PHASE I

ARCHAEOLOGICAL SURVEY FOR PROPOSED IMPROVEMENTS ALONG KY 7 AND KY 1161, MORGAN COUNTY, KENTUCKY (KYTC ITEM # 10-160.00)

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Kentucky Office of State Archaeology Project Number:

FY14-8152

CDM Smith

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Archaeology Report

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Abstract

At the request of the Kentucky Transportation Cabinet (KYTC), archaeologists from CDM Smith conducted a Phase I archaeological survey for the proposed improvements along KY 7 and KY 1161 in Morgan County, Kentucky (Item Number 10-106.00). The area of potential effect (APE) consisted of 23 acres (9.3 ha) along a portion of KY 7, both north and south of KY 1161, and along a portion of KY 1161, approximately three miles north of West Liberty, Kentucky. The APE was visited by a CDM Smith archaeology crew on July 16th through July 18th, 2014. The archaeological survey involved systematic shovel probe excavation, systematic surface collection, and visual inspection over the entire APE.

Three previously unrecorded archaeological sites, 15MO163-15MO165, were identified within the project bounds. None of the sites were deemed potentially eligible for recommendation to the National Register of Historical Places (NRHP) under Criterion D, and no further work was recommended.

Table of Contents

Abstract i
Table of Contents ii
List of Figures v
List of Tables vi
Acknowledgements vii
Section 1 - Introduction 1-1
1.1 Project Sponsor and Regulatory Authority 1-1
1.2 Purpose and Scope of Work 1-1
1.3 Project Location and Description 1-1
1.4 Area of Potential Effect (APE) 1-1
1.5 OSA Records Research 1-1
1.6 Principal Investigator 1-1
1.7 Field and Laboratory Crew 1-5
1.7.1 Field Effort 1-5
1.7.2 Laboratory Effort 1-5
1.8 Maps and Figures 1-5
1.9 Curation 1-5
1.10 Summary of Investigations 1-5
Section 2 - Environmental 2-1
2.1 Physiography and Topography 2-1
2.2 Geology 2-1
2.3 Hydrology 2-4
2.4 Soils 2-6
2.5 Cherts 2-9
2.6 Prehistoric Climate Conditions 2-9
2.7 Current Climate Conditions 2-10
2.8 Prehistoric and Present Flora and Fauna 2-10
2.9 Current Land Use 2-11
Section 3 - Cultural Context, Previous Investigation, and Summary of Known Sites 3-1
3.1 Prehistoric Period 3-1
3.1.1 Paleoindian Period 3-1
3.1.1.1 The Early Paleoindian: Pre-Clovis 3-2
3.1.1.2 The Early Paleoindian: Clovis 3-3
3.1.1.3 The Middle Paleoindian 3-4
3.1.1.4 The Late Paleoindian 3-4
3.1.2 Archaic Period 3-5
3.1.2.1 The Early Archaic Period 3-6
3.1.2.2 The Middle Archaic Period 3-6
3.1.2.3 The Late Archaic Period 3-8
3.1.3 Woodland Period 3-9
3.1.3.1 Early Woodland 3-10
3.1.3.2 Middle Woodland 3-11
3.1.3.3 Late Woodland 3-13
3.1.4 Late Prehistoric Period 3-15

3.2 Historic Period 3-17
3.2.1 Exploration and Early Settlement (ca. 17th Century-1820) 3-17
3.2.2 Antebellum (1820-1861) 3-19
3.2.3 Civil War (1861-1865) 3-20
3.2.4 Postbellum Industrialization (1865-1914) 3-22
3.2.5 Twentieth Century 3-23
3.3 Historic Map Research 3-25
3.4 Previous Archaeological Research 3-25
3.5 Known Archaeological Sites 3-28

Section 4 - Methodology 4-1

4.1 Implemented Field Methods 4-1
4.1.1 Field Conditions 4-1
4.1.2 Evaluation of Field Methods Used 4-1
4.2 National Register Evaluation of Archaeological Sites 4-1

Section 5 - Materials Recovered 5-1

5.1 Laboratory Methods 5-1
5.1.1 Prehistoric Artifact Assemblages 5-1
5.1.1.1 Prehistoric Lithics 5-1
5.1.1.1.1 Lithic Debitage 5-1
5.1.1.1.2 Raw Material Analysis 5-3
5.1.1.1.3 Mass Analysis 5-3
5.1.1.1.4 Materials Recovered 5-4
5.1.2 Historic Artifact Assemblages 5-4
5.1.2.1 Kitchen Group 5-6
5.1.2.1.1 Container Glass 5-6
5.1.2.1.2 Ceramics 5-8
5.1.2.2 Architecture Group 5-9
5.1.2.2.1 Flat Glass 5-9
5.1.2.2.2 Nails 5-10
5.1.2.2.3 Plate Glass 5-10
5.1.2.3 Fuel Group 5-11
5.1.2.4 Furniture Group 5-11
5.1.2.5 Other Group 5-11

Section 6 - Results 6-1

6.1 Site 15MO163 6-1
6.1.1 Location 6-1
6.1.2 Site Description 6-1
6.1.3 Stratigraphy 6-2
6.1.3.1 STP 24 6-2
6.1.4 Materials Recovered 6-2
6.1.5 Features 6-2
6.1.6 Prehistoric Discussion 6-2
6.1.7 Historic Discussion 6-3
6.1.8 National Register Eligibility 6-3
6.1.9 Recommendations 6-3
6.2 Site 15MO164 6-12
6.2.1 Location 6-12
6.2.2 Site Description 6-12

6.2.3 Stratigraphy 6-12
6.2.3.1 STP 6 6-12
6.2.4 Materials Recovered 6-12
6.2.5 Features 6-13
6.2.6 Prehistoric Interpretation 6-13
6.2.7 Historic Interpretation 6-13
6.2.8 National Register Eligibility 6-13
6.2.9 Recommendations 6-13
6.3 Site 15MO165 6-21
6.3.1 Location 6-21
6.3.2 Site Description 6-21
6.3.3 Stratigraphy 6-21
6.3.4 Materials Recovered 6-21
6.3.5 Features 6-22
6.3.6 Historic Interpretation 6-22
6.3.7 National Register Eligibility 6-22
6.3.8 Recommendations 6-22

Section 7 - Recommendations and Summary 7-1

Recommendations 7-1
7.1 Site 15MO163 7-1
7.1.1 National Register Eligibility 7-1
7.1.2 Recommendations 7-1
7.2 Site 15MO164 7-1
7.2.1 National Register Eligibility 7-2
7.2.2 Recommendations 7-2
7.3 Site 15MO165 7-2
7.3.1 National Register Eligibility 7-2
7.3.2 Recommendations 7-2
7.4 Summary 7-3

Section 8 - References 1

Appendix A - Artifact Inventory A-1

Appendix B - Archaeological Site Form B-1

List of Figures

Figure 1-1. Project Location within Morgan County. 1-2
Figure 1-2. USGS Topographical Map showing Project Location. 1-3
Figure 1-3. Aerial Map showing Project Location. 1-4
Figure 2-1. Physiographic Map of Kentucky. 2-2
Figure 2-2. Geologic Map of Kentucky. 2-3
Figure 2-3. Geological Quadrangle. 2-5
Figure 2-4. Hydrology. 2-7
Figure 2-5. Soils in the Project Area. 2-8
Figure 2-6. Creek Areas within the Project Area. 2-12
Figure 2-7. Agricultural Areas inside the Project Area. 2-12
Figure 2-8. Scrub, Weeds, Briars and Dirt Road within the Project Area. 2-13
Figure 2-9. Scrub, Weeds, and Briars within the Project Area. 2-13
Figure 2-10. Bulldozed and Graded Area within the Project Area. 2-14
Figure 2-11. Residential Yard and Home within the Project Area. 2-14
Figure 3-1. Kentucky and Virginia in 1794 (Lewis). 3-19
Figure 3-2. Morgan County, Kentucky in 1839 (Burr). 3-20
Figure 3-3. Morgan County, Kentucky in 1861 (Campbell & Barlow). 3-22
Figure 3-4. Morgan County, Kentucky in 1891 (Hoeing). 3-23
Figure 3-5. Locations of Previous Archaeological Investigations. 3-27
Figure 4-1. Location of STPs on the Aerial Map, Page 1. 4-4
Figure 4-2. Location of STPs on the Aerial Map, Page 2. 4-5
Figure 4-3. Survey Area east of KY 7 and north of KY 1161, Looking N, Surface Collection Area. 4-6
Figure 4-4. Survey Area Showing Elk Fork SE. 4-6
Figure 4-5. Survey Area, Scrub and Weeds in a Sloped Area, Looking North. 4-7
Figure 4-6. Survey Areas, Scrub, Weeds and Secondary Growth near Elk Fork, Looking West. 4-7
Figure 4-7. Survey Area Showing Road Bed of Old KY 7 along Elk Fork, Looking North. 4-8
Figure 4-8. Survey Area, Scrub, Weeds and Secondary Growth along Sloped Area, Looking West. 4-8
Figure 4-9. Survey Area west of Intersection of KY 1161 and KY 7, Looking Northeast, Cleared and Bulldozed, Surface Collection Area. 4-9
Figure 4-10. Survey Area West of KY 7, Looking Southwest, Area Filled in the 1950's. 4-9
Figure 4-11. Survey Area near the KY 7 and KY 1161 Intersection, Showing Roadway and Scrub along Roadway, Looking Southwest by South. 4-10
Figure 6-1. Location of Archaeological Site 15MO163 USGS Topography Map. 6-4
Figure 6-2. Location of Archaeological Site 15MO163 on the 2010 Aerial Photograph. 6-5
Figure 6-3 Location of Archaeological Site 15MO163 on the Design Sheet. 6-6
Figure 6-4. . Site 15MO163, Looking towards STP 24, Looking South by East. 6-7
Figure 6-5. Site 15MO163, Cox House, Looking Southeast. 6-7
Figure 6-6. Site 15MO163, Cox House, Looking Northeast. 6-8
Figure 6-7. Aerial Photograph from 1950 showing Site 15MO163. 6-9
Figure 6-8. Sample of Site 15MO163 Historic Artifacts (*from left to right*: Coal Fragment, Wire Nails, Whiteware, and Glass Plate Fragment). 6-10
Figure 6-9. Shovel Test Probe from Site 15MO163. 6-11
Figure 6-10. U.S.G.S. Topographic Map Showing 15MO164. 6-14
Figure 6-11. Location of Archaeological Site 15MO164 on the 2010 Aerial Photograph. 6-15
Figure 6-12. Location of Archaeological Site 15MO164 on Design Sheet. 6-16

Figure 6-13. Site 15MO164, Looking North. 6-17
Figure 6-14. Historic Aerial Photograph from 1950 Showing Site 15MO164. 6-18
Figure 6-15. Sample of Site 15MO164 Historic Artifacts (*from clockwise*: Metal Wire, Coal Fragments, Bottle/Jar Glass Fragment, and Flat Glass). 6-19
Figure 6-16. Sample of Site 15MO164 Prehistoric Artifacts (Retouched Flake). 6-20
Figure 6-17. Shovel Test Probe from Site 15MO164. 6-20
Figure 6-18. Location of Archaeological Site 15MO165 USGS Topography Map. 6-23
Figure 6-19. Location of Archaeological Site 15MO165 on the 2010 Aerial Photograph. 6-24
Figure 6-20. Location of Archaeological Site 15MO165 on the Design Sheet. 6-25
Figure 6-21. Site 15MO165, Showing the Heavily Disturbed Surface Area and Three Sheds, looking West. 6-26
Figure 6-22. Site 15MO165, Frame Shed # 1, Looking West. 6-26
Figure 6-23. Site 15MO165, Frame Shed # 2, Looking North. 6-27
Figure 6-24. Site 15MO165, Stone Shed, Looking North. 6-27
Figure 6-25. Site 15MO165, Showing Brick Rubble. 6-28
Figure 6-26. Aerial Photograph from 1950 of Site 15MO165. 6-29
Figure 6-27. Sample of Site 15MO165 Artifacts (*from clockwise*: Wire Nails, Milk Glass, Ironstone, Whiteware, Ironstone, and Melted Glass Fragments). 6-30

List of Tables

Table 3-1. Population changes for Morgan County, Kentucky (US Census Bureau 2013). 3-24
Table 5-1. Prehistoric Lithic Debitage. 5-4
Table 5-2. Historic Artifacts Recovered. 5-6
Table 5-3. Kitchen Group Artifacts. 5-6
Table 5-4. Architectural Group Artifacts. 5-10
Table 6-1. Site 15MO163 Historic Artifacts 6-10
Table 6-2. Site 15MO163 Prehistoric Artifacts. 6-10
Table 6-3. Site 15MO164 Historic Artifacts 6-19
Table 6-4. Site 15MO164 Prehistoric Artifacts. 6-19
Table 6-5. Site 15MO165 Artifacts. 6-30
Table A-1. Prehistoric Lithic Catalog. A-2
Table A-2. Historic Artifact Catalog. A-3

Acknowledgements

The Principal Investigator for the archaeological survey was Mr. J. Howard Beverly, RPA. Field crew director was Chris Rankin. Field crew consisted of Chris Rankin, Caroline Paulus, Ann Wilkinson, Adam Newell, Bethany Gabbard, and Arlis Johnson. Howard Beverly generated maps and formatted the report. Robert Ball provided support in Lexington.

Section 1 - Introduction

This report describes the field and laboratory method and the results of a Phase I archaeological survey conducted at the request of the Kentucky Transportation Cabinet (KYTC) by archaeologists from CDM Smith for the proposed improvements along KY 7 and KY 1161 in Morgan County, Kentucky (Item Number 10-106.00). Field work was conducted from July 16, 2014 through July 18, 2014.

1.1 Project Sponsor and Regulatory Authority

The state agency sponsoring this survey is the KYTC; the lead federal agency is the Federal Highway Administration. The survey was conducted in compliance with the guidelines established by the Kentucky Heritage Council Guidelines (Sanders 2006) and the National Historic Preservation Act of 1966 (P.L. 89-655; 80 Stat. 915, 16 U.S.C. 470 et seq), the National Environmental Policy Act of 1969 (P.L. 910190; 83 Stat. 852, 42 U.S.C. 4321 et seq), Procedures of the Advisory Council on Historic Preservation (36CFR800), Executive Order 11593, and the Protection and Enhancement of the Cultural Environment (16 U.S.C. 470; supp. 1, 1971).

1.2 Purpose and Scope of Work

A Phase I archaeological survey was conducted for the proposed improvements along KY 7 and KY 1161 in Morgan County, Kentucky. The archaeological surveyors were prepared to shovel probe areas of less than 15% slope, auger deeper soil deposits, and to visually inspect the entire area. The purpose of this work was to identify any archaeological resources which might have existed and to record their extent, significance, and the potential impact of the proposed project on these cultural resources.

1.3 Project Location and Description

This project is located along KY 7, both north and south of KY 1161, and along a portion of KY 1161, approximately three miles north of West Liberty, Kentucky, in the Kentucky Department of Highways District 10 (Figure 1-1). The project area includes the intersection of KY 7 and KY 1161 (Figure 1-2 and Figure 1-3).

1.4 Area of Potential Effect (APE)

The area of potential effect (APE) is defined as the limits of the proposed right-of-way and proposed temporary construction easement. The total area is 23 acres (9.3 ha).

1.5 OSA Records Research

On July 25, 2014, the site files and survey records at the Office of State Archaeology (OSA) were accessed.

1.6 Principal Investigator

The principal investigator for the project was J. Howard Beverly, MA, RPA, GIS.

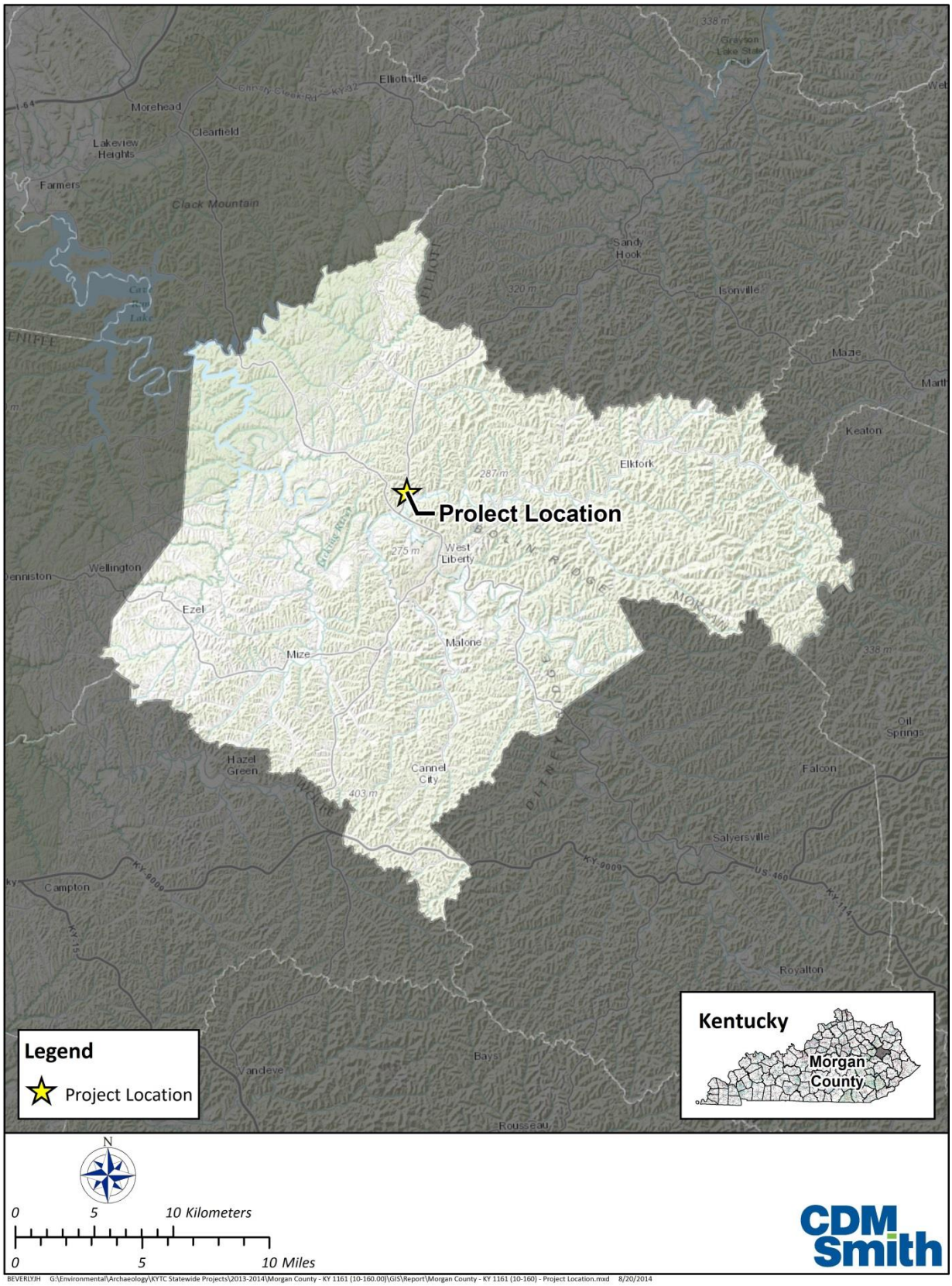

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Figure 1-1. Project Location within Morgan County.

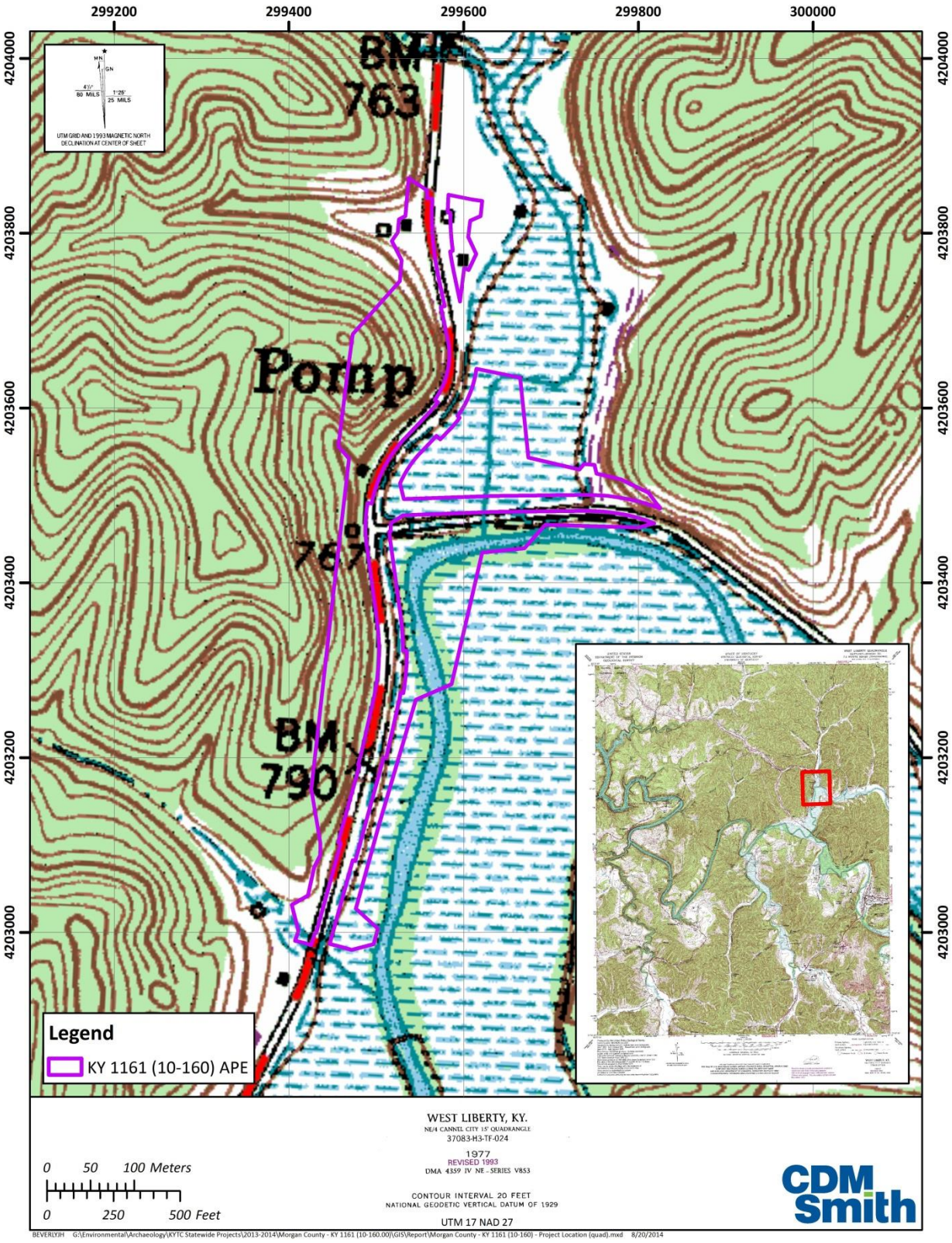

Figure 1-2. USGS Topographical Map showing Project Location.

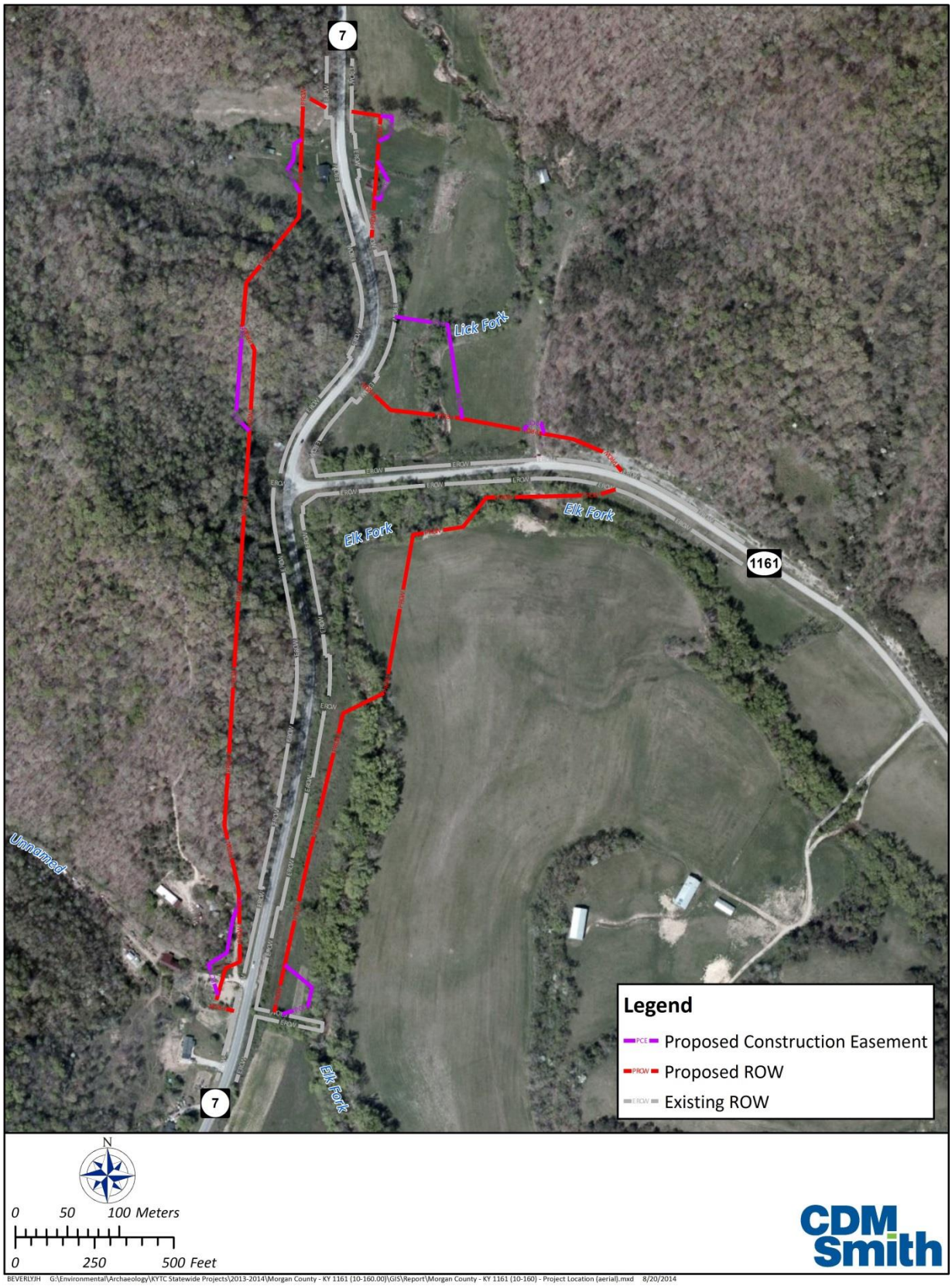

Figure 1-3. Aerial Map showing Project Location.

1.7 Field and Laboratory Crew

The field crew consisted of Chris Rankin, Caroline Paulus, Ann Wilkinson, Adam Newell, Bethany Gabbard, and Arlis Johnson. Mr. Rankin served as the field director and planned, coordinated, and supervised all field activities. Dona Daugherty prepared the final report, and J. Howard Beverly, Jr., prepared the maps and formatted the report. Laboratory analysis was coordinated by Dona Daugherty. Prehistoric artifact analysis was conducted by J. David McBride. Historic artifact analysis was conducted by J. Howard Beverly.

1.7.1 Field Effort

The total number of hours expended during fieldwork was about 80 hours or approximately 10 person days. Field work for the project was conducted on July 16, 2014 through July 18, 2014.

1.7.2 Laboratory Effort

The total number of hours expended to wash, catalog, analyze, and write up artifacts was 24 hours. Identification of artifacts was conducted using available library references and by comparison with artifact collections at CDM Smith.

