Appendix C:

Environmental Overview

Environmental Overview

Turkeyfoot Road (KY 1303)
From Barnwood Drive to Eastbound I-275 Ramps
Kenton County, Kentucky

prepared for:

Kentucky Transportation Cabinet

District 6

May 2018

TABLE OF CONTENTS

APPENDICES

LISTING OF FIGURES

1.0 Executive Summary

This environmental overview was conducted in November 2017 for the Turkeyfoot Road Planning Study; it assessed an area of potential effect (APE) surrounding Turkeyfoot Road from the intersection with Barnwood Drive to the eastbound ramps of I-275. The project area is predominantly urban with few natural environmental resources; however, in-office research, windshield surveys, and pedestrian reconnaissance were employed to identify environmental points of concern, which are included in mapping in Appendix A.

Though the majority of the project area is comprised of modern development, the historic Monte Cassino Chapel is located adjacent to Turkeyfoot Road on Thomas More College property. Though it is not listed on the National Register of Historic Places (NRHP), it should be assessed for eligibility to be listed.

The project area contains a high percentage of Minority and Low Income populations to the north of I-275; however, the APE does not include any residential impacts in that area at this time. There are high percentages of Elderly and Disabled populations throughout the project area. Further analysis for Environmental Justice (EJ) impacts should be conducted if residential relocations are anticipated during project development.

The project area includes several aquatic resources, including the pond on Thomas More College property, several streams, and one small wetland. These features should be assessed for permitting purposes but do not appear to support threatened and endangered species, nor connect to ecologically sensitive waterways. There are several trees in residential neighborhoods along Turkeyfoot Road that are potential habitat for endangered bats; appropriate coordination with the United States Fish and Wildlife Service (USFWS) and other relevant agencies should occur to assess any impacts.

Finally, a substation on Turkeyfoot road is a significant utility/hazardous materials site that should be avoided. An underground gas line between Town Center Boulevard and Turkeyfoot Road will require coordination if it is to be impacted.

2.0 Project Information

2.1 Project Description

This report presents an overview of significant environmental features within the study area of the Turkeyfoot Road Planning Study APE (see Figure 1).

The project study area extends from Barnwood Drive to the eastbound ramps of I-275 in Crestview Hills. Past improvements have been made to the project study area, resulting in some reduction of delays and queues along Turkeyfoot Road. Recently, an additional northbound lane was constructed along Turkeyfoot Road from north of Barnwood Drive to the southern I-275 ramp intersection. The goal of this improvement was to reduce congestion at the Thomas More Parkway intersection and improve access to I-275. An additional northbound left turn lane was provided on Turkeyfoot Road at the northern I-275 ramp intersection with the same project. While these initial improvements have resulted in some operational improvement, further improving Turkeyfoot Road will provide a safer, more efficient corridor connecting the surrounding communities with businesses, retail developments, Thomas More College, recreational resources, and I-275.

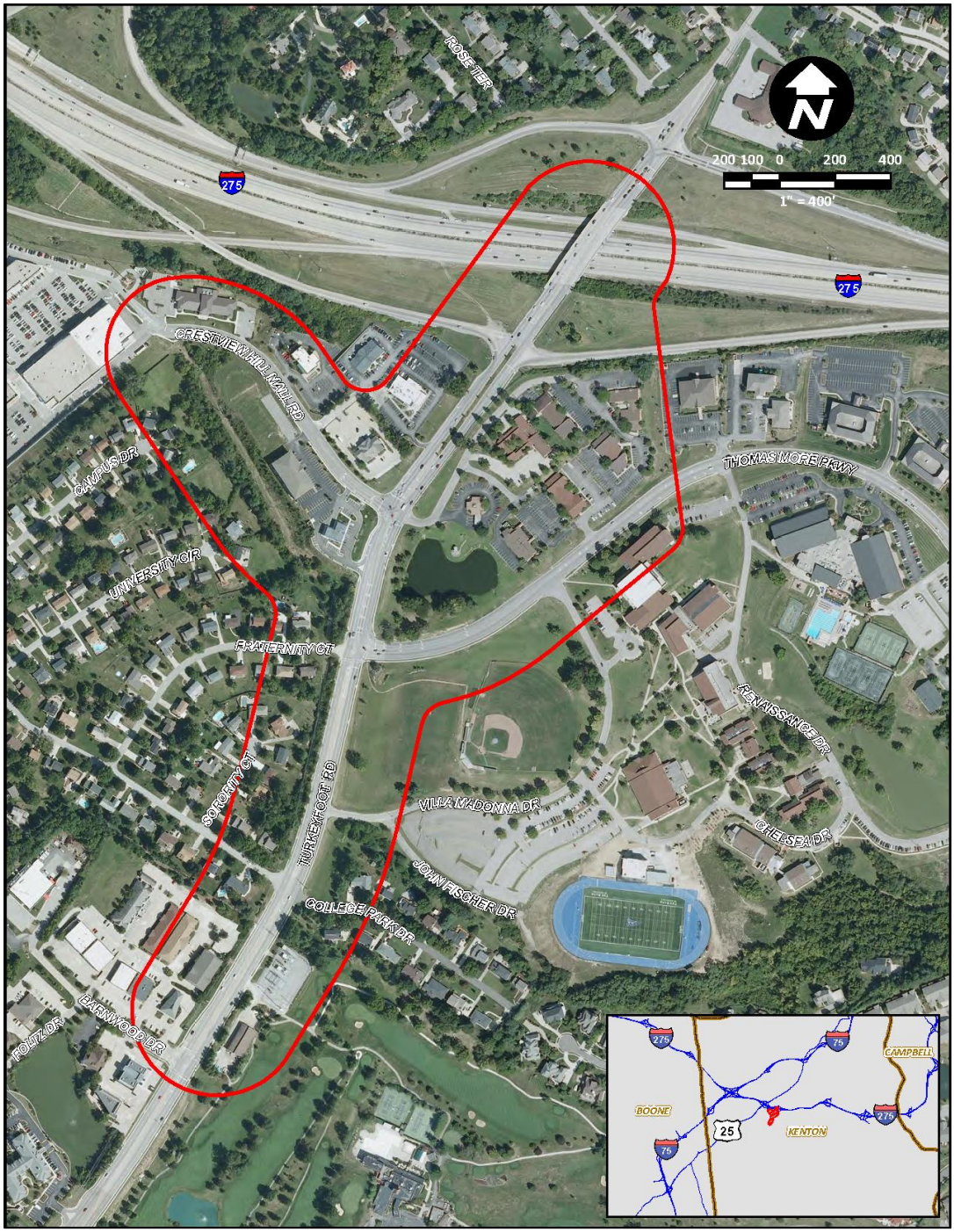

Figure 1: Project Study Area

2.2 Purpose and Need Statement

The purpose of this study is to improve safety and reduce congestion at the KY 1303 (Turkeyfoot Road) intersections with Thomas More Parkway and Town Center Boulevard. Multimodal traffic in Crestview Hills will also be considered in the study.

The primary goals of the Planning Study are to develop improvement strategies to reduce the potential for crashes and reduce travel delays.

Turkeyfoot Road (KY 1303) stretches 6.3 miles between KY 536 to the south and Dixie Highway (US 25/42/127) to the south. The project corridor is an urban minor arterial, 0.6 miles in length between the Barnwood Drive intersection (MP 5.085) and the middle of the I-275 bridge (MP 5.685). It carries between 30,300 and 44,700 vehicles per day. A total of 290 crashes were reported within the project study area between January 2014 and December 2016. These include crashes on Turkeyfoot Road and approaches at intersections. Within the same timeframe, 221 crashes were reported along the 0.6 mile mainline segment of Turkeyfoot Road. Approximately two-thirds of the crashes reported were designated as rear-end crashes. Long queues, limited turn lane capacity, and travel delays are frequently encountered by users. Thus, the primary purpose and need of the proposed project is to improve safety and improve mobility.

Recent improvements have been made to Turkeyfoot Road from College Park Drive to I-275 ramps, which has resulted in some reduction of travel delay within the project corridor. This study will seek to make further improvements.

2.3 Project Corridor

Beginning at the I-275 interchange and continuing south, there are two restaurants located on the west side of the road, which have only right-in and right-out access to and from Turkeyfoot Road. South of the restaurants, Crestview Hills Mall Road extends to the west past an office building, a restaurant, a retail building, and the Crestview Hills Municipal Building to the Crestview Hills Town Center and to Dixie Highway (US 25). South of Crestview Hills Mall Road, along the west side of Turkeyfoot Road, is a drainage channel, and then a residential subdivision, which access Turkeyfoot Road at Fraternity Court and College Park Drive. From College Park Drive to Barnwood Drive, the corridor on the west consists of a mixture of office, institutional, and retail land uses which have access to Turkeyfoot. KY 1303 (Turkeyfoot Road) is a state-maintained minor arterial route.

Along the east side of Turkeyfoot Road, south of I-275, an office park is accessed by an unnamed private street intersectng Turkeyfoot Road opposite Crestview Hills Mall Road. South of this intersection, opposite Fraternity Court, Thomas More Parkway provides access to Thomas More College, a number of medical office buildings, and numerous office buildings. Thomas More Parkway also serves as the primary access to the St. Elizabeth South Medical Center further to the south. South of the Thomas More Parkway intersection along Turkeyfoot, Villa Madonna Drive provides alternate access to the college. South of Villa Madonna, College Park Drives serves a small residential cul-de-sac. South of College Park Drive, and extending past Barnwood Drive, the Summit Hills Country Club abuts the east side of Turkeyfoot, but does not have access to Turkeyfoot (see Figure 1).

2.4 Project History

In 2005, Ohio-Kentucky-Indiana Regional Council of Governments (OKI) completed the Turkeyfoot Road (KY 1303) Corridor Traffic Operations Analysis at the request of the KYTC. The project limits of that study began at Dixie Highway (US 25/42/127) and terminated at Dudley Pike. The OKI study included the project limits of the current planning corridor study. The purpose of the OKI study was to examine in general terms the physical and operational characteristics of this roadway corridor.

3.0 Environmental Characteristics of the Project Area

3.1 Air Quality

The northern portion of Kenton County, including the project area, is a non-attainment area for 8-hour ozone (O_3,). Coordination with the appropriate officials and air quality analysis will be required to ensure that the proposed project does not exceed air quality standards.

3.2 Noise

If the project receives Federal funding, a noise study would be required to determine noise impacts from the proposed project. To determine potential noise impacts from construction and operation of the proposed project, each representative noise-sensitive land use would need to be identified in conjunction with specific alignment alternatives and existing measured ambient noise levels. The procedure for conducting field monitoring would be based on FHWA requirements and KYTC Noise Abatement Policy. Noise levels would be measured in terms of L_{eq}, which reflects the average equivalent steady state sound level; in a given time period (usually one hour) it would contain the same acoustic energy as the time-varying sound level during the same time period. For future noise level predictions, FHWA TNM (Traffic Noise Model) 2.5 would be used for noise impact analysis.

There are various types of noise receptors in the project area, including college buildings and residences.

3.3 Ecological Resources

3.3.1 Aquatic Resources

3.3.1.1 Floodplains

Floodplain information was obtained from the Federal Emergency Management Agency's (FEMA) FIRMette digital flood data, as appended by the state of Kentucky. This project is located on Flood Insurance Rate Maps (FIRM) 21117C0015F. There are no flooding hazards in the project APE. The project is within the Ohio River HUC 14 05090203040010; this watershed comprises 29.52 square miles.

3.3.1.2 Waters and Wetlands

One small detention area wetland was present north of Crestview Hill Mall Road. This wetland contained narrow-leaf cattails (obligate wetland plant, OBL) and black willow (facultative wet plant, FACW). This wetland may or may not be jurisdictional because there is no direct surface connection to other water features; the only possible connection is via underground culverts.

Three intermittent streams were present in the study area (see Appendix A). Stream 1 originates from a culvert under Crestview Hill Mall Road and joins Stream 2. Stream 2 flows along the west side of Turkeyfoot Road through various culverts, one under Fraternity Court and another between Fraternity Court and Central Bank. Stream 2 turns northwest along the 24-inch gas line and eventually flows into a large culvert under Crestview Hill Mall Road. A portion of this stream along Turkeyfoot Road has already been impacted by the placement of concrete. Stream 3 is an intermittent stream that originates at a culvert under Villa Madonna Drive and flows southeast off the project. There was no clear origin for this stream. There is also one pond in the study area. This pond has no connection to the streams in the

project since its outlet flows east through a large culvert with an unknown outlet location and away from the current streams present.

Each of the streams, the pond, and the wetland will have to be delineated and have official jurisdictional status applied for each one. See Appendix A for mapping of the aquatic features within the project study area.

3.3.1.3 Permits

A field survey of the area indicated there will be 404/401 permitting requirements for construction within the project area. Permit requirements will be determined during the project's design phase. Streams and jurisdictional drainage ditches were not formally assessed for this overview.

3.3.1.4 Wild and Scenic Rivers

No Wild or Scenic Rivers are located within the project corridor.

3.3.2 Threatened and Endangered Species

The majority of the project area is comprised of urban development and transportation right-of-way. However, the project study area contains large and small trees that could be considered as potential Indiana and/or northern long-eared bat roosting/maternity habitat, particularly within residential neighborhoods. Therefore, any tree removal will have to be coordinated with USFWS under the Endangered Species Act 1973.

Federally-threatened and endangered species for Kenton County include the gray bat; Indiana bat; northern long-eared bat; running buffalo clover; and the following mussels: sheepnose, clubshell, fanshell, northern riffleshell, orangefoot pimpleback, pink mucket, spectaclecase, purple cat's paw, rabbitsfoot, ring pink, and rough pig toe.

No critical habitat, trout streams/fish spawning areas, sensitive areas, management areas, or protected natural areas are known to occur near the project. Mussel species should not be subject to impacts since the streams within the project area do not support those species.

3.3.3 Geological Features

Searches on state databases revealed no caves, mines, wells, or potential for karst within the project area. Formal coordination will need to occur with the appropriate agencies during project development.

3.4 Cultural Historic Resources

3.4.1 Historic Resources

A cultural historic reconnaissance survey of the project area was performed in November 2017. Based upon this survey and preliminary research, only one building, the Monte Cassino Chapel, has sufficient age and significance to be listed in the National Register of Historic Places (NRHP). This site is included on the Environmental Points of Interest Map in Appendix A. The historic overview is provided in Appendix B.

The Monte Cassino fieldstone chapel (see Figure 2) was constructed in Covington's Peaselburg neighborhood in 1878 by Benedictine monks on the grounds of the Monte Cassino Benedictine Monastery. The chapel was relocated to its current site on the proposed Thomas More campus in the spring of 1965. The chapel is likely eligible under Criterion Consideration B, as important both for its architectural value as well as its association with the non-religious commercial work of the Benedictine Monks of Monte Cassino Monastery. This building appears to have retained its architectural integrity and may well be the only building associated with the monks tenure in Kenton County, Kentucky. In addition, the chapel could potentially be listed for its association with the development of Thomas More College in the mid-1960s, given that the move occurred over 50 years ago. Further research will need to be conducted to assess the historic significance of this resource.

Figure 2: Monte Cassino Chapel

3.4.2 Archaeological Resources

An Archaeological Overview was conducted in November 2017 for the proposed project (see Appendix C). The Archaeological Overview consisted of in-office research, review of the Kentucky Office of State Archaeology (OSA) records, and a site visit; no shovel testing was performed.

No archaeological sites were identified by the reports on file at OSA or any other type of survey within the project APE. One archaeological site was identified by those surveys as being within the 2-kilometer archaeological buffer. In spite of the development throughout the corridor, isolated locations were identified that could contain intact soils. Major infrastructure projects have occurred within the corridor, which include construction of I-275, the archaeological survey of which was completed in 1968, and the widening of Turkeyfoot Road, for which an archaeological survey was completed in 1994 (Rodeffer 1968; Stallings and Ross-Stallings 1994). One other survey within the project area was completed in 2001 for a cellular tower location (Stillwell 2001). The I-275 survey through Kenton County, however, was hampered by landowner access and vegetation, and no map of survey strategies or accessed properties were included in the report.

The surveyed corridor prior to the widening of Turkeyfoot Road is assumed to be within the current limits of the now-widened Turkeyfoot Road itself. Therefore, the current APE extends beyond those limits and portions outside of the current right-of-way still need to be surveyed. It is recommended that these areas be subjected to subsurface survey using shovel testing. Areas that were identified as possibly intact were

generally located near corners of intersections, as these were free from residential development, and areas that have mature trees. In addition to those areas noted for shovel test survey, the northwestern corner of the area is a steep ravine and should be walked over and examined for rockshelters or other cultural features.

3.5 Section 4(f)/Section 6(f) Resources

If federal funds are used for the project, Section 4(f) of the Department of Transportation (DOT) Act of 1966 will also apply to public recreational resources. Section 4(f) stipulates that the Federal Highway Administration (FHWA) and other DOT agencies cannot approve the use of land from publicly-owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless there is no feasible and prudent alternative to the use of the land, and the action includes all possible planning to minimize harm to the property resulting from use.

Section 6(f)(3) of the Land and Water Conservation Fund Act of 1965 requires all property acquired or developed with Land and Water Conservation Fund (LWCF) assistance be maintained in perpetuity for public outdoor recreation use.

There are no public recreational resources within or adjacent to the project area. Two private recreational facilities, the Summit Hills Country Club and Thomas More College's baseball field, are located adjacent to Turkeyfoot Road. These facilities do not appear to be subject to the provisions of Section 4(f).

The LWCF database was not available to consult during the development of this overview; however, it should be confirmed at a later date that Section 6(f) resources are not present within the project area.

3.6 Hazardous Material/Underground Storage Tank (UST)

Hazardous materials within the study project area include the Duke Energy substation immediately adjacent to Turkeyfoot Road, potential chemicals in the medical facilities, and the potential for asbestos in structures. At the time of the site visit, no polychlorinated biphenyl (PCBS) containers were identified, but no access to the property or the buildings was allowed. It would be best to avoid the substation (see Appendix A) and any utilities (i.e., the gas line between Turkeyfoot Road and Town Center Boulevard) that can be avoided.

