, referred to only by a username, M.N., believes there to be no headstone for two of the people including James Walter Lowe and his sister, Lena Lowe. This member knew them personally and wonders if they may not have been able to afford a marker due to being very poor at the time of their deaths. This member stated that his father had brought them from Tennessee to Union County after they became ill and had no one to care for them (M.N., Personal communication 2015).

A Brief History on African American Cemeteries

John Dickerson

African-American cemeteries in rural communities across Kentucky have provided the means for a cultural continuation that has maintained a symbolic connection with a distant African heritage. It is also around these often small, seemingly unkempt, plots that African Americans began to establish communities in the days following Emancipation. Early African-American burial practices reasserted familial bonds which had been severely strained during slavery. It was therefore through African cultural practices undertaken in funerals and grave offerings that the communal gathering provided the catalyst for the African-American community itself.

Cultural practices that have been observed within African-American cemeteries can serve

as a distinctive means for identifying these sites. In many Southern areas, slave graves were decorated much differently than those of whites, and black cemeteries have often not been recognized as such, as they could appear to be garbage dumps (Vlach 1978:139) or appear abandoned and neglected (Chicora Foundation, Inc. 1996). In a white cemetery, neat rows of graves free of materials and marked by headstones are expected, but in black cemeteries lots of material goods are often found on the surfaces of misaligned graves. Vegetation in African-American cemeteries may seem wild and overgrown, but this may have resulted from the next-of-kin leaving the cemetery as is, so as not to disturb the dead.

Black graves may contain offerings placed on tops of mounds of dirt, and these are most often pottery and glass containers, but many other items may also have been used. Materials left on graves are a statement of homage, and they function to keep tempestuous spirits at rest. These ideas stem from the strong belief among many African and African-American groups of the potential return of the ancestors (Vlach 1978:139). It has been suggested that the materials African-Americans placed on the grave appears to be one of the most enduring cultural traditions of African influence.

Most offerings are containers, and they are broken to "break the chain" so that others in the family will not die. The items are broken because of customs remembered from African ancestors, and slaves adhered to this custom when all else seemed hopeless and death provided one's escape from slavery and a return to the ancestral home (Vlach 1978:141). Other offerings included food as a last good meal and diverse materials that would aid the dead in the other world. In most cases, the items were white, such as china, porcelain, enamelware, bleached shells, and plaster, and many were associated with water, such as pitchers, tumblers, cups, and bottles. When shells were used, the grave could be made to look like a river bottom, which was the environment in African beliefs under which the realm of the dead was located (Vlach 1978:143). It is also believed that the presence of water vessels, mirrors, and shells served as a symbolism that can be associated with the middle passage. The water image represented the separation Africans had endured from the homeland, and it served to show the way back home (Smith 2010).

Knowledge of African customs was passed down from the elders in a community, and this knowledge included stories and superstitions regarding death and burial. As the development towards a more modern funeral emerged in the 1920s and 1930s, many of the traditions that had been solidified during slavery continued. Several of these beliefs were presented by Wright and Hughes (1996:18–19) and included the superstition that the wishes of the deceased must be carried out, or the deceased would haunt the family or individual who did not abide by the wishes; that the dead watch over their loved ones; that someone would die if a dog howled or a rooster crowed in a doorway; that when asleep, a person's spirit leaves the body and he or she would die if awoken; that if a spider descends on its string, it must not be allowed to rise back up, because it would mean death; and that if someone is sick, do not step over him or her, because you would also catch the sickness and possibly die.

African-American funeral practices both before and after the internment of the body, can serve to help identify rural cemeteries. Burials should be aligned from east to west with the feet to the east. This was done for various reasons: so that the deceased may rise at judgment day and to hear Gabriel's horn from that direction (in Christian beliefs), so that the person is not crossways to the world (many traditional African communities), or so that the person was buried facing the homeland of Africa (Chicora Foundation, Inc. 1996; Egerton 2003:157; Genovese 1976:197–198; Wright and Hughes 1996:19). The tradition of east–west burials could, however, reflect mixing of various ethnic or other group customs and cannot be attributed to a single group. Additionally, the positioning of the body so that the feet are arranged towards the nearest river has been observed in earlier

burials, and is thought to be a cultural transmission that emanates from Ghana and Togo, where this custom is still practiced today (Rutkoff and Scott: 2015). Many African-derived burial customs carried on in the South until into the twentieth century, but by the early nineteenth century, many had blended with white and Native-American customs (Genovese 1976:198).