1.8 Maps and Figures

Maps and figures for this report were prepared using a combination of Microstation design files, GIS data overlays, and databases gathered from a number of different resources. Existing site information was provided by the Office of State Archaeology. Soil mapping was provided by United States Department of Agriculture online and printed resources. Landowner data and vegetation coverage were obtained from aerial photographs and field reconnaissance. All GIS work was conducted by J. Howard Beverly, MA, RPA, GISP.

1.9 Curation

All field notes, maps, forms, and artifacts will be curated at the University of Kentucky's curation facility, the William S. Webb Museum of Anthropology.

1.10 Summary of Investigations

A Phase I archaeological survey was conducted by archaeologists from CDM Smith at the request of the KYTC ahead of the proposed improvements along KY 7 and KY 1161 in Morgan County, Kentucky. The total APE measures 23 acres (9.3 ha). The survey identified three newly recorded archaeological sites, Sites 15MO163-165. None of the sites were potentially eligible for recommendation to the National Register of Historical Places (NRHP) under Criterion D. No further work is recommended.

Section 2 - Environmental

Aspects of the natural environment often influence the development of prehistoric and historic communities. In this section, the environmental background of Morgan County and the surrounding region is reviewed. Environmental data includes physiography, geology, hydrology, soils, climate, flora, and fauna.

2.1 Physiography and Topography

Kentucky can be divided into five primary regions: the Cumberland Plateau (Eastern Coalfields) in the east, the north-central Bluegrass Region, the south-central and western Pennyroyal Plateau, the Western Coal Fields and the far-west Jackson Purchase. The Bluegrass Region is divided further into two regions - the Inner Bluegrass and the Outer Bluegrass.

Morgan County lies within the Cumberland Plateau (Eastern Coalfields) Region (Figure 2-1). This region is comprised of three major physiographical features, the Pottersville Escarpment, the Cumberland Plateau, and the mountain and creek bottom areas (Bladen 1973:23; Bladen 1984:58). The Eastern Coalfield region begins in the west with the Pottersville Escarpment. It is a rock wall with a coarse grained Rockcastle sandstone conglomerate cap (Bladen 1973:25; Bladen 1984:59). This area is deeply incised by eroding streams. The Cumberland Plateau is located between the Pottersville Escarpment to the west and the mountain and creek bottom area to the east. Deep canyons and gorges have been created by streams cutting through layers of soft decomposed shale and shales (Bladen 1973:30; Bladen 1984:60). The last area, east of the Cumberland Plateau, is the mountain and creek bottom areas. This area is made up of the Cumberland and Pine Mountains. It includes the highest peak in the state, Big Black Mountain, part of the Cumberland mountain chain, in Harlan County with an elevation of 4,150 feet (Bladen 1973:32; Bladen 1984:60). The Cumberland Mountains are the projecting edge of the Pottsville sandstone, known as the Lee conglomerate. Similarly, the Pine Mountain range is the also the projecting edge of the Lee conglomerate. Both of these mountain ranges were formed by an uplifting fault (Bladen 1973:32; Bladen 1984:60).

Morgan County is well dissected upland area with ridgetop elevations of 1,100 to 1,300 feet. The county has been carved by streams creating valleys 200 to 300 feet or more below the upland areas. Many of the valleys are cliff lined in the northwestern part of the county but the majority of the areas do not have as steep of slopes. The point where the Licking River leaves the county was the lowest elevation at 690 ft. prior to the impoundment of Cave Run Lake. Cave Run Lake is a flood-control facility which impounds waters of the Licking River (McGrain and Currens 1978).

2.2 Geology

The Eastern Coalfields physiographic region is an area of highly dissected area of varying altitude and relief. Consolidated sedimentary rocks are of the Breathitt Formation, which is ranging from Mississippian to Pennsylvanian age, and from unconsolidated sediments of Quaternary age (Figure 2-2). The sediments of the Mississippian sandstones and siltstones were deposited 350 million years ago, and were brought in by rivers and streams from uplands many miles to the northeast. The sediments of the Pennsylvanian were deposited 320 million years age. The warm climate of the Pennsylvanian grew extensive forests and great coastal swamps at the edges of water bodies. Marine

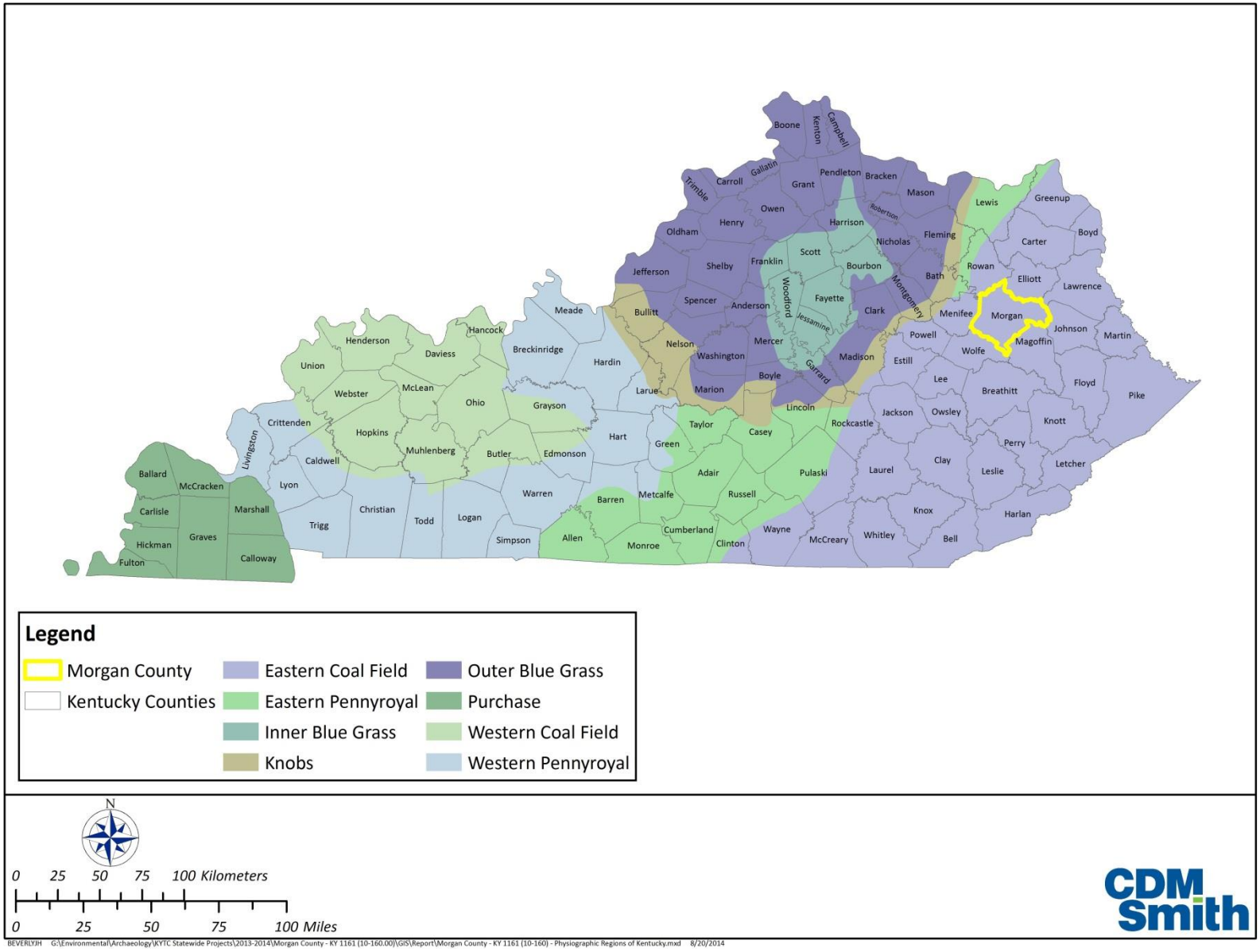

Figure 2-1. Physiographic Map of Kentucky.

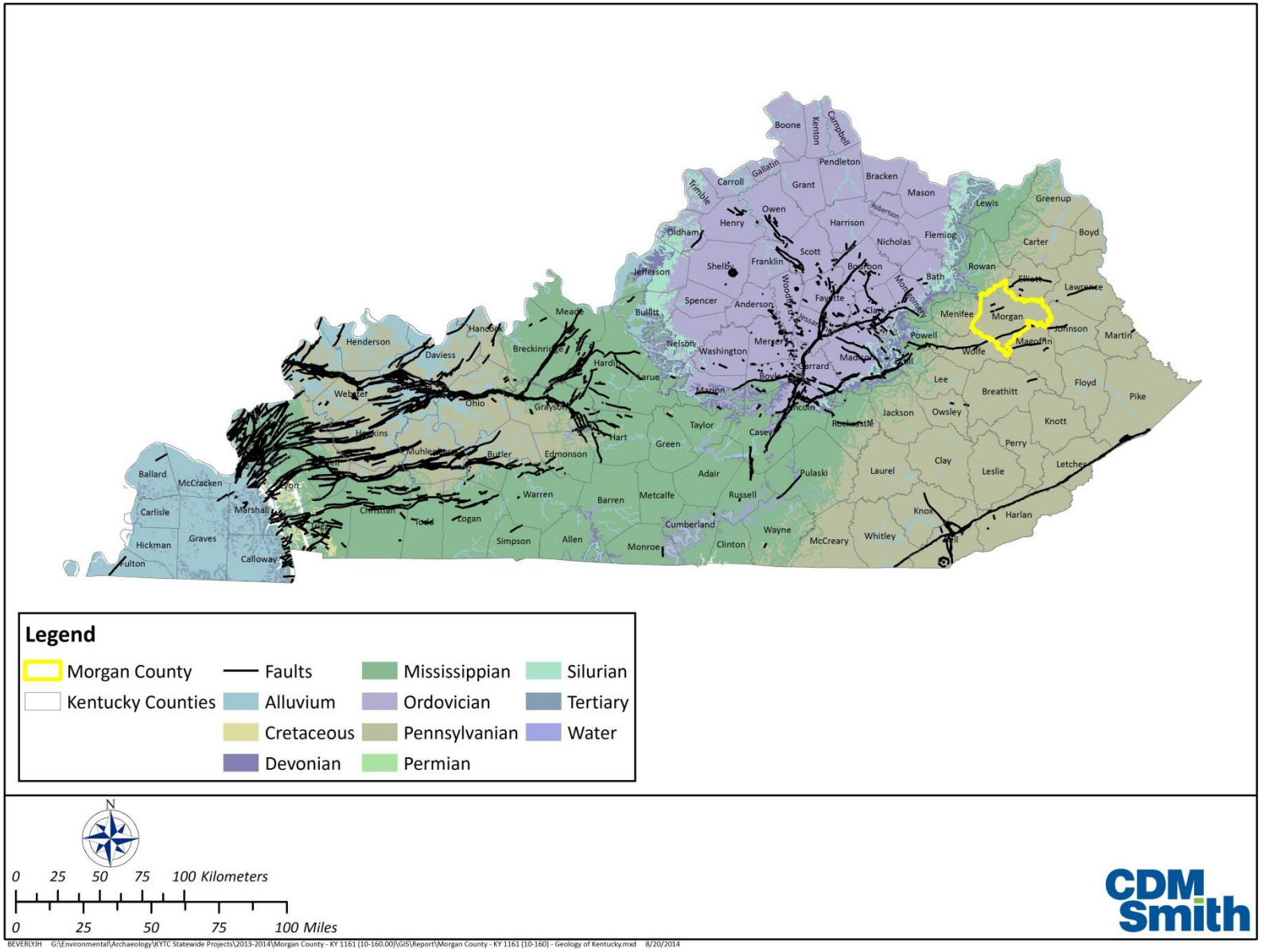

Figure 2-2. Geologic Map of Kentucky.

waters advanced and receded many times, which produced many layers of sandstone, shale, and coal. Vegetation of all sorts fell into the water and was buried under blankets of sediments, which over long geologic time were compressed into coal. The non-vegetative sediments such as sand, clay and silt were compressed into sandstone and shale. Over the last one million years unconsolidated Quaternary sediments have been deposited along the larger streams and rivers (McGrain 1983).

The geology underlying Morgan County is made up of unconsolidated deposits; limestones; sandstones; interbedded clay shales, siltstones, and sandstones; and coals, sandstones, and shales.

The unconsolidated deposits consist of Alluvium (Qal), sediment deposited by flowing water. It forms terraces and narrow floodplains of varying width along streams (Carey and Stickney 2005). Alluvium deposits are found throughout Kentucky along most of the larger streams and tributaries as boulders, cobbles, pellets, sand, silt and clays. It may also include sediment deposits found on terraces and floodplains, and in some cases as outwash deposits. In northern Kentucky, along the Ohio River, it may be present as lacustrine and eolian glacial deposited sediments. Most alluvium is Holocene, but some is late Pleistocene (McDowell and Newell 1986:H51-H52).

Limestones deposits consist of the Slade Formation (Mn). It underlies several of the valleys in Morgan County and its beds form some of the steep hillside and prominent bluffs where ridges and knobs are capped by Pennsylvanian aged rocks. Karst topography, cliffs and hanging valleys are common (Carey and Stickney 2005). The Slade Formation (Mn) replaces the carbonate of the Newman Limestone along the Portersville Escarpment in eastern Kentucky (Ettensohn et al. 1984).

Sandstones consist of the Grundy Formation (Plc). It forms steep-sided, rounded hills and ridges from erosional resistant sandstone beds 2 to 3 feet thick (Carey and Stickney 2005). It was previously mapped as part of the Lee and Breathitt Formations (Chesnut 1992).

Interbedded clay shales, siltstones, and sandstones consist of the Borden Formation (MDbb). This form has dissected slopes and massive siltstone cliffs (Carey and Stickney 2005).

Coals, sandstones, and shales consist of the Breathitt Group (Pbu, Pbm, Pbl). The topography for this formation is generally rugged. Sandstone from this formation forms narrow valleys and cliffs or steep slopes on hillsides. The shales form wide valleys and moderate or gentle slopes. Ridge tops and hills are occasionally capped by sandstone (Carey and Stickney 2005). The Breathitt Group is made up largely of gray siltstone and shale, subgraywacke, and minor amounts of ironstone and limestone (Rice 1986:H36).

The majority of the APE is over Alluvium (Qal) deposits and the Pikeville Formation with a small area over the Hyden Formation. The geology of the APE is shown in (Figure 2-3).

2.3 Hydrology

Kentucky is home to the most navigable inland waterways in the lower 48 states. Part of Kentucky's boundary with other states is formed by a few major drainages. The eastern boundary with West Virginia is demarked by the Big Sandy River. It joins the Ohio River near Ashland. The Ohio River then forms the northern boundary with Ohio, Indiana, and Illinois. The western boundary with Missouri is formed where the Ohio River merges with the Mississippi River.

The major drainages of Kentucky include the Big Sandy River, Ohio River, Mississippi River. The interior is drained by several smaller drainages that mostly flow into the Ohio River. These include the Licking,

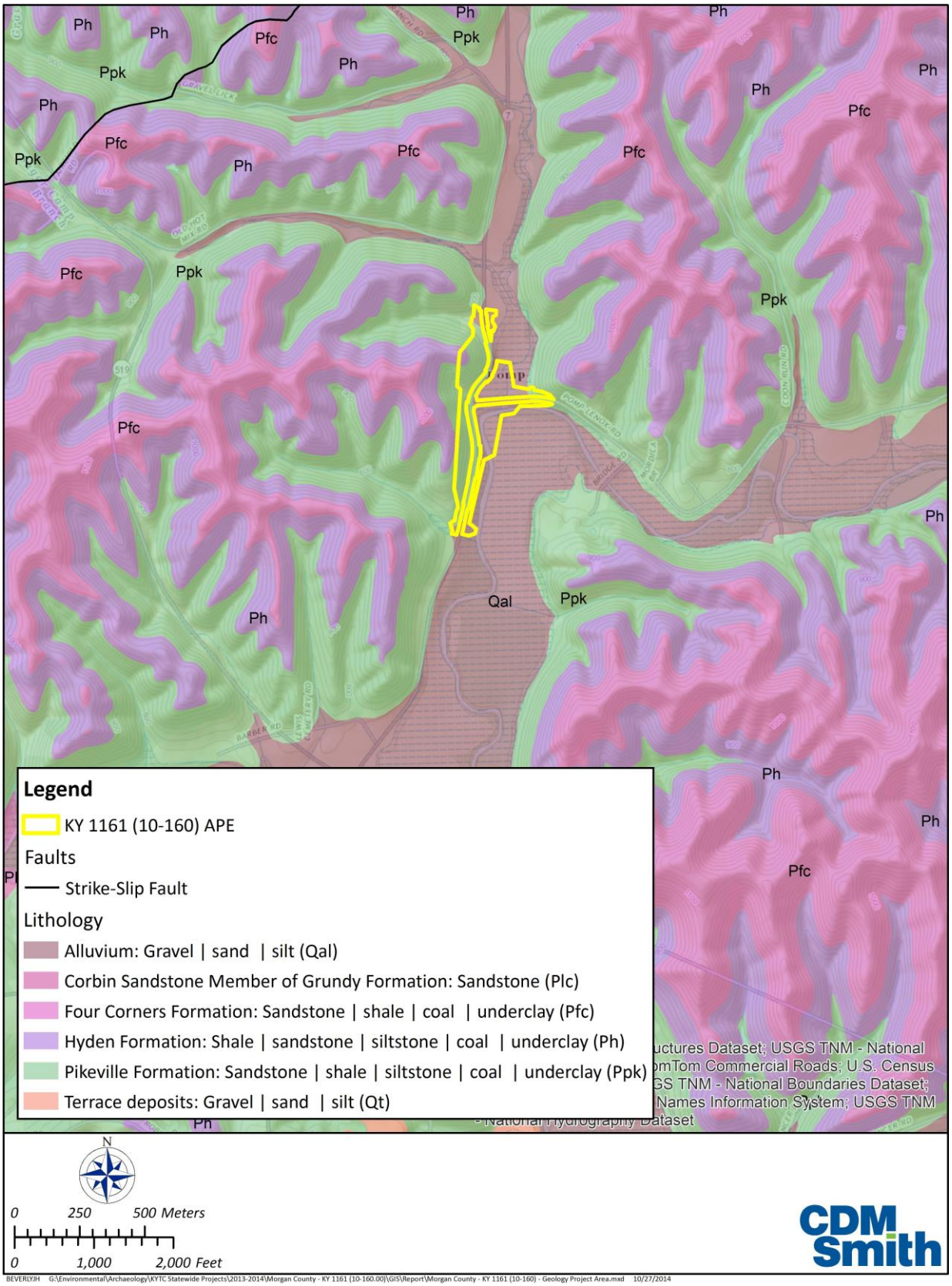

Figure 2-3. Geological Quadrangle.

Kentucky, Salt, Green, Tradewater, Cumberland and Tennessee Rivers (Bladen 1984:13-14). In west Kentucky, some drainages empty directly into the Mississippi River (Newell 1986:H66).

There are no natural lakes found completely within Kentucky. Only Reelfoot Lake, a naturally occurring lake in Tennessee, occasionally extends into Fulton County during wet weather (Bladen 1984:14).

Most of the streams in the Eastern Coalfields physiographic region are tributaries to larger streams found along valley bottoms between steep valley walls (Newell 1986). The main drainages of the Eastern Coalfields are the Big Sandy, the Licking, the Cumberland, and the Kentucky Rivers. They are dendritic in nature and drain into the Ohio. A few smaller streams, such as Tygarts Creek and the Little Sandy River drain directly into the Ohio (Bladen 1984:60).

Morgan County is drained by the Licking River which is located in the northwest part of the county. The Project Area is located within the Licking River watershed. The project area is drained by the Elk Fork and Lick Fork. Lick Fork flows into Elk Fork and Elk Fork flows into the Licking River (Figure 2-4).

2.4 Soils

Most of the soils found in Kentucky developed under the same formation processes and climate conditions. The differences in soils from one area to another are chiefly dependent on three factors: parent material, the topography where the soils are found, and the amount of time exposed to erosional forces.

There are five soil types found within the project area (Figure 2-5). They are described below.

The Rowdy loam, 0 to 4 percent slopes, occasionally flooded (RoB) soils are very deep, well drained, moderately permeable soils often found on stream terraces. The parent material consists of loamy alluvium washed mostly from sandstone, siltstone, and shale. The soils are found on low stream terraces and alluvial fans (Hayes 1989). The soils are prime for use as farmland (USDA 2014).

The Shelocta-Helechawa-Hazleton complex, 30 to 65 percent slopes, stony (SpF) soils are found along mountain slopes. The parent material consists of fine-loamy colluvium derived from interbedded sedimentary rock. The Helechawa forms from coarse-loamy colluvium derived from sandstone. The Hazleton forms from loamy-skeletal colluvium derived from sandstone. The soils are not prime farmland (USDA 2014).

The Gilpin-Latham-Marrowbone complex, 20 to 60 percent slopes (GnF) soils are found on mountain slopes. The parent material consists of fine-loamy residuum weathered from interbedded sedimentary rock and are well drained. The Latham soils form from clayey residuum weathered from shale and siltstone and are moderately well drained. The Marrowbone soils form from coarse loamy residuum weathered from sandstone and are well drained. The soils are not prime for farmland (USDA 2014).

The Pope loam, frequently flooded (Po) soils are deep, well-drained soils on first bottoms of floodplains and are very strongly acid. The parent material consists of alluvium washed from soils derived from sandstone and siltstone, and permeability is moderately rapid. The Pope soils consist of a surface layer of dark yellowish brown fine sandy loam mottled with brownish-yellow in the upper portion and extends to about 42 inches. The subsoil consists of a dark yellowish-brown fine sandy loam and a few thin layers of sandy loam and loamy sand, and extends to about 85 inches. The soils are suited to pasture, hay, and most commonly cultivated crops along with trees and wildlife habitat (Avers et al. 1974).

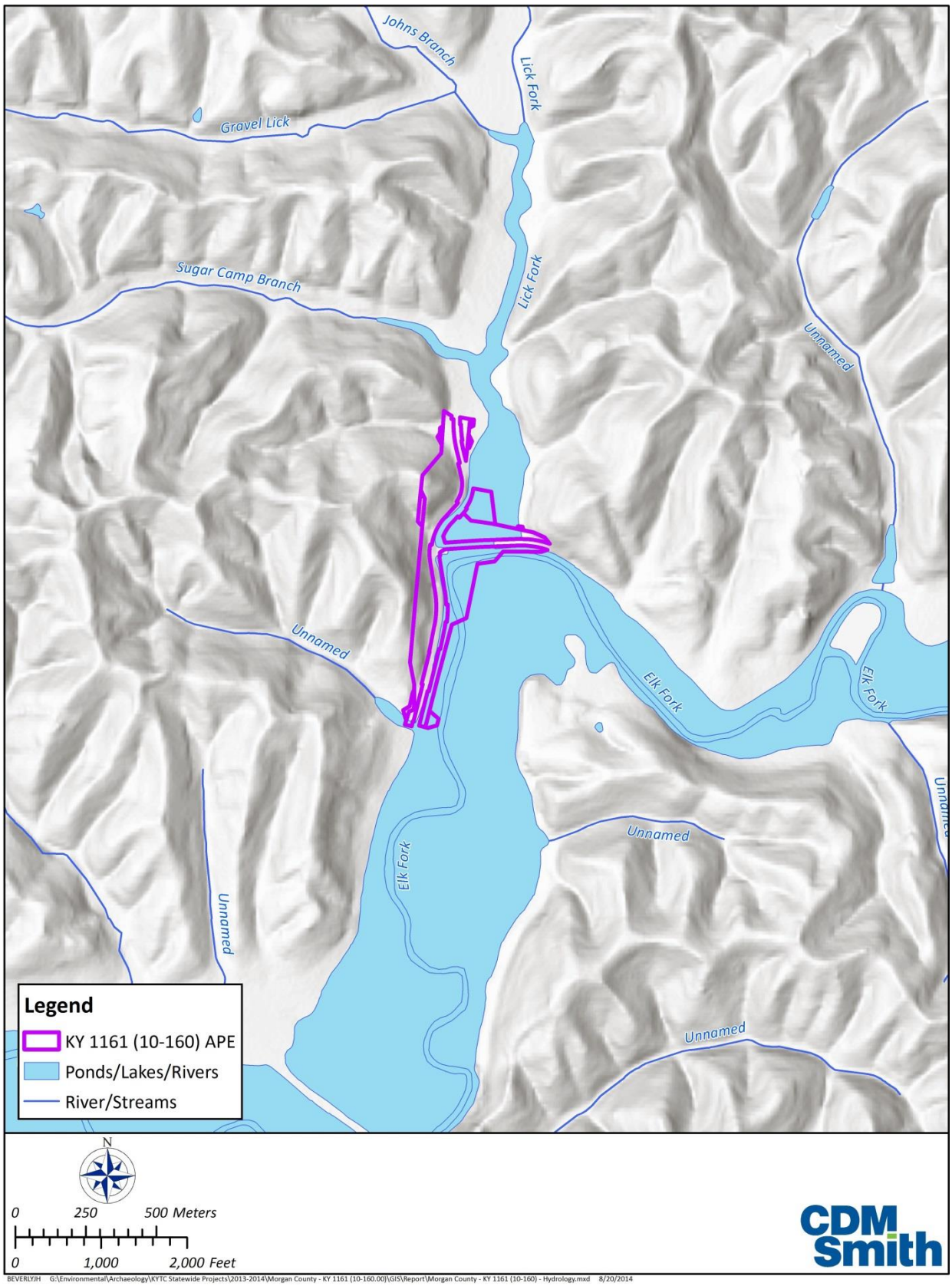

Figure 2-4. Hydrology.

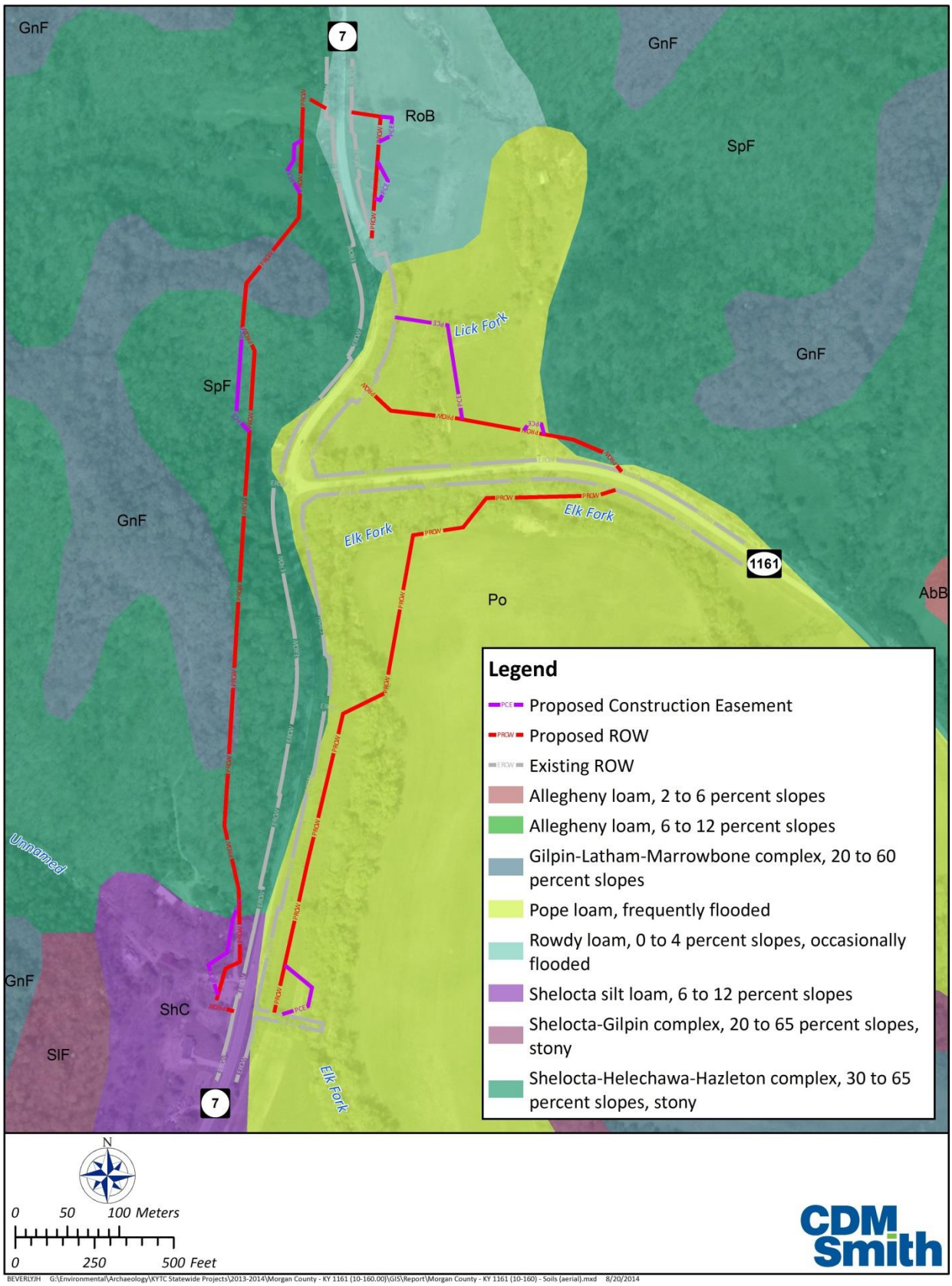

Figure 2-5. Soils in the Project Area.