There is potential for medical and dental facilities in the project area to house chemicals that could have been accidentally released in floor drains. If drains are found in these facilities, it would be best to sample water/soils near or in them.

Asbestos containing materials (ACMs) can be found in building structures. Prior to demolition, ACM samples will need to be taken.

No gas stations or other petroleum-containing facilities were identified within the project area. There were no burn or dump sites, nor any other hazardous waste sites immediately adjacent to the area of potential effect.

3.7 Socioeconomic Characteristics

Socioeconomic data for the state, Kenton County, and Census Tract Block Groups within the APE were obtained to determine potential Environmental Justice issues. Figure 4 below shows the location of all Census Tract Block Groups. A Socioeconomic Study was performed for this overview and is included in Appendix D; summaries of those findings are included below. Data for Census Tract 646 Block Group 3 is not included in the summaries since the portion of the APE within that block group consists solely of transportation right-of-way surrounding the interstate interchange.

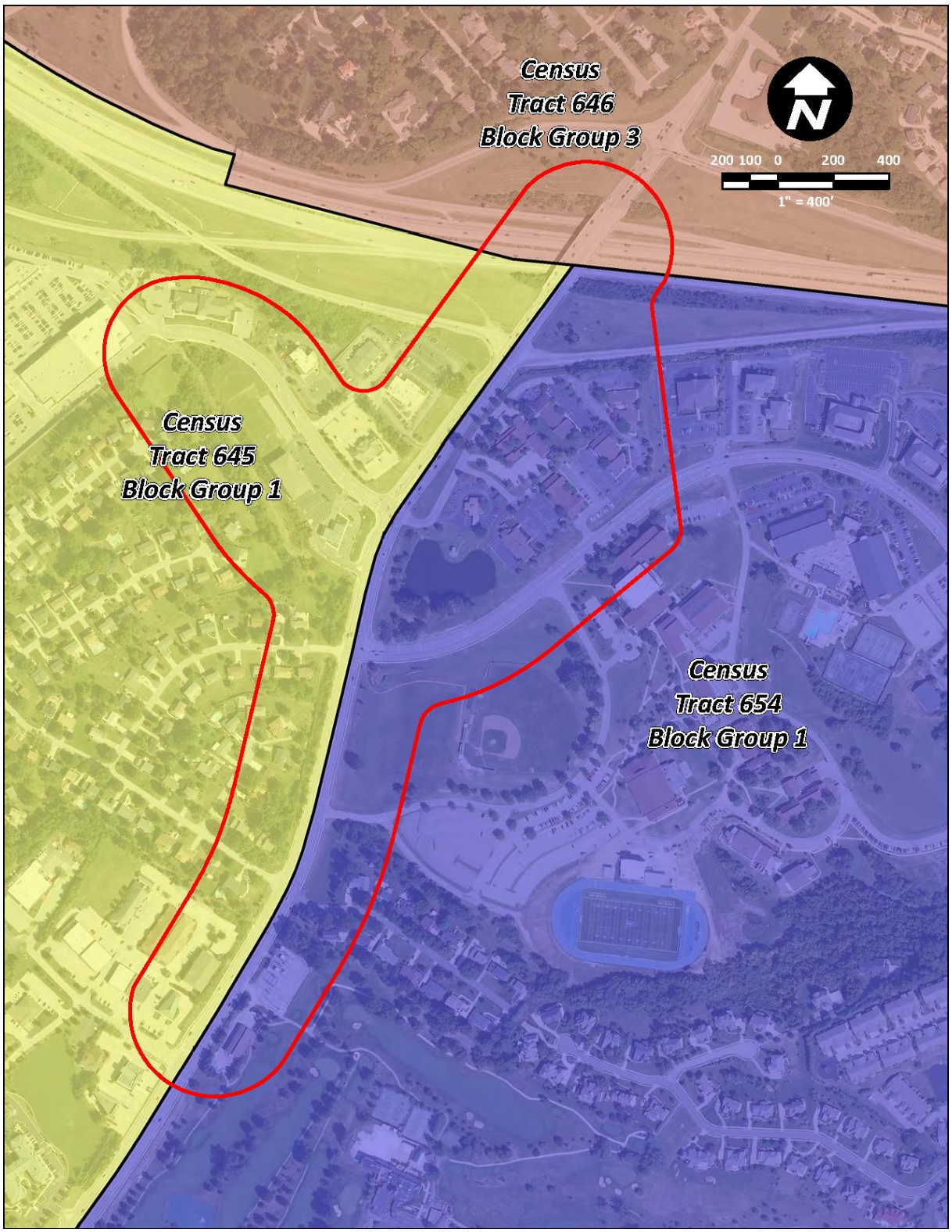

Figure 3: Census Tract Block Groups within the Project APE

3.7.1 Minority Populations

The percentage of persons that are Minority in the United States (38.7%) is higher than that of the state of Kentucky (15.1%). The Minority population in Kenton County (11.3%) is less than that of the state of Kentucky and of the United States. Block Group 1 CT 645 (2.3%) has a lower Minority population than the county, state and country. Block Group 1 CT 654 (7.4%) has a lower Minority population than the county, state and country. Block Group 3 CT 646 (26.3%) has a higher Minority population than the county. It has a higher Minority population than the state and a smaller minority population than the country.

3.7.2 Low Income Populations

The percentage of persons that are Low Income in the United States (15.5%) is lower than that of the state of Kentucky (18.9%). The Low Income population in Kenton County (14.6%) is less than that of the state of Kentucky and of the United States. Block Group 1 CT 645 (13.2%) has a lower Low Income population than the county, state and country. Block Group 1 CT 654 (2.7%) has a lower Low Income population than the county, state and country. Block Group 3 CT 646 (21.3%) has a higher Low Income population than the county, the state and the country.

3.7.3 Elderly Populations

The percentage of persons that are Elderly in the United States (14.9%) is higher than that of the state of Kentucky (14.4%). The Elderly population in Kenton County (12.3%) is less than that of the state of Kentucky and of the United States. Block Group 1 CT 645 (20.7%) has a higher Elderly population than the county, state and country. Block Group 1 CT 654 (20.3%) has a higher Elderly population than the county, state and country. Block Group 3 CT 646 (14.7%) has a higher Elderly population than the county and state but a lower Elderly population than the country.

3.7.4 Disabled Populations

The percentage of persons that are Disabled in the United States (12.4%) is lower than that of the state of Kentucky (17.0%). The Disabled population in Kenton County (14.2%) is less than that of the state of Kentucky and higher than that of the United States. Block Group 1 CT 645 (21.6%) has a higher Disabled population than the county, state and country. Block Group 1 CT 654 (15.4%) has a higher Disabled population than the county. It has a lower population than the state but a higher population than the country. Block Group 3 CT 646 (16.1%) has a higher Disabled population than the county. It has a lower Disabled population than the state but a higher disabled population than the country.

3.7.5 Limited English Populations

The percentage of persons that are Limited English in the United States (8.6%) is higher than that of the state of Kentucky (2.1%). The Limited English population in Kenton County (1.7%) is less than that of the state of Kentucky and lower than that of the United States. Block Group 1 CT 645 (1.2%) has a lower Limited English population than the county, state and country. Block Group 1 CT 654 (1.4%) has a lower Limited English population than the county, state and country. Block Group 3 CT 646 (7.3%) has a higher Limited English population than the county and the state but a lower Limited English population than the country.

3.7.6 Environmental Justice

The purpose of *Executive Order (EO) 12898,* "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations," is to focus federal attention on the environmental and human health condition of minority and low-income communities, to promote non-discrimination in federal programs affecting human health and the environment, and to provide minority and low-income communities access to public information and an opportunity to participate in matters relating to the environment and human health.

Additionally, the KYTC works to identify potential populations of the Elderly, Disabled, Limited English Proficiency, and Limited Transportation Options that may be impacted in or near the affected community, should highway improvements take place in the future.

Census Tract 646 Block Group 3 is located north of I-275; while a portion of the project APE extends into this Block Group, the APE does not encroach upon any residences or other structures within the Block Group. Within the APE, this Block Group only includes transportation right-of-way and would not be included in an environmental justice analysis for the project.

Higher percentages of Elderly and Disabled populations are present in both Block Groups within the project APE, when compared to the rates within Kenton County. Further analysis and coordination will need to occur to determine whether any EJ impacts will occur to these populations.

3.7.7 Agriculture

The immediate project area is predominantly urban, therefore, the provisions of the Farmland Protection Policy Act (7 CFR 658) do not appear to apply to this project. There is no farmland within or adjacent to the project area and it is not expected that this project will result in any impacts to farmland in Kenton County; further investigation should occur during project development to confirm that coordination with the Natural Resources Conservation Service (NRCS) is not required.

4.0 CONSTRUCTION PHASE ACTIVITIES

During construction, KYTC's *Standard Specifications for Road and Bridge Construction* will be utilized to ensure that this project will not cause significant detrimental social, environmental, or economic effects in the area. Any impact incurred during the construction of the proposed project will be short-term and will have no long-lasting effects upon the project area. Construction activities, including maintenance of traffic and sequencing of construction, will be planned and scheduled to minimize traffic delays. Signing will be used as appropriate to provide notice of pertinent information to the traveling public. Access to all properties will be maintained to the maximum practical extent. The project is expected to produce construction-period economic benefits by stimulating local economies through construction-related jobs, sales, income, government revenue and expenditures, and off-site construction support.

Best Management Practices (BMPs) and erosion control procedures will be utilized in areas of potential sedimentation and erosion. Construction associated with or near streams will occur during low-flow periods to minimize disturbances. Replanting of disturbed areas, including stream banks and right-of-way, will be with native vegetation for aesthetics, soil stabilization, and fish and wildlife populations. Removal of stream canopy trees will be avoided wherever possible. Mitigation of in-stream habitat disturbance will be executed.

Noise levels due to heavy construction equipment may exceed acceptable noise standards during the construction period; however, every reasonable effort will be made to minimize construction noise, especially near noise-sensitive locations.

5.0 EARLY COORDINATION AND PUBLIC INVOLVEMENT

Public meetings and coordination with local government officials will occur at the appropriate stages of project development.

Appendix A

Environmental Points of Interest Mapping

Turkeyfoot Road (KY 1303) Overview from Barnwood Drive to Northern I-275 Ramp

Environmental Points of Interest

Kenton County, KY

Appendix B

Historic Overview

Turkeyfoot Road (KY 1303) Cultural-Historic Overview

Historical Development

The .6 mile project area was largely rural in nature prior to the incorporation of the city of Crestview Hills in the early 1950s; the establishment of Thomas More College in the late 1960s; and the subsequent completion of I-275 in the late 1970s. Figure 1 - Figure 4 graphically demonstrate the development from a rural farming area into a suburban center for education, commercial, and residential growth.

Figure 1. 1951 USGS Topographic Map, Covington, KY-OH. Note there are very few residences on either side of Turkeyfoot Road.

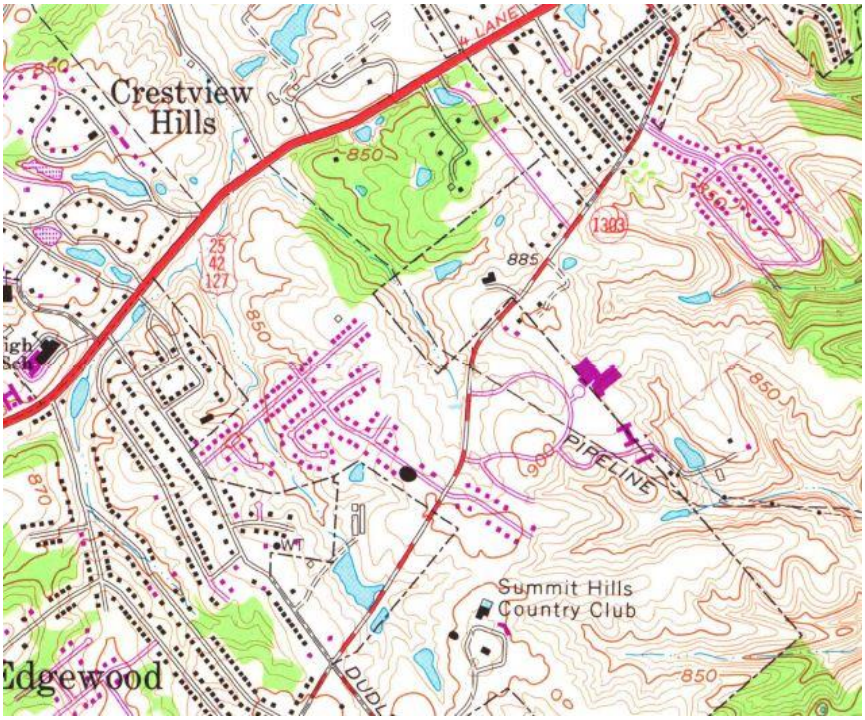

Figure 2. 1961 USGS Topographic Map, Covington, KY-OH Quadrangle, revised 1969. Note the development of a few new roads and buildings in the project area. I-275 had not yet been extended to Turkeyfoot Road in 1969.

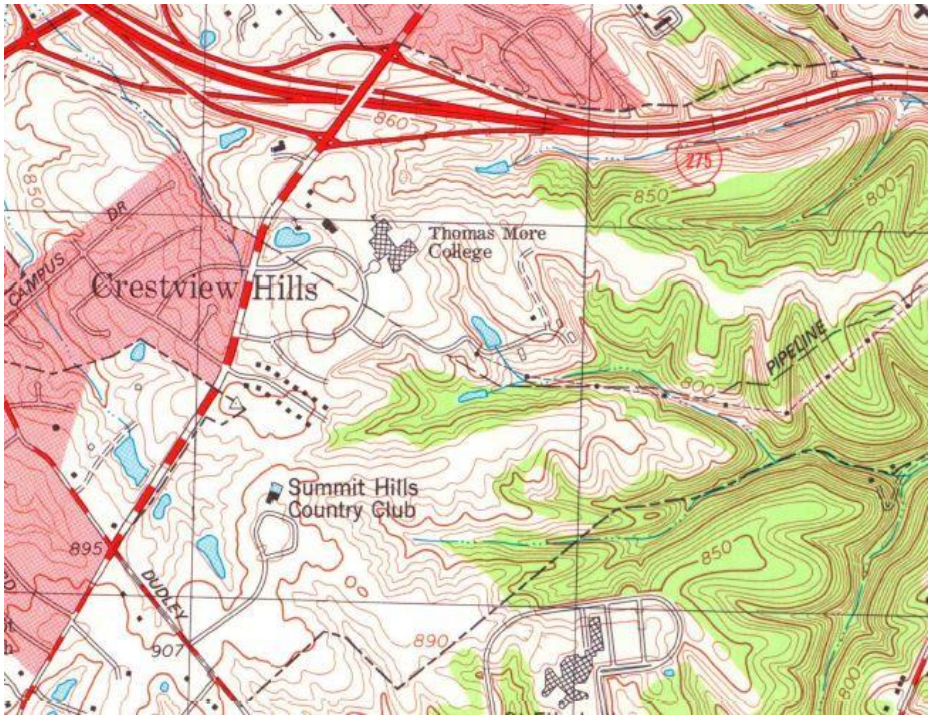

Figure 3. 1981 USGS Topographic Map, Covington, KY-OH Quadrangle. Between 1969 and 1981, the project area changed dramatically. I-275 was completed and an interchange was opened on Turkeyfoot Road, Thomas More College underwent a sustained period of growth, and the incorporated boundaries of Crestview Hills expanded.

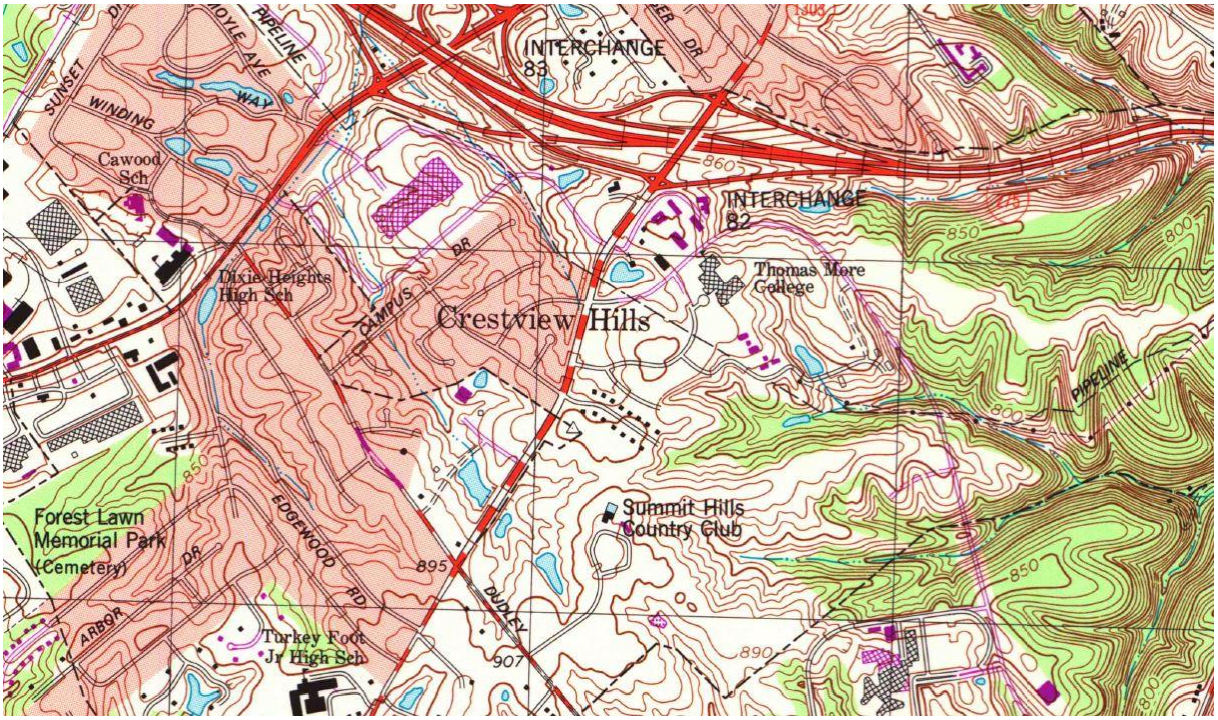

Figure 4. 1981 USGS Topographic Map, Covington, KY-OH Quadrangle, revised 1987. By 1987, the project area had largely gained its present appearance. Note the development of the Thomas More Office Park between 1981 and 1987 near the interchange with I-275.