It was considered proper to always cover the body and to place it directly on the ground. Coins would be placed over the eyes to keep them shut, but they were also sometimes placed in the hands to serve as a contribution to the community of the ancestors, or as a token for admittance into the spirit world (Wright and Hughes 1996:20). Coins have also been identified near the head in historic African-American graves (Parrington and Roberts 1990:150). Other items intentionally interred with historic African-American graves have included single shoes on the tops of coffins and plates on the abdomen (Parrington and Roberts 1990:150).

Ceremoniously broken items that belonged to the dead were placed on the grave to prevent the spirit from returning to the world of the living to search for those items. Lamps were placed on graves to provide light for the spirit searching for home, and bed frames were placed for the spirits to rest on while journeying home (Wright and Hughes 1996:20). Throughout the slave years, the West-African practice of burying food with the dead occurred across the South (Genovese 1976:198).

As can be observed in rural western Kentucky, these cemeteries were often located near the meeting houses that doubled as schools and churches (Lucas 2003). The African-American meeting house was a focal point of the community, and much like the cemetery, and the idea of death, these schools and churches represented defiance, and freedom in a world that was often less than accepting. Near Morganfield, Kentucky, the presence of the Bald Hill School on the historic topographic maps (USGS 1916) as well as the 1928 General Highway Map (KGS 1928) near the southern portion of the African-American cemetery, suggests that this area may have served as a focal point for a community of African Americans that may have lived in the vicinity (Leroy Lovell, personal communication 2015).

The presence of black churches in and around the cemetery appears to have been a common occurrence in the postbellum south. However, for many rural black communities during the late nineteenth and early twentieth centuries, space was often limited and these churches functioned as schools and public meeting houses. The multipurpose utility of these buildings meant they served a fundamental role in the development of African-American world views. The small African-American church was the platform on which the political awakening of the black community could begin to take place.

The importance of the cemetery, and the communal building that occupied a nearby space, also placed increasing importance on the preacher. This individual was both a political and religious figure within the small rural community, and would have guided his parishioners through both life and death (Lucas 2003:235). The involvement of black ministers in the education of students was an area that was often singled out by white superintendents. These ministers were often criticized for what whites viewed as an overzealous involvement in the education of students, which was thought to obstruct the work being performed by teachers (Wright 1992:109). In reality, these community leaders provided the means for an education when other opportunities were being denied.

Following emancipation in Kentucky, African-American schools were quickly established by the freedmen themselves, and later received aid from the Freedmen's Bureau. The fervent nature with which African-Americans pursued education served to show the tenacity with which they sought the advancement of their community. Viewed as a means for attaining equality, Kentucky's black population in the late-nineteenth century put forth more money for education than did

every other southern state except Louisiana (Lucas 2003). Black schools in western Kentucky were often overcrowded and suffered from irregular attendance. Schools recorded near Union County can serve as a basis for what may have persisted at the school depicted near Spring Grove, Kentucky. An African-American school in Smithland Kentucky, located approximately 42 miles southwest of Spring Grove, recorded class rooms that were forced to accommodate up to fifty pupils at a time. A school in Paducah enumerated 125 students. State support for black schools was granted from the Kentucky State legislature in 1874, but it was lacking any type of real substantive change in policy. Additionally, the ruling in the 1882 case of Commonwealth of Kentucky v. Jesse Ellis deemed funds raised through the state for educational purposes to be equally distributed among both black and white schools, a decision that was never upheld. Schools continued to be underfunded and under attack. The pattern of neglect witnessed by African-American schools during the late nineteenth and early twentieth century served to influence the overall development of the African-American community throughout the twentieth century.

The African-American cemetery, accompanied by its connection through material and practice to long-held African traditions, served the African-American community that found solace in its hallowed grounds. The construction of schools and churches in the vicinity of the cemetery can also demonstrate the central nature of the area, and lend credence to the possible development of an African-American community in the late nineteenth and early twentieth centuries.

Summary and National Register Evaluation

Site 15Un261 is an African-American cemetery dating to the first quarter of the twentieth century based on the earliest interment dates; however, it is predated by the use of this area for an African-American school as seen on the 1916 USGS topographic quadrangle map (Figure 15). It is likely that graves still exist at the site that have no grave markers. This is a common occurrence in African-American cemeteries. A large interior wooded area was heavily overgrown and contained tree falls that may have obscured additional burials not recorded during the current project. These concerns raise additional questions about unknown burials as well as the exact location of known burials that have had their headstones moved. In addition, information from the Findagrave.com website suggests that as many as 13 additional burials may be located in this cemetery that no longer, or never had, permanent grave markers.