The Shelocta silt loam, 6 to 12 percent slopes (ShC) soils are deep, well-drained soils on side slopes and alluvial fans, and are medium acid to very strongly acid in the surface layer (USDA 2014). The parent material consists of colluvium washed from soils derived from acid siltstone and shale, and permeability is moderate. The Shelocta soils consist of a surface layer of dark brown silt loam that extends to about 8 inches. The subsoil consists of a about 6 inches of yellowish brown heavy silt loam followed by 22 inches of strong brown light silty clay loam, and then followed by 11 inches of yellowish brown heavy silty clay loam mottled with pale brown, strong brown, and light-gray soils, extending about a total of 39 inches. The substratum consists of yellowish brown channery silty clay mottled with light-gray, strong brown, and yellowish red soils, and extends to about 64 inches in depth (Avers et al. 1974).

2.5 Cherts

Chert is present in the Terrace deposits within the West Liberty quadrangle (Englund et al. 1967) and in the Alluvium and Terrace deposits found within the Lenox quadrangle to the east (Johnson 1962). No chert is found in the Alluvium or other formations within the Cannel City quadrangle to the south (Sable 1978), the Wrigley quadrangle to the north (Hosterman et al. 1961) or the Ezel quadrangle to the west (Pipiringos, et al. 1968).

2.6 Prehistoric Climate Conditions

The beginning of the Holocene Age, dating between 12,700 and 11,300 B.P., is believed to be associated with major and rapid warming temperatures, decreases in cloud cover, and generalized landscape instability (Delcourt 1979:270). Estimated temperature increases during this period are three times greater than later Holocene fluctuations. 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 the southern Mississippi Valley refugia during the Wisconsin advances (Delcourt and Delcourt 1981:147). The climate during the early Holocene seems considerably cooler than the modern climate, and extant species in upper altitude zones of the Allegheny Plateau reflect conditions most similar to the Canadian boreal forest region (Maxwell and Davis 1972:515-516).

Conditions at lower elevations were probably less severe and favored the transition from boreal to mixed mesophytic species. Middle Holocene (8,000 to 4,000 B.P.) climate conditions appear to have been consistently drier and warmer than twentieth century conditions (Delcourt 1979: 271; Wright 1968). The influx of westerly winds during this Hypsithermal climatic episode contributed to periods of severe moisture stress in the Prairie Peninsula and to an eastward advance of prairie vegetation (Wright 1968). Delcourt has identified Middle Holocene moisture stress along the Cumberland Plateau in Tennessee, but indicated that upland barrens did not expand appreciably as did the Midwestern prairies (Delcourt 1979:274). Changes in Archaic settlement patterns in both central and northern Missouri have been associated with possible decreases in upland resource availability during the Hypsithermal.

The earliest distinguishable Late Holocene climatic episode began circa 5,000 to 4,000 B.P. and ended around 2,800 B.P. This episode is associated with the establishment of modern deciduous forest communities in the southern highlands and increased precipitation across most of the mid-continental United States (Delcourt 1979:270; Maxwell and Davis 1972:517-519). Beginning around 2,800 B.P., warm conditions similar to the modern climate prevailed until the onset of the Neo-Boreal episode around 700 B.P. Fluctuations in this Late Holocene Pacific episode appear to have varied locally, with either increased or decreased temperatures and precipitation (Delcourt 2002). Certain fluctuations have

been associated with adaptive shifts in midwestern prehistoric subsistence and settlement systems. An example is Struever and Vickery's (1973) suggestion of a possible correlation between the onset of a cooler and moister period circa 1,600 B.P. and increased use of polygonum species (smartweed) by Late Woodland groups in the Midwest (Struever and Vickery 1973:1215-1216). Researchers have inferred warmer temperatures for the Great Plains and drier conditions for the Upper Great Lakes during this same period (1,600-1,300 B.P.) (Delcourt 2002). Other fluctuations during the Pacific episode are similarly non-uniform across the mid-continental United States; however, the interfaces of all fluctuations are generally consistent.

Local paleoecological evidence is required to determine the kinds of climatic fluctuations Woodland populations experienced during the Pacific episode. Given evidence of fluctuations elsewhere, it is most likely that changes occurred circa 1,700 B.P., 1,300 B.P., and 900 B.P., with a possible fourth change around 2,300 B.P.

Studies of historic weather patterns and tree ring data by Fritts (1971) have indicated that climatological averages are "unusually mild" when compared with seventeenth and nineteenth century trends. His study suggests that winters were generally colder, weather anomalies were more common, and severe winters were more frequent between A.D. 1602 and 1899 than after 1900. These cooler, moister conditions are associated with the Neo-Boreal episode, or Little Ice Age, which began around 700 B.P. and coincided with minor glacial advances in the northwest and Europe.

The effects of the Neo-Boreal episode, which ended during the mid- to late nineteenth century, have not been studied in detail for this region. Despite this, it appears that the area experienced less radical temperature decreases during the late Neo-Boreal than did the upper Midwest and northern Plains (Fritts 1971). Related changes in extant vegetation should therefore be more difficult to detect. It is probably safe to assume, however, that average temperatures were at least a few degrees cooler during the late Prehistoric and early Historic periods. The frequency of severe winters and average winter precipitation were probably greater as well.

2.7 Current Climate Conditions

Morgan County has a temperate climate with moderately cold winters and warm, humid summers. The average year round temperature is around 52.95 °F (U.S. Climate Data 2014). The precipitation is well distributed throughout the year with July having the most rainfall and October the least (Avers et al 1974). On average, thunderstorms occur about 46 days each year, and the average annual precipitation is around 44 inches.

2.8 Prehistoric and Present Flora and Fauna

The archaeological APE area is included in the Western Mesophytic Forest Region, which is transitional between the extremely diverse Mixed Mesophytic Forest of the Appalachian Mountains and the Tall-Grass Prairies of the Midwest. The Western Mesophytic Forest contains a wide variety of vegetation climaxes and subclimaxes throughout its range, with oak and hickory as the dominant species. Trees commonly occurring in the archaeological APE area include chinquapin, red oak, water maple, honey locust, elm, black cherry, hackberry, Kentucky coffeetree, walnut, shagbark and butternut hickory, basswood, sycamore, box elder, willow, and cedar. Common shrubs include sumac, blackberry, poison ivy, Virginia creeper, pawpaw, spicebush, plum, hornbeam, redbud, wild grape, and buckberry. Some of the common native herbaceous plants are ironwood, milkweed, cane, nettle, white snakeroot, bloodroot, spring beauty, trillium, violets, cardinal flower, wild strawberry, goldenrod, and May apple.

These forest communities have produced and supported a wide variety of animals, such as white-tailed deer, red fox, raccoon, squirrel, rabbit, groundhog, other mammal species, birds, reptiles, amphibians, fish, and mollusks (Barbour and Davis 1974; Esarey et al 1992: 4). During prehistoric times white-tailed deer was by far and away the most important animal resource. Other species were also exploited, including turkey, fish, waterfowl, and mollusks (Fenton et al. 1996).

The archaeological APE area is located in the Ohio/Kentucky Carboniferous Plateau (Woods et al. 2002). It is described as a mixed mesophytic forest of woodland, pastureland, and cropland. It is a mixed deciduous–evergreen forests characterized by oaks and pines. The typical vegetation found on slopes include mixed oak and oak–pine forests variously dominated by white oak, black oak, yellow-poplar, red maple, scarlet oak, Virginia pine, shortleaf pine, white pine, and northern red oak. Yellow-poplar, black walnut, white oak, white pine, black walnut, buckeye, northern red oak, sugar maple, and eastern hemlock are found on well-drained bottoms, terraces, footslopes, and in coves. The vegetative cover on poorly-drained bottoms includes forests dominated by pin oak, cottonwood, sweetgum, red maple, sycamore, hackberry, and slippery elm (Woods et al. 2002).

2.9 Current Land Use

Present land use for the Archaeological APE includes agricultural areas, roadway, creek beds, scrub and brush areas, and residential areas. Figure 2-6 through Figure 2-11 illustrate the current land use for the APE.

Figure 2-6. Creek Areas within the Project Area.

Figure 2-7. Agricultural Areas inside the Project Area.

Figure 2-8. Scrub, Weeds, Briars and Dirt Road within the Project Area.

Figure 2-9. Scrub, Weeds, and Briars within the Project Area.

Figure 2-10. Bulldozed and Graded Area within the Project Area.

Figure 2-11. Residential Yard and Home within the Project Area.

Section 3 -

Cultural Context, Previous Investigation, and Summary of Known Sites

In this chapter, the culture history of Morgan County and this region of Kentucky are reviewed. The research methodology used to develop this background and context involved archival research at the Office of State Archaeology, and research at the University of Kentucky's various libraries. Included within the culture history section are reviews of the known prehistory from the State Plan for this part of the Commonwealth (Applegate 2008; Jefferies 2008; Maggard and Stackelbeck 2008; and Pollack 2008) followed by a consideration of the major historic time periods and sub periods (McBride and McBride 2008). This general review of the culture history of the region is followed by a synopsis of the cultural resource management recommendations for sites already documented within the archaeological APE and within two km of it. These recommendations are in accordance with the Kentucky Heritage Council specifications (Sanders 2006).

The prehistoric cultural chronology of Kentucky is divided into a series of periods that generally correspond to major shifts in subsistence procurement strategies, social organization, technology, and settlement patterning. They are also linked to distinct material cultural styles, particularly in projectile point shapes and (in later times) ceramic vessel form and decoration. These periods form a convenient framework for the discussion of human societies in eastern North America.

Since the Late Pleistocene, humans have occupied all areas of the continental U.S., adapting to the regionally diverse ecosystems and the long-term changes brought about by human occupation. Only the past 500 years is historically documented in any fashion; most of the past 15,000 years can be documented only by the study of prehistoric sites. This period of prehistory is commonly divided into four major chronological periods, which are discussed below.

3.1 Prehistoric Period

This section examines general prehistory of the archaeological APE area. The prehistory of the archaeological APE area can be usefully divided into four major periods – Paleo-Indian, Archaic, Woodland, and Late Prehistoric. Each of these periods is discussed below.

3.1.1 Paleoindian Period

The Paleoindian period's beginning is uncertain, but recent discoveries have pushed the date to at least 1,000 years before the earliest Clovis site date, and the period continues to circa 8,000 B.C., coinciding with the end of the Pleistocene and the beginning of the Holocene (Maggard and Stackelbeck 2008). The Monte Verde Site, located in southern Chile, puts humans in South America by at least 11,000 B.C. (Dillehay 1997, 1989; Meltzer et al. 1997), suggesting that initial entry into North America would be around 14,000 to 15,000 years ago. Within the last two decades, the Clovis-first theory of a homogeneous 'founder' culture has been questioned. The theory points to a common culture colonizing the New World, resulting in similarities of archaeological expressions and human physiology. However, biological, skeletal, linguistic, and genetic studies do not support this theory, but instead imply that a range of diversity existed (Maggard and Stackelbeck 2008)

The earliest documented inhabitants of the continental U.S. crossed from Asia sometime before 13,000 B.C. However, the colonization of North and South America most likely varied in the rate of exploration and expansion, and may have consisted of multiple and separate migrations. These migrations may have involved various cultural groups, who may or may not have originated from different geographic regions (Bonnichsen and Turnmire 1999; Bryan 1991; Dixon 1999; Gruhn 1987, 2004; Maggard and Stackelbeck 2008; Merriwether 2002; Schurr 2004). The adaptation to a new climate and ecological condition would likely produce cultural variability as seen at the Nenona complex of Alaska, the Western-stemmed Tradition of the Great Basin and Columbia Plateau, and maritime-focused coastal California sites (Maggard and Stackelbeck 2008). The above listed cultures are distinctly different than the traditional characterization of Clovis in their economic practices and technological traditions (Maggard and Stackelbeck 2009).

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 Great Lakes Stadial (after 9,900 B.C.), occurred. Although the glaciers never actually extended south of the Ohio River, the climatic effects were felt. A cooler, moister climate affected the composition and distribution of floral and faunal communities (Delcourt and Delcourt 1982; Klippel and Parmalee 1982).

The Clovis phenomenon may not have been the initial migration into the New World, but remains significant in how rapidly the people, technology, and/or economy spread across North America (Anderson et al. 1996; Meltzer 2002; Maggard and Stackelbeck 2008)

The Paleoindian period is poorly understood in Kentucky and in the Southeast as a whole. Much of the information concerning Paleoindian subsistence, settlement patterns, and chronology comes from information outside of Kentucky because dated Paleoindian material in Kentucky is limited. Twelve Paleoindian sites have been recorded for the Upper Kentucky/Licking Management Area by 2008 (Maggard and Stackelbeck 2008).

3.1.1.1 The Early Paleoindian: Pre-Clovis

The Pre-Clovis period dates from sometime before 13,000 B.C. to 9,500 B.C. In Kentucky, no sites from this time frame have been recovered, but several sites near Kentucky have reported cultural material in depositional contexts located stratigraphically below a Clovis layer. Cactus Hill is a stratified, multi-component site, located on a coastal plain of Southeastern Virginia. The site has a well-defined Clovis layer with fluted points, other tools, a hearth feature, and a radiocarbon date of ca. 8,900 B.C. Beneath the Clovis layer, several clusters of small quartzite flakes, small prismatic blades, blade cores, and retouched flakes were recovered. The quartzite came from locally-available cobbles. A charcoal concentration gave a radiocarbon age of 13,120 B.C. (15,070±70 B.P.), and soil samples collected yielded dates of 14,720 B.C. (16,670±730 B.P.) and 14,990 B.C. (16,940±50 B.P) (Maggard and Stackelbeck 2008; McAvoy and McAvoy 1997; Wagner and McAvoy 2004).

Meadowcroft Rockshelter is another example of pre-Clovis deposits. The site overlooks a tributary of the upper Ohio River, and consisted of stratified and multicomponent deposits that span the Late Pleistocene and Holocene (Adovasio et al. 1980, 1990, 1999; Adovasio and Pedler 2004; Maggard and Stackelbeck 2008). An unfluted, lanceolate-shaped projectile point was found from the lower levels of the shelter and was dated to 10,800-9.300 B.C. Small prismatic blades were also found in these lower strata. However, the site is controversial due to possible particulate and/or soluble contaminants in the lower deposits (Haynes 1980, 1987; Maggard and Stackelbeck 2008; Tankersley et al. 1987; Tankersley and Munson 1992).

Traditional time frames have recently been questioned, and although little is known about the pre-Clovis period, more attention will now be paid to layers beneath Clovis deposits. As a result, a better understanding of the pre-Clovis period will be possible.

3.1.1.2 The Early Paleoindian: Clovis

The Clovis culture dates from ca. 9,500 B.C. to 8,800 B.C., and is widely documented throughout North America and Kentucky (Anderson et al. 1996; Haynes 2002; Maggard and Stackelbeck 2008; Tankersley 1990a). Clovis projectile points are the hallmarks of the early part of the Paleoindian period. The hafted bifaces are distinctively lanceolate-shaped and often fluted. In addition to the Clovis point, unifacially and bifacially chipped tools such as knives, scrapers, spokeshaves, end scrapers with spurs, drills, and gravers have also been recovered (Boldurian and Cotter 1999; Frison 1999; Haynes 2002; Maggard and Stackelbeck 2008; Sanders 1990; Stanford 1999). Clovis points were multifunctional and often displayed resharpening along the distal margins of the blade (Boldurian and Cotter 1999; Kay 1996; Maggard and Stackelbeck 2008; Ray 2003). Archaeologists infer that tools of wood, bone, and shell were used, although their preservation is rare in the archaeological record. A number of these tools were manufactured for the killing and butchering of extinct fauna, including megafauna. For instance, at the Adams Mastodon site in Harrison County, Kentucky, the remains of a single mastodon were found in association with large limestone slabs and cut marks on the bones. The configuration of the skeletal remains, in addition to the above evidence, has been interpreted as possible human butchering (Duffield and Boisvert 1983; Walters 1988).

Most sites within Kentucky are short-lived, small occupations, occurring in shallow, deflated, or disturbed deposits, producing a low density of artifacts (Freeman and Smith 1996: 402; Maggard and Stackelbeck 2008). These small sites could represent short-term habitations that may have been used for various activities, such as temporary use sites and kill/butchering sites. The Adams Mastodon Site (15HR14), Big Bone Lick (15BE18, 15BE269-272), and Clay's Ferry Crevice (15FA163) site may all be kill/butchering sites, but no Early Paleoindian artifacts have been associated with Pleistocene faunal remains (Haag 2004; Lowthert 1998; Maggard and Stackelbeck 2008; Tankersley 1996; Walters 1988). Clovis period sites in Kentucky tend to cluster near terraces along major stream confluences, around karstic features (sinkholes and sinkponds), and near outcrops of high quality lithic raw material. In addition, studies in Marion and Washington counties show a preference for upland and headwater locations. In western Kentucky, sites have been proposed to be 'staging areas' for exploration and settlement of other nearby areas (Anderson 1990). The Christian County quarry/habitation sites of the Little River complex seem to uphold this theory, but these sites are very different from other sites in Kentucky (Maggard and Stackelbeck 2008: 121). Clovis groups are believed to be highly mobile, and therefore, the varying location of Kentucky sites should be expected.

The Clovis groups are characterized as big game hunters (Kelly and Todd 1988; Maggard and Stackelbeck 2008; Tankersley 1990b, 1996), but no kill/butchering sites in Kentucky are certain. However, preservation of Pleistocene bones may have been poor in eastern North America (Dincauze 1993; Maggard and Stackelbeck 2008). Big game was exploited at the Kimmswick site in Missouri and the Coats-Hines site in Tennessee (Breitburg et al. 1996; Graham et al. 1981). However, the diverse local environment of eastern Northern America may have provided a foraging strategy that consisted of a wider range of options (Dincauze 1993; Maggard and Stackelbeck 2008; Meltzer 1993; Walker and Driskell 2007). At the Kimmswick site, small mammals, fish, reptiles, and birds were all exploited along with big game (Graham et al. 1981; Graham and Kay 1988; Maggard and Stackelbeck 2008). In fact, the overall Clovis subsistence strategy appears to rely less on big game and more on a variety of

subsistence choices (Cannon and Meltzer 2004; Collins 2007; Kornfield 2007; Maggard and Stackelbeck 2008; Meltzer 1993).

The Clovis period is poorly understood in Kentucky with few sites having intact deposits. The Clovis occupation appears dense and widespread, but little is known about the timing, range of site types, or subsistence strategies (Maggard and Stackelbeck 2008). Tankersley (1996) suggests that Paleo occupations occur as isolated hafted bifaces within multicomponent sites. Larger sites are associated with areas that have access to quality lithic raw material or resources that would attract game, such as mineral springs, slow moving water, and at stream confluences and fords (King 2002:15; Freeman and Smith 1996; 402).

3.1.1.3 The Middle Paleoindian

The Middle Paleoindian phase ranges from ca. 9,000 B.C. to 8,500 B.C., and was a time of great climatic change, leading to the extinction of most species of Pleistocene mega-fauna (Anderson et al. 1996; Delcourt and Delcourt 1981; Grayson 1987; McWheeney 2007; Maggard and Stackelbeck 2008; Morse et al. 1996). The change in the environment lead to a more intense reliance on small game and locally available plant sources (Walker 2007). The Middle paleoindian lithic toolkits reflect this subsistence change in the wider range of tool types, such as limaces, spurred end scrapers, and a wide selection of flake tools. In addition, the toolkits relied more on local sources of chert, often of a lower quality. The increase in the utilization of local materials could represent a more settled lifestyle.

During the Middle paleoindian phase, a shift from direct to indirect percussion in fluting technology has also been noted (Maggard and Stackelbeck 2008; Morrow 1996; Ray 2003). The Cumberland and Gainey points emerged during this period. Gainey points, although similar to Clovis points, are thinner and have deeper basal concavities. Often, the distal end of the blade has been resharpened. Cumberland points, also similar to Clovis points, are usually longer and narrower with lateral proximal edges that expand slightly, giving it a 'fishtail-like' appearance (Justice 1987; Ray 2003; Tankersley 1996). Cumberland points were also often resharpened (Maggard and Stackelbeck 2008; Ray 2003).

Within Kentucky, Middle Paleoindian sites have a wider distribution than Clovis (Tankersley 1996). Sites have been recorded in the floodplain/terrace settings of the Purchase Management Area, in the Knobs region of the Salt River Management Area, and the uplands of the Upper Cumberland Management Area. Little is known about the Middle Paleoindian period in Kentucky. No sites have produced a radiocarbon date in direct association with diagnostic artifacts within Kentucky.

3.1.1.4 The Late Paleoindian

The Late Paleoindian period dates to ca. 8,500 to 8,000 B.C. During this period, the usage of local raw materials continues to be evident, with the overall quality of the chert material continuing to decrease (Maggard and Stackelbeck 2008). In addition, basal thinning replaces channel fluting, and the overall size of projectile points is reduced (Ray 2003). The toolkit is even more diverse than that of the Middle Paleoindian period. It includes beveled and backed bifaces, unifacial and flake scrapers, adzes, retouched flakes, and drills/perforators (Goodyear 1999; Maggard and Stackelbeck 2008; Morse 1997; Tankersley 1996).

The bifacially-flaked, lanceolate forms associated with the late Paleoindian period lack the characteristic flutes seen in the Early and Middle periods (Ray 2003; Tankersley 1996). At Kentucky sites, two stylistic clusters exist, Lanceolate Plano and Dalton, with the Lanceolate Plano being less common (Justice 1987; Ray 2003). The Dalton cluster includes the Beaver Lake, Quad, and the classic

Dalton types (Justice 1987). The possibility of a migration from the west into Kentucky has been suggested based on similarities between Kentucky Lanceolate projectile points and those documented in the Plains (Frison 1999; Stanford 1999; Wormington 1957).

Dalton cluster points are often identified by a 'fish-like' appearance, exhibiting extensive and even beveled resharpening above the haft element (Ray 2003; Tankersley 1996). The Beaver Lake types, though similar to Cumberland points, are shorter and narrower with the absence of flutes (Ray 2003). Quad points also demonstrate a 'fish-like' shape, but are short and wide and have basal ears that usually project from the widest section of the point (Ray 2003). In Kentucky, quad points range in length from 4.1 to 8.6 cm.

The Dalton type often demonstrates a serrated or right-handed beveled blade edge, but a large variation is found often due to resharpening (Ray 2003). Eventually, these points may reach a stage where they are converted into different tools. In Kentucky, Dalton point types range from 3.1 to 8.5 cm in length (Maggard and Stackelbeck 2008).

The Paleoindian phase continued to experience a vastly changing environment as seen in the Middle Paleoindian phase. Kentucky's spruce and jack pine parklands were replaced with mixed hardwood forests (Delcourt and Delcourt 1981). Mammoth, mastodon, horses, moose/elk, and other large herbivores became extinct. As a result, the shift towards a more varied subsistence strategy continued. At Dust Cave in Alabama, various nut species and animals were exploited within a Late Paleoindian component (Hollenbach 2007; Maggard and Stackelbeck 2008; Walker 2007; Walker and Driskell 2007). Across eastern North America, evidence exists that supports this change in subsistence strategies, from a big game emphasis to a broader foraging strategy. It is likely that such a change would lead to a less mobile lifestyle (Tankersley 1996). However, the change in subsistence could just be the result of regionalization, as groups began to settle into their environment, and begin to demonstrate characteristics common to certain regions (Maggard and Stackelbeck 2008).

3.1.2 Archaic Period

The Archaic period includes a long span of time during which important cultural changes took place. Because of the growing evidence for the existence of such transitional cultural manifestations, it is agreed generally that Archaic cultures evolved from late Paleoindian expressions of the Southeast and Midwest (Funk 1978:19). These manifestations probably occurred in response to environmental changes that took place at the close of the Pleistocene. The Archaic period is customarily divided into three sub-periods: Early (8,000-6,000 B.C.); Middle (6,000-3,000 B.C.); and Late (3,000-1,000 B.C.). Nevertheless, it is important to keep in mind that archaeologists often differ in opinion about these temporal boundaries, and they are best used only for general comparative purposes (Jefferies 2008).

During the Early Archaic, the last glaciers retreated and the arctic-like boreal forest began developing into the eastern deciduous forest. By the Middle Archaic, the environment was warmer and drier than it is today. In response to the changing climate and associated changes in plant and animal life, Late Archaic peoples developed a more diversified subsistence strategy. This included hunting, plant food gathering, fishing, and- in some areas- the beginnings of plant domestication in a planned seasonal round exploitation strategy. Caldwell (1958:6-18) has called this Archaic subsistence approach "primary forest efficiency." This strategy appears to have been a continuation of what had begun in the Middle and Late Paleoindian phase, and then continued well into the Woodland period.

As of mid-2006, Kentucky had recorded 4,703 Archaic components with the majority (seventy percent) concentrated in the Green River, Salt River, and Bluegrass Management Areas (Jefferies

2008). In contrast, little is known about Archaic presence in the Upper Kentucky/Licking, Big Sandy, and Upper Cumberland Management Areas. As of 2008, 359 Archaic period sites had been identified in the Upper Kentucky/Licking Management Area (Jefferies 2008:214).

3.1.2.1 The Early Archaic Period

The limited amount of Early Archaic material found at most sites and the general absence of middens, features, and burials, suggests that most occupations were of short duration. Early Archaic social units were small, probably consisting of bands comprised of related individuals. The relatively high percentage of projectile points in Early Archaic assemblages made from non-local cherts suggests that social groups were highly mobile. Items manufactured from non-local chert would have been incorporated into tool kits when groups traveled near the source areas. Some tools manufactured from certain kinds of high quality chert were used and curated for an extended period of time and later discarded far from the source area (Binford 1979; Jefferies 1990:151; 2008).

According to Jefferies (2008), except for the adoption of new projectile point styles, Early Archaic tool kits are nearly identical to those of the Paleoindians. The scarcity of tools associated with the preparation of plant foods and fishing in the early part of the Archaic indicates that hunting was probably still the major subsistence activity (Dragoo 1976:II).