Current Conditions Cultural-Historic Survey

Reconnaissance cultural-historic survey of the .6 mile project area was performed by Palmer's Cultural-Historic Principal Investigator (PI), Rachel Kennedy, and project assistant Bobi Martin on Monday, November 27, 2017. Conditions were sunny and mild. The project team began at the project's north end, near the intersection with I-275 and Turkeyfoot Road and traversed south toward the project terminus at Barnwood Drive. Current conditions are described by sub-areas and keyed into the map (Figure 5) below.

Prior to the trip in the field, KHC/SHPO project registration and a cultural-historic site check was accomplished that revealed only one previously recorded resource in our project area: KEFM-5- The Monte Cassino Chapel. The Chapel's National Register status is recorded as Undetermined at this time.

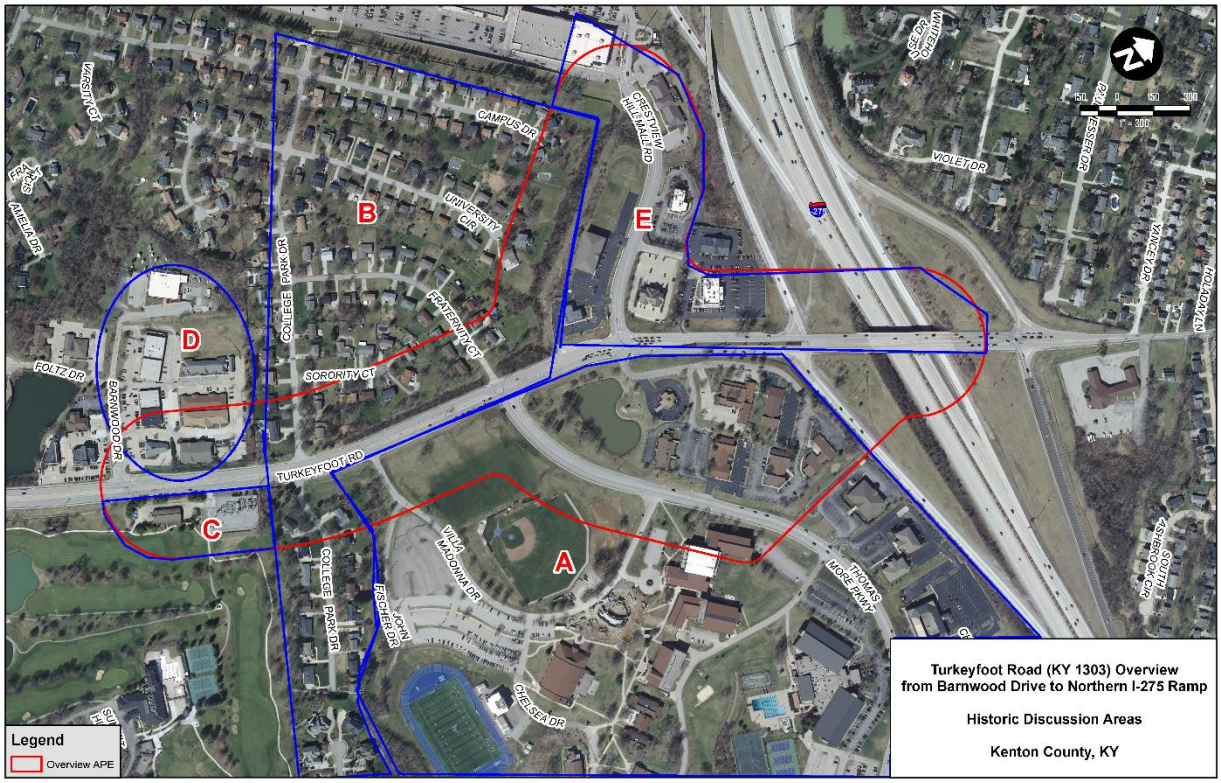

Figure 5. Historic Discussion Areas

Survey Criteria and National Register Criteria for Evaluation

All individual properties and multi-building districts meeting the 50-year age criterion were examined within the APE during reconnaissance survey. For a property to be considered for National Register of Historic Places (NRHP) eligibility, it must be at least 50 years old and possess both historic integrity and significance. Significance is defined by the National Park Service as:

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 meet at least one of the following four NRHP Criteria:

> Criterion A. Properties that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> Criterion B. Properties that are associated with the lives of significant persons in our past; or
>
> Criterion C. Properties 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 values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
>
> Criterion D. Sites that have yielded, or may be likely to yield information important in prehistory or history.

In addition, there are several NRHP Criteria Considerations, one of which applies within the study area- Criterion Consideration B.

> a religious property deriving primary significance from architectural or artistic distinction or historical importance; or
>
> *b. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or*
>
> c. a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or
>
> d. a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events; or
>
> e. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
>
> f. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,
>
> g. a property achieving significance within the past 50 years if it is of exceptional importance.

Survey Summary Results

Section A

The northeast portion of the project area is characterized by the development of Thomas More College in the late 1960s.[1] The college was moved from downtown Covington and the name was changed from Villa Madonna College to Thomas More College in 1968. The campus displays an extended pattern of development with several key buildings constructed over time, such as the Science Building (1972), the Connor Convocation Center (1989), and several residence halls in the early 2000s.[2] The most recent building on campus appears to be the *Mary, Seat of Wisdom Chapel* in 2012. The Thomas Moore office park, which is situated directly adjacent to the I-275 interchange was built by the college, ostensibly for rental income, circa 1985.

With the exception of the Monte Cassino Chapel, which will be discussed further below, the majority of the above-ground resources in this area were constructed in the late 1960s continuing into the 2000s. As a result of their recent age, the campus and office park are not eligible for listing in the NRHP. Thomas More's central campus should be reevaluated if it turns 50 years old without significant changes, due to its potential significance under Community Planning and Development and/or Education in Northern Kentucky. See Figure 6- Figure 9 below.

[1] David E. Schroeder, "Thomas More College," in *The Encyclopedia of Northern Kentucky*, ed. Paul A. Tenkotte and James C. Claypool, 876.
[2] Ibid.+

Figure 6. Thomas More campus buildings, looking toward NW toward the Administration building.

Figure 7. Thomas More College, Saints Center, constructed circa 2000.

Figure 8. Thomas More College, Villa Madonna Statue and Shelter. The statue was dedicated by the students of the college in 1954.

Figure 9. Typical Thomas More Office park building, constructed circa 1985, looking northwest.

The Monte Cassino Chapel was relocated to its current site on the proposed Thomas More campus in the spring of 1965. The fieldstone Chapel was constructed in Covington's Peaselburg neighborhood in 1878 by Benedictine monks on the grounds of the Monte Cassino Benedictine Monastery. The chapel was intended to be a place to pray among the grape vineyards that the Benedictine Brothers operated for both income and sacramental wine.

By the mid-1960s, the monastery had closed and the land was being developed as a residential subdivision. Local community members, along with the owner Fred Riedinger, preserved the chapel by helping raise the funds to relocate it to the proposed campus of what was then called Villa Madonna College on Turkeyfoot Road in Crestview Hills. According to several accounts, the chapel was in a state of disrepair and several of its key architectural elements were missing.[3] As a result of the community's preservation efforts, many of the important architectural features were returned to the owners for the move to the Thomas More College campus, such as the steeple, the stained glass windows, and the crucifix. The chapel was officially dedicated in 1971 by Thomas More College.

The fieldstone chapel measures six by nine feet and currently sits on a slight rise above a scenic lake, across Thomas Moore Parkway from the main college campus. Although the location and setting of the chapel has changed drastically from its initial locale in the hills above Covington, this diminutive building appears to be in good condition and retains its architectural integrity from the move over 50 years ago.

The chapel is likely eligible under Criterion Consideration B, as important both for its architectural value as well as its association with the non-religious commercial work of the Benedictine Monks of Monte Cassino Monastery. This building appears to have retained its architectural integrity and may well be the only building associated with the monks tenure in Kenton County, Kentucky. In addition, the chapel could potentially be listed for its association with the development of Thomas More College in the mid-1960s, given that the move occurred over 50 years ago. More research would need to be accomplished In order to further develop these arguments. See Figure 10 - Figure 14 below.

[3] Thomas More College website, "Monte Cassino Chapel," online at: http://www.thomasmore.edu/chapel/monte_casino.cfm; Stephen Enzweiler, "Our Rich History: Monte Cassino Chapel has storied legacy in Benedictine monks, wine-making," Northern Kentucky Tribune, 9 October, 2017; Kenton County Public Library, "Peaselburg: Monte Cassino Monastery and Chapel," online at: https://www.kentonlibrary.org/genealogy/regional-history/covington/peaselburg/monte-casino-monastery-and-chapel

Figure 10. Monte Cassino Chapel façade, looking northwest.

Figure 11. Plaque noting the 1971 dedication of the Chapel.

Figure 12. Monte Cassino Chapel, east elevation, looking west.

Figure 13. Monet Cassino Chapel, rear (north) elevation, looking south.

Figure 14. Context of Monte Cassino Chapel, looking south toward Thomas More Parkway.

Section B

Portions of the College Park neighborhood are located within the project area. The College Park neighborhood was developed beginning in the mid-to-late 1960s, and continuing into the early-to-mid 1970s.[4] The neighborhood is characterized by mid-century suburban residences situated on ample lots with significant setbacks from the community's concrete-paved streets, such as College Park, University Circle, and Fraternity Court. Streets are lined with mature trees and the overall impression is one of a highly intact mid-century neighborhood of ranch houses, split-levels, and minimal traditional houses.

The neighborhood will likely be eligible for the NRHP in 2022 as a historic district under Criterion C as long as significant changes are not undertaken. Portions of the neighborhood built before 1968 could be eligible on a street-by-street basis prior to this time. There are no individually eligible NRHP resources located in the project area, based upon our current understanding of the survey area. See Figure 15 - Figure 18 below.

[4] Tim Williams, Personal interview by telephone, November 29, 2017.

Figure 15. Typical mid-century housing in the College Park neighborhood, looking NE toward end of the cul-de-sac on Campus Drive in the project APE. Note the Minimal Traditional house to the left, circa 1965, and the split-level house to the right, circa 1970.

Figure 16. Stone-veneered ranch house, built circa 1965, in the College Park neighborhood. Photo taken looking NW from Sorority Court just outside the project APE.

Figure 17. Looking SE along College Park Drive (west side of 1303) toward Turkeyfoot Road. Note the concrete-paved streets and mature trees.

Figure 18. Looking east down College Park Drive (on the east side of 1303) in the project APE.

Section C

A very small portion of the Summit Hills Country Club property is located within the project area, which includes a modern maintenance building constructed on Turkeyfoot Road circa 1990. The Summit Hills Country Club was established in the late 1920s by Covington businessman and golf enthusiast, Joseph Macke.[5] The club and course have undergone much change over the past eighty-plus years, including a complete remodel in 1985 and again in 2003. The NRHP eligibility for this site would need additional study to consider the entire property, not just one building, but it is likely that the recent remodels have made it ineligible for NRHP listing. Following that, the circa 1990 maintenance building is not eligible for the NRHP as an individual resource.

There are no resources currently eligible for NRHP listing in Section C, due to their lack of sufficient age and significance. More research will need to be done to determine the NRHP eligibility of the Summit Hills Country Club. See Figure 19 - Figure 20 below.

Figure 19. Entry to Summit Hills Country Club and Golf Course, looking north from Dudley Road. (Outside the project APE).

[5] Dennis Van Houten, "Summit Hills Golf and Country Club," in *The Encyclopedia of Northern Kentucky*, ed. Paul A. Tenkotte and James C. Claypool, 861.

Figure 20. Summit Hills Country Club Maintenance Building

Section D and E

Both Sections D and E are characterized by a mix of modern retail, entertainment, and commercial office uses. At the projects northwest intersection with I-275 is Town Center Blvd., which was originally known as Crestview Hills Mall Rd.[6] Initially, this road led to Crestview Hills Mall which was developed circa 1979. The mall area was redeveloped into an open-air style shopping center in 2005. This area also contains modern office buildings, such as the offices for the city of Crescent Hills, located within the project APE.

Less is known of the history of development near the project's southern terminus with Barnwood Drive; however, the area's development was concurrent with commercial development in Section D. This area contains modern office uses, especially related to health care, and some small-scale retail, as shown in photographs below. See Figure 21 - Figure 24 below.

There are no resources eligible for NRHP listing within either Section D or Section E, due to their lack of sufficient age and significance.

[6] Paul A. Tenkotte and James C. Claypool, ed., *The Encyclopedia of Northern Kentucky*, 250.

Figure 21. Crestview Hills City offices, constructed circa 2000, are located along Town Center Blvd. This photo was taken looking north across Town Center Blvd.

Figure 22. View along Town Center Blvd, looking east toward Turkeyfoot Road. Note the modern commercial office spaces that line both sides of the road within the project APE.

Figure 23. View of modern commercial office buildings within the project APE. Looking west in parking area of the Advanced Pain Treatment Center.

Figure 24. View of small shopping strip located along Barnwood Avenue. Photo taken facing northeast. A portion of this shopping strip of located within the project APE.

NRHP Eligibility Summary

Palmer Engineering Cultural-Historic staff performed reconnaissance survey of the Turkeyfoot Road project area in November 2017. Based upon this survey and preliminary research, only one building has sufficient age and significance to be listed in the National Register of Historic Places. As detailed above, the Monte Cassino Chapel is likely eligible under Criterion Consideration B, as important both for its architectural value as well as its association with the non-religious commercial work of the Benedictine Monks of Monte Cassino Monastery. Therefore, in spite of being relocated, the chapel retains architectural significance and may also be the sole the surviving building associated with wine-making by the Benedictine Monks in Covington, Kenton County, Kentucky.

Appendix C

Archaeological Overview

ARCHAEOLOGICAL OVERVIEW FOR THE TURKEYFOOT ROAD (KY 1303) PROJECT, KENTON COUNTY, KENTUCKY

OSA Project No. FY18-9447

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Project No. PR17030
Cultural Resources Report No. TR17025

(Signature)

Anne Tobbe Bader, MA, RPA
Principal Investigator

December 6, 2017

ABSTRACT

Corn Island Archaeology LLC was retained by Palmer Engineering to perform an archaeological overview for the planned Turkeyfoot Road (KY 1303) Project in Kenton County, Kentucky. Corn Island was to assist Palmer Engineering in support of the Kentucky Transportation Cabinet in the area of prehistoric and historical archaeology by conducting a records search for recorded archaeological resources, assessing the potential for unrecorded and/or undiscovered resources to be present within the study area, drafting resource maps, and preparing a written overview of the findings.

OSA data research and site visit was completed by Kathryn McGrath on November 28, 2017. There were no obstructions for the site visit due to weather or landowner access. Major infrastructure projects have occurred within the corridor, which include construction of I-275, the archaeological survey of which was completed in 1968, and the widening of Turkeyfoot Road, for which an archaeological survey was completed in 1994 (Rodeffer 1968; Stallings and Ross-Stallings 1994). One other survey within the project area was completed in 2001 for a cellular tower location (Stillwell 2001). No sites were identified within the project APE during these or by any other method. One site, mound site 15KE1, was identified by Webb and Funkhouser and is located within the 2-km buffer.

In spite of the development throughout the corridor, isolated locations were identified that could contain intact soils. The I-275 survey through Kenton County was hampered by landowner access and vegetation, and no map of survey strategies or accessed properties were included in the report. The surveyed corridor prior to the widening of Turkeyfoot Road is assumed to be within the current limits of the now-widened Turkeyfoot Road itself and therefore, the current APE extends beyond those limits and portions outside of the current right-of-way. It is recommended that the current project APE outside of the current right-of-way still needs to be surveyed in areas suspected to have intact soils.

It is recommended that these areas be subjected to subsurface survey using shovel testing. Areas that were identified as possibly intact were generally located near corners of intersections, as these were free from residential development, and areas that have mature trees. In addition to those areas noted for shovel test survey, the northwestern corner of the project area is a steep ravine and should be walked over and examined for rockshelters or other cultural features.

CONTENTS

FIGURES

TABLES

1
INTRODUCTION

Corn Island Archaeology LLC was retained by Palmer Engineering to perform an archaeological overview for the planned Turkeyfoot Road (KY 1303) Project in Kenton County, Kentucky (**Figure 1**).

Corn Island was to assist Palmer Engineering in support of the Kentucky Transportation Cabinet (KYTC) in the area of prehistoric and historical archaeology by conducting a records search for recorded archaeological resources, assessing the potential for unrecorded and/or undiscovered resources to be present within the study area, drafting resource maps, and preparing a written overview of the findings.

Figure 1. Boone, Campbell, and Kenton counties, Kentucky.

PROJECT DESCRIPTION

Turkeyfoot Road (KY 1303) extends between Dixie Highway (U.S. 25/42) and the intersection of Mt. Zion Road (KY2953) and Bristow Road (KY 536). The project area, however, extends from the I-275 westbound entrance and exit ramps south to an artificial lake at Edgewood Dental Care at 155 Barnwood Drive (**Figure 2**). The purpose of the project is to examine strategies for creating safer travel along Turkeyfoot Road and its intersections while also shortening delays.