This cemetery is directly adjacent to and just outside of the project area. Some graves are located within 1 m (3.3 ft) of Bald Hill Road West and 3 m (9.8 ft) south of KY 56. Due to the extremely close proximity to KY 56 and Bald Hill Road coupled with the unknown boundaries of this cemetery and potential for unmarked burials, CRA recommends extreme caution be used in this area. To ensure marked and potentially unmarked burials are not disturbed, CRA recommends geophysical survey and/or archaeological monitoring when working in this area, especially while stripping, excavating, or using any heavy machinery. Without these steps, CRA cannot confirm that there are no additional burials in the vicinity of this cemetery. A high visibility fence should liberally mark the known boundary to ensure heavy equipment does not intrude into this sensitive area.

Isolated Find 1

KYSP-Single NAD83: N4170161 E407031

Elevation: 119 m (390 ft) AMSL

Component(s): prehistoric

Type: Non-temporal open habitation without mounds

Distance to nearest water: 2.7 km (1.7 mi)

Direction to nearest water: south

Type and extent of previous disturbance: agricultural use

Topography: Floodplain

Vegetation: corn fields

Ground surface visibility: 75 percent

Aspect: level

Description. IF1 consists of a single early stage flake of indeterminate chert weighing 0.2 g. It was found while surface collecting a corn field in a floodplain north of KY 56 (Figure 38). Eight shovel tests were excavated in a cruciform pattern at 10 m (33 ft) intervals in the immediate vicinity of the find, but no additional cultural material was encountered. Little can be inferred about the temporal and/or cultural affiliations for IF1 beyond the fact that at least one episode of lithic reduction occurred in the area.

Isolated Find 2

KYSP-Single NAD83: N4171192 E410571

Elevation: 136 m (445 ft) AMSL

Component(s): prehistoric

Type: Non-temporal open habitation without mounds

Distance to nearest water: 2.2 km (1.4 mi)

Direction to nearest water: south

Type and extent of previous disturbance: agricultural use

Topography: Floodplain

Vegetation: soybean fields

Ground surface visibility: 65 percent

Aspect: level

Description. IF2 consists of a hafted biface of Ste. Genevieve chert weighing 3.5 g. This projectile point is of an indeterminate cluster/type and had post depositional damage. The projectile point is a thin biface with regular outline and sharp edges but irregular faces. Both basal corners, one shoulder, and most of one lateral edge are missing as a result of trampling or other post depositional damage. It was found while surface collecting a soy bean field in a floodplain south of KY 56 (Figure 39). Six shovel tests were excavated in a cruciform pattern at 10 m (33 ft) intervals in the immediate vicinity of the find, but no additional cultural material was encountered. Little can be inferred about the temporal and/or cultural affiliations for IF2.

Figure 38. Location of IF1, facing west.

Figure39. Location of IF2, facing northeast.

VII. CONCLUSIONS, RECOMMENDATIONS, AND TREATMENT

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 Federal Highway Administration and KYTC, Division of Environmental Analysis (DEA), in consultation with the State Historic Preservation Office (the KHC).

The archaeological baseline study of the proposed KY 56 reconstruction project in Union County, Kentucky, consisted of pedestrian survey supplemented by screened shovel probing and/or controlled surface collections of the proposed project area. The total project area encompassed approximately 44.5 ha (110.0 acres) of dissected uplands and floodplains comprised of agricultural fields, residential lots, and commercial property. The entire project area was investigated except for five parcels owned by 3 people that denied access to survey, and these areas are pending acquisition. The denied areas included several commercial properties (Figure 3b) situated on both sides of the west terminus near the KY 56/KY 109 intersection and two residential properties near the central portion of the project area (see Figures 3c and 3d). The KYTC District 2 DEA as well as the director of right-of-way for Palmer Engineering, Keith McDonald, have been contacted about these denied entries and further archaeological work will be necessary after acquisition is complete. After acquisition, an addendum to this report will be necessary. In addition, a portion of the project area for a distance of 270 m (886 ft) from the east terminus had construction already in progress with heavy equipment installing an aggregate foundation (Figure 3h). A portion of this area had been previously surveyed.

The current study resulted in the documentation of three previously unrecorded archaeological sites (15Un259, 15Un260, and 15Un261) as well as two prehistoric isolated finds (IF1 and IF2).

No further work is recommended for sites 15Un259 or 15Un260 within the project boundary. The current findings suggest that further work at these sites would not contribute additional information beyond that already attained during the current survey. All structures have been razed in both of these areas; and the areas are now being used as agricultural fields. The prehistoric component for Site 15Un260 recovered 5 lithic artifacts and has limited research potential. Both 15Un259 and 15Un260 have been severely disturbed by previous road development, the removal of structures, utilities, and agricultural use. If the portions of these sites that extend outside of the project boundary require work, these areas would need additional archaeological investigation. Neither site is recommended as eligible for inclusion in the NRHP.