Archaeological investigations at a number of deeply buried sites in the Southeast, like the Longworth-Gick Site near Louisville, Kentucky (Collins 1979), have provided important information on Archaic lifeways and their changes through time. Excavations in western Kentucky, southern Illinois, and southern Indiana have refined our understanding of regional Early Archaic chronology, settlement-subsistence strategies, and social organization (Smith 1994, Swan's Landing site [12HR304]; Smith and Mocas 1995, Paddy's West [12FL46]; Stafford and Cantin 2008, James Farnsley site [12HR520] at Caesar's Palace; Wagner and Butler 2000, Hills Branch Rock Shelter) (Jefferies 2008).

The Longworth-Gick Site identified eight stratified Early Archaic components, recovering early archaic material from Zone III to Zone XIII, possibly Zone XXXVII (Collins 1979; Jefferies 1990, 2008). Small varieties of Kirk projectile points (7,540±230 B.C and 6,490±380 B.C.) were recovered from Zones XIII through VII, and Large Kirks (6,490±125 B.C.) were recovered from Zone V. Zone III contained LeCroy and Kanawha bifurcate base projectile points (6470±110 B.C.). The site appears to have been occupied for brief periods, most likely due to flooding. The most intensive period occurred during the Kirk (Zone VI and V) and the Bifurcate Base (Zone III) zones.

3.1.2.2 The Middle Archaic Period

The environment during the Middle Archaic sub-period was dryer and warmer than modern conditions. By the beginning of the Middle Archaic period, environmental remnants of the Pleistocene had disappeared and animal and plant communities more closely resembled those present at the time of European-American contact. Pollen records from some parts of the region indicate that drier climatic conditions associated with the Hypsithermal interval reached their maximum around 6,500 B.P. (King and Allen 1977). The subsequent reduction of arboreal communities and the influx of grass and herb communities appear to have affected Middle Archaic settlement and population distributions (Conaty 1985; Janzen 1977; Jefferies 1983; Nance 1985).

Increasing regionalization of artifact inventories and the addition of new artifact classes and projectile point styles implies the development of extensive 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, such as manos, mortars and pestles, and nutting

stones, are interpreted as plant food processing artifacts, indicating an increasing utilization of plant food resources during the Middle Archaic.

Little is understood about the Middle Archaic subsistence strategies in Kentucky, but white-tailed deer and wild turkey are both widely regarded among scholars as important sources of meat during that sub-period. Within nearby states, a subsistence strategy that included hunting a variety of animals existed, which likely is true for Kentucky's Middle Archaic residents. In addition, a variety of nuts, especially the hickory nut, along with fruits, starchy seeds, and a wide range of plant resources were exploited during this period (Jefferies 2008).

New projectile point styles appeared during this sub-period, such as stemmed and corner notched points. The presence of a variety of bone tools, including antler projectile points, fishhooks, and gouges, suggests an improved efficiency in exploiting local resources. Middle Archaic sites tend to contain larger accumulations of materials than those of earlier periods, suggesting an increased group size and/or longer periods of occupation (Cohen 1977:191). Chapman (1975) has suggested that projectile points were probably used in conjunction with the atlatl, a device that increases the distance and accuracy of a thrown spear. The recovery of bone and groundstone objects (banner-stones) in Middle Archaic contexts that are interpreted as atlatl weights tends to support this 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 as seen in earlier periods.

High group mobility, like that of the Early Archaic period, is suggested by the ephemeral nature of most early Middle Archaic occupations (Jefferies et al. 2005; 2008). However, the difficulty in identifying diagnostic projectile points may explain the lack of early Middle Archaic components (Stafford and Cantin 2008). Late Middle Archaic sites tend to contain deep middens, a high diversity of tool types, and burials, suggesting the sites were intensively occupied on a long-term or year-round basis (Conaty 1985; Janzen 1977; Jefferies 1983; 2008; Jefferies et al. 2005; Nance 1985; Stafford 1994).

Major Middle Archaic sites include Highland Creek (Maggard and Pollack 2006) and Morrisroe (Nance 1985) in Kentucky; Eva (Lewis and Lewis 1961), Anderson (Dowd 1989) and Icehouse Bottom in Tennessee (Chapman 1997); Black Earth (Jefferies and Lynch 1983), Koster (Cook 1976) and Modoc Rock Shelter (Fowler 1959; Styles et al. 1983) in Illinois; and several sites in the North Carolina piedmont (Coe 1964). In eastern and central Kentucky, Middle Archaic adaptation is very similar to Early Archaic. However, in the Green River area, a decrease in hunter-gatherer mobility and longer occupations seem to be the trend.

In the Falls of the Ohio River region, Granger's (1988) investigation of Archaic settlement patterns resulted in the definition of the late Middle Archaic Old Clarksville (4,000-3,000 B.C.) and the Terminal Archaic Lone Hill (2,400-1,200 B.C.) phases. Additional data supporting Granger's work includes the following: KYANG (Kentucky National Guard) (15JF267), McNeeley Lake (15JF200), and Mill Creek Station (15JF206) (Bader 1992; Bader and Granger 1989; Granger et al. 1992; Janzen 1977; Kreinbrink 2008). The KYANG site, located on a knoll overlooking a former marsh and sluggish stream, revealed two distinct midden zones, the upper with a Lone Hill phase and the lower with an Old Clarksville phase (Bader and Granger 1989). The Old Clarksville phase contained 32 flexed burials with numerous grave goods, including engraved bone pins; bear, dear and wolf tooth necklaces; red ochre; and an assortment of chert implements. Side-notched specimens, such as Big Sandy, Salt River Side Notched, and Brewerton types, were recovered, and a radiocarbon date put the occupation at ca. 3,060 B.C. (Bader and Granger 1989; Jefferies 2008).

In the middle Ohio Valley there appears to be at least two Middle Archaic horizons, although the second is not particularly well documented. The first is the North Carolina sequence, first defined by Coe (1964). The second Middle Archaic manifestation is represented by corner- notched and side-notched Brewerton-like points, which are typically thought of as Late Archaic points, but they may well have first appeared during the Middle Archaic (Hemmings 1977, 1985; Wilkins 1978).

3.1.2.3 The Late Archaic Period

The Late Archaic 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 projectile point types characterize the Late Archaic. Judging from the greater number of sites that have been recorded, an increase in population can be postulated. Evidence of longer and more intensive site occupation suggests, in some cases, extended habitation within an area.

Aside from hickory nuts, a variety of other nuts, fruits, and seeds were exploited. The increased dietary significance of certain starchy seeds, such as goosefoot, marshelder, and knotweed, has been noted in the Eastern Woodlands (Cowan 1985:229-230). These seasonally available food resources were exploited at appropriate times during the social group's annual settlement/subsistence cycle. Group organization and movement were structured to efficiently accomplish these tasks. The occasional presence of native and tropical cultigens at some sites suggests that some Late Archaic groups were experimenting with horticulture (Chomko and Crawford 1978; Cowan et al. 1981; Watson 1985).

Population increase and, in some parts of Kentucky, an inferred 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 Carlson Annis (Webb 1950) contain hundreds of human burials and evidence of complex mortuary practices and rich ceremonial life. The development of inter-regional trading networks is indicated by the recovery of copper, marine shell, and other non-local 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 use of these plants as subsistence resources. Evidence of early cultigens has been documented at such sites as Koster in central Illinois (Brown 1977:168), at the Carlson Annis and Bowles sites along the Green River in west-central Kentucky (Marquardt and Watson 1976:17), and at Cloudsplitter shelter in Menifee County (Cowan et al. 1981).

Struever and Vickery (1973) have defined two plant complexes domesticated at the close of the Archaic, which continued in use into the Woodland period. One consisted of non-native plants such as gourd and squash, occurring sporadically but early, and corn, which did not become important in the Ohio Valley until circa A.D. 1000. The other was a group of native plants, such as Chenopodium, marsh elder, and sunflower. Recent research in Missouri, Kentucky, and Tennessee suggests that squash was under cultivation in the mid-south by the late third millennium B.C. (Adovasio and Johnson 1981:74), and that by the second half of the second millennium B.C., evidence from Illinois, Kentucky, and Tennessee demonstrates that squash, gourd, and sunflower were well established (Adovasio and Johnson 1981:74), although some view these plants as two different groups of cultigens: the East Mexican Agricultural complex and the Eastern United States Agricultural complex. The latter includes

sunflower (Helianthus annuus), sumpweed (Iva annua), chenopod (Chenopodium sp.), may grass (Phalaris sp.), and knotweed (Polygonum sp.). The East Mexican Agricultural complex includes squash (Curcurbita pepo), bottle gourd (Lagenaria siceraria), and maize (Zea mays). Watson (1976), 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 and then up the Mississippi River and its tributaries. The native cultigens consist of local species whose seeds recovered from archaeological contexts are much larger than those which grow in a natural state; hence, cultivation is inferred.

Plant domestication was an important factor in Late Archaic cultural development. Research at Cloudsplitter shelter has documented early plant domestication. Desiccated squash rind was found in a Late Archaic deposit associated with a radiocarbon date of 3728 +/- 80 B.P. (1778+/- 80 B.C.) (UCA 2313- K) (Cowan et al. 1981:71). Seeds of the Eastern Agricultural complex (sunflower, sumpweed, may grass, and erect knotweed) are sparse in the Late Archaic levels in the site, but after 3000 B.P. (1050 B.C.), all members of the Eastern Agricultural complex underwent a sudden and dramatic increase in the rate at which they were being deposited in the site, perhaps indicative of a wholesale introduction of the complex into the region at this time. The Late Archaic and Early Woodland inhabitants of Cloudsplitter seem to have followed a similar trajectory in cultivated plant usage experienced in several other river drainages in the East (Cowan et al. 1981:71).

The data from Cloudsplitter suggest that squash may not have diffused into the East or Southwest from Mexico as previously postulated by Struever and Vickery (1973), but that it may have evolved in situ from North American stock (Cowan et al. 1981:71). This interpretation seems to be substantiated by more recent investigations conducted throughout the southeastern and Midwestern United States.

3.1.3 Woodland Period

Although initially there was very little difference between Late Archaic and Woodland period settlement, over the two millennia of the period, Woodland cultures in the Ohio Valley diverged sharply from their Archaic beginning. Kentucky shared in this development that produced burial mounds and earthwork enclosures, some of the more notable prehistoric monuments in the Ohio Valley of Kentucky. These went along with intensification in the earlier efforts at plant domestication present in the Archaic period, the development of fired clay ceramic containers (first used as ceremonial containers, later used more widely), and the intensification of trade with distant regions of the Midwest in materials used specifically as burial offerings.

The Woodland period is customarily divided into Early (1000 B.C. – 300 B.C.), Middle (300 B.C. – A.D. 400), and Late (A.D. 400 – A.D. 1000) sub-periods. Of these, the Early Woodland is the least known, but reflects its Archaic origins. During the Middle Woodland, Kentucky was characterized by large burial mounds and earthwork complexes that are termed “Adena” and have counterparts north of the Ohio River. Towards the end of this sub-period, a few sites reflect the Hopewellian cultural fluorescence, best known again from Ohio in the major earthworks of the Scioto valley. During the Late Woodland, a distinctive cultural adaptation developed with similar variants throughout the Middle Ohio River valley.

In Kentucky, the introduction of shell tempered pottery and maize-based field agriculture characterized the upper boundary of the Woodland period. The adoption of pottery technology occurred between cal 1606 and 802 B.C. in the Salt River Management Section, cal 1258-829 B.C. in the eastern Ohio River II Section, and cal 1432-950 B.C. in the Southeastern Mountains Section

(Applegate 2008). Few analyses of Woodland pottery have occurred within the Gorge Section of the Upper Kentucky/Licking Management Area, and most have not been assigned to specific types (Applegate 2008).

The Office of State Archaeology records indicate that 2,920 Woodland period sites are documented in Kentucky. Three hundred and thirty-two Woodland sites are in the Upper Kentucky/Licking Management Area (Applegate 2008).

3.1.3.1 Early Woodland

Variation exists in accepted beginning and ending dates for the Early Woodland sub period throughout regions of Kentucky. In the Mississippi River, Northern Bluegrass, and Lower Big Sandy sections, Kreisa and Stout (1991), Duerksen et al. (1994, 1995), and O'Steen et al. (1991) determined that the sub period dated between 1000-200 B.C. In the Ohio River II Section, deNeeve (2004) placed the dates at 1000-150 B.C. The Central Bluegrass was dated to 1000 B.C.-A.D. 1 (Schlarb 2005), and the Gorge and Lower Big Sandy sections ranged between 800-200 B.C. (Gremillion 1993, 1998; Ison 1988; Applegate 2008; O'Steen et al. 1991; Railey 1991).

Pottery technology, the hallmark of the Early Woodland sub period, surfaced at different times across Kentucky. In fact, some Early Woodland sites are without pottery while some Late Archaic sites do have pottery technology. The impact of pottery on cultural adaptations varied as well. In rugged terrains, such as portions of the Upper Green River Section, pottery would hinder travel while baskets and squash/gourd containers were a more practical option (Carstens 1996:10; Applegate 2008).

Another technological change during the Early Woodland sub period included a shift from chipped stone end scrapers to bone beamers, and a shift from grooved axes to ungrooved celts (Applegate 2008). A celt requires less maintenance than a grooved axe which needs to be continuously relashed. The ungrooved celt and bone beamer remained in use until the Historic period.

Other groundstone tools utilized during the Early Woodland sub period did not deviate from those used in previous periods. Pestles, nutting stones, atlatl weights, and hammerstones all continued to serve a purpose (Applegate 2008). Bone and shell also were used by Early Woodland groups as seen in bone awls, flakers, reamers, handles, bowls, shell spoons, scrapers, beads, and gorgets (Applegate 2008).

In Kentucky, the earliest textiles were recovered from Terminal Archaic to the Early Woodland sites. The textiles were located in caves and rockshelters in the Upper Green River and Gorge sections. A variety of clothing, foot wear, and bags were woven during this sub period (Applegate 2008).

Trade networks had existed since the Late Archaic, but towards the end of the Early Woodland, an increase in the frequency of copper, mica, and exotic cherts was recorded.

Subsistence strategies did not differ much from previous periods, with hunting and gathering being the focus. Garden products also were a part of their diet, and an increase in cultivation of weedy plants and cucurbits developed. Deer, box turtle, small mammals, birds, fish, and mussels were all consumed.

Projectile points that mark this sub-period are dominated by notched and stemmed forms including Kramer, Wade, Savannah River, Adena, and Turkey-tail. While the majority of these point types date the early portion of the Early Woodland, the Adena point type is more common towards the end of the sub-period (Railey 1990:250).

Early Woodland populations tended to live in upland, ridge top, floodplain, rockshelters, and cave vestibules. Rockshelters were used in eastern and western Kentucky. Cave exploration and mineral mining, which began in the Late Archaic, intensified during the Early Woodland. As documented at Mammoth and Salts cave, gypsum, mirabilite, and epsomite were all mined from caves. Mining has been documented in the Upper Green River, Pennyroyal, and Lake Cumberland sections (Applegate 2008).

Some of the earliest known Early Woodland sites in Kentucky and in the Ohio Valley include Peter Village in Fayette County (Clay 1984, 1985, 1987) and the West Runway site in Boone County (Duerksen et al. 1995). Quite different sites, Peter Village was an enclosure first surrounded by a post stockade, later by a ditch and internal bank, while the West Runway site was a campsite with multiple hearths, suggesting a series of short-term occupations. Radiocarbon dates place the occupation of West Runway possibly as early as 600 B.C. and Peter Village at about 350-400 B.C. While West Runway, in the types of features and their clustering in this upland location, is not that different from a Late Archaic site, the Peter Village enclosure marks a sharp break with Archaic settlement systems.

At both sites, that hallmark of the Woodland period occurs: thick and relatively crude ceramics representing quite large containers. First called Fayette Thick pottery from its occurrence at the Peter Village site (Griffin 1943), the pottery occurs widely, though sparsely, across central and eastern Kentucky (cf. Clay 1980) with some variation suggesting different pottery-making groups. The type even occurs in small and early burial mounds, for example the Hartman mound in Boone County (Webb 1943) where it may date to ca. 400 B.C. At the Peter Village enclosure, it is hypothesized by Clay (1987) that groups gathered to mine a source of barite and galena that was then fashioned into pigments and objects for personal use and for trading with other groups. The large ceramic vessels represented at the site may have been “feast containers” made to serve large work crews on the spot. The occurrence of thick pottery at the Hartman burial mound suggests also that the pots may have been made to serve funeral parties during the course of burial ceremonies, the first indication of customs that would become common in the Middle Woodland.

3.1.3.2 Middle Woodland

In most parts of the Southeast and Midwest, the development of Hopewell is a distinguishing difference between the Early and Middle Woodland sub periods. However, in Kentucky, Hopewell does not have a deep effect on Woodland populations, and as a result, considerable continuity exists between the Early and Middle sub periods (Applegate 2008). In addition, regions within Kentucky seem to differ with the beginning and ending dates for the Middle Woodland as did the Early Woodland. In the Mississippi River Section, Kreisa and Stout (1991) set the sub period at 200 B.C.-A.D. 400, and in the Ohio River II Section, deNeeve (2004) gives the sub period at 150 B.C.-A.D. 500. The Central Bluegrass Section has been given ranges of 400 B.C.-A.D. 400 and A.D. 1-500 (Richmond and Kerr 2005; Schlarb 2005). Gremillion (1993) gave the Middle Woodland sub period in the Gorge Section a range from 300 B.C.-A.D. 500.

In the Bluegrass, Upper Kentucky/Licking, and Big Sandy areas, ceramic vessels tend to have plain exterior surfaces during the early Middle Archaic. Cordmarked, cord-wrapped dowel-impressed, or fabric-impressed exterior surfaces are common in the Purchase, Green River, and Upper Cumberland areas (Applegate 2008). In the Salt River and Ohio River I Sections, sherds that exhibit Havana-like or Hopewellian decoration were documented, and southeastern stamped ceramics were found throughout the state but at low frequencies. Late Middle Woodland ceramic vessels tend to have subconoidal or subglobular jars, with outflaring, recurved, or direct rims. Jars usually have

cordmarked or plain exterior surfaces, and small quantities of simple stamped or check stamped sherds are present. Complicated stamped, brushed, or rocker stamped sherds are also found in small quantities, but are often used as indicators for the late Middle Woodland sub period.

Robbins, Motley, Gary, and Adena Stemmed (cal 88 B.C.-A.D. 239 [Dowell 1981] points area all found in both the Early and Middle Woodland sub periods. Copena and Copena Triangular, which are Triangular/Lanceolate forms, are considered diagnostic of the Middle Woodland sub period along with corner-notched forms, such as Snyders (cal 1258 B.C.-A.D. 425 [Mocas 1992]) and Affins Snyders (Applegate 2008). Late Middle Woodland contexts demonstrate expanding stemmed and shallow side notched types, such as Steuben, Bakers Creek, Lowe, and Chesser (cal A.D. 268-887 [Crane and Griffin 1966]). In addition, chert bladelets are also considered diagnostic of the Middle Woodland sub period (Applegate 2008).

In mortuary-ritual deposits, exotic raw materials continued to be used, and seemed to peak in the early Middle Woodland, but then decline again during the late Middle Woodland. These exotic raw materials included copper bracelets and breastplates/gorgets, copper and mica head ornaments, marine shell beads, and Vanport chert bladelets (Applegate 2088).

Subsistence strategies did not differ much from the Early Woodland sub period. The Middle Woodland populations continued to rely on wild foods more than cultigens. Settlement patterns saw an increase in usage of floodplain zones. Activity areas are suggested by midden deposits and feature clusters. In western Kentucky, earthworks were sometimes associated with habitation areas, and in the Lower Big Sandy, Upper Big Sandy, and the Central and Eastern Bluegrass, postmold patterns have been discovered that suggest small, single- and double-post circular and square/rectangular houses (Applegate 2008). In the Gorge Section, rockshelter occupations appear to decline. Settlement hierarchies have been noted in the Mississippi River and Ohio River II Sections.

The Middle Woodland in Kentucky is marked notably by the construction of burial mounds that have been called Adena after a site in southern Ohio (Webb and Snow 1945; Webb and Baby 1957). Major mound excavations in the region of Fischer, Drake, Mt. Horeb, Morgan Stone, Wright, Ricketts, Camargo, and many others, have given archaeologists a detailed picture of burial customs during this time period (Clay 1986). Excavations at the small Auvergne mound in Bourbon County (Clay 1983) suggest that Native Americans from a larger area came together at the time of a death to feast at graveside.

Some of the large mounds, containing multiple burials, suggest that these groups often returned to the same mound to add more burials to the structure. At times the burial mound could, like the Wright mound in Montgomery County (Webb 1940), grow to an imposing size. Although we have considerable excavated evidence for burial customs, the total settlement system is not well understood (Clay 1998:13-19). Those responsible for the burial mounds may have lived widely dispersed throughout Kentucky in relatively small groups. Seen in this light, the elaborate burial sites (mounds) offered essential foci for scattered groups where they could meet and interact. There were also small, circular enclosures called ceremonial circles of which the Mount Horeb site in Fayette County (Webb 1941) is an excavated example. Late in the Middle Woodland, hilltop enclosures were constructed, such as Indian Fort Hill near Berea, Madison County, Kentucky. Still, daily domestic sites are very poorly understood, although examples dating to the time period have been found to the south on the Cumberland Plateau (Kerr and Creasman 1998).

Several Middle Woodland mortuary-ritual sites have been documented, such as the conical burial mounds. In the Bluegrass and Big Sandy areas, these conical burial mounds date to the early Middle Woodland, but in other areas, they date to the late Middle Woodland. Stone mounds date to the late Middle Woodland. Although rare, geometric earthworks and hilltop enclosures date to the late Middle Woodland. In the Central Bluegrass, non-mound ceremonial sites without burials have been documented, such as ritualistic feasting and ceremonial plant use (Applegate 2008).

3.1.3.3 Late Woodland

Defining the temporal parameters of the Late Woodland has not been an easy task. Clear boundaries have not been identified in the archaeological record, and diagnostic ceramic and lithic attributes, although widespread, show little temporal variability within this period. As a result, the transition from Middle to Late Woodland traditions was a gradual process and not an abrupt one, since no dramatic shifts in cultural practice or in styles of tools or ceramics occurs (Pollack and Henderson 2000). Changes that did occur between the Middle and Late Woodland are probably linked to changes in plant subsistence strategies, hunting technologies, long-distance trade networks, and the degree of ritual expression (Pollack and Henderson 2000:615).

While Pollack and Henderson's study demonstrates continuity in material culture, analysis of some site data suggests that population increase or at least localized aggregation occurred, which over time may have led to a smaller number of larger settlements, or increased inter-community violence. In other words, population cycles may have impacted lifeways and contributed to some changes in subsistence, settlement organization, and the duration of a particular settlement. A recent survey of available radiocarbon-dated sites in Kentucky and adjacent parts of West Virginia reveals some trends during the Middle and Late Woodland that support (in part) a population increase, and possibly some subsequent population declines.

The above discussion has highlighted the fact that a large number of sites are assigned to the Late Woodland period, and that many have been dated. These dated sites suggest that the Late Woodland period, as Pollack and Henderson (2000) among others have suggested, can be subdivided into at least two sub-periods. This apparent division may reflect some cyclicity in population expansion, changes in subsistence, settlement re-organization, or the introduction or incorporation of new technologies- such as corn agriculture and the bow and arrow- into pre-existing cultural complexes. While these data provide a substantive framework that identifies some temporal parameters, recent syntheses- along with earlier studies of the Late Woodland period- suggest that within the region of southern Ohio, northern and central Kentucky, and extreme southern Indiana, a single cultural complex or phase was present: the Newtown tradition.

Griffin (1956:187), working on artifacts from the Turpin site in Ohio, recognized a previously undocumented cultural complex which he named "Newtown," and which he considered to post-date the Middle Woodland Hopewell tradition and to pre-date the Fort Ancient tradition in the Middle Ohio Valley. Although he could not discern the length of the period during which this Late Woodland culture flourished, he did suggest that little cultural progress was made during this period (Griffin 1952). Owing to the paucity of Late Woodland archaeological data, Griffin was unable to characterize the Newtown culture or ascertain if distinctive regional variations existed (1952, 1956).

More archaeological data has been gathered since Griffin's groundbreaking research, but considerable debate on the temporal and geographic extent of Newtown and other Late Woodland cultures still exists (e.g., Clay and Creasman 1999; Davis et al. 1997). Site assemblages throughout the region are linked by the occurrence of the ceramic complex known as Newtown Cordmarked, a type described by

McMichael (1968) in the 1960s and characterized by large jars with thickened, angular shoulders. More recent research (e.g., Pollack and Henderson 2000; Seeman and Dancey 2000) indicates that while a thickened, angular shoulder may be a characteristic of some Newtown vessels, some site assemblages are considered Newtown even though they lack ceramic vessels with this particular characteristic.

Recent archaeological investigations at several sites in the region have revealed additional traits about Newtown phase assemblages (e.g., Ahler 1988; Dancey 1988, 1991, 1992; Henderson and Pollack 1985; Kreinbrink 1992; Railey 1990). Typically, Newtown lithic assemblages are characterized by Steuben, Lowe, or Chesser notched variety projectile points (see Justice 1987), thick stone bifaces, and small, triangular, shaped celts. The ceramic assemblage includes ceramic jars with incurvate to direct rims, flattened lips, and vertical cordmarking on their outer surfaces. Personal adornment, highly developed in the preceding Middle Woodland period, was apparently limited in the Late Woodland, as Newtown assemblages are distinguished by a lack of decorative and personal ornaments. Seeman and Dancey report "...Late Woodland societies created virtually nothing that can be considered artistic..." (2000:598). The few documented artifacts showing artistic style include some stone and bone gorgets, bone pins, small mica sheets, limestone elbow pipes, and stone and shell beads.

Pollack and Henderson's recent review of the Late Woodland period in Kentucky offers current data on what the term "the Newtown phase/complex/tradition" (2000:625) means in Kentucky, while Seeman and Dancey's review of southern Ohio Late Woodland traditions incorporates discussion of some northern Kentucky sites (2000:595). Pollack and Henderson focus their study on either side of the Falls of the Ohio, which serves to demarcate two regions of Kentucky that appear to differ culturally, and which may have maintained distinct cultural traditions for a long period of time.

One of Pollack and Henderson's sub-regions is downstream of the Falls of the Ohio, and occupies the western portion of the state; the second sub-region, is upstream of the Falls and is in the eastern portion of the state. This eastern region encompasses the Middle Ohio River valley, the Central and Inner Bluegrass region, and the Knobs and mountains of Eastern Kentucky. Major rivers in the region include the Ohio, as well as its Kentucky tributaries (Kentucky, Licking, and Big Sandy), all of which are deeply entrenched with narrow flood plains. Within this region, only one cultural complex is well documented for the early Late Woodland sub period: the "Newtown phase/complex/tradition" (Pollack and Henderson 2000:625). Components associated with this phase are noted at several important Kentucky sites such as the Dreaming Creek site in Madison County, Hansen and Bentley sites in Greenup County, and the Pyles site in Mason County, as well as numerous smaller sites in the Bluegrass (e.g., Shelby Lake, Froman), and sites in the Eastern Coalfields such as Rock Bridge and Haystack rock shelters. Other Late Woodland cultural traditions (e.g., Beal's Run) in this region are only now being examined, since this period has typically been understudied (e.g., Pollack and Henderson 2000), so additional variation may be present that is only recently being documented.