The majority of the project area lies within Crestview Hills, although it includes a portion within Edgewood at its southern edge, and also a small area of Lakeside Park at its northern end. Major alterations to the area have included the construction of I-275, the archaeological survey of which was completed in 1968, and the widening of Turkeyfoot Road, for which an archaeological survey was completed in 1994. One other survey within the project area was completed in 2001 for a cellular tower location.

COMPLIANCE REQUIREMENTS

The cultural resources documentation of this project aims to provide the Kentucky Transportation Cabinet on guidance in meeting future compliance requirements relative to 36 CFR 800 and Section 106 of the National Historic Preservation Act (NHPA) (16 USC 470 f). The project complies with specifications for field surveys and investigations for National Register of Historic Places (NRHP) assessment as set forth in the *Secretary of the Interior Standards and Guidelines for Archaeology and Historic Preservation* (USDOI-NPS 1983). The Kentucky Transportation Cabinet is the lead agency for the Federal Highway Administration.

The conduct of this investigation adheres to specifications for reporting standards as detailed in *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Sanders 2006). The personnel conducting the archaeological overview meet the Secretary of the Interior's standards for professional archaeologists. Credentials for Corn Island's archaeologists

are on file at the Kentucky State Historic Preservation Office (SHPO) seated in the Kentucky Heritage Council (KHC). In addition, our staff members belong to the Registered Professional Archaeologists (RPA) and abide by the RPA code of ethics. Corn Island Archeology is a nationally, state, and locally certified WBE (Woman Owned Business Enterprise) as well as a certified DBE (Disadvantaged Business Enterprise) with the Kentucky Transportation Cabinet.

Figure 2. Satellite image of the Turkeyfoot project APE.

STATEMENT OF WORK

This proposed *Statement of Work* (SOW) consists of several components, as itemized below.

1. Records checks and archival research;
2. Assessment of the archaeological potential of the subject corridor;
3. Preparation of resources inventories and maps; and
4. Summary report of findings.

Task 1: Records Checks, Archival Research, Windshield Survey

The archaeological site records housed at the Kentucky Office of State Archaeology (OSA) will be researched to identify recorded archaeological and historic sites within the study area. Archaeological reports detailing previous studies in Kenton County will be reviewed to ascertain:

1. The locations of recorded archaeological sites, relevant historic structures and buildings, as well as all properties listed on the National Register of Historic Places;
2. Those areas (if any) within and along the proposed corridor that have been previously examined by professional archaeologists and therefore would not require additional consideration;
3. The locations of National Register Historic Properties and Districts; and
4. Cemeteries.

Task 2: Sensitivity Assessment

Corn Island will access various sources to ascertain the archaeological potential of the subject corridor. First, Corn Island will conduct a drive-through or windshield survey of the project corridor. In addition, Corn Island will utilize existing on-line data such as Google Maps, USDA-Natural Resources Conservation Services soil maps, GIS data for streams and slope, etc. to make an informed assessment of the suitability of the corridor to contain intact prehistoric and historic archaeological resources, as well as standing structures that may be associated with archaeological resources.

The environmental data contained within relevant archeological reports for the area will be reviewed to derive expectations for the potential for unrecorded archaeological sites to be discovered in the area and to determine, to the degree possible, those areas that are likely to be archaeologically sensitive. To the extent possible with on-line data, Corn Island will also document areas of ground disturbance that would negate or minimize the need for on-the-ground field surveys or the presence on intact cultural resources.

As appropriate, Corn Island will conduct limited archival research relative to the project area to contextualize the historic cultural development of the project area. Specifically, the research will be directed at determining the presence and ages of historic buildings (if any are present), their potential to contain associated archaeological deposits, their uses (residence/commercial) over time, and other relevant ethnic, social, and economic aspects of the occupants. Corn Island will also conduct a historic map review to ascertain the locations of any former buildings that have been destroyed but which may be associated with intact archaeological deposits.

Task 3: Resource Inventories and Maps

Corn Island will prepare a map or series of maps as appropriate of recorded or otherwise known archaeological and relevant historic resources along the subject corridors. If during the research, Corn Island discovers other unrecorded resources that appear to have local or state significance, these will be mapped as well. Corn Island will also prepare, as appropriate, maps that highlight the potential for the presence of unrecorded archaeological sites. The maps will be prepared using GIS, and presented to Palmer Engineering with associated shapefiles and .pdf versions as requested.

Task 4: Technical Overview Report

Corn Island will prepare a summary overview report of the findings of the records checks, sensitivity assessment, and archival research. The overview report will present an inventory of recorded resources within the study area and evaluate the potential for significant but unrecorded archaeological deposits to be present along the corridor. A map depicting potentially sensitive archaeological areas will be included.

PROJECT SCHEDULING AND STAFFING

The project staff meets the requirements for professional archaeologists as detailed in the Secretary of the Interior standards. Ms. Anne T Bader, MA, RPA, served as the Principal Investigator for the project. The archaeological resource overview was completed by Ms. Kathryn J. McGrath, MA RPA. Mapping was completed by Dr. Tim Sullivan.

CURATION

As no cultural material was collected during the overviews, no curation was necessary.

2
ENVIRONMENTAL AND CULTURAL CONTEXT

The interpretation of prehistoric and historic cultures must extend beyond the study of the actual material remains of a society in order to provide an understanding of the ways in which that society interacted with its environment. Throughout time, the natural landscape has influenced human use, and was in turn affected by that use. This interrelationship is reflected in both the natural and cultural (standing structures, cemeteries, archaeological sites) resources of the area.

The cultural landscape approach provides a framework for understanding the entire landuse history of a property. It is the foundation for establishing a broader context for evaluating the significance of cultural resources, because the significance of any given cultural resource is not determined in isolation. Rather, it is achieved by examining the entire context of the landscape and interrelationships among its constituent components.

ENVIRONMENTAL CONTEXT

The following environmental context provides data on regional ecological patterns such as floral distributions and communities, regional geomorphology, soils, and hydrology. An understanding of the natural setting of an area allows informed interpretations on such cultural issues as prehistoric/historic settlement patterns, resource availability and exploitation, and more. The discussion is aimed at identifying those aspects of the natural environment that may have influenced the cultural development of the project APE.

Soils

As revisited by Buol et al. (1989), work by Dokuchaev (1898) and Jenny (1980) led to the understanding of soil as an open system influenced by the following five independent variables known as “clorpt”:

- relief (landform)
- parent material;
- time;
- climate; and
- organisms.

As a healthy mantle of soil has been the basis for settlement patterns, the following discussion interprets the environmental context of the project APE with regard to these five soil-forming factors. Soils mapped for the vicinity are shown in **Figure 3** and summarized in **Table 1**. Soils within the project APE formed from limestone and shale bedrock of the Bull Fork Formation, alluvium, and glacial deposits including loess over outwash. These soils are predominantly well drained to moderately well drained, which would have provided fertile soils for agriculture. Excessive slopes, however, diminish the potential in many areas.

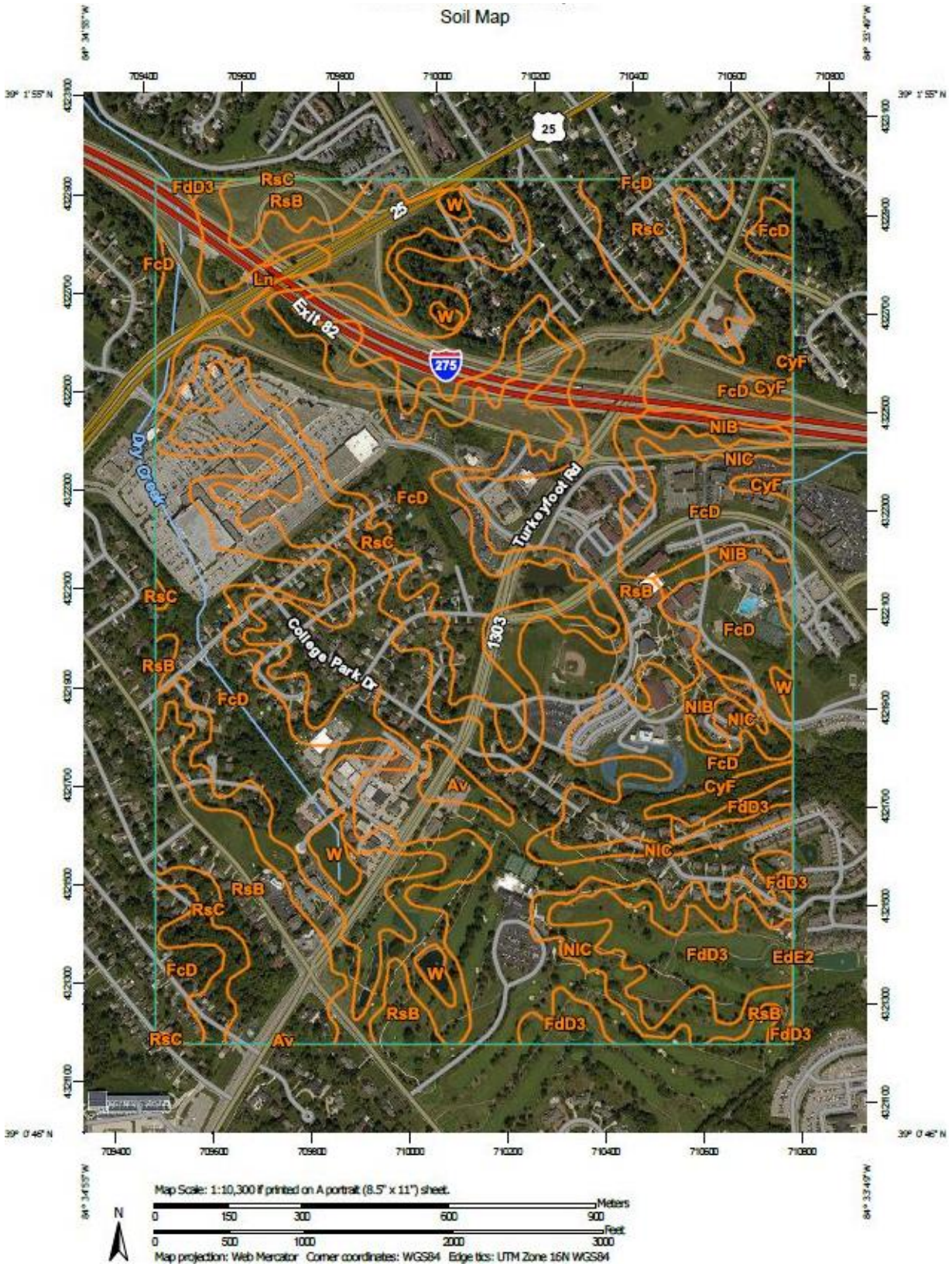

Figure 3. Soil map (U.S.Department of Agriculture and National Resources Conservation Service 2017).

Table 1. Soils Series Mapped for Area

Parent Group	Parent Material	Drainage Class	Map Unit Name	Acres in AOI	Percent of AOI
bedrock	clayey residuum weathered from limestone	wd	Cynthiana flaggy silty clay loam, 20 to 50 percent slopes (CyF)	5.2	0.9%
		wd	Faywood silty clay, 12 to 20 percent slopes, severely eroded (FdD3)	23.2	4.1%
	clayey residuum weathered from calcareous siltstone and/or clayey residuum weathered from limestone and shale	wd	Eden silty clay loam, 20 to 35 percent slopes, eroded (EdE2)	0.0	0.0%
	clayey residuum weathered from limestone and shale	wd	Faywood silty clay loam, 12 to 20 percent slopes (FcD)	171.9	30.4%
alluvium	mixed fine-silty alluvium	mwd	Lindside silt loam (0 to 3 percent slopes, occasionally flooded) (Ln)	11.2	2.0%
glacial deposits	fine-silty noncalcareous loess over loamy outwash with Avonburg being thick	swpd	Avonburg silt loam (0 to 4 percent slopes) (Av)	3.3	0.6%
		mwd	Nicholson silt loam, 2 to 6 percent slopes (NlB)	9.3	1.6%
		mwd	Nicholson silt loam, 6 to 12 percent slopes (NlC)	29.1	5.2%
	thin fine-silty noncalcareous loess over loamy outwash	mwd	Rossmoyne silt loam, 0 to 6 percent slopes (RsB)	188.3	33.3%
		mwd	Rossmoyne silt loam, 6 to 12 percent slopes (RsC)	118.8	21.0%
		W	Water	5.3	0.9%
Totals for Area of Interest				**565.7**	**100.0%**

Two of the soil associations present within the county that are pertinent to the project APE developed from bedrock (Eden-Cynthiana association and the Faywood-Nicholson association), and one developed from glaciated uplands (Rossmoyne-Jessup association). The Eden-Cynthiana association developed in the Hills of the Bluegrass from steep to very steep uplands on limestone and shale bedrock. The Cynthiana soil series develops on the convex ridge crests and are somewhat excessively drained with flaggy subsoil, conditions that can produce unique microenvironments and vegetation. The Faywood series develops on ridge crest landscapes while Eden blankets the sideslopes and Brashear develops on alluvium in V-shaped valleys. This association is noted by the soil survey manual to occur in the southern portions of the county and along steep areas along the Ohio and Licking rivers.

Similar bedrock on more moderate slopes has produced the Faywood-Nicholson association, which is noted to occur in central Kenton County. Nicholson develops on the slopes, and Nolin develops in the drainages. A fragipan develops in the Nicolson series.

Fragipans also develop in the Rossmoyne-Jessup association. This is an association that develops on moderately steep to level glaciated uplands. Mapping has documented this association in northern Kenton County. Rossmoyne series, which includes the fragipan,

develops on the upper slopes while the Jessup series develops on sideslopes, and the Avonburg series develops on level topography.

Relief

Kenton County is located in the northern portion of the Outer Bluegrass Physiographic region of Kentucky (**Figure 4**). Elevations within the county range from the lowest elevation of 455 feet (ft) above mean sea level (AMSL) within all three Northern Kentucky counties—Boone, Kenton, and Campbell--up to over 900 ft AMSL. Kenton County rises to 920 ft AMSL along the drainage divide between Banklick and Cruises creeks. The prime cause of the present physiography of the county is the Cincinnati Arch. Due to this uplift, streams are incised. The west, north, and eastern borders of the three-county Northern Kentucky area are bordered by the Ohio River. The Licking River flows northward through the central area of these counties with tributaries that drain most of Kenton and Campbell counties.

Prehistoric populations would have used the level uplands as well as drainages to acquire cobbles of various materials from within the outwash. The water resources of the counties were extremely important for navigation, sources of water for human consumption, for crops, for livestock, and for surveying markers Other resources frequented by prehistoric groups are salt licks or springs, which may attract wild game, and sources of raw material such as iron ore, which is noted on the 1883 atlas nearby just south of Dudley Road. Physiographically, Turkeyfoot Road lies along a drainage divide, which are often locations of travel routes along the ridgetops or as portage location between drainage networks. The 2-km buffer extends from the headwaters to Dry Creek in the western portion to Horse Branch, a tributary to Banklick Creek, draining the eastern portion.

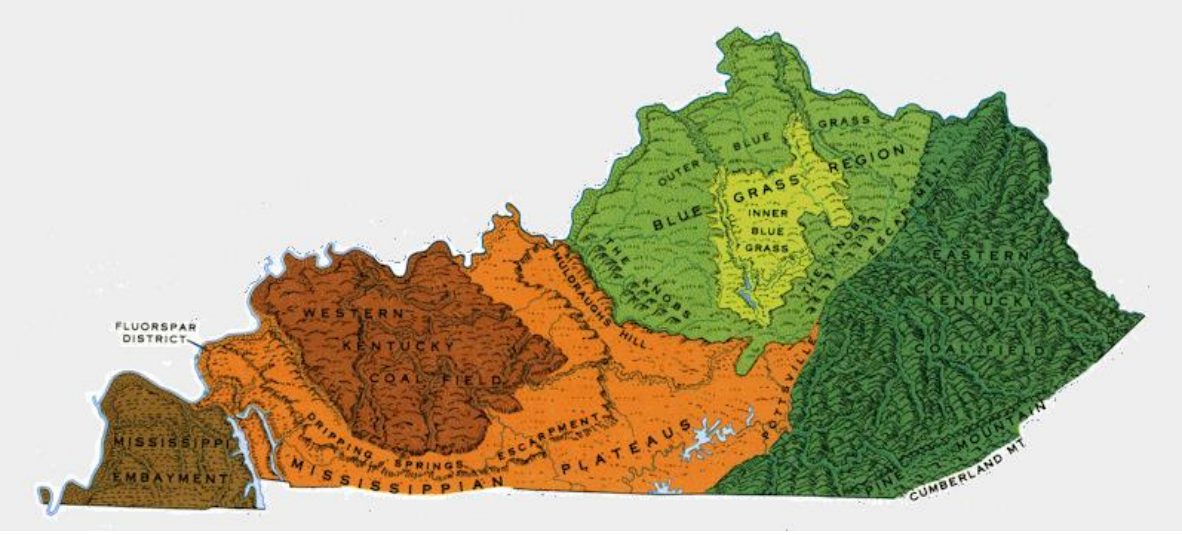

Figure 4. Physiographic regions of Kentucky (Kentucky Geological Survey 2017b).

Parent Material: Underlying Geology

Parent materials of soils in the surrounding areas include materials dating from the Ordovician Bull Fork Formation, although materials from the Grant Lake Limestone, Fairview Formation, Kope Formation, and Point Pleasant Tongue of the Clays Ferry Formation may also have been accessible within the Banklick drainage to the east (**Figure 5** and **Figure 6**). Quaternary parent

material lies within the Banklick and Licking River drainages, along the Ohio River, and tributaries of these. Most of the glacial material is Wisconsin, but large areas within tributaries of the Ohio River in neighboring Campbell County, particularly the Phillips Creek drainage, is underlain by pre-Illinoian materials. Pre-Illinoian materials include drift, lacustrine, and outwash. Tributaries filled with glacial lacustrine materials often occur as excessive amounts of outwash clog the main drainage, which cuts of the tributaries for a time and creates ponded or lake environments. These would be a significant change from the surrounding environment and provide fertile soils for prehistoric and historic habitation.