Site 15Un261, the "Bald" or "Ball" Hill Cemetery is located just outside, yet immediately adjacent to, the project area. Due to the extremely close proximity of proposed construction work to the cemetery, special care is advised. Consideration should be made that graves likely exist here that have no markers, which is a common occurrence in African-American cemeteries. Some headstones observed in the field were moved and toppled from their original location. This may have occurred with additional headstones that are either no longer visible or have been removed from this area. A large interior wooded area was heavily overgrown and contained tree falls that may have obscured additional burials not recorded during the current project. Groupings of graves are spread apart from each other leaving large voids in between and the possibility of other graves not clustered with the known areas. Information from the website Findagrave.com suggests that there are additional burials in this cemetery that are not marked. The collaboration of all this information strongly suggests the high probability of unmarked burials located in this cemetery. There is no formal boundary marker or fencing of any kind, and it appears that the cemetery never had one; therefore, the actual limits of this cemetery are unknown.

To ensure marked and potentially unmarked burials are not disturbed, CRA recommends geophysical survey and/or archaeological monitoring when working in this area, especially while stripping, excavating, or using any heavy machinery. Without additional steps, CRA cannot confirm that there are no additional burials in the vicinity of this cemetery. A high visibility fence should liberally mark the known boundary to ensure heavy equipment does not intrude into this sensitive area. If the recommended monitoring and fencing are not possible, CRA recommends that reconstruction efforts in the vicinity of the cemetery be avoided entirely. These recommendations are made under the consideration that some headstones, whether intentional or not, have been moved from their original location.

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 MATERIALS RECOVERED

Table A-1. Historic Materials Database.

Bag	Site	Unit	Zone	Dep	Cat	Group	Class	Type	Attr 1a	Attr 1b	Attr 1c	Attr 2a	Attr 2b	Attr 3a	Attr 4a	Burned	Count	Wt (g)	Dia (mm)	Vessel Part	Vessel Type	Min Date	Max Date	References	Comments
003	15Un259	STP 1	I	0–5 cm bgs	1	A	Nails	Wire Nail	3d	Unaltered		Roofing				FALSE	1					1880		Nelson 1968	
004	15Un259	STP 2	I	0–13 cm bgs	2	A	Flat Glass	Window Glass								FALSE	1					1902	1902	Moir 1987	
004	15Un259	STP 2	I	0–13 cm bgs	2	A	Flat Glass	Window Glass								FALSE	1					1903	1903	Moir 1987	
005	15Un260	STP 1	I	0–32 cm bgs	1	D	Ceramics	Whiteware	Chromatic glaze (monochrome)		Other monochrome					FALSE	1			Body		1920	1970	Blaszczyk 2000:121; Faulkner 2000	gray exterior, white interior
005	15Un260	STP 1	I	0–32 cm bgs	2	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	7			Body	Indet bottle/ jar	1903		Jones & Sullivan 1985; Lindsey 2015	
005	15Un260	STP 1	I	0–32 cm bgs	2	D	Container Glass	Automatic Bottle Machine		Amber glass						FALSE	1			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
005	15Un260	STP 1	I	0–32 cm bgs	2	D	Container Glass	Automatic Bottle Machine		Aqua glass						FALSE	1			Body	Canning jar	1903		Jones & Sullivan 1985; Lindsey 2015	
005	15Un260	STP 1	I	0–32 cm bgs	2	D	Container Glass	Automatic Bottle Machine		Aqua glass		Embsd				FALSE	1			Body	Canning jar	1903		Jones & Sullivan 1985; Lindsey 2015	"B" from Ball Mason jar
005	15Un260	STP 1	I	0–32 cm bgs	3	A	Construction Material	Brick	Handmade brick: vitrified							FALSE	1	23.3				1800	1880	Holley 2009	
005	15Un260	STP 1	I	0–32 cm bgs	4	A	Construction Material	Caulk								FALSE	1								white caulk
005	15Un260	STP 1	I	0–32 cm bgs	5	A	Nails	Wire Nail	Fragment	Pulled						FALSE	5					1880		Nelson 1968	
005	15Un260	STP 1	I	0–32 cm bgs	6	A	Flat Glass	Plate Glass								TRUE	1					1917		Roenke 1978	
005	15Un260	STP 1	I	0–32 cm bgs	6	A	Flat Glass	Plate Glass								FALSE	2					1917		Roenke 1978	
005	15Un260	STP 1	I	0–32 cm bgs	7	A	Flat Glass	Privacy Glass								FALSE	1								
005	15Un260	STP 1	I	0–32 cm bgs	8	A	Fittings and Hardware	Stoneware Water Pipe								FALSE	1	4.1							
005	15Un260	STP 1	I	0–32 cm bgs	9	M	General Hardware	Bolt	Eyebolt							FALSE	1								
005	15Un260	STP 1	I	0–32 cm bgs	10	M	Electrical	Insulator: glass								FALSE	1					1875		Whitten 2015	milk glass; stamped "N.Y." within interior
005	15Un260	STP 1	I	0–32 cm bgs	11	A	Construction Material	Corrugated Metal	Roofing / siding							FALSE	1					1850		Phillips 1989:140	
006	15Un260	STP 2	I	5–15 cm bgs	12	D	Container Glass	Automatic Bottle Machine		Light green glass						FALSE	2			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
006	15Un260	STP 2	I	5–15 cm bgs	12	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	3			Body	Indet bottle/ jar	1903		Jones & Sullivan 1985; Lindsey 2015	
006	15Un260	STP 2	I	5–15 cm bgs	12	D	Container Glass	Automatic Bottle Machine		Amber glass		Embsd				FALSE	1			Body	House–hold	1940	1962	Clorox Company 2015	"X" embossed; Clorox bottle frag
006	15Un260	STP 2	I	5–15 cm bgs	12	D	Container Glass	Automatic Bottle Machine		Amber glass		Embsd				FALSE	1			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	unknown embossed symbol frag
006	15Un260	STP 2	I	5–15 cm bgs	12	D	Container Glass	Automatic Bottle Machine		Clear glass		Embsd				FALSE	1			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	embossed "8"
007	15Un260	STP 3	I	5–15 cm bgs	13	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	1			Body		1903		Jones & Sullivan 1985; Lindsey 2015	
007	15Un260	STP 3	I	5–15 cm bgs	14	A	Nails	Wire Nail	Fragment	Pulled						FALSE	1					1880		Nelson 1968	
007	15Un260	STP 3	I	5–15 cm bgs	15	U	Metal	Iron / Steel		Flat: thin						FALSE	1								90 degree angle; white enamel or paint on both surfaces; poss architectural
008	15Un260	STP 4	I	0–18 cm bgs	16	D	Ceramics	Whiteware	Plain							FALSE	1			Body	Plate	1860	1930	Faulkner 2000; Majewski and O'Brien 1987:119	Dual rings on base; 1860+
008	15Un260	STP 4	I	0–18 cm bgs	17	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	2			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	