Early and late Middle Woodland artifacts are very similar in most areas, but the late Middle Woodland tends to lack decorated ceramics. In Kentucky, early Late Woodland ceramics consist of subconoidal and subglobular cordmarked jars, and vessel rims are usually unmodified and lips are usually flattened and plain. Plain and cordmarked forms are common throughout Kentucky during the terminal Late Woodland sub period, but variation does exist. Pottery vessels with zones of incised geometric designs on the jar necks are found in the lower Ohio River valley. In far western Kentucky, during the terminal Late Woodland, pan-shaped vessels and red film surface treatment begins to

appear although these types are diagnostic of the Mississippian period. In the Bluegrass Management Area, vessels with angular shoulders continue to be used (Applegate 2008).

In the terminal Late Woodland sub period, the 'true arrowheads' begin to appear in Kentucky (Applegate 2008). Point types found at Late Woodland sites, including several from dated contexts, are Jacks Reef (cal A.D. 442-776, cal A.D. 548-859 [Ahler 1987], and cal A.D. 675-938 [Ledbetter and O'Steen 1992]), Raccon (cal A.D. 663-1151 and cal A.D. 695-1223 [Ledbetter and O'Steen 1992]), Hamilton (cal A.D. 223-592 and cal A.D. 569-768 [Des Jean 2004]), and Levanna.

Wild animals and plants continued to be the mainstay of the subsistence strategy utilized during the early Late Woodland sub period. Cultivation of native plants continued and maize appears during the Middle and early Late Woodland contexts, but not as a significant source until the terminal Late Woodland (ca. A.D. 800) (Applegate 2008). In Kentucky, maize cultivation appeared mostly in the Purchase and Green River management areas.

Regional variability dictated settlement patterns within the Late Woodland sub period. In the Pennyroyal Section, domestic structures included rectangular and circular single-post forms and possible Late Woodland wall trench structure (Applegate 2008). Late Woodland sites in the Bluegrass Management Area concentrated on upland ridges, while other areas continued a focus on floodplain zones. Two- and three-tiered settlement hierarchies have been documented in the Purchase Management Area during the terminal Late Woodland sub period. In contrast, nucleated settlements are more common in the early Late Woodland in central and northeastern Kentucky.

By A.D. 500, the construction of large earthen or stone enclosures had ceased. In contrast, construction of stone mounds increased during the Late Woodland. In western, southern, and parts of northern Kentucky, stone box grave cemeteries became common.

3.1.4 Late Prehistoric Period

Both the Mississippian and Fort Ancient cultural manifestations are widespread in the Midwest and are characterized by distinctive settlement patterns. Mississippian society is characterized by a hierarchical social organization, in contrast with the non-hierarchical social organization evident in Fort Ancient society. Examination of site structure, settlement pattern and mortuary behaviors confirm these distinctions. Generally, Mississippian and Fort Ancient cultures were spatially discrete. Mississippian societies are documented in western Kentucky, Illinois, and states further south, whereas Fort Ancient societies are documented from western West Virginia to southeastern Indiana and from south-central Ohio to north-central and eastern Kentucky (Griffin 1978:551). More specifically within Kentucky, Fort Ancient is present within the Salt River, Bluegrass, Big Sandy, and Upper Kentucky/Licking River management areas (Sharp 1990:467).

The Late Prehistoric archaeological complex of the middle Ohio Valley is Fort Ancient, which spans the time period from approximately A.D. 1000 to about A.D. 1700. In the Bluegrass, Fort Ancient is divided into the early Osborne Phase (circa A.D. 950 – A.D. 1200), Middle Fort Ancient (A.D. 1200 – A.D. 1400) and Madisonville Horizon (A.D. 1400 – A.D. 1700). The Osborne Phase is known in the Bluegrass from the Muir and Dry Run sites (Sharp 1990) in Jessamine and Scott counties. Middle Fort Ancient sites include Buckner, Gilfoil, and Florence (Fassler 1987). Fort Ancient within the Mountains of east Kentucky is found only in the Kentucky and Big Sandy drainages and a single phase, Woodside, is present (Dunnell 1972).

The development of Fort Ancient and its relationship to Late Woodland cultures has been a debated issue. Two hypotheses have been offered in explanation for the relationship between Fort Ancient and Late Woodland cultures. One hypothesis suggests that Fort Ancient represents the fluorescence of an indigenous Late Woodland culture (Graybill 1981; Rafferty 1974). Others (e.g., Essenpreis 1978:154-155) suggest that Fort Ancient represents an influx of Mississippian peoples from the lower Ohio River Valley. Although the question has yet to be resolved, it is entirely possible that each of these hypotheses may be correct, depending upon the data set and region employed to address the problem. Essenpreis (1978), for example, has suggested that these two hypotheses are appropriate for explaining Fort Ancient manifestations at different times during the Late Prehistoric. In this scenario, Fort Ancient is viewed as a fluorescence of Mississippian-influenced Late Woodland culture during the early phases (Baum, Anderson, and Feurt) and as an influx of Mississippian peoples during the later Madisonville phase (Essenpreis 1978:164).

Fort Ancient reflects an elaboration of Late Woodland subsistence activities and social organization. Settlements were much more nucleated, as evidenced by large village sites (Mayer-Oakes 1955). Village sites tend to be situated in valley bottoms along the main stems of the region's larger drainage (Graybill 1981). On the other hand, smaller sites tend to be located throughout tributary drainage and are thought to represent seasonal camps and resource procurement activity stations. A number of sites along the Ohio River, or close to it, were fortified; and many have central courtyards or plaza areas (Griffin 1978:552). Within the Mountains only two types of sites have been documented, villages and camps. It has been hypothesized that camps might represent hunting camps associated with the villages (Sharp 1996:177). The Slone site, located in Pike County, was a village site shaped circularly with a stockade. At least 12 houses were documented within the stockade and contained centrally located hearths with some small attached porticos. Houses also included nearby hearths, basins, earth ovens, and rock- or potsherd-lined storage pits. Burials were found between houses and the village stockade and were often covered with stone slabs (Sharp 1990). A smaller Fort Ancient open habitation site located in Breathitt County, site 15BR9, contained one structure, several features, and two burials (Sharp 1990:514). Rock shelters within this area of Kentucky have also served usage during the Fort Ancient Period (Sharp 1990:515; 1996:177-178).

Fort Ancient subsistence is characterized for the first time by a reliance on the cultivation of maize, coupled with beans and squash. Despite the increased importance of horticulture, hunting provided an important source of food. Deer was the main meat source; at some sites it made up to 80 percent of the game consumed. The cultural material assemblage included elaborate ceramic styles (usually tempered with crushed mussel shell, although limestone and grit-tempered ceramics also occurred), triangular arrow points, mussel shell tools (e.g., knives, scrapers, and hoes), and bone tools (e.g., bone reamers), which also serve to distinguish Fort Ancient cultures from Late Woodland occupations (Griffin 1978:552). Ceramics recovered from the Slone site were shell-tempered plain, cordmarked, or exterior roughened jars with strap handles. A saltpan was the only type of identifiable vessel found at this site. Tools from the Slone site included small, triangular points, as well stone disks, elbow pipes, and bone and antler tools (Sharp 1996:177).

Although Fort Ancient subsistence, like that of Mississippian populations, was based on the cultivation of corn and other cultigens, other aspects of Fort Ancient clearly distinguish it from the contemporary Mississippian occupations: Fort Ancient sites lack large ceremonial centers and earthworks, although Early and Middle Fort Ancient sites (through circa A.D. 1250) exhibited burial mounds. For example the Rowena Site, flooded by Lake Cumberland, was described as a small Mississippian regional center, possibly occupied from A.D. 1300-1400 (Weinland 1980:133). The artifact assemblage indicated the

site was influenced strongly by eastern Tennessee cultures throughout most of its history, especially the Dallas cultures (Weinland 1980:131). Other Mississippian sites along the Cumberland, like Crowley-Evans (Jefferies 1995; Jefferies and Flood 1996), were built around low platform mounds on which the house of a local chief was constructed. However, the complex settlement hierarchy found in the Mississippian, some sites having mounds, others with none, does not occur in Fort Ancient. Villages and hunting camps have been the only Fort Ancient site types defined thus far.

Within the Upper Kentucky/Licking area considerably more Fort Ancient sites have been found within the Gorge Section than the Interior Mountains Section. Very little information is known still about the Fort Ancient chronology in this region. However, the Fort Ancient material culture of the Mountains region appears to resemble the culture from the more well documented Bluegrass and Ohio Valley sites (Sharp 1996:178).

3.2 Historic Period

3.2.1 Exploration and Early Settlement (ca. 17th Century-1820)

It is not exactly known when the first Europeans entered Kentucky, but early explorers like Marquette and Jolliet certainly witnessed the western portion of Kentucky as they traveled the Mississippi and it's possible that La Salle may have visited the Ohio Valley. British exploration of the New and Holston rivers and stories from Native Americans led them across the mountains (Alvord 1920).

The Native American tribe that was first contacted by Europeans in Kentucky is believed to be the Shawnee (Turnbow 1980:17). It has been traditionally and historically maintained that the earliest routes into Kentucky followed buffalo and game trails frequented by Native Americans (Boisvert 1984:46-49, Brown 1929:4). It was quickly discovered by European Americans that these early trails were easy to follow and that they invariably led to salt and water.

Other important early routes into Kentucky went overland through the Cumberland Gap, while a major water route proceeded down the Monongahela River, then the Ohio River. The exploration and the ultimate European American settlement of Kentucky began in earnest in 1750 when Dr. Thomas Walker explored some of eastern Kentucky. His party reached the confluence of the Red and Kentucky Rivers. He was followed in rapid succession by a number of other Englishmen, Christopher Gist in 1751, John Finley in 1752, and Daniel Boone in 1769. In 1775, Boone established the first permanent European American settlement in Kentucky at Boonesborough in Madison County. Both the overland and water routes were considered dangerous during the eighteenth century due to intermittent Indian attacks.

By the late 1760s, "Long Hunters" from the eastern United States were venturing into the area via the Cumberland Gap (McBride and McBride 1990:587). Daniel Boone, negotiating with the Cherokee, built the Wilderness Road, which became the primary overland route through Kentucky from 1775 to 1818 (Ison et al. 1991:11). The Wilderness Road passed through the Gap, down Yellow Creek, through the Little Log Mountain gap, on through Ferndale, up Moore's Branch, through the Big Log Mountain gap, through the "Narrows" south of Pineville, through Cumberland Ford in Pineville, past the Cumberland River to Flat Lick, and finally on to Boonesborough (Fuson 1947). An earlier traveler's account described the land after passing through the Gap:

> *"From thence (from Cumberland Gap) until you pass Rockcastle River there is very little good road; this tract of country is very mountainous, and badly watered along the trace, especially for springs. There is some good land on the*

> *water-courses, and just on this side Cumberland River appears to be a good trace, and within a few years I expect to have a settlement on it. Some parts of the road is very miry in rainy weather. The fords of Cumberland and Rockcastle are both good unless the waters be too high." (William Brown in 1782, Fuson 1947:2).*

A second gap, Pound Gap, also played a significant role in the settlement of Kentucky and the western frontier. Pound Gap is an opening in Pine Mountain and is located in northeast Letcher County above Jenkins on the border with Virginia. It was a route that became known as the Kentucky Trace which branched off the Wilderness Road at Castles Woods (Castlewood, VA) to Indian Creek and from there through the Gap and into Kentucky. Most of those settlers who moved to the hills of eastern Kentucky called this "the Pound" (Mohn 2005).

With increasing European American settlement in the region, the struggle for control between the French, British, and Native Americans led to the steady decline of Native populations, primarily resulting from introduced Old World diseases, such as smallpox, chicken pox, influenza, measles, and the common cold, to which they had no developed resistance.

Initially early stations or forts like Martin's Station (1769), Gibson's Station (1785), Wilderness Road Block House (1775), Fort Watagua (1775), and Fort Chiswell (1758) were established east of the mountains to protect the settlers from Indian attacks. In 1776, the Virginia General Assembly created Kentucky County out of Fincastle County (Clark 1992:xix). Lincoln County was established afterwards. With the increasing settlers moving into Kentucky on the Wilderness Road, more forts and stations were needed.

Agricultural products included corn, cane, hemp, oats, flax, and tobacco which were almost all grown on flood plain. Within the mountains of eastern Kentucky, agriculture remained at a subsistence level much longer than elsewhere in the state (McBride and McBride 1990:592). The Wilderness Road greatly benefitted these early settlers of Kentucky as it served as a commercial road connecting Kentucky with neighboring states like North Carolina, Virginia, and further on to Maryland. Livestock such as horses, cattle, sheep and hogs, and furs and surplus crops were transported via the road to markets east of the mountains. Beef had become a main source of income for farmers in central Kentucky as it became popular in Eastern cities (Kinkaid 1992:187; McBride and McBride 1990:590). To further benefit the settlers, efforts made by Governor Isaac Shelby led to an improvement in communication when a postal route was opened in 1792 connecting Bean Station, Tennessee via the Cumberland Gap with Danville, Kentucky in the Bluegrass. Mail and news from and to the settlements was now possible. Although eastern Kentucky saw growth, significant growth was primarily in central Kentucky or the Bluegrass where soils were more fertile.

Although not as great as the remainder of the state, the mountains of eastern Kentucky did see growth in population between 1810 and 1820. Population of eastern Kentucky went from 20,297 to 34,602. Again, although not to the same degree as the remainder of the state, the eight eastern counties did practice commercialized agriculture and were producing grains, livestock, hides, and fur for trade in the Ohio Valley, central Kentucky's Bluegrass, and western Virginia. Towns in the mountain region remained comparatively small to the towns elsewhere in the state (McBride and McBride 1990:596). The area that is now Morgan County was part of Virginia when the first surveying parties arrived, but settlement in the area did not progress as quickly as in the Bluegrass Region. By, 1800, the area had some settlement. Earliest settlers in the area of Morgan County included Daniel Williams who came to Kentucky with Daniel Boone in the 1770's and was a veteran of the Battle of the Blue Licks. Other

early settlers in the area included Thomas Lewis, who served with General George Rogers Clark, and Gardner (or Garner) Hopkins, a Revolutionary War veteran (Nickell 1992a). The early settlement of Wells Mills was established in 1816 where Edmund Wells had begun operating a water mill on the Licking River. This settlement would later be the same location as the town of West Liberty (Nickell 1992b). Figure 3-1 illustrates eastern Kentucky and Virginia in 1794.

Figure 3-1. Kentucky and Virginia in 1794 (Lewis).

3.2.2 Antebellum (1820-1861)

While river and railroad transportation routes were opened up in the first part of the nineteenth century by steamboats and trains, eastern Kentucky became more remote. Small steamboats were able to traverse the Big Sandy after 1837 and some road improvement occurred, but the mountainous part of Kentucky did not benefit from the revolutionary transportation improvements in the rest of the state. It was at this time that a "distinct Appalachian subculture" evolved (McBride and McBride 1990:601).

Agriculture did not change significantly for the people of eastern Kentucky and most crops and livestock were produced for home consumption. Hog was the meat of choice, but some cattle were still bred (McBride and McBride 1990:605). An abundance of timber was also sold. By 1840 small commercial coal mines were present in eastern Kentucky. In 1845 the first large coal mine community, Peach Orchard, located in Lawrence County in the northeastern part of the state, was established by the owners of the coal company. Its success would lead to many similar communities in eastern Kentucky. Here coal mining companies constructed dwellings along with commercial necessities like a grocery store, gristmill, and sawmill (McBride and McBride 1990:605). By 1860 urban development of eastern Kentucky was still poor with very few cities. Of the cities that did exist,

most were very small and associated with the commercial mines. The only well populated towns in this region of Kentucky were located on the Ohio River where more traffic was seen.

Within the vicinity of the project area, in 1822, settlers within the area of study sought to form a new county out parts of Floyd and Bath counties, creating Morgan County, and named it after General Daniel Morgan, a Revolutionary War hero (Nickell 1992a). West Liberty was established as the county seat in 1823. Edmund Wills donated the land for the town, and quickly a log jail and a two story frame courthouse were constructed (Nickell 1992b). West Liberty is located about 100 miles east of Liberty, Kentucky, but the town was named under the belief that Pikeville, KY would be called Liberty when incorporated. Figure 3-2 illustrates Morgan County, Kentucky in 1839.

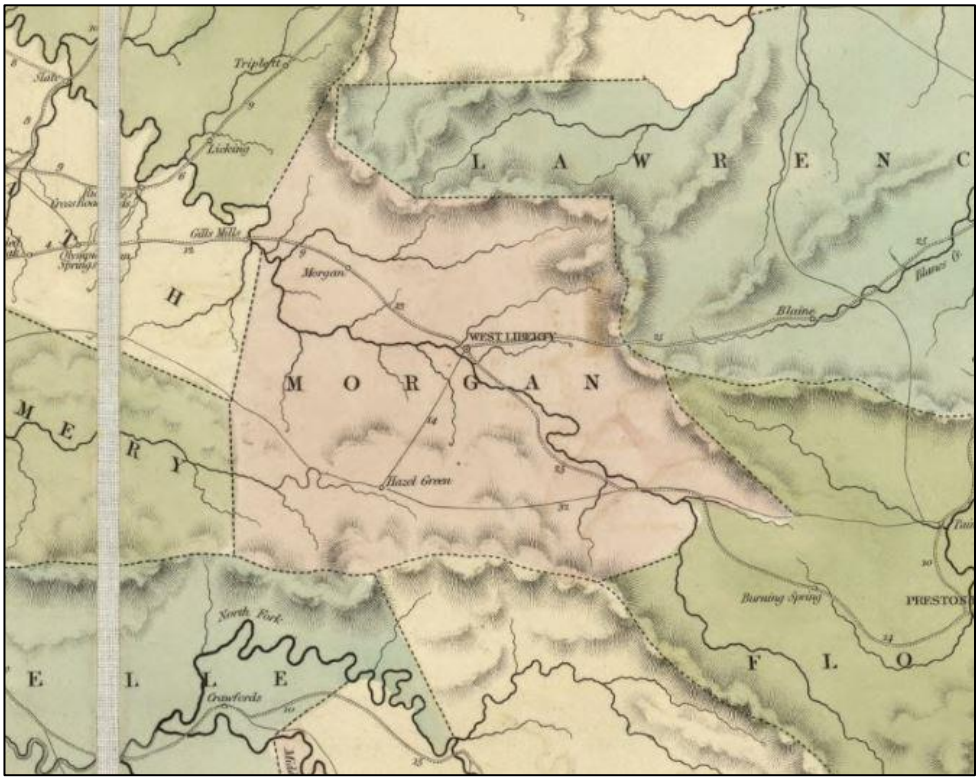

Figure 3-2. Morgan County, Kentucky in 1839 (Burr).

3.2.3 Civil War (1861-1865)

Kentucky's status as a border state not fully joining the Confederacy but yet still allowing slavery brought division within the population. The Union Army headquarters for Kentucky were at Louisville and Camp Nelson in Jessamine County which was a large quartermaster depot and African–American recruitment center that operated from 1863 to 1865. The fort employed over 2,000 civilian employees, and housed between 900 and 5,000 troops at any time (McBride et al. 2003).

The Battle of Perryville, the largest Civil War battle to occur in Kentucky, was fought near Perryville in Boyle County. On October 8, 1862, the battle ensued, involving 16,000 Confederate troops and 58,000 Union troops. The Confederate force was defeated and they retreated to Tennessee, and the three-month long Confederate effort to secure Kentucky was halted. (Kleber 1992).

During the Civil War, both sides recognized the importance of the Cumberland Gap and its strategic value . As a result, there was a constant battle for its possession with both sides occupying the Gap at

different times during the war. The mountain inhabitants of Kentucky sided strongly with the Union since they had few to no slaves. Some of these mountain inhabitants were part of the first blow against the Confederacy in Kentucky at Wildcat Mountain. Known as the Battle of Wildcat Mountain, this engagement took place in October of 1861 with principal commanders U.S. Brig. Gen. Albin F. Schoepf and C.S.A. Brig. Gen. Felix Zollicoffer. In mid-September 1861, Zollicoffer and his 5,400 men occupied the Cumberland Gap and took control of Cumberland Ford at Pineville, defeating a group of home guard volunteers from the town of Barbourville in the process. Responding to the Confederates, a detachment of Kentuckians led by Col. Theophilous Garrard was sent for three reasons: 1) to secure the ford on the Rockcastle River, 2) establish a camp at Wildcat Mountain, and 3) obstruct the Wilderness Road. Garrard, greatly outnumbered, would have been forced to retreat had not Gen. A. Schoepf arrived with reinforcements. On the morning of October 21, Confederate troops attacked and Union soldiers repelled the Confederates successfully. Another Confederate offensive later that afternoon was also repelled by the Union forces and later that night, the Confederates finally withdrew. The battle was considered the first Union victory in Kentucky as well as the first engagement of regular troops in Kentucky (Fuson 1947).

Afterwards, an extermination of the rebels in the region began, but the Confederate sympathizers retaliated in turn by killing Federal soldiers. In this way, feuds grew out of the Civil War. After the war, relations of those killed began to settle the matter by killing others. Long-standing feuds broke out in different parts of the mountains, but only a very small part of the population was engaged at any or all times in these feuds (Fuson 1947).

Control of Pound Gap was also important for both Union and Confederate troops. The Gap exchanged hands numerous times during the Civil War and was used continually as a route for supplies. In the winter of 1862, Confederate troops managed to maintain camps on both sides of the pass. Numerous skirmishes were fought for control until 800 hundred Union troops managed to outflank 500 Confederate troops and forced them into retreat.

The economic effects of the war were probably more significant to people in Kentucky than the physical devastation. Many farmers and merchants were hurt by the curtailment of trade with the south (McBride and McBride 1990:609). There were also transportation system disruptions due to war damage or to Union control. Throughout Kentucky, the Louisville and Nashville (L&N) Railroad suffered considerable damage during the war (Castner 1992:579). The L & N survived the war in reasonably good conditions since it became part of the vital supply route supporting Union troops advancing through the south (Castner 1992:579). The largest single factor in the deterioration of Kentucky's agriculture and industry was the loss of the labor force. About 100,000 Kentucky men entered the Union Army and up to 40,000 entered the Confederate Army (McBride and McBride 1990:610). Almost one third of those enlisted died. Slaves escaped across the Ohio River in the early years of the war. In 1864, the U.S. Government granted freedom to any slave that enlisted in the U.S. Army. The male slaves also brought their families to the encampments (McBride et al. 2003).

Unlike other areas in Eastern Kentucky, Morgan County mostly sympathized with the Confederacy, although some influential families within the county were pro-Union. However, no major battles occurred within the county, only a few skirmishes. The court house in West Liberty was destroyed along with the offices of the circuit and county clerks during the war (Nickell 1992b). Figure 3-3 illustrates Morgan County, Kentucky in 1861.

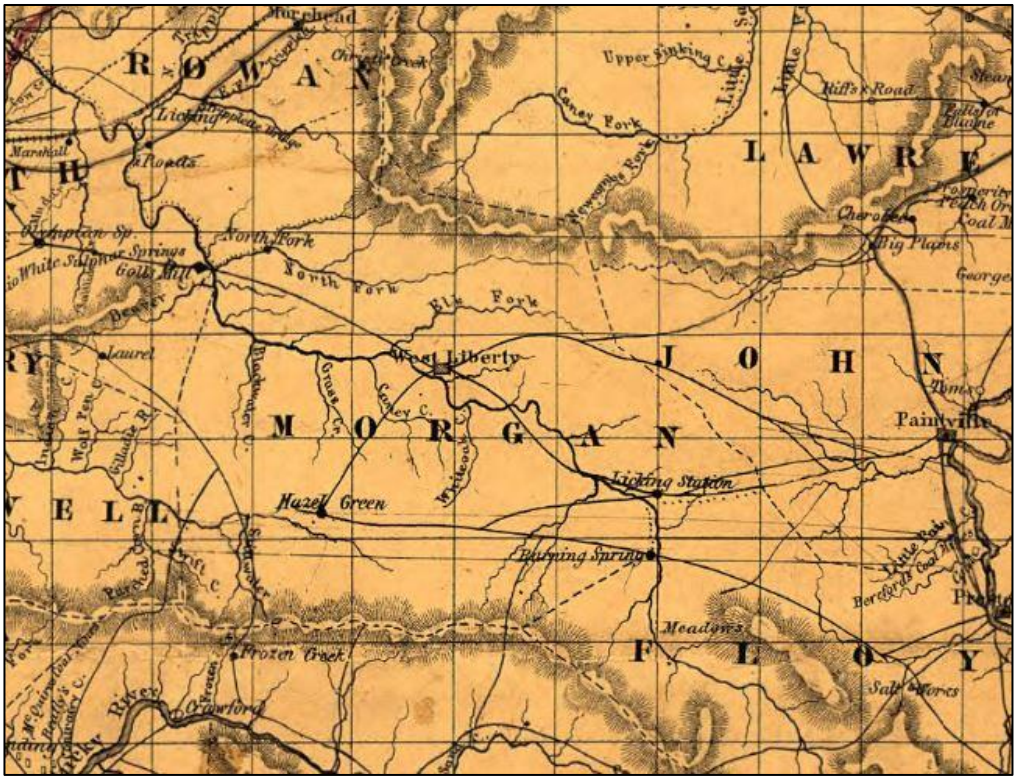

Figure 3-3. Morgan County, Kentucky in 1861 (Campbell & Barlow).

3.2.4 Postbellum Industrialization (1865-1914)

There were changes in social and economic systems that greatly affected Kentucky during the Postbellum period (McBride and McBride 1990:615). During this period the state began to deal with the emancipation of African-Americans and their role in the society. The agricultural system began to change with the introduction of white burley tobacco (McBride and McBride 1990:615). There were significant developments in communication and transportation, growth in industry and commerce and increased urbanization (McBride and McBride 1990:615). Like the rest of the mountainous region of eastern Kentucky, however, population slowly grew during the late nineteenth century (**Error! Not a valid bookmark self-reference.**).

Many mountain people refused to work in the coal and lumber industry and remained farmers. However, eroded soils became more common and losses forced many farmers into part time work for coal and lumber companies. This in turn had an effect on the production of food and availability of livestock, much of which now had to be shipped in (McBride and McBride 1990:624).

In Morgan County and most of eastern Kentucky, both the logging and mining industries played vital roles. Both industries started up in the 1880s and by the early twentieth century they were thriving. By the beginning of the twentieth century, railroads had entered Morgan County in search of timber and cannel coal. The Morehead & North Fork Railroad reached Blairs Mills, Wrigley, Redwine, and Lennox. This railroad would later be abandoned in the 1920's. The Ohio & Kentucky Railroad extended to Adele, Cannel City, Caney, Stacy Fork, Malone, Index, Liberty Road, and Licking River. This railroad would later be abandoned in 1933 (Nickell 1992a). Figure 3-4 illustrates Morgan County, Kentucky in 1891.

Table 3-1. Population changes for Morgan County, Kentucky (US Census Bureau 2013).