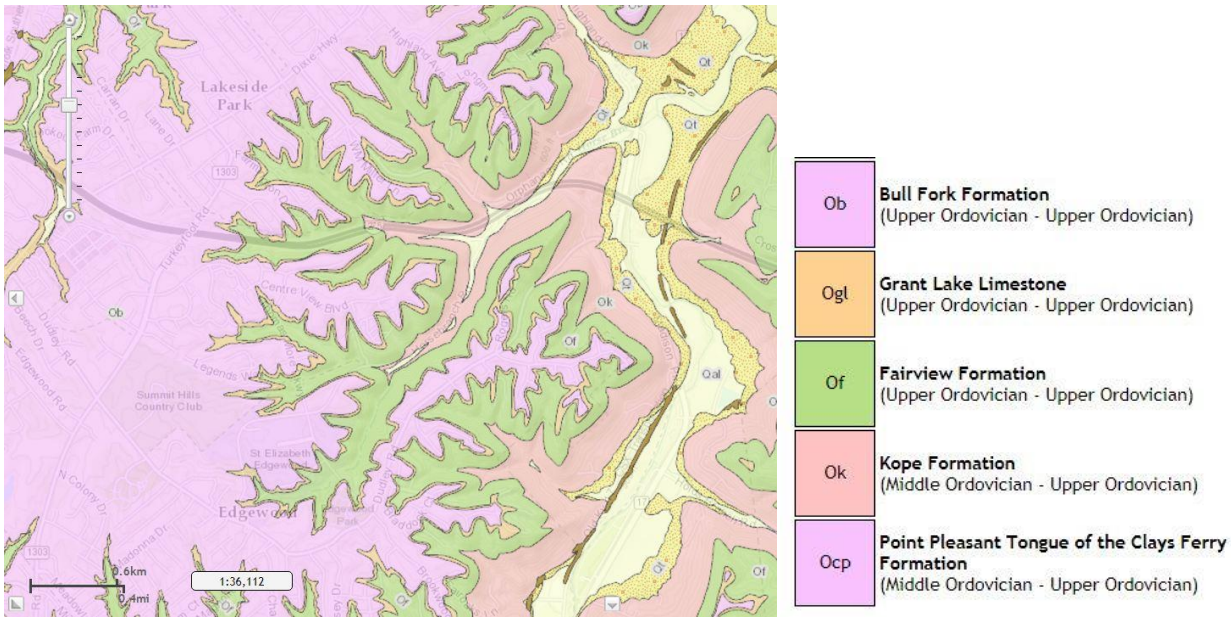

Figure 5. Geology mapped for the area from the project area east to Banklick Creek (Kentucky Geological Survey 2017a).

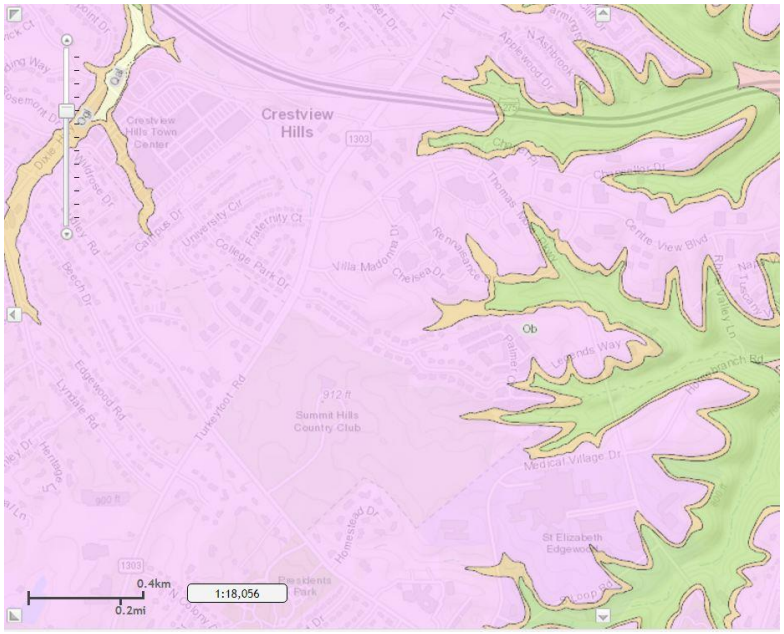

Figure 6. Close-up of geology mapped for the project APE (Kentucky Geological Survey 2017a).

Time

Since the deposition of parent material, a number of processes transformed the original material into soils that support plant life. Processes include chemical reactions such as the oxidation or reduction of iron as well as mechanical weathering of the parent material through freeze-thaw cycles. Clues to the age of soil include the stages of structure development, clay accumulation, acidity, Ca/Mg ratio, depth of leaching, and other signs of horizon development. Characteristics that may have influenced past human activities include soil fertility, soil drainage class, and accumulation of minerals such as clay.

Climate

Kenton County lies within Udic moisture regimes, defined as 90 consecutive days of moist conditions within the soil profile (Buol et al. 1989). In contrast to the Ustic moisture regime to the west that supports wheat, the Udic moisture regime of the eastern U.S. can support corn. Within recorded history, the average annual precipitation for these counties varies from 38 inches (96.5 cm) in the northern area to 43 inches (109 cm) in the southern. The average high temperature in July is 87 degrees Fahrenheit (F) in the northern area and 89 degrees F in the southern area. In January, the average daily minimum temperature is 23 degrees F in the northern area and 25 degrees F e in the southern. These counties have a growing season of 186 days (Weisenberger B.C. et al. 1973).

Climate fluctuations, however, have varied from these ranges throughout the Earth's history (Buol et al. 1989; Fagan 1991). According to a model developed by Milankovich, these periodic fluctuations are caused by changes in the Earth's elliptical orbit every 100,000 years, its quivering spin on its axis every 21,000 years, and its tilt on its axis every 41,000 years (Selby 1985:510). The pollen record shows that relatively mild temperature fluctuations have occurred since the end of the Pleistocene Epoch. After about 10,000 B.P., there was a gradual warming trend that resulted in generally higher temperatures than are present today. The highest temperatures appear to have occurred around 5000 B.P. This warming trend continued until the beginning of the Little Ice Age (A.D. 1500 to 1850) during which a significant drop in temperature occurred. After the Little Ice Age, temperatures became more moderate (Davis 1983:176; Fagan 2000; Mann 2002). A few of the fluctuations that have occurred over the past 10,000 years are summarized in **Table 2**.

Table 2. Some Major Climate Fluctuations over the Past 10,000 Years

Years	Fluctuation	Event	Source
6200-2500 B.C.	1° to 2.5° C warmer drier; prairie expands	Hypsithermal, Altithermal, Climatic Optimum	Buol et al. 1989:180; Selby 1985
B.C. 1000-800 A.D.	1° to 2°C cooler wetter		Buol et al. 1989:180; Selby 1985
900-1200 AD	warmer droughts	Medieval Warm Period	Buol et al. 1989; Fagan 2000
1300 AD	cooler	Little Ice Age	Fagan 2000
1600 AD	warmer	variation within the Little Ice Age	Buol et al. 1989

Years	Fluctuation	Event	Source
1700 AD	cooler	variation within the Little Ice Age	Buol et al. 1989

Biological Organisms

Floral Resources

During periods of glaciation, vegetation would have included pines, fir, hemlock, and spruce. As the glaciers retreated, a forest of hackberry and ironwood replaced the northern species until more temperate deciduous species returned from their separate refugia to the south and east (Delcourt 2002). As the glaciers continued to retreat farther north, average temperatures rose and the mixed hardwood forests were gradually replaced by Oak-Hickory forests. By 5,000 years ago, the transition was complete (Delcourt and Delcourt 1981). Oak-Hickory Forests would have been found in warm exposed areas, and Beech-Maple Forests would have occurred in cool, moist shaded areas. Along streams and river valleys, Northern Riverine Forests would have been present (Kricher 1988:72).

Oak-Hickory Forests commonly contain a wide variety of flora. The trees that may have been present prehistorically include oaks, hickories, American chestnut, dogwood, sassafras, hop hornbeam, and hackberry. Tulip trees, elm, sweetgum, shagbark hickory, and red maple also may have been present, especially in moist areas. The understory may have contained mountain laurel, a variety of blueberries, and deer berry among other plants. Herbs may have included wintergreen, wild sarsaparilla, wood-sorrel, mayapple, rue-anemone, jack-in-the-pulpit, and trout lilies to name a few (Kricher 1988:57). Today, along the tributaries of the Ohio River, are stands of cottonwood, sycamore, soft maple, black willow, gum, and elm. On inland terraces, white oak, black oak, yellow poplar, hickory, beech, and hard maple predominate. On the drier portions of the area oak, sweetgum, tupelo, sassafras, black locust, and ash occur. The American chestnut, a common species during prehistoric times as a canopy tree, has been reduced to an understory tree by a blight introduced into North America in historic times (Kricher 1988:58). Numerous grasses and perennials such as smartweed, goosefoot, and amaranth are found in areas that are not farmed. Many of these species were present prehistorically and were utilized to various degrees as food, medicine, spiritual use, construction material, fuel, and fiber.

More specifically to this region of Kentucky, in 1857 the Kentucky Geological Survey summarized the soils and vegetation of nearby Bracken County (Owen 1857:115). The survey divided the landscape into three sections. On upland “table lands”, white oaks grew to noteworthy size. Black oak as well as red oak also grew upon these ridgetops. On the midslopes, forests consisted of “a mixed growth of sugar-tree, walnut, hickory, interspersed with black and white ash, oak, buckeye, and wild cherry.” The third type of vegetation was that of the bottomlands, but the source made no mention of the individual species. During the historic period, tobacco cultivation was best on the midlands, underlain by the Kope Formation (Owen 1857).

According to conclusions made by Delcourt and Delcourt (1997) and Lorimer (2001), however, the present and predicted forest types may not have existed in the project area during prehistoric times due to intentional burning by Native Americans. Fire was used to clear bottomland for agriculture, to create habitat for meadow or edge-dwelling species, and to clear the underbrush surrounding a settlement. Another activity practiced by native groups was the

tending of patch resources such as river cane (*Arundinaria gigantea*) (Delcourt 2002). This native species of bamboo, grasses, and sedges would have been important to Native American groups for use as cordage, nets, baskets, and mats. It may have existed within low-lying, moist, backswamp locations.

Some of the most important botanical materials to native populations were the weedy plants that grew in the disturbed soil surrounding their camps. These were gathered for many years and, as a result, became domesticated (Riley et al. 1990; Smith 1989) (**Table 3**).

Table 3. Indigenous Plants that Became Domesticated by Prehistoric Native Americans

Plant	Early Date	Site	Source
marshelder/sumpweed (Iva annua)	4000 BP	Napoleon Hollow, IL	Smith 1989
Sunflower (Helianthus annuus)	3500 BP	Higgs, TN	Smith 1989
Chenopodium (Chenopodium berlandieri)	3500 BP	Cloudsplitter, KY	Riley et al. 1990
Squash (Cucurbita pepo ssp ovifera)	2850 BP	Cloudsplitter, KY	Smith 1989

Other species important to native groups were species that were domesticated elsewhere such as Mexico or Peru. These include bottle gourds (*Lagenaria siceraria*), pumpkins (*Cucurbita pepo ssp pepo*), maize (*Zea mays*), and beans (*Phaseolus vulgaris*).

In addition to river cane (*Arundinaria gigantea*), Delcourt (2002) suggests Native Americans may have tended stands of mast resources as well. These resources might have included hickory, walnuts, butternuts, and acorns. These would have been present in the acidic mesophytic and acidic subxeric forests, which occur on sideslopes and bottomlands.

Ecological communities in the past, however, may have been different. In addition to effects of climate change and prehistoric modifications, a number of modifications dating to the historic period have affected the communities within Boone, Campbell, and Kenton counties. Perhaps the most profound effects were due to logging activities. Effects include extensive sheet erosion in the uplands, excessive deposition in the valleys, and transformation of forest species from k-selected to r-selected species, the r-selected species being those that are intolerant of shade and can therefore colonize disturbed areas more quickly. Other examples of historic modifications include agriculture, in which the diversity of species in the valleys would have been replaced by monocrop plots; species extermination due to hunting (e.g. the passenger pigeon); and the demise of native species due to competition with introduced species such as Japanese honeysuckle, tree-of-heaven, and burning bush.

Faunal Resources

During glacial periods of Quaternary times, the mammoth and mastodon were residents of the region, which was treeless tundra. Other types of large and now-extinct animals such as the giant peccary, ground sloth, bison, horse, elk, deer and beaver would also have been available to the early Paleoindian groups inhabiting the area (Shelford 1963; Wayne and Zumberge 1965). By approximately 10,000 B.P., mixed deciduous forests had developed in the area. The

primary vegetation cover was consistent with a mesic upland forest. Hickories, oaks, elms, maple, ash, and tulip trees would have been common. Between 62,000 and 25,000 B.C., during the Hypsithermal Interval, the climate was somewhat warmer and drier than at the present time. Post-Hypsithermal, the flora and fauna of the area were probably typical of the Carolinian province biotic assemblage.

These diverse habitats would have included numerous species available to native populations for food, medicines, and materials. Archaeological data has demonstrated that the species important to native populations included mastodonts during the early Paleoindian period; fish and shellfish during the Archaic period; white-tailed deer and wild turkey during numerous periods; and raccoon during the later periods.

Mammals that thrived in the forested environment may have included the gray squirrel, fox squirrel, white-tailed deer, raccoon, beaver, woodchuck, and a variety of mice, striped skunks, mink, otter, fox, black bear, and bobcats. A buffalo trace has also been noted in the vicinity—along Willow Creek to the west; a salt lick has been reported within that drainage (Pollack and Jobe 1992). Bird species would likely have included red-tailed hawks, ruffed grouse, great horned and eastern screech owl, pileated woodpecker, wild turkeys, and blue jay among others (Kricher 1988). A variety of ducks and geese also could have been present during the Fall and Spring migrations. Numerous species of freshwater mussels and other shellfish such as gastropods were present and used by the aboriginal inhabitants. Studies of various Indiana and Kentucky shell mounds have yielded remains suggesting that major fish populations used prehistorically were the drumfish (*Applodinotus gruniens*) and catfish (*Ictalurus sp.)* which fed upon the mussel populations.

A reliance on a wide range of resources is indicated. Many of those species listed above were recovered from features at the site. During the Mississippi period (A.D. 1000 to 1750), protein including elk and bear in addition to turkey and white-tailed deer (Pollack and Jobe 1992). Other faunal remains collected from the site included gray fox, gray squirrel, raccoon, Eastern box turtle, softshell turtle, and frog. Drumfish remains were also collected from the site.

During the historic period, however, these resources shifted dramatically. Europeans and European Americans began to severely modify the regional ecology (Delcourt and Delcourt 1981). Fauna that are now gone from the area include the wolf, elk, beaver, passenger pigeon, and others. The populations of mink, fox, and most other animals have been reduced, due to the loss of habitat and hunting.

PREHISTORIC CONTEXTS

Cultural change is a slow and continual process; therefore, archaeologists typically divide the long period of human history into regionally distinct cultural periods. As discussed below, archaeologists recognize four broadly defined prehistoric periods for the Eastern Woodlands. The sections below review the prehistoric cultural groups that may have been present in Boone, Campbell, and Kenton counties over the past 12,000 years. Each group occurred during specific periods of time and generally ranged across the Eastern North American woodlands. The temporal and regional variants within the Outer Bluegrass region, however, must still be discovered, analyzed and interpreted. Data recovered during the present project will aid these investigations. Overall, trends evident from the earliest (Paleoindian) to the latest (Mississippi) period include an increase in sedentism, increase in social complexity, and increase in dependence on agriculture.

To examine these trends in northeastern Kentucky, an examination of site data compiled by surveys, excavations, and the Kentucky Heritage Council's State Historic Preservation Comprehensive Plan Report (Pollack 1990; Pollack 2008) is necessary. First, the project APE must be put into its proper management area and cultural landscape. According to Pollack (1990, 2008), Kenton County is located within the Northern Kentucky section of the Ohio Valley Urban Centers Cultural Landscape. Regarding management areas, these counties area in the Northern Bluegrass section of the Bluegrass Management Area. This management area section extends 5612 km^2 and includes Boone, Campbell, Carroll, Gallatin, Grant, Henry, Kenton, Owen, Pendleton, and Trimble. As of the 2008 state plan, the Northern Bluegrass Section included 903 total sites, which comprised 21.5 percent of all sites for the Bluegrass Management Area. This is comparable to the figures for the Eastern Section, but only a third of the numbers documented for the Central Section—a pattern that echoes through many periods.

Of the sites identified for the Northern Bluegrass Section, the majority were identified as open habitation sites without mounds (n=587). Mound sites included earth mound (n=53), stone mound (n=6), and mound complex (n=5). Non-mound interment sites included cemetery (n=18). Historic sites included historic farm (n=161), industrial (n=3), and military (n=1). Additional prehistoric types included rockshelter (n=5), workshop (n=4), cave (n=2), quarry (n=12), and others. Again reflected in the numbers is a similarity with the Eastern Section with regard to the numbers of open habitation sites without mounds and earth mounds. Figures for stone mounds, however, are higher in the Eastern Bluegrass Section (n=21) than in the Northern (n=6). This may reflect a sampling bias, but also may reflect real settlement patterns.

Paleoindian Period (10,000 to 8000 B.C.)

Although the lithic material associated with Paleoindians is the earliest dated material recovered from humans in North America, it is also one of the most impressive. As with many cultural adaptations, the technology and the Paleoindians themselves had a long history of evolution in the Old World before migrating to the New World. Artifacts found in both Old World and New World assemblages include fluted points, polyhedral cores, prismatic blades, and the *piéces esquillèe*. Additional artifacts associated with Paleoindians include an extensive unifacial toolkit that included scrapers, gravers, and *limacés* (slug-shaped unifaces) (Dragoo 1973).