Bag	Site	Unit	Zone	Dep	Cat	Group	Class	Type	Attr 1a	Attr 1b	Attr 1c	Attr 2a	Attr 2b	Attr 3a	Attr 4a	Burned	Count	Wt (g)	Dia (mm)	Vessel Part	Vessel Type	Min Date	Max Date	References	Comments
008	15Un260	STP 4	I	0–18 cm bgs	17	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	1			Body	Misc jar	1903		Jones & Sullivan 1985; Lindsey 2015	
008	15Un260	STP 4	I	0–18 cm bgs	17	D	Container Glass	Automatic Bottle Machine		Clear glass					External thread	FALSE	1			Rim	Misc jar	1903		Jones & Sullivan 1985; Lindsey 2015	Chewed up; plowed?
009	15Un260	STP 5	I	0–17 cm bgs	18	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	1			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
009	15Un260	STP 5	I	0–17 cm bgs	18	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	1			Body	Misc jar	1903		Jones & Sullivan 1985; Lindsey 2015	
009	15Un260	STP 5	I	0–17 cm bgs	19	A	Flat Glass	Plate Glass								FALSE	3					1917		Roenke 1978	
009	15Un260	STP 5	I	0–17 cm bgs	20	U	Metal	Iron / Steel		Flat: thick						FALSE	1								
009	15Un260	STP 5	I	0–17 cm bgs	21	U	Plastic	Modern		Item / part						FALSE	1					1930		Meikle 1995	red plastic from unk broken item
010	15Un260	STP 6	I	5–15 cm bgs	22	D	Ceramics	Whiteware	Undecorated							FALSE	1			Body	Cup	1830		Majewski and O'Brien 1987:119	minutel traces of cobalt dots; could be hand–painting, transfer print, or any other blue dec
010	15Un260	STP 6	I	5–15 cm bgs	22	D	Ceramics	Whiteware	Chromatic glaze (monochrome)		Cobalt blue					FALSE	1			Body	Bowl	1930	1970	Blaszczyk 2000:121; Faulkner 2000	
010	15Un260	STP 6	I	5–15 cm bgs	23	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	3			Body		1903		Jones & Sullivan 1985; Lindsey 2015	
010	15Un260	STP 6	I	5–15 cm bgs	24	A	Flat Glass	Plate Glass								TRUE	1					1917		Roenke 1978	
011	15Un260	STP 7	I	0–26 cm bgs	25	A	Nails	Wire Nail	Fragment							FALSE	3					1880		Nelson 1968	
011	15Un260	STP 7	I	0–26 cm bgs	26	A	Flat Glass	Plate Glass								FALSE	1					1917		Roenke 1978	
012	15Un260	STP 8	I	0–22 cm bgs	27	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	3			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
012	15Un260	STP 8	I	0–22 cm bgs	28	A	Fittings and Hardware	Stoneware Water Pipe								FALSE	1								
012	15Un260	STP 8	I	0–22 cm bgs	29	U	Glass	Amorphous								FALSE	1					1864		Jones & Sullivan 1985; Lindsey 2015	clear
013	15Un260	STP 9	I	0–34 cm bgs	30	D	Ceramics	Whiteware	Undecorated							TRUE	1			Body	Bowl	1830		Majewski and O'Brien 1987:119	
013	15Un260	STP 9	I	0–34 cm bgs	31	D	Ceramics	Stoneware	Bristol slipped exterior			Albany slipped interior				FALSE	1			Body	Jug	1880	1925	Greer 1999; Ketchum 1983	
013	15Un260	STP 9	I	0–34 cm bgs	32	D	Container Glass	Undiagnostic container fragment		Clear glass						FALSE	1			Body	Misc bottle	1864		Lindsey 2015	
014	15Un260	STP 10	I	0–30 cm bgs	33	D	Ceramics	Whiteware	Undecorated							FALSE	1			Body	Cup	1830		Majewski and O'Brien 1987:119	
014	15Un260	STP 10	I	0–30 cm bgs	34	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	4			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
014	15Un260	STP 10	I	0–30 cm bgs	34	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	1			Body	Misc jar	1903		Jones & Sullivan 1985; Lindsey 2015	
014	15Un260	STP 10	I	0–30 cm bgs	34	D	Container Glass	Automatic Bottle Machine		Amber glass						FALSE	1			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
014	15Un260	STP 10	I	0–30 cm bgs	34	D	Container Glass	Automatic Bottle Machine		Light green glass						FALSE	1			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
014	15Un260	STP 10	I	0–30 cm bgs	35	D	Container Glass	Undiagnostic container fragment		Clear glass						FALSE	1			Body		1864		Lindsey 2015	
014	15Un260	STP 10	I	0–30 cm bgs	36	A	Nails	Wire Nail	Fragment							FALSE	2					1880		Nelson 1968	
014	15Un260	STP 10	I	0–30 cm bgs	37	A	Flat Glass	Window Glass								FALSE	1					1894	1894	Moir 1987	
014	15Un260	STP 10	I	0–30 cm bgs	37	A	Flat Glass	Window Glass								FALSE	2					1895	1895	Moir 1987	