Census Year	Total Population
1830	2,857
1840	4,603
1850	7,620
1860	9,237
1870	5,975
1880	8,455
1890	11,249
1900	12,792
1910	16,259
1920	16,518
1930	15,130
1940	16,827
1950	13,624
1960	11,056
1970	10,019
1980	12,103
1990	11,648
2000	13,948
2010	13,380

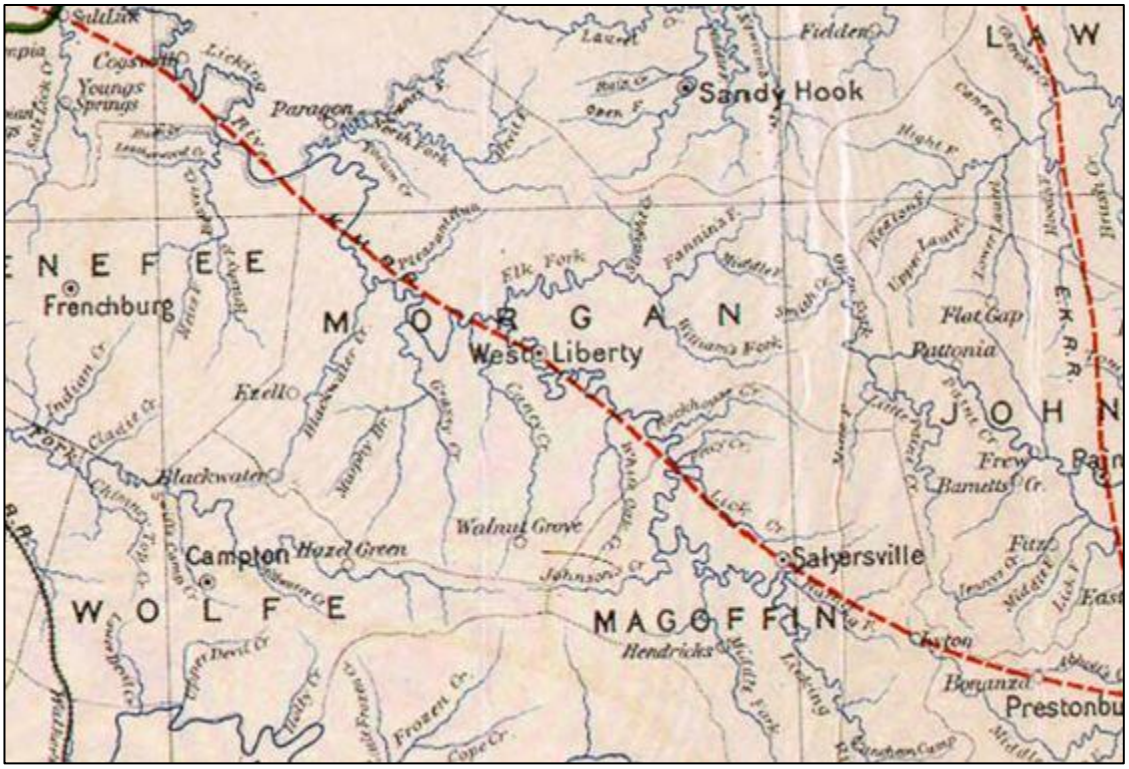

Figure 3-4. Morgan County, Kentucky in 1891 (Hoeing).

3.2.5 Twentieth Century

The beginning of this period was very similar to the previous period. Kentucky was still a leader among the southern states in agricultural products and a continued production pattern in industrialization and manufacturing also occurred.

The Great Depression and World War II were two of the most important events of the Twentieth Century. For many, the onslaught of the Depression was not apparent until the stock market crashed in October 1929. For farmers, however, hard times began much earlier. Agricultural prices had been depressed for nearly a decade before the crash and remained so until World War II.

The Great Depression affected every facet of American life, sapping energy from the economy and draining the citizenry's ability to build. Although no unemployment figures were kept, it is generally thought that the jobless rate hovered around 12 percent in Kentucky.

New Deal programs put together by the Roosevelt administration in the 1930s changed the face of Kentucky. Born of economic desperation of the Great Depression, the New Deal implemented work programs that provided paying jobs for the unemployed. The Civilian Conservation Corps (CCC), Works Progress Administration (WPA), Public Works Administration (PWA), Civil Works Administration (CWA), and Resettlement Administration put to work many of the Kentucky unemployed. In 1937, Eleanor Roosevelt dedicated a new stone building in Morgan County built by the WPA (Nickell 1992a).

Mechanization of agriculture and the general decline in farming as a way of life, continued urbanization, major improvements in roads, and a decline in river traffic all occurred at this time. There were also increases in stores and access to consumer goods (McBride and McBride 2008:967).

Kentucky's population increased during the period, but at a slower rate than the rest of the Southeast (McBride and McBride 2008:967). Morgan County's population has continuously fluctuated since it was established (Table 3-1).

Morgan County continued to rely heavily on agricultural and timber. In the 1990's, the main agricultural products for the county include cattle and burley tobacco, and timber continued to be an important industry (Nickell 1992a). Tourism also became important to the county. The northwest corner of the county is part of the Daniel Boone National Forest and Cave Run Lake forms a portion of the county's northwest boundary. In addition, Morgan County became home to the Mennonite World Headquarters and Bible Printing Facility, the Eastern Kentucky Correctional Complex, and the extended campus of Morehead State University, and the University of Kentucky Regional Technology Center (Nickell 1992b). In 2012, West Liberty suffered severe damage to its downtown region as an EF3 tornado tore through the area (WYMT TV 57 Mountain News 2012).

3.3 Historic Map Research

USGS maps available were the 1951, 1977, and 1977 (photo-revised 1993) 7.5 minute topographic maps for the West Liberty, KY quadrangle. Also available were a 1937 *Highway and Transportation Map of Morgan County, Kentucky* (Kentucky Department of Highways 1937) and the 1955 *Rural Highway Series Map of Morgan County, Kentucky* (Kentucky Department of Highways 1955). Aerial maps from 1950 were also available (USGS 2014).

3.4 Previous Archaeological Research

The survey report files at the Office of State Archaeology (OSA) were consulted on July 25th, 2014. Six archaeological surveys were recorded prior to this survey within a 2 km radius of the archaeological APE (Figure 3-5).

In 2002, at the request of Palmer Engineering, Cultural Resource Analysts conducted an archaeological survey for the proposed KY 7 realignment and bridge replacement upgrade and a Phase II evaluation of 15MO140 in Morgan County, Kentucky. The survey utilized pedestrian survey, screened shovel testing, and deep testing with use of a backhoe. One newly recorded site was identified, Site 15MO140 (Elk Fork Site). The site included a deep basin-shaped feature and a piece of flake debris was recovered in one trench. Further work was recommended on the site and a Phase II investigation was conducted. The Phase II consisted of eighty-four auger probes, three 1x1 m units, two 2x1 m units, and one 1x3 m unit. Artifacts recovered included 1,208 pieces of lithic debitage, 11 bifaces, 19 ceramic sherds, and over 2,196 pieces of FCR. Two archaeological features were excavated. Feature 1 was concluded to be a refuse pit associated with the Late Woodland component. Feature 2 was concluded to be a fire hearth with a late Prehistoric component. Diagnostic material indicated a stratified multi-component site with occupations dating to at least the Late Woodland and Late Prehistoric periods as well as an unidentified component stratigraphic ally below the Late Woodland zones. The site was excavated to a depth of about 1 m, but likely goes deeper. The site was recommended eligible for the National Register of Historic Places under Criterion D and additional Phase III archaeological work was recommended prior to the proposed project (Martin 2002).

Between April 17 and 25 of 2003, at the request of T.H.E. Engineers, Inc., Cultural Resource Analysts Inc. conducted a Phase I archaeological survey of four proposed waste areas used in conjunction with the KY 7 realignment project in Morgan County, Kentucky. The proposed project area was situated northwest of the community of West Liberty, Kentucky and included about 23.1 ha (57.8 acres). The

Figure 3-5. Locations of Previous Archaeological Investigations.

survey utilized pedestrian survey supplemented with screened shove testing and screened bucket auger testing. Four previously undocumented archaeological sites (15MO143, 15MO144, 15MO145, and 15MO146) and one non-site locality (NSL 1) were identified during the survey. Site 15MO143 and 15MO146 were considered potentially eligible for inclusion on the National Register of Historic Places. Therefore, if these sites could not be avoided, it was recommended that Phase II archaeological investigations should be completed to determine eligibility for inclusion on the National Register of Historic Places. In addition, Site 15MO143 should include deep testing. No archaeological sites were located in Waste Areas 2 or 7, so clearance was recommended for these areas (Davies and Uecker 2003).

Between April 17 and 25 of 2003, at the request of T.H.E. Engineers, Inc. ., Cultural Resource Analysts, Inc. conducted a Phase I archaeological survey of six proposed waste areas to be used in conjunction with the KY 7 Realignment project in Morgan County, Kentucky. The survey was of six waste area sites (Waste Areas 1, 3, 4, 5, 8, and 9). The sites were located between the town of West Liberty and the intersection with CR 519. The survey utilized pedestrian survey supplemented with screened shovel tests. No archaeological material was recovered during the survey and clearance was given for the proposed project (Uecker 2003).

Between May 5 and September 2003, at the request of MACTEC, Cultural Resource Analysts, Inc. conducted excavations at the Elk Fork site (15MO140) for the proposed realignment and bridge replacement project along KY 7, over the waters of Elk Fork in Morgan County, Kentucky. The survey utilized mechanical stripping, hand excavations of individual units and blocks, and excavation of discovered features and post molds. The survey identified two major occupation periods on the T1 and a very ephemeral occupation on the T2. On the T1, the oldest occupation dates to the Late Archaic Maple Creek phase (circa 2000 to 800 B.C.), and habitation at the site during this time is believed to be at three separate, chronologically distinct occupation events, mainly during the Fall and Winter. The most recent T1 is between the Late Woodland and early Fort Ancient periods (A.D. 1000 to 1200). This represents a single, fairly short-term occupation also occurring in the Fall or Winter. The T2 consisted of an ephemeral Early Woodland occupation of just three features: two roasting pits and a shallow sheet midden. Material was accidently excavated on the T3 (outside the scope) and produced Early Archaic related archaeological material (Herndon 2005).

In 2010, at the request of East Kentucky Power Cooperative, Cultural Resource Analysts, Inc. conducted an archaeological survey of a proposed switching station located in Morgan County, Kentucky. The proposed project area consisted of about 1.1 ha (2.7 acres) situated about 4 km (2.5 miles) northwest of West Liberty, Kentucky. The survey utilized pedestrian survey supplemented with systematic screened shovel probing. No archaeological material was recovered during the survey and clearance was recommended for the proposed project (Kelley 2010).

In 2010, at the request of Joe Settles, on behalf of East Kentucky Power Cooperative, Cultural Resource Analysts, Inc. conducted an archaeological survey of the proposed Hot Mix Road substation and tap line project in Morgan County, Kentucky. The proposed project area consists of 40.8 ha (100.8 acres). The survey methods consisted of an intensive pedestrian survey supplemented by screened shovel testing and bucket augering. The survey identified one previously unrecorded site, Site 15MO158 and two isolated finds, IF 1 and IF 2. Site 15MO158 is a historic farm and residence dating to the late nineteenth to twentieth century with an indeterminate prehistoric component. The site was deemed not eligible for the National Register of Historic Places, and no further work was recommended, allowing clearance for the project (Curran 2010).

3.5 Known Archaeological Sites

The site files at the OSA were consulted on July 25th, 2014. No previously recorded archaeological sites were documented within the project area, but seven sites had previously been recorded within a two-kilometer radius of the APE. These sites – 15MO3, 15MO140, 15MO143, 15MO144, 15MO146, 15MO153, and 15MO158 – are described below.

Site 15MO3 was not on file at the time of research.

The Elk Fork Site (15MO140) was identified during a survey for a proposed realignment and bridge replacement project of Kentucky Route 7 over the waters of Elk Fork in Morgan County, Kentucky. The survey was conducted by Cultural Resource Analysts, Inc. in 2003 and is discussed above. The survey utilized pedestrian survey, screened shovel testing, and deep testing with use of a backhoe and only identified one site, Site 15MO140 (Elk Fork Site). Site 15MO140 included a deep basin-shaped feature and a piece of flake debris was recovered in one trench. Further work was recommended on the site and a Phase II investigation was conducted. The Phase II consisted of eighty-four auger probes, three 1x1 m units, two 2x1 m units, and one 1x3 m unit. Artifacts recovered included 1,208 pieces of lithic debitage, 11 bifaces, 19 ceramic sherds, and over 2,196 pieces of FCR. Two archaeological features were excavated. Feature 1 was concluded to be a refuse pit associated with the Late Woodland component. Feature 2 was concluded to be a fire hearth with a late Prehistoric component. Diagnostic material indicated a stratified multi-component site with occupations dating to at least the Late Woodland and Late Prehistoric periods as well as an unidentified component stratigraphic ally below the Late Woodland zones. The site was excavated to a depth of about 1 m, but likely goes deeper. The site was recommended eligible for the National Register of Historic Places under Criterion D and additional Phase III archaeological work was recommended prior to the proposed project (Martin 2002). The Kentucky Archaeological Site Survey Form lists the site as considered eligible but not nominated by SHPO (Site Form for 15MO140).

Site 15MO143 is located in Waste Area 10 east of the junction of KY 7 and KY 519 in Morgan County, Kentucky. The site includes three low-density lithic scatters (Localities A, B, and C) that together cover a large area of the Elk Fork and Licking River floodplain. Locality A consisted of a low-density lithic scatter uncovered with shovel testing and covered an area of 75 m^2. Locality B consisted of a low-density lithic scatter uncovered with shovel testing and covered an area of about 50 m^2. A portion of Locality B had previously been disturbed by construction activities. Locality C consisted of a low-density lithic scatter uncovered with shovel testing and covered an area of about 150 m^2. In total, the site produced eight flakes greater than ¼ inch, three flakes less than ¼ inch, and six pieces of FCR. The prehistoric materials suggest short-term, possibly specialized, prehistoric occupation. The site could possible relate to the previously recorded 15MO140 Elk Fork Site, and as a result, the site was deemed eligible for inclusion in the National Register of Historic Places. Further testing was recommended to include deep testing (Davies and Uecker 2003; Site Form for 15MO143).

Site 15MO144 is a sandstone rockshelter located in Waste Area 6, northeast of KY 7. It is littered with two 55 gallon drums and various pieces of modern trash. No evidence of looting was detected, but a logging road has disturbed the area in front of the rockshelter. The rockshelter was observed during pedestrian reconnaissance, and ten shovel tests were excavated. Four of the shovel tests produced cultural material, consisting of lithic debitage, FCR, and faunal remains. Historic material was also recovered. Overall, thirty-seven prehistoric artifacts, seven historic artifacts, and sixty-one faunal remains were recovered from the site. The prehistoric material was non-diagnostic and the site most likely represents a short-term occupation. The site was not deemed eligible for inclusion in the

National Register of Historic Places and no further work was recommended (Davies and Uecker 2003; Site Form for 15MO144).

Site 15MO146 is located in Waste Are 6, northeast of KY 7 and includes two areas of historic occupation (Localities A and B). Locality A appeared to be a historic farmstead/residence, covering about 30 m northwest to southeast and about 35 m northeast to southwest. Ninety-seven historic artifacts were recovered from Locality A, dating from 1830 to the present. Three surface features were identified too, including a cut limestone chimney base, a metal cistern pump, and three rough stone slabs arranged to form a small oblong compartment with a square opening. This last feature may be a stone furnace possible used for manufacturing corn whiskey. Archival Research indicated that Thomas J. Henry and his wife Catherine owned the property by 1883 and likely built the house that once stood at Locality A, and it is possibly that it was torn down around 1970. Locality B is located upriver from Locality A and consisted of several stone piers and a small quantity of historic cultural material. Locality B measures about 15 m northwest to southeast by 15 m northeast to southwest. Seventeen historic artifacts were recovered from Locality B, and several rough stone piers were observed. The piers were used to raise a small structure off the ground. Locality B was not considered eligible for inclusion on the National Register of Historic Places under Criterion D and no further work was recommended. However, Locality A was deemed potentially eligible for listing on the National Register of Historic Places under Criterion D (Davies and Uecker 2003; Site Form for Site 15MO146).

Site 15MO153, the Day-Lewis Site, is an open habitation site without mounds with a historic component. The site includes three intact subsurface features that were not excavated. The site area consisted of a variety of chipped stone debitage with the highest concentration along the crest of the landform. Projectile points and biface fragments were widely scattered on the surface at the time of the survey. The site measures about 150 m N-s by 100 m E-W. The site was relatively undisturbed other than plowing at the time of the survey. The site was deemed eligible for inclusion on the National Register of Historic Places under Criterion D. The site has intact subsurface features that have not been excavated. The material recovered indicated that multiple activities occurred at the site and that it represents a Middle-Late Archaic occupation. The historic component consisted of ceramic material, including Ironstone, stoneware, Yellow ware, Whiteware, and Pearlware. The historic component dated to c. 1851-1900 (Site Form for Site 15MO153).

Site 15MO158 is a multi-component site, consisting of one prehistoric flake and a historic farm/residence. The historic component dates from the early nineteenth century to the mid twentieth century. The site contained five standing structures, including a residence, two sheds, a small livestock barn, and a tobacco barn. Two surface features included a capped well and a possible former root cellar. The site measured about 120 m east-west by 70 m north-south. Eighteen shovel tests and one auger were excavated to delineate the site. Two features were identified during the survey, including a capped concrete-block well and a possible root cellar. Site 15MO158 was not deemed potentially eligible for listing on the National Register of Historic Places under Criterion D (Curran 2010; Site Form for Site 15MO158).

Section 4 - Methodology

In this chapter, the methods employed during the course of this study are described. These methods include the fieldwork activities, their application in different portions of the archaeological APE reflecting conditions encountered, and an evaluation of their effectiveness in conducting initial National Register evaluation of the archaeological site. Laboratory methods are discussed in the following section (Section Five) along with the site assemblage and a discussion of the associated contexts of recovery and interpretation. This section also presents an overview of the requirement for nomination to the National Register of Historical Places and concludes.

4.1 Implemented Field Methods

The field methods implemented for the Phase I investigations conform to the Kentucky Heritage Council's specifications for conducting a Phase I survey (Sanders 2006). The field methods included systematic shovel probes and visual inspection. Systematic shovel test probes (STPs) were excavated where possible. All soil excavated from the STPs was screened through ¼ inch mesh screens with the intention that any and all artifacts retained in the screen would be collected and bagged according to provenience. Areas of 15 percent or greater slope were visually inspected for surface remains.

Areas that were under concrete or asphalt, such as roadways and driveways, were not excavated, but were visually inspected. Several other areas were disturbed by construction and/or fill activities and were not excavated, but were also visually inspected.

Twenty-five STPs were excavated. Multiple areas were surface collected. The location of all the shovel probes and surface collection areas are shown below on aerial photographs (Figure 4-1 and Figure 4-2).

4.1.1 Field Conditions

The entire APE was subjected to visual inspection. Shovel probing was conducted across the entire APE. Approximately 99 percent of the shovel tested portions of the APE were completely grown over in mowed lawns or scrub, weeds, and secondary growth trees that offered zero to very low ground surface visibility. A small section of the shovel tested portions of the APE were within an old roadbed that at times had moderate to high visibility. Four STPs were excavated within the areas where surface collection was utilized and visibility was high, such as agricultural fields and recently disturbed areas. The survey conditions are illustrated in Figure 4-3 through Figure 4-11.

4.1.2 Evaluation of Field Methods Used

Shovel testing and visual inspection were used to identify and define approximate site limits within the survey area. The methods were successful in identifying site location, delineating site boundaries, and obtaining a sample of cultural materials from the site.

4.2 National Register Evaluation of Archaeological Sites

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to take into account the effects of their undertakings on properties listed or eligible for listing in the National

Figure 4-1. Location of STPs on the Aerial Map, Page 1.

Figure 4-2. Location of STPs on the Aerial Map, Page 2.

Figure 4-3. Survey Area east of KY 7 and north of KY 1161, Looking N, Surface Collection Area.

Figure 4-4. Survey Area Showing Elk Fork SE.

Figure 4-5. Survey Area, Scrub and Weeds in a Sloped Area, Looking North.

Figure 4-6. Survey Areas, Scrub, Weeds and Secondary Growth near Elk Fork, Looking West.

Figure 4-7. Survey Area Showing Road Bed of Old KY 7 along Elk Fork, Looking North.

Figure 4-8. Survey Area, Scrub, Weeds and Secondary Growth along Sloped Area, Looking West.

Figure 4-9. Survey Area west of Intersection of KY 1161 and KY 7, Looking Northeast, Cleared and Bulldozed, Surface Collection Area.

Figure 4-10. Survey Area West of KY 7, Looking Southwest, Area Filled in the 1950's.

Figure 4-11. Survey Area near the KY 7 and KY 1161 Intersection, Showing Roadway and Scrub along Roadway, Looking Southwest by South.

Register and to give the Advisory Council on Historic Preservation a reasonable opportunity to comment. While it does not require the preservation of such properties, it does require that their historic or prehistoric values be considered in weighing the benefits and costs of federal undertakings to determine what is in the public interest. Section 106 is invoked when "any project, activity, or program that can result in changes in the character or use of historic properties" (36 CFR Part 800) whether federal agency jurisdiction is direct or indirect.

Pursuant to the October 1992 Amendments to the National Historic Preservation Act (Section 110 of NHPA 1980, amended 1992) an "undertaking" means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including (A) those carried out by or on behalf of the agency; (B) those carried out with federal financial assistance; (C) those requiring a federal permit, license, or approval; and (D) those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- that are associated with events that have made a significant contribution to the broad patterns of our history; or
- that are associated with the lives of persons significant in our past; or

- that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- that have yielded, or may be likely to yield, information important in prehistory or history.

Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A-the property's specific association must be considered important as well. Often, a comparative framework is necessary to determine if a site is considered an important example of an event or pattern of events.

In order to qualify under Criterion B, the persons associated with the property must be individually significant within a historic context. As with all Criterion B properties, the individual associated with the property must have made some specific important contribution to history.

To be eligible under Criterion C, a property must meet at least one of the following requirements: the property must embody distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction.

Criterion D requires that a property “has yielded, or may be likely to yield, information important in prehistory or history.” Most properties listed under Criterion D are archaeological sites and districts, although extant structures and buildings may be significant for their information potential under this criterion. To qualify under Criterion D, a property must meet two basic requirements:

- The property must have, or have had, information that can contribute to our understanding of human history of any time period;
- The information must be considered important.

The use of Criteria A, B, and C for archaeological sites are appropriate in limited circumstances and have never been supported as a universal application of the criteria. However, it is important to consider the applicability of criteria other than D when evaluating archaeological properties. It is important to note that under Criteria A, B, and C the archaeological property must have demonstrated its ability to convey its significance, as opposed to sites eligible under Criterion D, where only the potential to yield information is required.

Section 5 -

Materials Recovered

In this section the laboratory procedures and analytic methods are discussed and the materials recovered are presented. The analytic methods involve the use of an artifact classification scheme that creates useful analytic categories for evaluating National Register eligibility. The artifact assemblages are also discussed with the site descriptions and results in Section Six.

5.1 Laboratory Methods

Artifacts recovered during field investigations were brought to the CDM Smith archaeology laboratory in Lexington, Kentucky, for washing, cataloging, and initial analysis. Materials were washed and sorted by general material type (e g., historic vs. prehistoric). All prehistoric specimens are classifiable into one class based on stage of reduction, tool form, and portion represented. A series of attributes and metric data were then collected for specific prehistoric artifact classes including size of debitage, cortex presence and absence, thermal alteration, and raw material type. Prehistoric lithic specimens were identified by J. David McBride. Historic artifacts were washed and sorted into major material categories. These were then cataloged according to the system of artifact-function association modified from South (1977). All artifacts were assigned to the functional groups (kitchen, architecture), then to a material class (e.g., ceramic, glass, metal), to a type (e.g., base of bottle, jar lip), and to a subtype (e.g., color, decoration type). Historic specimens were identified by J. Howard Beverly.

In the following discussion, each of the major categories of artifacts is defined. Prehistoric artifact types are discussed first, followed by the standard classifications of historic artifacts developed by South (1977).

5.1.1 Prehistoric Artifact Assemblages

5.1.1.1 Prehistoric Lithics

The analyses included tool analysis, raw material analysis, and mass analysis. These different techniques provide complementary data and permit the extrapolation of stronger inferences about the organization of lithic technology at the four sites. One hundred percent of all surface-collected and excavated materials were subjected to these, except where noted below.

All debitage was macroscopically examined for evidence of retouch and/or utilization. Those artifacts displaying retouch and/or utilization were then separated from non-utilized debitage. Additionally, all chipped stone artifacts were analyzed for presence of primary geologic or secondary incipient cone cortex and macroscopic evidence of thermal alteration. A typology of specimens was developed using standard techniques and definitions employed throughout eastern North America (e.g., Callahan 1979; Crabtree 1982; and Odell 1996).

5.1.1.1.1 Lithic Debitage

One of the most ubiquitous artifact categories on prehistoric sites is lithic debitage, which is considered to include all the material produced from the initial reduction stage to the use/reworking stage. Debitage is produced during all stages of reduction, but the representation of each class as compared to the other classes provides insight into the types of lithic use that occurred at a specific

location. All flakes, blades, chunks/shatter were analyzed according to platform facet and dorsal scar counts, presence of cortex, and macroscopic evidence of thermal alteration and/or utilization.

Flakes are pieces of debitage with two faces, a dorsal and a ventral. The dorsal surface can be partly or totally covered by cortex, but normally shows the scars from removals that were made before the flake was removed from the core. The ventral surface contains only the features related to the detachment of the particular flake.

Flake debitage produced in bifacial and unifacial technologies is divided into three major categories including primary flakes, secondary flakes, and tertiary flakes, and several subcategories based on specific morphological attributes. These lithic reduction categories follow classification stages proposed by Collins (1974), Flenniken (1978), Boisvert et al. (1979), Magne and Pokotylo (1981), Magne (1985), Ebright (1987), and Bradbury and Carr (1995) with some modifications. A brief description of each debitage category is provided.

> *Primary flakes* (primary and secondary decortication flakes) are those produced during the earliest stages of lithic reduction and result from the removal of cortex from the raw material. *Primary decortication flakes* are usually large and cortex is present on over 50 percent of the dorsal surface. *Secondary decortication flakes* contain cortex on less than 50 percent of the dorsal surface.
>
> *Secondary flakes* (interior and thinning flakes) result from the reduction and shaping of the initial biface. Secondary flakes characteristically display a well-developed bulb of percussion, one or more flake scars on the dorsal surface, and may exhibit platform preparation. *Interior flakes* generally have large, double faceted platforms perpendicular to the orientation of the flake. *Thinning flakes* may have multi-faceted platforms at an acute or obtuse angle to the flake's orientation and may show signs of crushing or battering in preparation for flake removal from the parent material.
>
> *Tertiary flakes* (late stage percussion and pressure flakes) result from the sharpening and/or reworking of tools or points. These flakes are generally very small with small striking platforms, often multifaceted and steeply angled. Tertiary flakes are usually underrepresented in artifact assemblages recovered with standard ¼ inch hardware mesh screens, as these flakes are frequently smaller than ¼ inch and pass through the screens.

Flakes struck from flake cores for further unifacial modification are generally indistinguishable from those produced in bifacial reduction. However, a formal, specialized unifacial technology is blade manufacture, which produces morphologically distinct artifacts.

> *Blades* are specialized flakes with more or less parallel or sub-parallel lateral edges which, when complete, are at least twice as long as wide (Owen 1982: 2). Blades contain at least one dorsal crest but may contain two or more dorsal crests. Blades are associated with prepared cores and blade technique and are not produced randomly (Crabtree 1982: 16).
>
> Debitage displaying some flake characteristics are classified as *undetermined flakes* if they are too fragmentary to determine flaking stage.
>
> *Chunks/shatter* are pieces of usable raw material with at least one freshly broken surface. Blocky and angular fragments are usually produced in the initial stages of flintknapping as a result of removing unstable areas of material from the core or blank. Chunks/shatter are

distinguished from cores by the absence of negative flake scars and striking platforms. Natural processes may produce a small proportion of chunk/shatter.

5.1.1.1.2 Raw Material Analysis

The determination of raw material type was accomplished with the aid of written descriptions (DeRegnaucourt and Georgiady 1998, Gatus 1980, 1982). All debitage and tools in the assemblage were macroscopically inspected to determine raw material type and compared with existing descriptions. Examining raw material procurement trends can yield data on settlement patterns, resource procurement strategies, and trade and exchange networks.