As the wealth of data from Paleoindian sites have accumulated, it has become apparent that groups prior to Clovis lived in North American. From Cactus Hill in Virginia, Meadowcroft Rockshelter in Pennsylvania, to Pendejo Cave in the Southwest, dates prior to 10,000 B.C. have been documented. With regard to the Northern Outer Bluegrass region, however, no conclusive evidence for pre-Clovis populations has been documented so researchers follow the Paleoindian subperiods defined by Tankersley (1996): Early Paleoindian, Middle Paleoindian, and Late Paleoindian.

Early Paleoindian (9,500 to 9,000 B.C.)

The Early Paleoindian subperiod is represented by magnificent Clovis spear points, polyhedral cores, and prismatic blades. Subsistence included megafauna such as the mammoth within prairie habitats and mastodons within forested habitats. Although there is scant archaeological evidence of Paleoindian social complexity, following arguments by Wright (2000), subsistence strategies that included procuring quantities of meat larger than one or two families could use quickly suggest higher levels of group cohesion and social complexity. Other areas along the Ohio River, mammoth and mastodon remains have been found in Wisconsinan gravel deposits at depths between three and eight meters (Granger and DiBlasi 1976:20). The earliest Paleoindian occupation may likely lie therein.

Middle Paleoindian (9000 to 8500 B.C.)

The Middle Paleoindian subperiod is represented in the Southeast by Cumberland, Beaver Lake, Quad, and Suwannee projectile point/knives (ppk). During this subperiod, local raw materials were chosen more often. Perhaps related to this expanded use of material type, reduction strategies included bipolar reduction. Artifact types associated with the Middle Paleoindian include *limacés*, and scrapers and gravers exhibiting a spur or protrusion.

Late Paleoindian (8500 to 8000 B.C.)

The Late Paleoindian Period is represented by side-notched points such as Dalton. It is during this subperiod that the greatest change in mobility and diet occurred. During this subperiod, diet appears to have become even more varied as the climate became more temperate. Although some rockshelter sites have contained evidence of Early Paleoindian Clovis occupations, such as Wolfe Shelter Site 15CU21 (Lane et al. 1995), the Dalton culture is often reported to be the first to routinely take advantage of rockshelters (Tankersley 1996; Walthall 1998).

Many items that were found in later prehistoric periods have not been recovered from Paleoindian contexts due to preservation. Cultural traits represented by that material culture were also assumed to be absent from the Paleoindian repertoire. Artifacts of botanical remains and bone or ivory ornamentation are some examples. Paleoindian material recovered from sites with better preservation such as rockshelters, bogs, and springs, however, changed the picture of Paleoindian cultural adaptations.

Subsistence strategies of the Paleoindian populations have also become more complex as more data have been analyzed. Although often portrayed as relying predominantly on megafauna such as the mastadonts (Loy and Dixon 1998), data from sites with optimal preservation reveals a more complex story. From the earliest sites such as Cactus Hill, the exploitation of game such as rabbit, bear, deer, and elk was documented by blood residue analysis (NPS 2011). Data from Meadowcroft Rockshelter suggest possible botanical resources used by Paleoindians included hickory, walnut, and hackberry (Carr et al. 2001). As noted previously, as rockshelters were chosen as habitation sites more often during the Late Paleoindian time, data revealed that a greater variety of patch resources were exploited than previously realized, particularly non-migratory forest-dwelling species such as squirrel and turkey or edge-dwelling deer (Walthall 1998).

As of the 2008 preservation plan, 71 Paleoindian sites had been documented for the Bluegrass Management Area; 37 of which were documented in the Central Section. Within the Northern Bluegrass Section, only eleven Paleoindian sites had been documented, again suggesting the Northern Bluegrass Section was on the periphery of the main settlement patterns. Site types within this section include open habitation sites, including those associated with the salt springs such as 15NI2.

Archaic Period (8000 to 900 B.C.)

Over the course of the Archaic period, populations developed new cultural traits and adaptations, including the use of pottery and use of seed and grain crops. A more sedentary lifestyle can be interpreted from the use of heavy stone bowls and storage pits during this

period. Three subperiods have been defined for the Archaic Period: Early Archaic (8000 B.C. to 6000 B.C.), Middle Archaic (6000 B.C. to 3000 B.C.), and Late Archaic (3000 B.C. to 900 B.C.).

Early Archaic (8000 to 6000 B.C.)

A number of new styles of projectile points indicate regional cultural growth during the Early Archaic. During the 1979 survey of Fleming County, Fenwick identified the following diagnostic projectile point types for the Early Archaic subperiod: Kirk Corner-notched, Kirk Stemmed, Kanawha Stemmed, LeCroy Bifurcate, MacCorkle, Plevna, and Greenbrier (Pollack 1990:200). Beveling along blade edges, grinding along basal edges, and serrations along margins are common.

Hunting gear included the atlatl. Although the portions made of antler and wood deteriorate too rapidly to recover from most archaeological deposits, the lithic bannerstones do not. Having had much labor and energy put into their manufacture, these items also were often items of trade or tribute. In addition, from sites such as Windover, Florida where preservation was exceptional, the Early Archaic assemblages had also included bone projectile points, the antler atlatl hooks, and wooden canoes.

Middle Archaic (6000 to 3000 B.C.)

During the Middle Archaic subperiod, the climate became warmer and drier than today. Known as the Hypsithermal, this climate change led to vast changes in ecological conditions. Species that may have held on since glaciation or that had expanded into riskier microhabitats would have died out. Prairie ecosystems would have expanded eastward into a larger portion of Kentucky.

Due to this environmental change, the natural resources available to the Middle Archaic people changed, leading to a marked change in residency and subsistence from the Early Archaic. This period of restricted natural resources gave rise to more permanent settlements, one indication of which is the presence of storage pits. Parry and Kelly, in Andrefsky (2005), propose other clues in the lithic assemblage that indicate increased sedentism: less reliance on formal tools, and greater use of retouch and expedient-use tools (Andrefsky, Jr. 2005; Parry and Kelly 1987). Middle Archaic lithic assemblages fit this model.

Subsistence patterns also changed during this period of climate change. Across the Eastern North American Woodlands, Middle Archaic populations can be identified by their extensive exploitation of shellfish. Shell mounds and shell-laden horizons, in addition to the appearance of netsinkers and fishhooks in the Middle Archaic toolkit, document this change to riverine resources. In addition, mortars and pestles document the processing of mast resources such as walnuts and hickory.

In the Bluegrass Management Area, diagnostic projectile point types of the Middle Archaic subperiod include Big Sandy Side-notched, Stanly, and Morrow Mountain. Additional items in a Middle Archaic assemblage might include woven fabrics, atlatls, bone and antler tools, awls, red ocher, marine shell, and copper. Burials of canine companions have been documented (Lewis and Kneberg 1959).

Late Archaic (3000 to 900 B.C.)

During this subperiod, populations increased, maintained even more permanent settlements, and developed new technologies. In the Southeastern United States, the first evidence of pottery, a fiber-tempered ware, can be attributed to Late Archaic groups. In the Eastern Bluegrass Section of the Bluegrass Management Area, diagnostic projectile point/knives include McWhinney, Savannah River, Karnak, Merom Expanding Stemmed, Trimble Side-notched, Bottleneck, and Ledbetter. Raw materials used for these are usually poor-quality, local materials. A variety of groundstone tools have been recovered, including three-quarter grooved axes. Bone and antler tools are well represented from Late Archaic sites, and include atlatl hooks, fishhooks, awls, pins, and antler projectile points. The extensive trade/tribute networks that were maintained as evidenced by the recovery of steatite, copper, and marine shell at Late Archaic sites suggest stronger leadership.

Subsistence during the Late Archaic included oily and starchy seed crops such as lambsquarters (*Chenopodium berlandieri* Moq. ssp. *jonesianum*), sunflower (*Helianthus annuus* var. *macrocarpus*), and ragweed (*Ambrosia trifida*) (Crites 1993; Gremillion 1995; Riley et al. 1990) Squash (*Cucurbita pepo* ssp *ovifera*) also became domesticated. Freshwater resources included *Rangia sp*, an introduced snail species from the lower Mississippi Valley, drumfish (*Applodinotus grunniens*), and catfish (*Ictalarus sp.*) (Janzen 1971).

Late Archaic sites include a diverse range of types, including shallow, upland, lithic scatters; hillside rockshelter/cave sites; and deep middens along the major rivers. In addition to the storage pits typical of the Middle Archaic subperiod, Late Archaic sites included features such as rock hearths, earth ovens, and dark middens--further evidence of the decline in mobility. One cultural phase represented within the Northern Bluegrass Section is the Maple Creek phase defined for southwestern Ohio. Dating from 1750 to 1000 B.C., this phase is identified by the presence of earth ovens and projectile points such as McWhinney, Merom, and Trimble. Exemplary Late Archaic sites within the Bluegrass Management Area include Zilpo (15BH37), Zilpo Cemetery (15BH103), and Cabin Creek (15MS31).

Woodland Period (900 B.C. to A.D. 900)

Trends established in the Late Archaic, such as increased social complexity and inequality, coupled with sophisticated mortuary practices, continued during the Woodland and culminated in the Adena and Hopewell cultural traditions. In some ways, the Woodland lifestyle was a continuation of earlier Later Archaic and some cultural traditions spanned the Late Archaic and Early Woodland periods. Technological innovations serve to differentiate the Woodland from the Archaic as a developmental stage. Among these is the manufacture and use of ceramics. The ungrooved celt replaced the Archaic grooved axe, and bone beamers took the place of endscrapers (Railey 1990; Railey 1996).

The period is also characterized by the appearance of social or ritual spaces set aside from the domestic dwellings. These ritual spaces include earthen enclosures and burial mounds. Upstream from the Falls of the Ohio, a complex social system labeled Adena appeared in the late Early Woodland around 500 B.C. and continued into the early Middle Woodland when it intensified into the Hopewell Tradition. The Woodland period is divided into Early (1000 to 200 B.C.), Middle (200 B.C. to A.D. 500), and Late (A.D. 500 to 1000) subperiods.

Early Woodland (1000 B.C. to 200 B.C.)

Differences between Woodland subperiods are largely distinguished by changes in ceramic styles. Early Woodland pottery is generally thick and grit tempered; vessel exteriors exhibit cordmarking, fabric impressions, or are plain. In the Eastern Bluegrass Section, Early Woodland projectile points include a variety of stemmed and notched types, including Kramer, Wade, Adena, Gary, and Turkey-tail, as well as Cogswell Stemmed (Justice 1987). Domestic structures varied in shape between oval, circular, square, and rectangular. Within the mountainous regions of the state, these groups extensively exploited rockshelters and occupied many for long periods of time.

Although the emphasis of subsistence practices during this subperiod remained on hunting and gathering, the continued development of the horticulture of weedy annuals marks a divergence from the earlier subperiod (Railey 1990:250). Plant species in the Eastern Agricultural Complex (EAC) tended for their seeds included goosefoot (*Chenopodium berlandieri* var. *jonesianum*), erect knotweed (*Polygonum erectum*), little barley (*Hordeum pusillum*), maygrass (*Phalaris caroliniana*), sumpweed (*Iva annua* var. *macrocarpa*), and sunflower (*Helianthus annuus*). Species propagated for their fruit include cucurbit (*Cucurbita sp.*). In addition, maize has been reported from a few Early Woodland sites in Ohio and West Virginia (Wymer 1992) as well as in Kentucky at the Hornung Site (15JF60).

Middle Woodland (200 B.C. to A.D. 500)

The Middle Woodland subperiod is largely marked by changes in ceramic style. While Early Woodland pottery was thick and crude, some Middle Woodland ceramics were designed for ritual or ceremonial use and exhibited thin walls and elaborate decorations (Muller 1986). Middle Woodland ceramics include conoidal and barrel-shaped jars with flat, rounded, or pointed bottoms, with plain, cordmarked, dowel-impressed, or fabric-impressed surfaces. Decoration in the form of nodes, zoned incised punctuation, or incised dentate stamping have been recovered from sites of this subperiod (Railey 1990:251, 1996:89). Types identified in the Eastern Bluegrass Section might include Adena Plain or Montgomery Incised such as recovered from the Morgan Stone Mound. Projectile points typical of the subperiod include expanded-stem points and shallow-notched points, including Robbins, Snyders, Steuben, Lowe Flared Base, Chesser, and Bakers Creek (Railey 1990:252). Middle Woodland peoples continued to rely on hunting, gathering, and an intensified form of horticulture that emphasized the native plant species of the EAC. Wymer (1992) found that the Middle Woodland populations relied more on these seed crops than later groups. In addition, maize has been recovered and dated from the Harness Mound in Ohio (Wymer 1992). These additions to the diet may have had repercussion throughout the social, political, and economic spheres, changes that are discussed below.

Settlement patterns appear to change through time, with small, scattered settlements occurring early in the subperiod, with a later increase in nucleation associated with larger base camps. Ritual spaces, including Adena tradition burial mounds and later Hopewell tradition earthen enclosures, which are associated with Middle Woodland sites (Railey 1990:251-252, 1996). Large-scale mound construction is indicative of significant community effort and politically complex, ranked societies. Social stratification also is evident by the burials, which were becoming increasingly more elaborate. Although Clay (1992) had argued Adena political systems were not controlled by chiefs or “Big Men”, Wright’s (2000) interpretation of the role of Big Men to solidify intra-group identity and inter-group détente appears to apply to the Adena. The logic of non-zero sum games found in Wright (2000) are actually foreshadowed by Clay’s conclusions of Adena manifestations in the Ohio Valley:

> . . . it is suggested that cooperative mortuary ritual in Adena, most importantly the construction of burial mounds, reflects just this tendency for dispersed social groups in the time period ca. 400 B.C.-1 A.D. to buffer local shortages in goods within a larger social environment becoming more densely populated and competitive. Through alliances with other groups, patterns of potential economic reciprocity were established and access to dispersed environmental resources…was assured, cemented…. Finally, the grave goods represent items of exchange, payoffs preserving symmetry in reciprocity between exchanging groups. [Clay 1992:80].

These alliances are visible in the archaeological record by the exotic materials found on Adena and Hopewell sites. Characteristic artifacts include the following: gorgets, incised stone and clay tablets; platform pipes; barite and galena bars; copper earspools, bracelets, and beads; and bone and shell beads (Webb and Snow 1974).

The temporal division between Adena and Hopewell earthworks is not as well defined in the Bluegrass as it is further north. Researchers are increasingly treating Adena and Hopewell sites in Kentucky as a single ceremonial tradition (Railey 1996:97-101) or as an organization type (Clay 1991).

Within the Eastern Bluegrass Section, Middle Woodland sites include Morgan Stone Mound (15BH15), 15LW301c, and the Mason County mound sites: Dover (15MS27), Pyles (15MS28), Gillespie (15MS50), and Mays Lick (15MS53). Evidence regarding the domiciles built during the Middle Woodland included evidence of a paired-post structure identified beneath the Morgan Stone Mound (15BH15) and evidence of oval structures uncovered at 15LW316a (Schock and Langford 1980).

Late Woodland (AD 500 to 900)

The transition between the Middle and Late Woodland periods is poorly understood. The Late Woodland subperiod is generally perceived to be a period of decline in the importance of the ritual that characterized the Middle Woodland subperiod. Earthwork construction stopped and long-distance exchange collapsed dramatically (Railey 1996:110). Late Woodland societies apparently developed along different lines regionally, but all seem to have depended initially upon the exploitation of local wild resources and the domesticated plants of earlier times. The cultivation of maize characterized the latter portion of the subperiod. Nucleated villages characteristic of the Ohio Newtown Phase have been identified in the Northern Bluegrass Section (Railey 1990). The Snag Creek site (15BK2), which lies in Bracken County, contains a Newton component (Gwynn Henderson, personal communication 2009). In Mason County, sites such as Pyles (15MS27) and Gillespie (15MS53) exhibit Newtown characteristics: associated mortuary mounds, central plaza, and a size of approximately 1.3 ha (Railey 1990:306).

Late Woodland artifact assemblages do not differ significantly from those of the Middle Woodland, with the exception that there is a lack of ceramics decorated with Hopewellian motifs and other ceremonial or exotic objects (Railey 1990:256). Late Woodland ceramics are generally cordmarked jars with little decoration.

Projectile points initially consisted of expanded-stemmed points such as Lowe Flared Base. With the technological development of the bow and arrow, however, small triangular arrow points appeared. Odell (1988) proposes that experimentation with the new technology began

much earlier—around A.D. 1—and that many of the first arrows were flakes. Seeman, on the other hand, suggests the first culture to use the bow and arrow was the Jack's Reef Horizon around A.D. 700 (Seeman and Dancey 2000).

Subsistence continued to rely predominantly on hunting and generalized gathering, but the plants comprising the EAC continued to be important. It is during this subperiod that maize becomes more important in the diet, as does cucurbits (squash) over most of the seed crops of the EAC. Only goosefoot and sunflower continued to be propagated (Wymer 1992). In place of the starchy seeds, Late Woodland populations included "sumac, elderberry, raspberry, honey locust, and others in their diet (Wymer 1992:66).

Mississippi Period (A.D. 1000 to 1750)

In Northern Kentucky, the Mississippi period is represented by the Fort Ancient culture and is divided into three subperiods: Early Fort Ancient (A.D. 1000 to 1200), Middle Fort Ancient (A.D. 1200 to 1400), and Late Fort Ancient (A.D. 1400 to 1750) (Sharp 1990).