Bag	Site	Unit	Zone	Dep	Cat	Group	Class	Type	Attr 1a	Attr 1b	Attr 1c	Attr 2a	Attr 2b	Attr 3a	Attr 4a	Burned	Count	Wt (g)	Dia (mm)	Vessel Part	Vessel Type	Min Date	Max Date	References	Comments
014	15Un260	STP 10	I	0–30 cm bgs	38	M	Electrical	Insulator: glass								TRUE	1					1875		Whitten 2015	aqua green
015	15Un260	STP 11	I	0–32 cm bgs	39	D	Ceramics	Whiteware	Undecorated							FALSE	1			Rim	Saucer	1830		Majewski and O'Brien 1987:119	
015	15Un260	STP 11	I	0–32 cm bgs	39	D	Ceramics	Whiteware	Embossed (early)							FALSE	1			Rim	Saucer	1860		Faulkner 2000	molded/embossed with applied green color (poss flow)
015	15Un260	STP 11	I	0–32 cm bgs	39	D	Ceramics	Whiteware	Embossed (early)							FALSE	1			Body	Saucer	1860		Faulkner 2000	molded/embossed with applied green color (poss flow)
015	15Un260	STP 11	I	0–32 cm bgs	40	D	Ceramics	Ironstone	Plain							FALSE	2			Rim	Cup	1830		Majewski and O'Brien 1987:122	
015	15Un260	STP 11	I	0–32 cm bgs	41	D	Container Glass	Blown in Mold		Clear glass						FALSE	1			Body	Misc jar	1864	1920	Lindsey 2015; Miller & Sullivan 1984; Jones & Sullivan 1985	
015	15Un260	STP 11	I	0–32 cm bgs	41	D	Container Glass	Blown in Mold		Aqua glass						FALSE	1			Body	Misc bottle	1800	1920	Lindsey 2015; Miller & Sullivan 1984; Jones & Sullivan 1985	
015	15Un260	STP 11	I	0–32 cm bgs	42	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	6			Body		1903		Jones & Sullivan 1985; Lindsey 2015	
015	15Un260	STP 11	I	0–32 cm bgs	42	D	Container Glass	Automatic Bottle Machine		Clear glass		Recessed panel				FALSE	1			Body	Medicine	1903		Jones & Sullivan 1985; Lindsey 2015	
015	15Un260	STP 11	I	0–32 cm bgs	43	A	Flat Glass	Security Glass								FALSE	1					1891		IMACS 1992	
015	15Un260	STP 11	I	0–32 cm bgs	44	A	Fittings and Hardware	Pipe Fitting								FALSE	1								iron/steel; possible pipe frag; 3/4" diameter
016	15Un259	GSC		Surface	3	D	Ceramics	Whiteware	Plain							FALSE	1			Footring with base	Plate	1860	1930	Faulkner 2000; Majewski and O'Brien 1987:119	
016	15Un259	GSC		Surface	3	D	Ceramics	Whiteware	Undecorated							FALSE	1			Body	Plate	1830		Majewski and O'Brien 1987:119	
016	15Un259	GSC		Surface	3	D	Ceramics	Whiteware	Flow decorated		Blue					FALSE	1			Rim	Plate	1839	1908	Majewski and O'Brien 1987:119; Samford 1997:24	
016	15Un259	GSC		Surface	4	D	Ceramics	Ironstone	Undecorated							FALSE	1			Body	Cup	1830		Majewski and O'Brien 1987:122	
016	15Un259	GSC		Surface	5	D	Ceramics	Stoneware	Bristol slipped exterior			Albany slipped interior				FALSE	1			Body		1880	1925	Greer 1999; Ketchum 1983	
016	15Un259	GSC		Surface	5	D	Ceramics	Stoneware	Salt glazed exterior			Slipped interior				FALSE	1			Body	Crock	1800	1925	Greer 1999; Ketchum 1983	
016	15Un259	GSC		Surface	6	D	Container Glass	Blown in Mold		Amethyst glass				Tooled	Patent	FALSE	1			Lip with neck	Medicine	1870	1920	Lindsey 2015; Miller & Sullivan 1984; Jones & Sullivan 1985; Lockhart 2006	
016	15Un259	GSC		Surface	7	D	Glass Tableware	Press mold: unleaded		Clear unleaded glass			Molded design/ pattern			FALSE	1			Cover / Lid	Covered server	1864		Jones 2000:149; Miller & Sullivan 1984	
016	15Un259	GSC		Surface	8	A	Construction Material	Brick	Machine made brick: vitrified							FALSE	1	93.4				1880		Holley 2009	
016	15Un259	GSC		Surface	9	A	Fittings and Hardware	Door hardware	Door knob: porcelain	Ceramic: porcelain						FALSE	1					1820	1910	Faulkner 2000	
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Undecorated							FALSE	1			Body	Cup	1830		Majewski and O'Brien 1987:119	
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Plain							FALSE	1			Rim	Cup	1860	1930	Majewski and	