5.1.1.1.3 Mass Analysis

Mass analysis focuses on the variables of size, shape, and presence of cortex on aggregate batches of debitage as a means of distinguishing various forms and characteristics of reduction within a lithic artifact assemblage. Because there are several disadvantages in using reduction stage classification exclusively to analyze flaking debris, data obtained from mass analysis can be used to compare with those gained from reduction stage classification to provide more solid interpretations of the lithic artifact assemblage (Ahler and Christensen 1983, Ahler 1989, Bradbury and Franklin 2000). Two general theoretical observations regarding flintknapping underlie mass analysis and are relevant to the current study:

Flintknapping is fundamentally a reductive technology, and the nature of this technology places predictable and repetitive size constraints on the byproducts (and products) produced. Most flakes produced early in reduction should be larger, and most flakes produced late in reduction should be smaller. Similarly, the frequency of flakes with cortex should be highest in early reduction and lowest in late reduction.

Variation in load application in the flintknapping procedure produces corresponding variations in both size and flake shape. Experimental data shows that percussion flaking, on the whole, is capable of producing flakes much larger in size than any produced by pressure flaking. Size grade distribution data provides a fairly direct measure of load application variation (Ahler 1989: 89-91).

For this project, all non-utilized debitage (flakes, flake fragments) were passed through a series of nested laboratory hardware cloth screens to sort by size. Size grades follow Stahle and Dunn (1982, 1984). The size grades are as follows:

Grade 0 includes specimens smaller than ¼ inch

Grade 1 includes specimens smaller than ½ inch but larger than ¼ inch

Grade 2 includes specimens smaller than 1 inch but larger than ½ inch

Grade 3 includes specimens smaller than 2 inches but larger than 1 inch

Grade 4 includes specimens larger than 2 inches

Flake debris from each provenience in each grade was weighed as an aggregate to the nearest tenth of a gram and then counted. One attribute, thermal alteration, was also recorded for the reduction debris. Thermal alteration is often intentional within the culture in order to change the properties of the chert in order to make the raw material more adept to tool production.

The presence of primary geologic cortex may indicate that the raw material was procured from outcrops, whereas secondary incipient cone cortex on the core surface suggests that raw material was procured from a stream context. Research has shown that reduction analysis insufficiently provides data on the stage during which a flake was removed. However, by comparing frequency of occurrence of cortex on flakes, research indicates that a higher percentage of flakes during the initial stages of lithic reduction will have cortex and a lower percentage will have cortex during the final stages of lithic reduction. In addition, the amount of the flake covered in cortex is also an indicator of the stage during which the flake was removed, again more coverage indicates removal during the initial stages, and less coverage indicates later removal. Thus flakes with cortex were evaluated according to the following criteria:

Grade 1 includes specimens with primary geologic cortex over greater than 50% surface

Grade 2 includes specimens with primary geologic cortex over less than 50% surface

Grade 3 includes specimens with secondary conical cortex over greater than 50% surface

Grade 4 includes specimens with secondary conical cortex over less than 50% surface

All of these methods compose mass analysis. When taken together, they can provide extensive data on the methods of tool production.

5.1.1.1.4 Materials Recovered

Seven pieces of lithic debitage (Table 5-1) were recovered from Phase I investigations. The debitage consisted of two undetermined flakes, two interior flakes, one retouched flake, one thinning flake, and one piece of shatter. The debitage was made from Tan (n=4), Light Gray (n=1), White/Gray (n=1), and Reddish Brown chert (n=1).

Table 5-1. Prehistoric Lithic Debitage.

Tool Type	Raw Material	Debitage Type	Deb. Size Grade	Cortical Grade	Total
Chipped	Tan	Interior Flake	2		1
	Tan	Interior Flake	1	4	1
Chipped	Tan	Retouched Flake	2	3	1
Chipped	Tan	Thinning Flake	1		1
Chipped	Light Gray	Undetermined Flake	2		1
	Reddish Brown	Undetermined Flake	2		1
Chipped	White/Gray	Shatter	1		1
Total					**7**

5.1.2 Historic Artifact Assemblages

In accordance with South (1977), artifacts are ascribed to functional groups reflecting their association with the dwelling (architecture); food preparation, serving, and preserving (kitchen);

personal items; clothing items; furnishing; jobs/activities; arms; transportation; and finally fuel and miscellaneous categories.

A total of fifty-one (n=52) historic artifacts were recovered from the Phase I investigations. Table 5-2 shows the various groups or artifact classes recovered.

Table 5-2. Historic Artifacts Recovered.

Functional Group	Quantity
Kitchen	17
Architecture	14
Fuel	10
Furniture	9
Other	2
Total	**52**

5.1.2.1 Kitchen Group

This group consists of artifacts used in the preparation, consumption, and/or storage of foods and beverages. For the most part, this group comprises container glass and ceramics. As most of these are manufactured, there is significant variation in decorative style and manufacturing techniques over time. This chronological variation forms the basis for the assignment of individual sites to historic time periods.

A total of seventeen (n=17) Kitchen Group related artifacts, consisting of bone, glass, ceramic and plastic, were recovered (Table 5-3).

Table 5-3. Kitchen Group Artifacts.

Class	Type	Subtype1	Subtype2	Total
Ceramic	Whiteware	Undecorated	Body	1
			Footring	3
			Footring with Base	2
	Ironstone	Painted	Base	1
			Body	2
			Footring with Base	2
		Undecorated White	Body	1
Glass	Bottle/Jar Body	Machine Made		2
	Burned/Melted Unidentifiable Glass			3
Grand Total				**17**

5.1.2.1.1 Container Glass

Container glass, like ceramic sherds, constitutes one of the most important components of a historic assemblage. Like domestic ceramics, these artifacts convey significant chronological, functional, and social information. Analysis offers an important source of data about the period of occupation of the site, the kinds of activities undertaken there, and potentially the social or ethnic status of the

occupants. Studies of bottle glass have isolated the significant chronological characteristics of these vessels. Jars and other glass containers are discussed in a separate section.

5.1.2.1.1.1 Bottle Glass

European and American bottles were free blown and shaped to the vessel form, or were blown into simple dip molds. Dip molds are single component iron or wooden molds that give the body of the vessel its shape. These molds can only be square or cylindrical with the basal area being smaller or the same width as the shoulder area. Dip molds continued to be used as late as 1860 (Deiss 1981:12-18). Multipart molds having dip molded bodies (Rickett's molds) were produced into the 1920s (Jones and Sullivan 1985). To finish the neck of these early bottles, a glass-tipped rod (pontil) was attached to the bottle base to provide a means of holding it. Early types of finishing included fire-polished, flanged, folded, and applied string. All of these finishes persisted until the 1840s-1870s, when they were replaced by improved methods (Deiss 1981:18-24; Jones and Sullivan 1985; Jones 1971).

English bottle manufacturers used simple two-piece molds to make proprietary medicine bottles since the mid-1700s, and by 1800, American bottle makers were also using two-piece molds. These molds were hinged at the base or shoulder and may be referred to as open and shut molds. Bottles could be shaped in any form, such as square, round, or multi-sided. Consequently, polygonal bottle forms were very popular in the mid-nineteenth century (Deiss 1981:62). These molds enabled embossed lettering to be put on the fronts, backs, sides, and shoulders of the bottles (Jones and Sullivan 1985) and Gothic-style lettering was the most common style used until circa 1850 (Deiss 1981:48-49). Liquor flasks made in two-piece molds were introduced circa 1810 and were very popular by 1830. Embellished with a wide variety of molded or pictorial images, flasks remained popular until after the mid-1800s (Deiss 1981:62-65). Removable plates or panels that could be inserted into the mold were patented in 1867 (Jones and Sullivan 1985). These panels or plates were often embossed with the manufacturer name, product name, and city of manufacture, and could be used to personalize large shipments of bottles. This became popularly used on pharmaceutical and bitters bottles.

Two-piece molds were eventually eclipsed by multipart open and shut molds by 1850. These molds are similar to two-piece molds, but have a separate base plate. During the period 1840 to 1860, the two-piece and multi-part open and shut molds were the most popular mold types (Jones and Sullivan 1985). Vessel finishes (lip and necks) could still be hand formed by applying additional glass to the vessel and hand shaping a lip. By the 1820s, lipping shears were being used to shape the inside of the bottle, producing a standardized form known as an applied-tooled finish, which was most common from about 1840 to 1870.

Open and shut molds, dip molds, and multipart dip molds were all popularly used molds during the nineteenth century. Another mold, the turn-mold or turn-paste mold was developed and used in France on wine bottles as early as 1860 (Jones and Sullivan 1985). This mold type leaves no mold seams. In America, this mold type was most frequently used for wine and other beverages from 1870 to the 1920s (Jones and Sullivan 1985).

Even though molds are the most often used method to establish the manufacturing date of glass vessels, changes in the glass formula and innovations in overall glass vessel manufacture can aid in establishing chronology. For example, although the soda-lime formula was in use to make moderately clear glass for many centuries, a modified form of the soda-lime formula was developed in 1864 that revolutionized the glass industry in that it was less brittle and could be molded, cut, and engraved easily (Jones and Sullivan 1985). Because of this new formula, decorated and highly colored glass became cheaper and easier to produce, allowing it to be affordable and subsequently popular after the

1870s (Jones and Sullivan 1985; Innes 1976). By 1880, manganese oxide was used in molten glass as a decolorizer. Glass containers made with manganese oxide turn purple or amethyst when exposed to sunlight. Selenium began replacing manganese oxide as a decolorizer by 1915, and the replacement was complete by 1918 (Deiss 1981:78-83). Selenium glass when exposed to ultraviolet rays becomes a straw yellow color.

Another turning point in the glass industry occurred between 1850 and 1860, with the development of a device called the snap case. This implement held the vessel while the neck and lip were finished. No longer was a pontil rod attached to the base of a glass vessel. Other innovations occurred to revolutionize glass production. By the 1870s, finishes incorporated in the mold had become common. This type, involving the reheating and tooling of the finish to eradicate mold seams on the lip, is referred to as the improved-tooled finish. Improvements in annealing ovens also helped to totally fuse the lip to the neck. Bottle lips were no longer distinctly separate bits of glass. Molds with incorporated finishes predominated until the early twentieth century, when automated glass vessel manufacture replaced less efficient processes (Deiss 1981:54-59).

By circa 1884 to 1892, semi-automatic manufacture of wide and small mouth containers was possible. The only difference between semi-automatic manufacture and automatic manufacture is the way that the melted glass is passed to the machine. In semi-automatic manufacture, the glass is introduced by laborers and in automatic manufacture; the glass is introduced mechanically to the machine. It was not until the perfection of the Owen's machine in 1903 that fully automatic bottle manufacture was possible. This machine leaves a distinct mark on the base of the vessel. By 1917, 50 percent of glass containers were made using this machine (Miller and Sullivan 1984). Vessels made using the Owen's machine are not found in archaeological contexts after 1970 (Miller and Sullivan 1984). Also, during the late nineteenth and early twentieth centuries, semi-automatic machines continued to be used and modified for automatic manufacture through the development of glass feeding devices like the Peeler Paddle Gob Feeder (Miller and Sullivan 1984). Vessels made by semi-automatic machines are indistinguishable from vessels made on other machines (except the Owen's machine). The precision of automatic manufacturing enabled the standardization of continuous thread finishes, and screw caps replaced other forms of non-pressurized sealing.

A total of two (n=2) fragments of bottle/jar body glass fragments were recovered. Both fragments have no diagnostic attributes. One fragment is amber and one is blue green. The amber colored fragment may have originally belonged to a modern beer bottle.

5.1.2.1.2 Ceramics

Domestic ceramics are one of the most important chronologically diagnostic artifact categories from archaeological sites. In addition, these materials offer important clues to functional and social status variation among sites and cultural or ethnic components. For this reason, the ceramics are described in detail in the following chapter. Typically, ceramics are divided into two major groups: refined and unrefined earthenware. Refined earthenware was primarily used as serving vessels, such as dinner and tea services, or toiletry items. Refined wares treated here included delft or Tin-enameled ware, porcelain, creamware, pearlware, whiteware, and ironstone. Unrefined earthenware was used for storage and food preparation, such as mixing bowls, churns, and milk pans.

5.1.2.1.2.1 Whiteware

Whitewares are non-vitreous and semi-vitreous, white-paste earthenwares usually having a clear, colorless glaze. Whitewares were first manufactured in England circa 1800, had become popular by

1820, remained common throughout the 1800s, and are still being manufactured today. The period of greatest popularity of whiteware was 1830 to 1890 (Majewski and O'Brien 1987:119-125; Miller 1980:16-17; Noel-Hume 1969:130-131; Price 1982). Whiteware occurs in virtually every decorative type that was available in the nineteenth century, and decoration type and style can be used as relative temporal indicators.

Six undecorated whiteware sherds representing three individual vessels were recovered during the Phase I investigations. No diagnostic attributes are present.

5.1.2.1.2.2 Ironstone

Ironstone refers to a semi-vitreous white-paste ware that contains china stone (petunse). Charles Mason began producing "Mason's Ironstone China" in England in 1813. Mason claimed his ware contained iron slag. . English ironstone began appearing on American sites during the 1840s. These heavy-bodied vessels often were decorated to imitate Chinese porcelain. After 1850, ironstone predominantly was undecorated, or was decorated with molded geometric, floral, or foliate motifs. American manufacturers began making refined, white-paste wares, including ironstone, during the Civil War. Two varieties of ironstone from the mid-to-late nineteenth century are now recognized: blue-bodied and white-bodied. Blue-bodied ironstone was manufactured by British, and perhaps, by American firms. White-bodied ironstone was made by both British and American firms, but primarily by British ones. The period of greatest popularity of embossed ironstone was 1840 to 1907 (Majewski and O'Brien 1987:20-21). The difficulties of assigning fragmentary ceramics to either whiteware or ironstone can result in an under-enumeration of ironstone and an over-enumeration of whiteware.

A total of six (n=6) piece of ironstone was recovered during the Phase I investigation. Four (n=4) are thick, molded and painted blue, one (n=1) thick, is not molded, but is painted blue, and one (n=1) is undecorated. These fragments represent two vessels. One vessel is represented by the undecorated shard and the other vessel of the blue painted and molded shards. This vessel was most likely served in some form of unitarily capacity such as a flower pot. There are no diagnostic attributes present on any of the shards.

5.1.2.1.2.3 Other

This category includes all kitchen artifacts not accommodated by the above categories, including utensils, cooking vessels, metal cans, metal can pull-tabs, glass bottle crown caps, metal foil, and other wrapping materials, etc.

Three clumps of burned/melted unidentifiable glass were recovered during the Phase I survey.

5.1.2.2 Architecture Group

Artifacts assigned to this group include all items associated with construction and hardware furnishings. Specimens include bricks, mortar, cement, window glass, doorknobs, faucet parts, and various nails. The major categories of this group are described below.

A total of fourteen (n=14) Architectural Group artifacts were recovered during this survey (Table 5-4).

5.1.2.2.1 Flat Glass

Flat glass fragments are presumed to have been used in window panes if no other function can be determined, such as for mirrors, table tops, picture frames, etc. Given a large assemblage from a site, flat glass has the potential to comprise an important, chronologically sensitive artifact. During the eighteenth century, flat glass appropriate for windows was cut from a large disk of glass which was

Table 5-4. Architectural Group Artifacts.

Class	Type	Subtype1	Subtype2	Subtype3	Color	Total
Glass	Flat Glass				Aqua	1
					Blue-Green	3
					Clear	3
	Plate Glass	Lighting/Electrical Glass Insulator				1
Metal	Nail	Wire	8d	Clinched		2
				Pulled		1
				Unaltered		3
Grand Total						**14**

then cut into panes. By the early nineteenth century, glass manufacturers produced broad glass, which may be distinguished by a slight thickening toward the plate margin, one surface slightly more opaque than the other, and bubbles in the glass usually distorted in straight lines. In the late nineteenth century, machine-made glass, characterized by a uniform thickness, with occasional wavy lines of bubbles, was widely produced. In the early twentieth century, production of sheet pane glass eclipsed other manufacturing processes.

Seven window glass fragments were recovered from the Phase I investigations. Although there was a small sample of window glass, the Moir (1987) formula (Date= 84.22 (Thickness) + 1712.7) was used to determine construction dates.

The flat glass fragments had the following thickness and dates: 1884 (2.032), 1905 (2.286), 1948 (2.794), and 1969 (3.048).

5.1.2.2.2 Nails

Nails form one of the most widespread categories of artifacts recovered from historic sites. As with many other materials, increasing industrialization has had a major impact on the manufacturing of nails and associated hardware. Archaeologists have devoted considerable attention to nails in order to identify their chronologically significant characteristics (Nelson 1968). These are identified by manufacturing process (wrought, cut, wire) and, when possible, by size.

All nails were assigned to one of these three major categories; unidentified fragments were assigned to a miscellaneous category. The presence of cut nails at a site suggests a mid-nineteenth century occupation rather than an early nineteenth century occupation; the presence of significant numbers of wire nails indicates that some portion of a site occupation postdates the 1880s and continues into the twentieth century.

5.1.2.2.2.1 Wire Nails

Wire nails are made by cutting hardened steel wire and are round in cross-section. Wire nails were first produced in the 1850s, but were not commonly used until the 1880s. These are the dominant type manufactured today (Nelson 1968).

All six (n=6) nails were 8d in size. Two (n=2) common nails were clinched, one (n=1) common nail was pulled, one (n=1) common nail was unaltered, and two (n=2) flooring brads were unaltered.

5.1.2.2.3 Plate Glass

Plate glass includes industrially manufactured glass used in architecture. Examples include lighting/electrical glass insulators, other lighting/electrical glass, and unidentified lighting/electrical glass.

One (n=1) shard of an amber brown glass insulator was recovered.

5.1.2.3 Fuel Group

This category includes items such as coal, coal cinders, ash, slag, and charcoal. Coal was adopted as a primary fuel in the middle to late nineteenth century, prior to which firewood and charcoal were used both domestically and commercially as an energy sources.

Ten (n=10) Fuel Group artifacts were recovered from the survey. These were 2 coal fragments weighting 8.5 grams and eight (n=8) fragments of coal cinder/slag weighting 1.2 grams.

5.1.2.4 Furniture Group

A variety of artifacts associated with furnishings and household fixtures are often recovered in small numbers from historic sites. Examples of these include lamp globe or chimney parts, mirror glass, faucet parts, fireplace equipment, clock parts, draw pulls, flower pots and similar items (Thuro 1976).

A total of nine (n=9) shards of a white milk glass container vessel similar to a flower pot was recovered. Four (n=4) shards were undecorated and five (n=5) were painted green. No diagnostic attributes were present.

5.1.2.5 Other Group

This category includes all materials that are not readily assignable to a major group or that are unidentifiable. Items in this category include, for example, unidentified rusted metal artifacts and fragments of synthetic materials such as plastic, etc.

One (n=1) unidentifiable metallic wire and one (n=1) unidentified rusted object was recovered during the survey.

Section 6 -

Results

Three archaeological sites were located within the APE. The following is a description of these findings.

6.1 Site 15MO163

Site 15MO163 is a historic site associated with a residential structure, the Cox House, constructed in 1944 and still standing today. The site also has an indeterminate prehistoric component (Mrs. Cox, personal communication 2014).

6.1.1 Location

Site 15MO163 can be found on the USGS West Liberty, Kentucky, 7.5' quadrangle map (Figure 6-1). The UTM coordinates (Zone 17 NAD 27) for the center of the site are XXXXXXXXXXXX (Figure 6-2). The site's location on KYTC design sheets for the proposed reconstruction is shown in Figure 6-3. The site area is 0.019 acres (0.008 hectares) and is located on a floodplain just above a perpetual flowage easement associated with Cave Run Lake. Figure 6-4 though Figure 6-6 shows the site area.

6.1.2 Site Description

The site is located along KY 7on the east side of the road and about 124 meters west of Lick Fork at an elevation of 740 ft. AMSL. The site was initially identified by the presence of artifacts recovered during Phase I investigations and of the presence of the Cox's house. The house is still standing, but is in poor condition, and is no longer lived in. The house, the side yard, and the back yards of the house are all located within the APE. The front yard is mostly outside of the APE. According to Mrs. Cox, KY 7 once ran to the east of the house as a dirt road. Historic road plans indicated that the road was paved at some point between 1931 and 1945, but did not indicate if or when the road was relocated (Kentucky Department of Highways 1931, 1936, 1945). The historic archaeological material from the site indicated an occupation date anywhere from the late nineteenth century to the present, but this diagnostic material is very limited and the density of the artifacts was very low. According to Mrs. Cox, prehistoric material was found often along Lick Fork near the site, prior to becoming part of the Cave Run Lake easement and more prone to flooding. The site is hemmed in by road construction to the west, a ditch and negative shovel probes to the north, and slope plus road construction to the south. The front of the house faces east, towards the creek and the original routing of KY 7.

The historic map research corroborated the verbal communication with Mrs. Cox that the house was constructed in 1944, and indicated a large barn was once located north of the house within the APE. The 1950 aerial photograph shows the Cox House in its present location and a large barn to the north of the house and north of the ditched drain (Figure 6-7). The 1937 Highway Map of Morgan County did not show a structure in the vicinity of the site, but the scale makes this map not very dependable (Kentucky Department of Highways). The 1951 and 1977 7.5' West Liberty topographic quadrangle maps both showed the house and barn in the vicinity of the site (USGS). The 1955 Rural Highway Series Map of Morgan County, Kentucky indicates one structure in the vicinity (Kentucky Department of Highways). The barn is not found on the 2010 aerial photograph but the house is in the same location (Figure 6-2) (USGS).

Figure 6-1. Location of Archaeological Site 15MO163 USGS Topography Map.

Figure 6-2. Location of Archaeological Site 15MO163 on the 2010 Aerial Photograph.

Figure 6-3 Location of Archaeological Site 15MO163 on the Design Sheet.

Figure 6-4. Site 15MO163, Looking towards STP 24, Looking South by East.

Figure 6-5. Site 15MO163, Cox House, Looking Southeast.

Figure 6-6. Site 15MO163, Cox House, Looking Northeast.

Figure 6-7. Aerial Photograph from 1950 showing Site 15MO163.

6.1.3 Stratigraphy

Nine shovel test probes were excavated during the Phase I investigations in the vicinity of Site 15MO163. Three shovel probes were excavated ten meters from the north, east, and south sides of the house, and only the probe to the north was positive, producing historic artifacts and one prehistoric artifact from above and in the possible burn layer overlaying the subsoil and beneath 20 cm of topsoil. Six additional shovel test probes were excavated on the remaining property within the APE to the north of the house, but all were negative. A profile is illustrated in Figure 6-8. The soil for the site consists of Rowdy Loam, 0 to 4% slopes (RoB).

6.1.3.1 STP 24

STP 24 was located northwest of the Cox House in the back yard about 10 meters from the house (Figure 6-8). The shovel probe consisted of four zones extending from the surface to 50 cmbs. Zone I consisted of a 10YR3/4 dark yellowish brown silt loam, which overlay Zone II. Zone II consisted of 14 cmbs of 10YR3/3 silt loam mottled with coal fragments and produced historic material. Beneath Zone II, Zone III consisted of 4 cmbs of 5YR3/4 burnt sandstone layer mixed with 10YR3/3 silt loam, and also produced historic material. Beneath Zone III, Zone IV consisted of 2.5Y5/3 silt loam clay mottled with 10YR4/6 clay inclusion subsoil. The historic material recovered consisted of two Whiteware fragments, two wire nails, two coal fragments, one lighting/electrical glass insulator plate glass fragment, and one unidentified metal fragment. The prehistoric material recovered consisted of one shatter fragment of white/gray chert.

6.1.4 Materials Recovered

Eight historic artifacts were recovered during the Phase I investigations of the site (Table 6-1; Figure 6-9). The artifacts consisted of the kitchen group (n=2), the architecture group (n=3), the fuel group

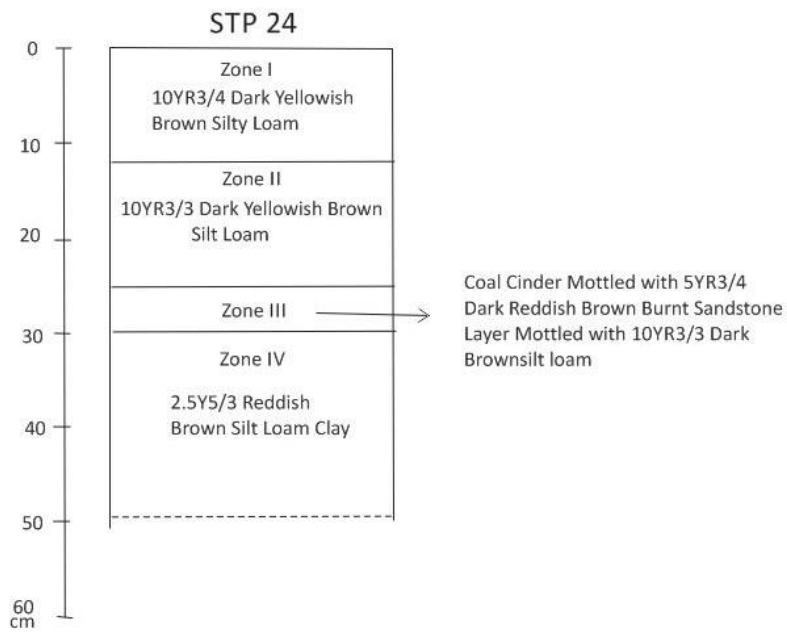

Figure 6-8. Shovel Test Probe from Site 15MO163.

Table 6-1. Site 15MO163 Historic Artifacts

Type	STP 24	Total
Whiteware	2	2
Wire Nail	2	2
Coal	2	2
Unidentified Metal	1	1
Lighting/Electrical Glass Insulator Glass Plate Fragment	1	1
Total	**8**	**8**

Figure 6-9. Sample of Site 15MO163 Historic Artifacts (*from left to right*: Coal Fragment, Wire Nails, Whiteware, and Glass Plate Fragment).

(n=2), and the Other group (n=1). The temporally diagnostic artifacts consisted of wire nails and whiteware. Whiteware was most popular from 1830 to 1890, but is still manufactured today (Majewski and O'Brien 1987; Miller 1980; Noel-Hume 1969; Price 1982). Wire nails became common in the 1880s but remain the dominant type manufactured today (Nelson 1968). The artifact assemblage likely represents a midden of primarily architecture and kitchen material associated with the Cox House. Unfortunately, only one shovel probe was positive for cultural material, limiting the potential for further study in the area.

One prehistoric artifact was recovered, a piece of shatter from STP 24 (Table 6-2). The piece of shatter is made of white/gray chert, but is not diagnostic of any cultural or temporal period.

Table 6-2. Site 15MO163 Prehistoric Artifacts.

Type	STP 24	Total
Shatter, White/Gray Chert	1	1
Total	**1**	**1**

6.1.5 Features

One feature was identified within the positive shovel probe. It consisted of a burn layer that overlay the subsoil and also produced historic artifacts. No other features were identified within the site.

6.1.6 Prehistoric Discussion

The prehistoric component consists of one piece of shatter. The piece of shatter is not diagnostic of any cultural or temporal period. Based on the limited amount of material the prehistoric component is unlikely to provide important information and is of limited research potential. The presence of historic artifacts in the STP suggests there is limited integrity for the prehistoric component.

6.1.7 Historic Discussion

The historic component represents a historic residence, the Cox House, that dates to between the 1944 and the present. The house is still standing, although no longer lived in and in poor condition. It was built by the Cox Family and is still owned by them today. The house faces east towards the original route for KY 7. Eight historic artifacts were recovered during the Phase I investigations of the site (Table 6-1). The artifact assemblage likely represents a midden of primarily architecture and kitchen material associated with the Cox House. Unfortunately, only one shovel probe was positive for cultural material, limiting the potential for further study in the area. The historic assemblage suggests a date anywhere from the late nineteenth century to the present, but the assemblage is of a low density and the diagnostic material is very limited.