Early Fort Ancient (A.D. 1000 to 1200)

One phase has been defined for the Early Fort Ancient subperiod: the Croghan Phase defined with the Thompson site. According to the 1990 state plan, the phase is defined as follows:

Most triangular projectile points associated with Croghan phase components have a flared base and incurvate sides, and the predominant pottery types are Baum Cordmarked Incised (Griffin 1943) and Baum Shell tempered Cordmarked (Prufer and Shane 1970). While most of the ceramics are tempered with grit (crushed quartz and feldspar), others are tempered with shell and grit or shell. The only vessel forms identified are jars with vertical, incurved, or slightly flared rims. Lips are mainly flat or flat-rounded and are often cordmarked or dowel-impressed. Appendages consist of semi-circular lugs, and a few thick strap or loop handles. Characteristic Baum rim strips, wedge-shaped in profile and vertically cordmarked to the lip, were commonly applied to flared rims. Cordmarking is the predominant surface treatment and occasionally triangular incised designs are present on vessel necks (Sharp 1990:520).

Middle Fort Ancient (A.D. 1200 to 1400)

The Manion Phase has been defined for the Middle Fort Ancient subperiod. The most well-known example of this phase came from the Fox Farm Site (15MS1). The Fox Farm site extends 10 to 16 ha and includes components dating from the Late Fort Ancient subperiod as well as the Middle Fort Ancient subperiod. Ceramic types identified in this assemblage included: "Fox Farm Cordmarked, Fox Farm Plain, Fox Farm Salt Pan, Fox Farm Bowl, Fox Farm Colander, Fox Farm Net-Impressed, and Fox Farm Checkstamped" (Sharp 1990:490). Projectile points consisted of serrated triangular types.

Subsistence appears to have been based on corn and beans. Few nutshells characterized the archaeobotanical materials recovered from Fox Farm. Native tobacco was recovered here as was evidence of deer, elk, and bear. Sites in the Eastern Bluegrass Section containing a Middle Fort Ancient component include the Van Meter Site (15MS52).

Late Fort Ancient (A.D. 1400 to 1750)

Two Late Fort Ancient phases have been defined within the Late Fort Ancient subperiod based on the presence or absence of contact period artifacts. The earlier phase, Gist Phase (AD 1400 to 1550), is characterized by the lack of contact period artifacts and evidence of reliance on a diet based on corn, beans, and squash with large mammals supplying some of the protein. Snag Creek (15BK2) is an example of a Gist Phase Fort Ancient site and predominantly appears to date to the 1400s, although evidence for continuity from the Late Woodland subperiod was identified. In addition, the local collectors have collected copper tinkling cones from the site, suggesting it persisted into the later Montour Phase. The site was also the location of a historic skirmish, which occurred in 1791 (Henderson and Turnbow 1987).

The later, Montour phase (A.D. 1550 to 1750) is characterized by the presence of European trade goods such as copper tinkling cones, copper kettles, pins, and glass trade beads. Montour phase components have been identified at the Bracken County sites of Augusta Site (15BK200) and Snag Creek Site (15BK2), the Mason County Fox Farm (15MS1), and the Bintz (15CP1) and Dunn sites (15CP40) (Henderson et al. 1986:123; Henderson 2008:798).

Owen (1857:116) describes the Augusta site as follows:

> From four to five feet below the surface of the alluvial plain, on which Augusta stands, innumerable quantities of human bodies, of aboriginal races, are entombed. So abundant are they, that in digging a cellar under one of the houses from fifty to sixty skeletons were found … The human bones are generally surrounded by a black clay or loam, and are mostly in so tender and decomposed a condition that it is difficult to exhume them entire.

In addition, Owen describes the midden layer:

> An exceedingly rich black shell earth is also frequently turned up in some of the gardens, by the spade and plough; they are river shells such as now exist in the Ohio river, viz: several different kinds of Unio and Paludina. From their position here, in a rich black earth, both in the Augusta bottom, and in the same material in a high situation in the cut-off hills of the Lower Wabash in Indiana, more than one hundred feet above the bottom lands, I am convinced that in seasons of scarcity these mollusks served as an article of diet, and this black shell earth is the site of aboriginal dung hills, where the shells were cast away after the repast on this singular food; that which lends probability to this inference is the fact of bones of deer, elk, opossums, raccoons, and other animals occurring in the same black earth associated with the shells.

Henderson and Turnbow (1987) summarized the cultural deposits at Augusta as well. As mentioned by Owen, the site included many burials. Although copper was present, whether this was associated with the aboriginal burials was unclear. The midden layer was found to be 50 cm thick with two cultural zones identified. Between these cultural layers, a sterile zone was encountered. The site was concluded to range from the late 1400s to the 1600s.

HISTORICAL CONTEXT PERTINENT TO ARCHAEOLOGICAL RESOURCES

The Turkeyfoot Road APE lies amidst extensive residential and commercial development associated with Crestview Hills, Edgewood, and Lakeside Park. The following summarizes

these communities. In addition, references to a Turkeyfoot community were encountered in an 1848 paper, which referenced the route between Essex and Turkey Foot to Napoleon and back. Other references, however, appeared to refer to Turkey Foot as along the Ohio River. Others referred to roads in Ohio. The March 26, 1860 *Cincinnati Daily Press* looked at post offices and asked: “Horse Cave, Turkey Foot, and Black Lick. What’s in a name?”.

Turkeyfoot Road

The incorporation of the Turkey Foot Turnpike Road Company occurred on January 9, 1852. This turnpike was to extend from “the second toll gate on Lexington and Covington turnpike road, thence with or near the Turkeyfoot road, in Kenton County, to the residence of Zachary Herndon, on said Turkey Foot road.” (Commonwealth of Kentucky 1852:830-832). As referenced, a previous roadway must have existed prior to 1852. The new turnpike was to be at least 25 ft wide but not wider than 40 ft with 15 ft of that as stone or gravel (although plank or wood was also permitted). Depth was to be at least 10 inches in the road’s center and tapering to 7 inches along the margins. If plank or wood was used, then the width must be 10 ft wide. Commissioners were stated to be T. Elliott, John Swetman, Caleb Rice, Reuben L. Bristow, Lewis Collings, and Waller S. Herndon.

Prior to this, turnpikes that appear to have serviced the area were the Lexington and Covington Turnpike (Dixie Highway), as noted above, and the Bank Lick Turnpike Road Company to the east, which had been incorporated in 1839. This turnpike was to extend from Covington to Dry Ridge. In 1852, however, the Independence and Colemansville Turnpike Company was incorporated to continue that road from its end near Independence to the Harrison County town of Colemansville (Commonwealth of Kentucky 1852:511-512).

Mentions of Turkeyfoot Road in newspapers occur in connection with the social activities of Mrs. Laffoon. Husband Polk Laffoon had once been the chairman of the Kentucky State Racing Commission, and their country estate, known as *Pokeaway* or *Pokeway*, was mentioned many times during the 1920s and 1930s. Mentions of Latonia race course also occur during this period. Other names referenced along Turkeyfoot Road include R. H. List, who pastured for Kahn in 1868. In 1871, and George List, who was a dairyman that died in 1931.

Crestview Hills

According to the city’s website, Crestview Hills was settled by 1785 and had been an Old Buffalo Trace to Big Bone Lick (City of Crestview Hills 2017). Unless otherwise cited, the following summarizes the history from this source.

At the time of European-American settlement, the land was granted to the Leathers family, then it became the landholdings of John B. Casey. During the Civil War, Confederate General Heth’s expedition of 6,000 made their way as far north as Fort Mitchell in 1862, which may have made impacts or left archaeological traces through the area. Barney Bungener owned the area, then his wife Elizabeth owned it from 1884 until 1922. At that time, residential development was envisioned, and the Kenton County Development Company was formed by William Hoppenjans for subdivision. By 1924 the first model home was constructed.

Also developing during the 1920s was the Summit Hills Golf and Country Club. This was developed by Joseph Macke on land owned by his father-in-law, who appears to be the landowner referred to as Harry Hartke (Van Houten 2009). Previously, the land had been the Summit Dairy Farm. The club opened in 1930. Macke, however, was out by 1940, and Hartke

was out by 1944. The clubhouse building had been the barn and silos, which was damaged by a 1931 fire and destroyed in a 1952 lightning strike. The new building incorporated a portion of one silo. The course itself has also been redesigned from its original layout.

Surrounding the club, residential development continued. After some financial troubles and the death of William Hoppenjans, the Crestview Hills Development Company was formed in 1951, and commercial and residential development continued.

Crestview Hills was incorporated in October 1951 in response to annexation threats, fire insurance taxes, and railway land acquisitions. The College Park Subdivision was formed in the 1960s, Thomas More College moved to location in 1968, and the Crestview Hills Mall was constructed in 1978.

Edgewood

The name of Edgewood has been suggested to have come from a few different sources. One indicates the city was named for the "Edgewood" estate that has become the Walker Estates (Planning and Development Services of Kenton County 2017). Another indicates it was named for "Colonel Edgewood" of "Twelve Trees" (Weidner 1983). The city was incorporated just a few years earlier than Crestview Hills— in 1948 as compared to Crestview Hills' 1951 date (Weidner 1983). As with Crestview Hills, this incorporation was also done to prevent annexation. For Edgewood, the threat came from Erlanger. Edgewood itself began annexations in the 1960s (Summit Hills Heights and Pius Heights) to become "New Edgewood" in 1968 (Weidner 1983). Additional annexations came in the 1980s (Planning and Development Services of Kenton County 2017). The subdivision mania of the twentieth century began at about the same time as Crestview Hills—by 1928 a model home was located at Lynndale Court and Edgewood Road.

Aviation, however, was an important part of the city, and an airstrip was noted to have existed at Dudley Road and Turkeyfoot Road (Planning and Development Services of Kenton County 2017). This Lionel Flying Field had been named for Lionel E. Stephenson, a Covington printer, artist, parachute jumper and parachute tester (Cincinnati Enquirer 1968; Jaeger 2009). The field was stated to have been used through World War II (Planning and Development Services of Kenton County 2017) or just lasting "barely one year" (Jaeger 2009). The latter source notes that events at the field helped to draw prospective home-buyers, had a grass runway, and lay within an 11-acre parcel. As with its duration, its location is also provided in differing ways: either at President's Park (Sweeney 2009) or between Presidents' Park and Turkeyfoot Road (Jaeger 2009). In addition to this airstrip, helicopter service to Cincinnati was highlighted as an amenity of choosing to live in the Brookwood subdivision (Planning and Development Services of Kenton County 2017).

Lakeside Park

Lakeside Park incorporated at the earliest date of three communities—1930, which is not surprising given its proximity to Fort Mitchell, and this was precisely the push for incorporation (Gaynor 2009). The following summarizes information from this source.

Endeavoring to preserve its residential fell, ordinances of the community limit businesses to the three present. Historical features include Dixie Highway, Five Mile House, Dry Creek Baptist Church, and the Dixie Highway National Historic District. Earthwork defenses had also been present along Dixie Highway during the Civil War. By 2009, the city had 2,869 citizens and 530 acres.

3
BACKGROUND CHECK and EXISTING Inventory

The results of the background research conducted at the Kentucky OSA are presented in this section. The archaeological background research consisted of a records check and a review of gray literature documenting previous cultural resources management investigations within a 2-kilometers (km) buffer of the project APE as well as within the project buffer. The map review examined changes in land use and settlement patterns and summarized any previously surveyed cemeteries that may be or have been present within the project area.

MAP AND AERIAL REVIEW

A series of historic maps and aerials were reviewed in relation to this project. The purpose of this research was to identify any former buildings, structures, transportation routes, land use changes, and other relevant ethnic, social, and economic changes in the vicinity of the project. These inform interpretations of contexts for the area and possible locations of archaeological sites. It should be noted that the maps presented below are for representative purposes only. Alignments depicted on historical maps may be different. In addition, buildings noted within the ROWs may not currently be present as standing buildings, although it should be recognized that foundations, artifact scatters, and features such as cisterns, wells, and privies may still be present as archaeological resources.

Maps earlier than those presented were also examined. These include ones from 1795, 1804, 1814, 1822, 1845, 1856, and 1880 that were examined at Mapsofus.org. These show drainages, trails, roadways, and railroad systems. That of 1814 map is notable as it shows a very different drainage system. Roadway systems were developed by the 1822 map; by the 1845 map, Kenton County is shown.

The 1883 map is shown in **Figure 7** and **Figure 8** (Griffing 1883). Sulfur springs and a fish pond are noted within the project area, which appears to mean a recreational area. In addition, the northern portion of Turkeyfoot Road appears to be circular, possibly to avoid a tollgate on Dixie Highway as occurred with Deering Road in Jefferson County.

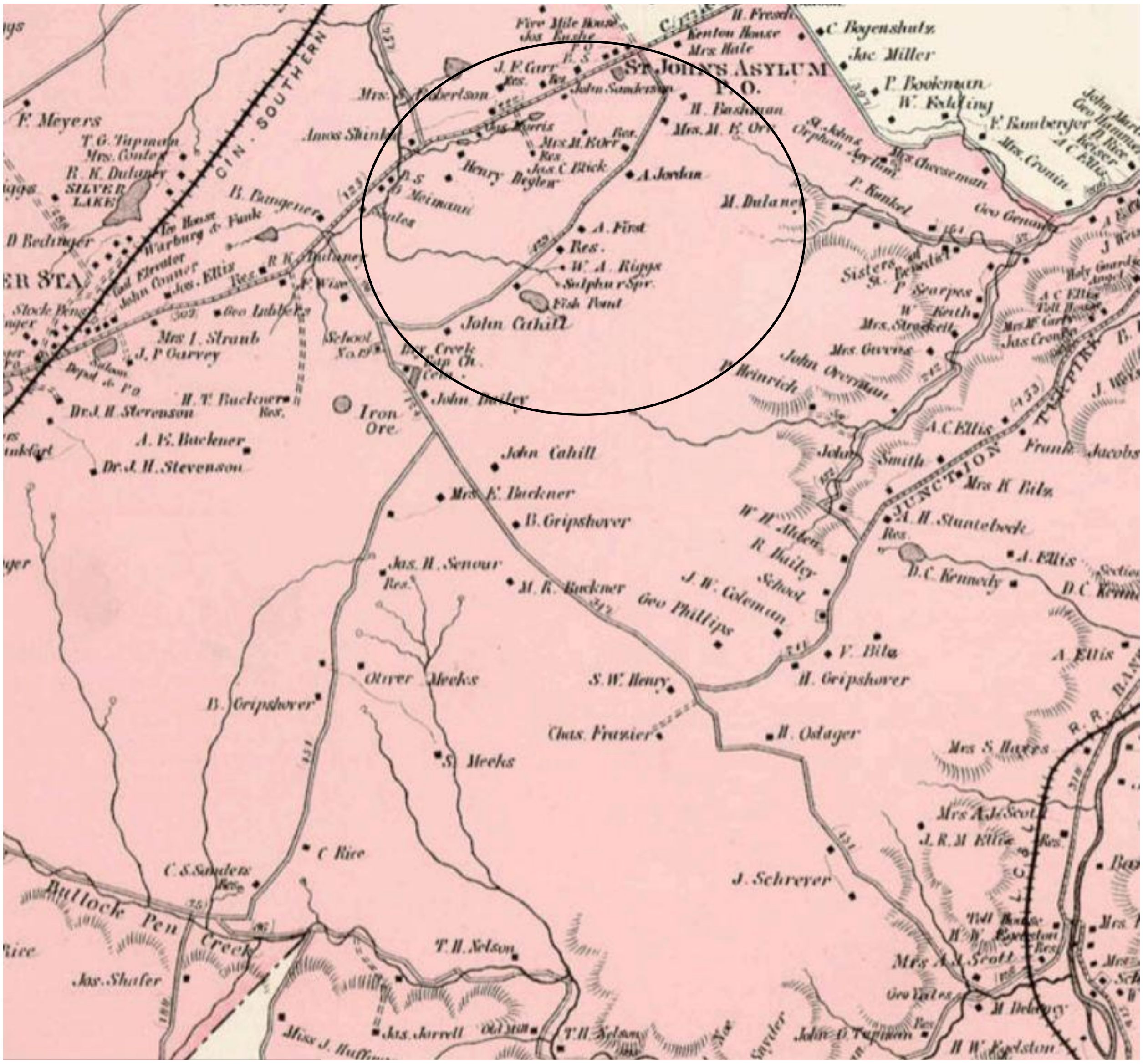

Figure 7. Surrounding area on the 1883 Griffing Scott's Magisterial District.