Bag	Site	Unit	Zone	Dep	Cat	Group	Class	Type	Attr 1a	Attr 1b	Attr 1c	Attr 2a	Attr 2b	Attr 3a	Attr 4a	Burned	Count	Wt (g)	Dia (mm)	Vessel Part	Vessel Type	Min Date	Max Date	References	Comments
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Molded							FALSE	1			Body	Plate	1830		O'Brien 1987:119 Majewski and O'Brien 1987:119; Wetherbee 1980	
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Plain							FALSE	1			Rim	Bowl	1860	1930	Majewski and O'Brien 1987:119	
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Undecorated							FALSE	2			Body	Plate	1830		Majewski and O'Brien 1987:119	
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Undecorated							FALSE	1			Footring with base	Plate	1830		Majewski and O'Brien 1987:119	
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Molded							FALSE	2			Body		1830		Majewski and O'Brien 1987:119	molded/embossed
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Chromatic glaze (monochrome)		Other monochrome					FALSE	1			Body		1920	1970	Blaszczyk 2000:121; Faulkner 2000	lt. green
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Chromatic glaze (monochrome)		Green					FALSE	1			Rim	Plate	1920	1970	Blaszczyk 2000:121; Faulkner 2000	also molded; kelly green
017	15Un260	GSC		Surface	45	D	Ceramics	Whiteware	Molded							FALSE	2			Footring with base	Cup	1830		Majewski and O'Brien 1987:119; Wetherbee 1980	molded/embossed
017	15Un260	GSC		Surface	46	D	Ceramics	Stoneware	Unglazed exterior			Albany slipped interior				FALSE	1			Base	Jug	1830	1925	Greer 1999; Ketchum 1983	
017	15Un260	GSC		Surface	46	D	Ceramics	Stoneware	Albany slipped exterior			Albany slipped interior				FALSE	1			Handle	Jug	1830	1925	Greer 1999; Ketchum 1983	body with base of handle
017	15Un260	GSC		Surface	46	D	Ceramics	Stoneware	Bristol slipped exterior			Albany slipped interior				FALSE	1			Body		1880	1925	Greer 1999; Ketchum 1983	
017	15Un260	GSC		Surface	47	D	Container Glass	Blown in Mold		Aqua glass						FALSE	1			Body	Canning jar	1800	1920	Lindsey 2015; Miller & Sullivan 1984; Jones & Sullivan 1985	
017	15Un260	GSC		Surface	47	D	Container Glass	Blown in Mold		Aqua glass						FALSE	1			Base	Canning jar	1800	1920	Lindsey 2015; Miller & Sullivan 1984; Jones & Sullivan 1985	
017	15Un260	GSC		Surface	48	D	Container Glass	Automatic Bottle Machine		Clear glass						FALSE	1			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
017	15Un260	GSC		Surface	48	D	Container Glass	Automatic Bottle Machine		Clear glass		Embsd				FALSE	1			Body	Misc bottle	1903		Jones & Sullivan 1985; Lindsey 2015	unknown embossing; stippled
017	15Un260	GSC		Surface	48	D	Container Glass	Automatic Bottle Machine		Cobalt glass						FALSE	1			Body		1903		Jones & Sullivan 1985; Lindsey 2015	
017	15Un260	GSC		Surface	48	D	Container Glass	Automatic Bottle Machine	Cup bottom mold	Cobalt glass		Embsd				FALSE	1			Base	Toiletries/ Perfume	1920	1960	Hinds–Brown 2007	Vicks VapoRub; double triangles makers mark on base
017	15Un260	GSC		Surface	49	D	Container Closures	Home Canning Jars	Liner for Mason zinc: flat							FALSE	3					1869	1950	Toulouse 1977:91, 96; Toulouse 1969:350	
017	15Un260	GSC		Surface	50	A	Construction Material	Brick	Machine made brick: vitrified							FALSE	1	780.6				1880	1940	Gurcke 1987; Hockensmith 1997	early soft mud machine; end cut
017	15Un260	GSC		Surface	51	A	Flat Glass	Plate Glass								FALSE	5					1917		Roenke 1978	
017	15Un260	GSC		Surface	52	A	Fittings and	Stoneware Water								FALSE	1	35.9							