The historic map research corroborated the verbal communication with Mrs. Cox that the house was constructed in 1944, and indicated a large barn was once located north of the house within the APE. The map research suggested that the house and barn were standing by 1950 to 1977, but the barn was gone by 2010. The house was still standing at the time of the survey, although in poor condition.

6.1.8 National Register Eligibility

Site 15MO163 consists of a prehistoric and a historic component. The prehistoric component consists of a single piece of debitage. The limited amount of material and the lack of cultural and temporal affiliation indicate that there is limited research potential for the prehistoric component. The association of prehistoric and historic artifacts indicates a lack of integrity for the prehistoric component. The historic component consists of a historic residence dating from 1944 to the present. The area found within the APE consists of the side yard and back yard of the house. Artifacts recovered primarily consist of architecture and kitchen material. Based on the material recovered and the soil profiles from the shovel probes, the site is not likely to yield important information. The recent age of the historic material and the limited area that produced cultural material within the site indicates that little more can be learned from the site. In addition, the site lacks integrity. Therefore, Site 15MO163 does not have research potential, and is not recommended as eligible for listing on the National Register under Criterion D.

6.1.9 Recommendations

No further work is recommended.

6.2 Site 15MO164

Site 15MO164 consists of an indeterminate multi-component site located along and within the old route for KY 7.

6.2.1 Location

Site 15MO164 can be found on the USGS West Liberty, Kentucky, 7.5' quadrangle map (Figure 6-10). The UTM coordinates (Zone 17 NAD 27) for the center of the site are XXXXXXXXXXX. The site is located along KY 7 on the eastern side of the road about 55 meters west of Elk Fork at an approximate elevation of 758 ft. AMSL within a floodplain area (Figure 6-11). The site's location on KYTC design sheets for the proposed reconstruction is shown in Figure 6-12. Figure 6-13 illustrates Site 15MO164.

6.2.2 Site Description

The site consists of an area that encompasses about 0.050 acres (0.20 hectares) and at the time of the survey, it was covered in scrub and weeds or had high surface visibility within the remnants of old KY 7 (Figure 6-13). The site is hemmed in to north by negative shovel probes, to the west by KY 7, to the south by the terminus of the APE, and to the east by negative shovel probes, the limits of the APE, and Elk Fork. The site could extend outside the APE to the south. Historic map research did not identify any structures within the vicinity from 1937 to present (Figure 6-14).

6.2.3 Stratigraphy

Nine shovel test probes were excavated in the area near Site 15MO164. Three were positive for cultural material and none were found to be disturbed. Shovel probes were excavated within and along the old KY 7 roadbed. The soil for the site is Shelocta-Helechawa-Hazleton (SpF). One representative shovel test probe is described below.

6.2.3.1 STP 6

STP 6 consisted of one zone (Figure 6-15). Zone I extended from surface to 45 cmbs and consisted of a 10YR4/1 Dark Gray silty loam. The zone developed higher moisture content towards the base of the shovel test probe. Artifacts recovered from STP 6 included two flat glass fragments and one interior flake.

6.2.4 Materials Recovered

Fourteen historic artifacts were recovered from three positive shovel test probes, STP 4, 5, and 6 (Table 6-3 and Figure 6-16). The material recovered included bottle/jar glass, flat glass, coal, and unidentified metal wire. One fragment of modern plastic was also recovered from STP 5 but discarded. Six prehistoric artifacts were recovered from three positive shovel test probe, STP 4, 5, and 6 (Table 6-4 and Figure 6-17). The material recovered included debitage, consisting of a retouched flake, interior flakes, a thinning flake, and undetermined flakes.

The historic material is of a very low density and the diagnostic material is limited. The only diagnostic material recovered includes flat glass and machine-made bottle/jar glass. The median date determined by the thickness of the flat glass suggests a date of 1944 (Moir's 1987), but the earliest date suggested was 1905 and the latest date was 1969. The machine-made bottle glass suggests a date of post 1890, but little else can be determined from the fragment (Miller and Sullivan 1984). The historic artifact assemblage is represented mostly by architectural material. The prehistoric artifacts consisted of one retouched flake, one interior flake, two thinning flake, and two undetermined flakes from STPs 4, 5, and

Figure 6-10. U.S.G.S. Topographic Map Showing 15MO164.

Figure 6-11. Location of Archaeological Site 15MO164 on the 2010 Aerial Photograph.

Figure 6-12. Location of Archaeological Site 15MO164 on Design Sheet.

Figure 6-13. Site 15MO164, Looking North.

Figure 6-14. Historic Aerial Photograph from 1950 Showing Site 15MO164.

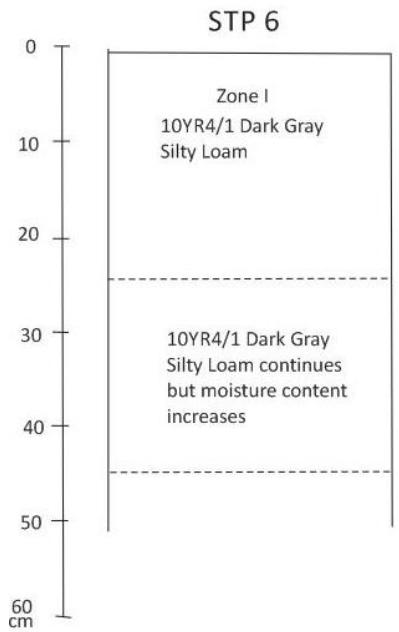

Figure 6-15. Shovel Test Probe from Site 15MO164.

Table 6-3. Site 15MO164 Historic Artifacts

Type	STP 4	STP 5	STP 6	Total
Flat Glass	2		2	4
Unidentified Metal Wire		1		1
Coal		8		8
Bottle/Jar Body Glass			1	1
Total	**2**	**9**	**3**	**14**

Figure 6-16. Sample of Site 15MO164 Historic Artifacts (*from clockwise*: Metal Wire, Coal Fragments, Bottle/Jar Glass Fragment, and Flat Glass).

Table 6-4. Site 15MO164 Prehistoric Artifacts.

Type	STP 4	STP 5	STP 6	Total
Retouched Flake		1		1
Interior Flake		1	1	2
Thinning Flake		1		1
Undetermined Flake	1	1		2
Total	**1**	**4**	**1**	**6**

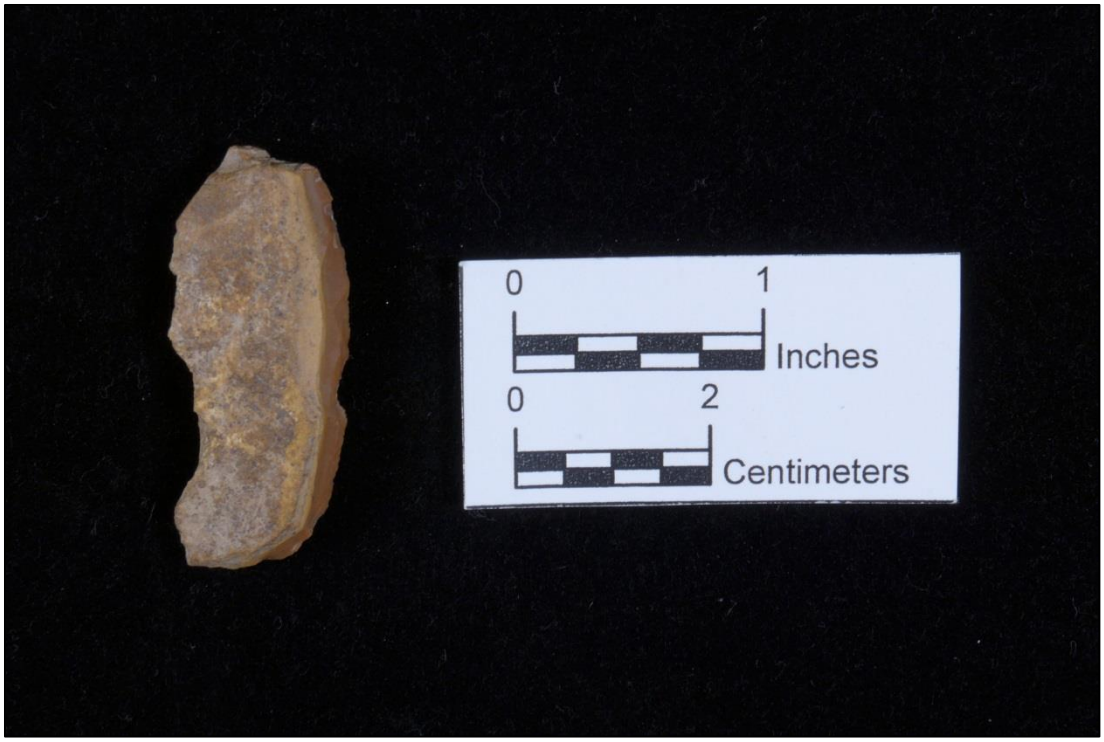

Figure 6-17. Sample of Site 15MO164 Prehistoric Artifacts (Retouched Flake).

6. The raw material used consisted of tan, light gray, and reddish brown chert. None of the prehistoric artifacts are diagnostic of any cultural or temporal period.

6.2.5 Features

No features were located during the Phase I archaeological investigations for 15MO164.

6.2.6 Prehistoric Interpretation

Site 15MO164 consists of one retouched flake, one interior flake, two thinning flake, and two undetermined flakes. None of the prehistoric artifacts are diagnostic of any cultural or temporal period. Based on the limited amount of material, the prehistoric component is unlikely to provide important information and is of limited research potential. In addition, the presence of historic artifacts in the STPs suggests there is limited integrity for the prehistoric component. Modern plastic material was also recovered in STP 5.

6.2.7 Historic Interpretation

Site 15MO164 consists of one fragment of bottle/jar glass, four flat glass fragments, eight coal fragments, and one unidentified metal wire fragment. The historic material is of a very low density and the diagnostic material is limited. The only diagnostic material recovered includes flat glass and machine-made bottle/jar glass. The median date determined by the thickness of the flat glass suggests a date of 1944 (Moir 1987), but the earliest date suggested was 1905 and the latest date was 1969. The machine-made bottle glass suggests a date of post 1890, but little else can be determined from the fragment. The historic artifact assemblage is represented mostly by architectural material. However, the historic map research did not identify any structures within the vicinity from 1937 to present. Disturbances to the site were not identified, but the artifacts were recovered from a mixed context as prehistoric, historic and modern were all found together. The site does lie within a floodplain and the material could be from

a secondary deposit. The majority of the historic material could easily be modern as all is still found today, although some of the flat glass suggests an earlier date. Based on the limited amount of material, the historic component is unlikely to provide important information and is of limited research potential. In addition, the presence of modern material in the STPs suggests there is limited integrity. No features or intact deposits were identified.

6.2.8 National Register Eligibility

Site 15MO164 consists of a historic and prehistoric component. The historic component consists of a low density of artifacts with little diagnostic material, and that diagnostic material is very limited. The historic material is possibly modern. The historic artifact assemblage is represented mostly by architectural material. However, the historic map research did not identify any structures within the vicinity from 1937 to present. The site is located within and along the old route for KY 7 and within a floodplain area. Therefore, the site could be from a secondary deposit. The prehistoric component consists of a low density of artifacts and no diagnostic material. The site has limited integrity due to the presence of a mixed context with modern, historic, and prehistoric material all found together. No intact deposits or features were identified for either component. Therefore, Site 15MO164 has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D.

6.2.9 Recommendations

No further work is recommended.

6.3 Site 15MO165

Site 15MO165 consists of a heavily disturbed historic house site with three standing outbuildings, dating from the early to mid-twentieth century to the present.

6.3.1 Location

Site 15MO165 can be found on the USGS West Liberty, Kentucky, 7.5' quadrangle map (Figure 6-18). The UTM coordinates (Zone 16 NAD 27) for the center of the site are XXXXXXXXXXXX(Figure 6-19). The site is located along KY 7, just west of the KY 7 and KY 1161 intersection. The site measures 0.109 acres (0.044 hectares) and sits at about 772 ft. AMSL on a small terrace. The site's location on KYTC design sheets for the proposed reconstruction is shown in Figure 6-20.

6.3.2 Site Description

The site consists of a historic scatter with three standing shed outbuildings (Figure 6-21-Figure 6-25). The historic scatter was surveyed using systematic surface collection as the surface had high visibility due to recent bulldozing and/or heavy equipment activity. The subsoil and bedrock were exposed over the majority of the site. Two of the sheds date from around 1940 to the present (Figure 6-22; Figure 6-23). The third stone shed likely dates to around the 1920s to the 1940s (Figure 6-24). The 1951, 1977, and 1977 (revised in 1993) USGS 7.5' West Liberty topographic quadrangle maps all indicated that two structures were once standing in the vicinity of the site (USGS). In addition, the 1950 aerial photograph also indicated two structures in the vicinity of the site (USGS) (Figure 6-26). The 1955 Rural Highway Series Map for Morgan County, Kentucky indicates two structures in the vicinity of the site (Kentucky Department of Highways). The 2010 aerial photograph indicates that only one of the structures was still standing (USGS) (Figure 6-19). The 1937 Highway and Transportation Map of Morgan County, Kentucky Map shows one large structure in the vicinity of the site, but this map is less dependable due to its scale (Kentucky Department of Highways).

6.3.3 Stratigraphy

No shovel probes were excavated due to the disturbance to the site. The majority of the site was recently disturbed with backhoe activity and the subsoil and bedrock were exposed. The soil for the site area is Pope loam (Po).

6.3.4 Materials Recovered

Thirty-two artifacts were recovered from the surface collection, but this is just a sample of what was littered across the site (Table 6-5 and Figure 6-27). The material recovered consisted of four wire nails, five flat glass fragments, three burned/melted glass fragments, one bottle/jar glass fragment (machine-made), six Ironstone fragments, four Whiteware fragments, and nine ceramic hardware pieces. Brick debris was noted as strewn about the site area (Figure 6-25). The historic material recovered suggested early twentieth century to the present occupation. The diagnostic material consisted of wire nails, flat glass fragments, machine-made glass, Ironstone fragments, and Whiteware fragments.

The median date determined by the thickness of the flat glass suggests a date of 1933 (Moir 1987), but the earliest date suggested was 1884 and the latest date was 1969. The machine-made bottle glass suggests a date of post 1890, but little else can be determined from the fragment. Whiteware was most popular from 1830 to 1890, but is still manufactured today (Majewski and O'Brien 1987; Miller 1980; Noel-Hume 1969; Price 1982). Ironstone began appearing on American sites during the 1840s and continued in popularity until around 1907(Majewski and O'Brien 1987). Wire nails became common in

Figure 6-18. Location of Archaeological Site 15MO165 USGS Topography Map.

Figure 6-19. Location of Archaeological Site 15MO165 on the 2010 Aerial Photograph.

Figure 6-20. Location of Archaeological Site 15MO165 on the Design Sheet.

Figure 6-21. Site 15MO165, Showing the Heavily Disturbed Surface Area and Three Sheds, looking West.

Figure 6-22. Site 15MO165, Frame Shed # 1, Looking West.

Figure 6-23. Site 15MO165, Frame Shed # 2, Looking North.

Figure 6-24. Site 15MO165, Stone Shed, Looking North.

Figure 6-25. Site 15MO165, Showing Brick Rubble.

Figure 6-26. Aerial Photograph from 1950 of Site 15MO165.

Table 6-5. Site 15MO165 Artifacts.

Type	Surface	Total
Whiteware	4	4
Wire Nail	4	4
Ironstone	6	6
Bottle Glass/Jar	1	1
Flat Glass	5	5
Ceramic Hardware	9	9
Burned/Melted Unidentifiable Glass	3	3
Total	**32**	**32**

Figure 6-27. Sample of Site 15MO165 Artifacts (*from clockwise*: Wire Nails, Milk Glass, Ironstone, Whiteware, Ironstone, and Melted Glass Fragments).

the 1880s but remain the dominant type manufactured today (Nelson 1968). The historic artifact assemblage is represented mostly by architectural and kitchen material.

6.3.5 Features

No features were located during the Phase I archaeological investigations for Site 15MO165.

6.3.6 Historic Interpretation

Site 15MO165 is a historic scatter associated with three standing, shed outbuildings. The site is strewn with historic and modern material and has recently been heavily disturbed by heavy equipment, leaving the majority of the site with the subsoil and bedrock exposed on the surface. The site was surface collected and a sample taken. Brick rubble was noted on the surface. Historic map research indicates

that two structures were once in the vicinity as early as 1950, and one of these structures was possibly standing in 1937; only one structure was still standing in 2010. These two structures are in addition to the three shed outbuildings still extant. The historic material did not produce any solid dates, but suggests a date range from the early twentieth century to the present. The material collected consisted of mostly kitchen and architectural artifacts. The site is likely associated with a residential structure with multiple outbuildings that was recently destroyed. The majority of the site was destroyed recently by heavy equipment activity. No intact deposits or features were identified. Based on the severity of the destruction to the site, the historic component is unlikely to provide important information and is of limited research potential.

6.3.7 National Register Eligibility

Site 15MO165 consists of a historic component. The historic component consists of a historic scatter and three standing outbuildings associated with a residential structure and another outbuilding recently destroyed. The site has been practically destroyed through recent bulldozing or other heavy equipment activity, and the subsoil and bedrock are exposed on the surface of the site. Therefore, Site 15MO165 has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D.

6.3.8 Recommendations

No further archaeological work is recommended for Site 15MO165.

Section 7 -

Recommendations and Summary

Recommendations

7.1 Site 15MO163

Site 15MO163 consists of a small historic scatter associated with a standing house structure which likely dates from the mid twentieth century to the present based on artifact analysis, verbal communication with landowner, and historic map research. The site also has a prehistoric component, consisting of one piece of shatter. The historic component consisted of eight historic artifacts, primarily of architecture and kitchen material. The site likely extends outside of the APE, but did include the house, the backyard, and the side yards. Nine shovel probes were excavated in the vicinity of the standing house, but only one was positive for cultural material.

7.1.1 National Register Eligibility

Site 15MO163 consists of a prehistoric and a historic component. The prehistoric component consists of a single piece of debitage. The limited amount of material and the lack of cultural and temporal affiliation indicate that there is limited research potential for the prehistoric component. The association of prehistoric and historic artifacts indicates a lack of integrity for the prehistoric component. The historic component consists of a historic residence dating to between the 1944 and the present. The area with in the APE consists of the side yard and back yard of the house. Artifacts recovered primarily consist of architectural and kitchen material. Based on the material recovered and the soil profiles from the shovel probes, the site is not likely to yield important information. The recent age of the historic material and the limited area that produced cultural material within the site indicates that little more can be learned from the site.

7.1.2 Recommendations

Site 15MO163 is considered to not have research potential and integrity, and therefore, is not recommended as eligible for listing on the National Register under Criterion D. As a result, no further work is recommended.

7.2 Site 15MO164

Site 15MO164 consists of an indeterminate multi-component site. The site is hemmed in to north by negative shovel probes, to the west by KY 7, to the south by the terminus of the APE, and to the east by negative shovel probes, the limits of the APE, and Elk Fork. Nine shovel probes were excavated in the vicinity of the site, but only three were positive for material. Fourteen historic artifacts were recovered from three positive shovel test probes, and consisted of bottle/jar glass, flat glass, coal fragments, and an unidentified metal wire. One fragment of modern plastic was also recovered from a STP but discarded. Six prehistoric artifacts were recovered from three positive shovel test probe. The only diagnostic material recovered includes flat glass and machine-made bottle/jar glass. The median date determined by the thickness of the flat glass suggests a date of 1944 (Moir's 1987), but the earliest date suggested was 1905 and the latest date was 1969. The machine-made bottle glass suggests a date of post 1890, but little else can be determined from the fragment. The historic artifact assemblage is represented mostly by architectural material. However, the historic map research did not identify any structures within the

vicinity from 1937 to present. Disturbances to the site were not identified, but the artifacts were recovered from a mixed context as prehistoric, historic and modern were all found together.

7.2.1 National Register Eligibility

Site 15MO164 consists of a historic and prehistoric component. The historic component consists of a low density of artifacts with little diagnostic material and that diagnostic material is very limited. The historic artifact assemblage is represented mostly by architectural material. However, the historic map research did not identify any structures within the vicinity from 1937 to present. The prehistoric component also consists of a low density of artifacts and no diagnostic material. The site has limited integrity due to the presence of a mixed context with modern, historic, and prehistoric material all found together. No intact deposits or features were identified for either component. Therefore, Site 15MO164 has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D.

7.2.2 Recommendations

Site 15MO164 is considered to not have research potential and integrity, and therefore, is not recommended as eligible for listing on the National Register under Criterion D. As a result, no further work is recommended.

7.3 Site 15MO165

Site 15MO165 consists of a historic scatter with three standing shed outbuildings. The historic scatter was surveyed using systematic surface collection as the surface had high visibility due to recent bulldozing and/or other heavy equipment activity. The subsoil and bedrock were exposed over the majority of the site. Two of the sheds date from around 1940 to the present. The third stone shed likely dates to around the 1920s to the 1940s. Historic map research suggests that two structures were once in the vicinity as early as 1950 and only one structure was still standing in 2010. These two structures are in addition to the three shed outbuildings still extant. Thirty-two historic artifacts were recovered, but this is just a sample of the material at the site. Brick rubble was also noted in the debris but not collected. The historic material did not produce any solid dates, but suggests a date range from the late nineteenth century to the present. The material collected consisted of mostly kitchen and architectural artifacts. The site is likely associated with a residential structure with multiple outbuildings. The majority of the site was destroyed recently from heavy equipment activity. No intact deposits or features were identified.

7.3.1 National Register Eligibility

Site 15MO165 consists of a historic component. The historic component consists of a historic scatter and three standing outbuildings associated with a residential structure and another outbuilding recently destroyed. The site has been practically destroyed through recent bulldozing or other heavy equipment activity, and the subsoil and bedrock are exposed on the surface of the site. Therefore, Site 15MO165 has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D.

7.3.2 Recommendations

No further archaeological work is recommended for Site 15MO165.

7.4 Summary

At the request of the Kentucky Transportation Cabinet (KYTC), archaeologists from CDM Smith conducted a Phase I archaeological survey for improvements along KY 7 and KY 1161 in Morgan County, Kentucky (Item Number 10-106.00). The area of potential effect (APE) consisted of 23 acres (9.3 ha) along KY 7 and 1161. The APE was visited by a CDM Smith archaeology crew between July 16th and July18th, 2014. The archaeological survey involved systematic shovel test excavation, systematic surface collection, and visual inspection over the entire APE.

Three previously unrecorded archaeological sites, 15MO163-15MO165, were identified within the project bounds. None of the sites were potentially eligible for recommendation to the National Register of Historical Places (NRHP) under Criterion D.

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Appendix A -

Artifact Inventory

Table A-1. Prehistoric Lithic Catalog.

Catalog #	Field Site	Site	Unit	Level	Tool Type	Subtype	Deb SG	Deb Type	Raw Material	Cortex	HT	Length	Width	Thickness	Weight	Number
2	CDMS 2	15MO164	STP 5		Chipped Stone	Debitage	2	Retouched Flake	Tan	3	n	43.05	17.2	5.85	6.5	1
2	CDMS 2	15MO164	STP 5		Chipped Stone	Debitage	2	Interior Flake	Tan	N	N				2.8	1
2	CDMS 2	15MO164	STP 5		Chipped Stone	Debitage	1	Thinning Flake	Tan	N	N				0.1	1
2	CDMS 2	15MO164	STP 5		Chipped Stone	Debitage	2	Undetermined Flake	Lt. Gray	N	N				1.2	1
1	CDMS 1	15MO163	STP 24		Chipped Stone	Debitage	1	Shatter	White/Gray	N	N				0.4	1
1	CDMS 2	15MO164	STP 4		Chipped Stone	Debitage	2	Undetermined Flake	Reddish Brown	N	Y				4.4	1
3	CDMS 2	15MO164	STP 6		Chipped Stone	Debitage	1	Interior Flake	Tan	4	N				1.1	1

Table A-2. Historic Artifact Catalog.

Site #	Field Site #	Cat. #	STP/UNIT #	Level	Functional Group	Material Class	Type	Sub Type 1	Subtype 2	Subtype 3	Color	#	Size	Weight (gm)	Comments
15MO163	CDMS 1	1	STP 24		Kitchen	Ceramic	Whiteware	Undecorated	Footring with Base			1			
15MO163	CDMS 1	1	STP 24		Kitchen	Ceramic	Whiteware	Undecorated	Body			1			
15MO163	CDMS 1	1	STP 24		Architecture	Metal	Nail	Wire	8d	Pulled		1			
15MO163	CDMS 1	1	STP 24		Architecture	Metal	Nail	Wire	8d	Clinched		1			
15MO163	CDMS 1	1	STP 24		Fuel	Biological	Coal	Coal				2		8.5	
15MO163	CDMS 1	1	STP 24		Other	Metal	Other Metal	Unidentified				1			
15MO163	CDMS 1	1	STP 24		Architecture	Glass	Plate Glass	Lighting/Electrical Glass Insulator				1			amber
15MO164	CDMS 2	3	STP 6		Architecture	Glass	Flat Glass				Aqua	1	2.286		
15MO164	CDMS 2	3	STP 6		Architecture	Glass	Flat Glass				Clear	1	3.048		
15MO164	CDMS 2	2	STP 5		Other	Metal	Other Metal	Unidentified				1			Metal wire
15MO164	CDMS 2	2	STP 5		Fuel	Biological	Coal	Coal Cinder/Slag				8		1.2	
15MO164	CDMS 2	1	STP 4		Kitchen	Glass	Bottle/Jar Body	Machine Made			Blue Green	1			
15MO164	CDMS 2	1	STP 4		Architecture	Glass	Flat Glass				Clear	1	2.76		
15MO164	CDMS 2	1	STP 4		Architecture	Glass	Flat Glass				Clear	1	2.91		
15MO165	CDMS 3	1	Surface		Architecture	Metal	Nail	Wire	8d	Unaltered		1			common
15MO165	CDMS 3	1	Surface		Architecture	Metal	Nail	Wire	8d	Clinched		1			common
15MO165	CDMS 3	1	Surface		Architecture	Metal	Nail	Wire	8d	Unaltered		2			flooring brads
15MO165	CDMS 3	1	Surface		Architecture	Glass	Flat Glass				Blue-green	2	2.032		
15MO165	CDMS 3	1	Surface		Architecture	Glass	Flat Glass				Blue-green	1	2.794		
15MO165	CDMS 3	1	Surface		Architecture	Glass	Flat Glass				Clear	2	3.048		
15MO165	CDMS 3	1	Surface		Kitchen	Glass	Burned/Melted Unidentifiable Glass					3			
15MO165	CDMS 3	1	Surface		Kitchen	Glass	Bottle/Jar Body	Machine Made			Amber	1			beer bottle

15MO165	CDMS 3	1	Surface		Furniture	Ceramic	Hardware	Other Furniture Ceramic				5			Painted green exterior.
15MO165	CDMS 3	1	Surface		Furniture	Ceramic	Hardware	Other Furniture Ceramic				4			
15MO165	CDMS 3	1	Surface		Kitchen	Ceramic	Ironstone	Painted	Footring with Base			2			molded, blue painted
15MO165	CDMS 3	1	Surface		Kitchen	Ceramic	Ironstone	Painted	Base			1			blue painted
15MO165	CDMS 3	1	Surface		Kitchen	Ceramic	Ironstone	Painted	Body			2			molded, blue painted
15MO165	CDMS 3	1	Surface		Kitchen	Ceramic	Whiteware	Undecorated	Footring			3			
15MO165	CDMS 3	1	Surface		Kitchen	Ceramic	Whiteware	Undecorated	Footring with Base			1			
15MO165	CDMS 3	1	Surface		Kitchen	Ceramic	Ironstone	Undecorated White	Body			1			