Bag	Site	Unit	Zone	Dep	Cat	Group	Class	Type	Attr 1a	Attr 1b	Attr 1c	Attr 2a	Attr 2b	Attr 3a	Attr 4a	Burned	Count	Wt (g)	Dia (mm)	Vessel Part	Vessel Type	Min Date	Max Date	References	Comments
017	15Un260	GSC		Surface	53	P	Hardware Health and Grooming	Pipe Cosmetic Container		Glass						FALSE	1					1903	1960	Jones 2000	milk glass; unk embossing; likely machine made
017	15Un260	GSC		Surface	54	P	Health and Grooming	Cosmetic Container		Plastic: modern						FALSE	1					1930		Meikle 1995	threaded finish
017	15Un260	GSC		Surface	55	P	Toys and Games	Marble	Glass							FALSE	1		15			1920		Basinet 2015	Peltier white, orange, and yellow swirl design
017	15Un260	GSC		Surface	55	P	Toys and Games	Marble	Glass							FALSE	1		16			1935		Basinet 2015	National Line Rainbo (liberty); white base with red and blue swirls
017	15Un260	GSC		Surface	56	M	Electrical	Insulator: glass								FALSE	1					1875		Whitten 2015	aqua glass; top of domed insulator
017	15Un260	GSC		Surface	57	T	Motorized Vehicle	Tempered glass								FALSE	1					1940			red glass circular tail light fragment