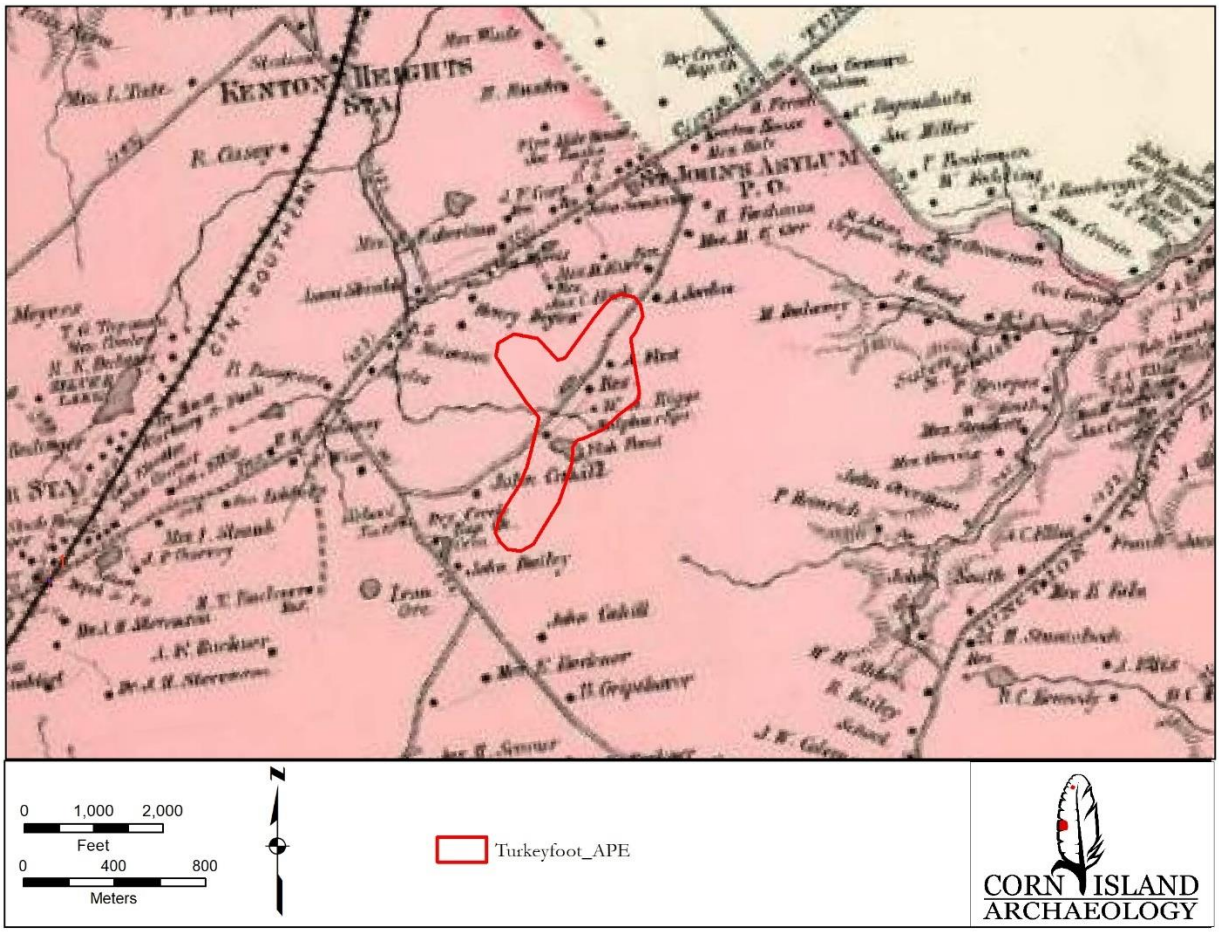

Figure 8. Portion of 1883 Griffing Scott's Magisterial District with APE noted.

The 1914 USGS is shown in **Figure 9.** Infrastructure includes Lexington Road Electric and the *Cincinnati, New Orleans, and Texas* Railroad. Florence, Woodside Station, Erlanger, and Crescent Springs are present. A southwest-extending roadway, which appears as a fragment in 1950, is present.

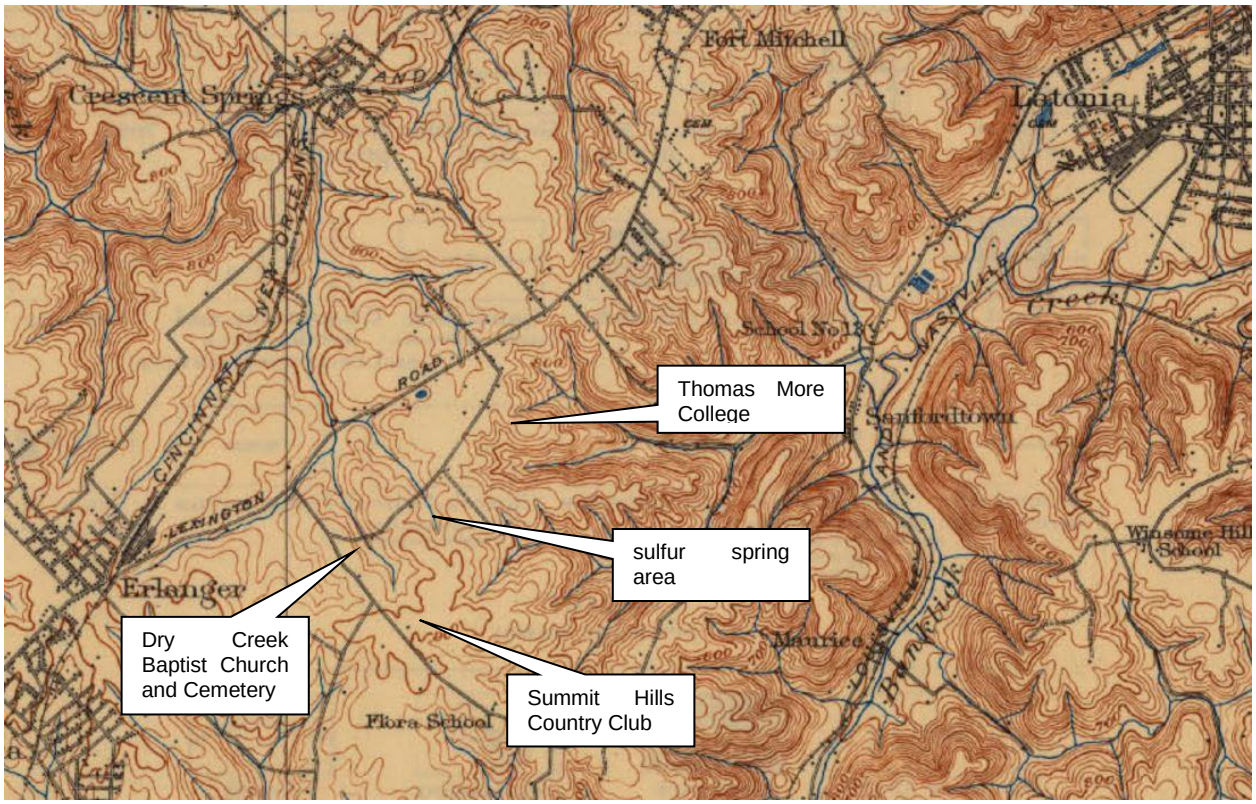

Figure 9. Portion of the 1914 *West Cincinnati* OH-KY USGS 15-minute topographic quadrangle reprinted in 1933 (U.S.Geological Survey 1914).

The 1950 quadrangle shows housing along Turkey Foot Road, which ends at College Park Drive. Headwaters to tributaries of Pleasant Run Creek and Bank Lick extend along the project area, indicating Turkey Run Road lies along a drainage divide. Summit Hills Country Club is visible, which makes it—and possibly any archaeological remnants--more than 50 years old (**Figure 10**).

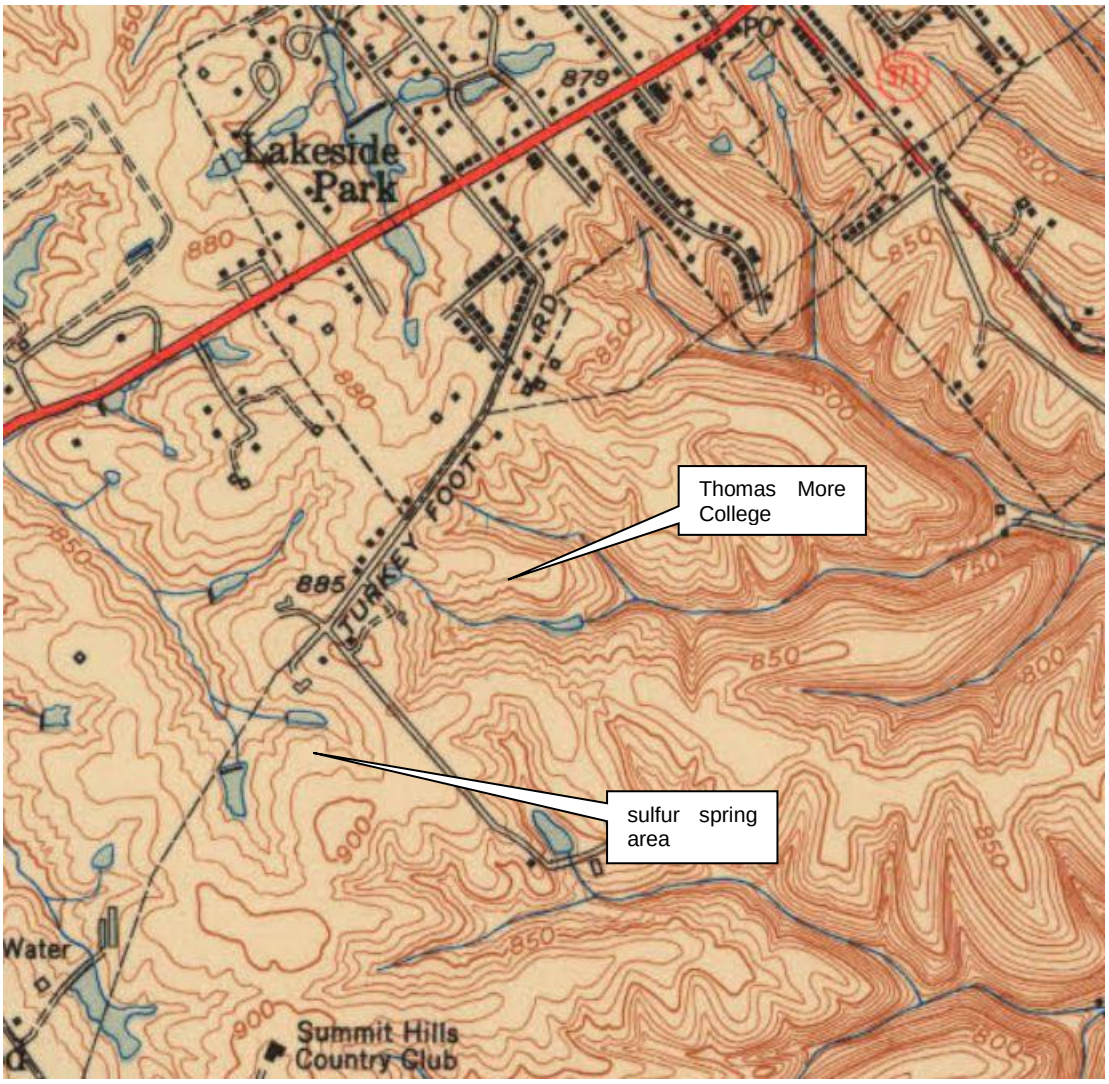

Figure 10. Portion of the 1950 *Covington KY-OH* USGS 7.5-minute topographic quadrangle *(U.S.Geological Survey 1950)*.

By 1961 photorevised in 1969, one large building lies west of Turkeyfoot Road, and a very large new building lies where Thomas More College develops. New housing is visible along both east and west segments of College Park Drive, which makes these at or approaching 50 years. Dammed lakes are present throughout the area (**Figure 11**).

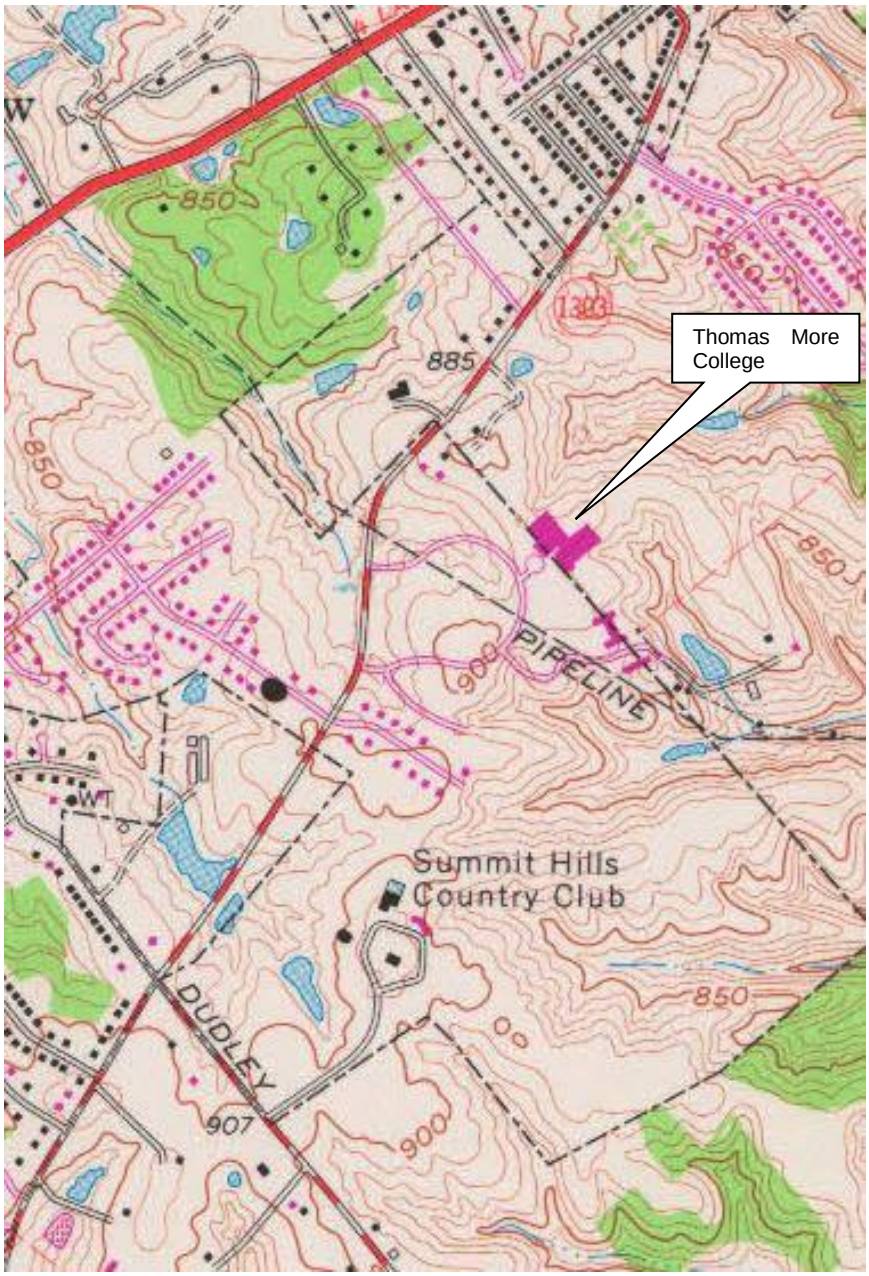

Figure 11. Portion of the 1961 photorevised 1969 *Covington KY-OH* USGS 7.5-minute topographic quadrangle (U.S.Geological Survey 1961).

The 1981 photorevised 1987 quadrangle shows the existence of I-275, Thomas More College, the lake is present, and the previous building west of Turkeyfoot Road remains at the location that becomes Fridays (**Figure 12**).

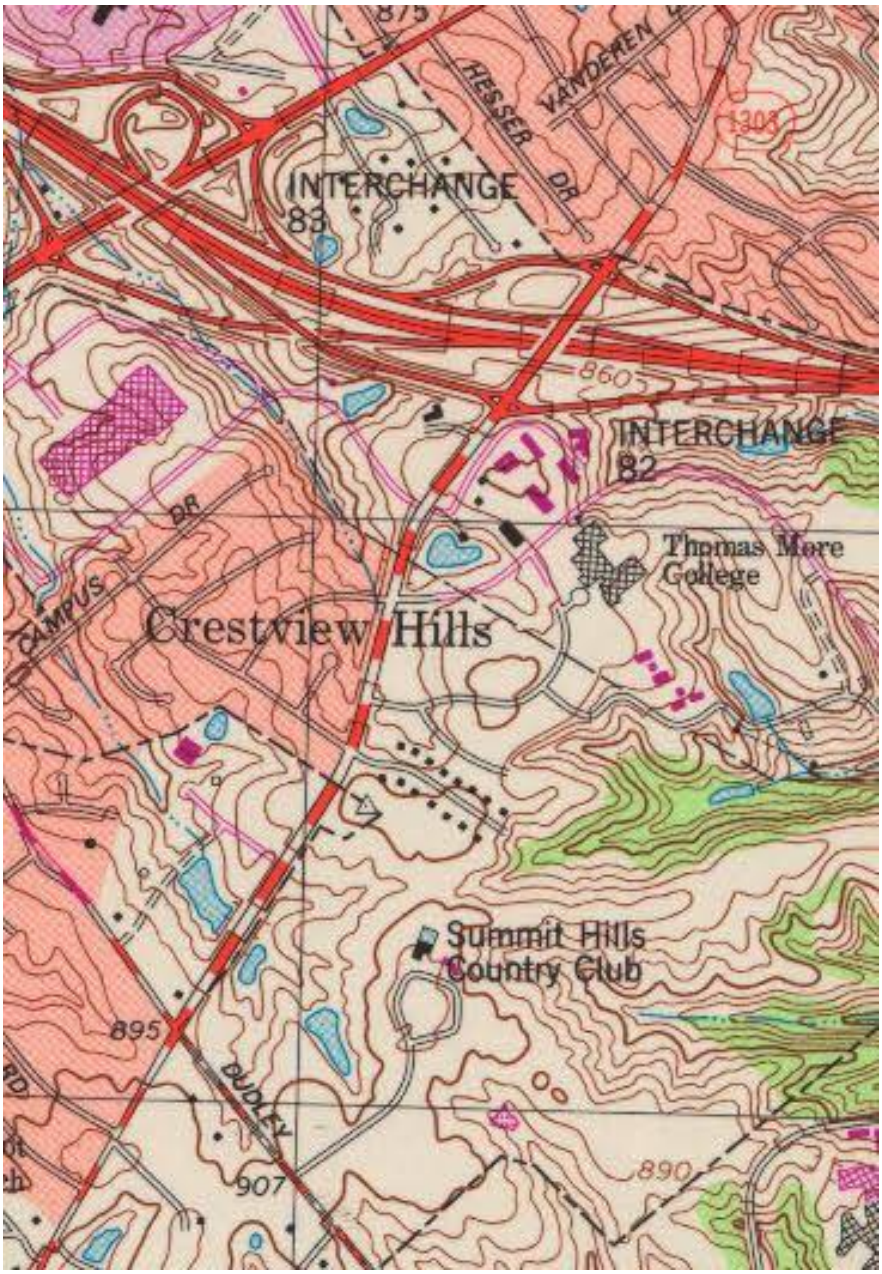

Figure 12. Portion of the 1981 photorevised 1987 *Covington KY-OH* USGS 7.5-minute topographic quadrangle (U.S.Geological Survey 1981).

ARCHAEOLOGICAL RECORDS CHECK AND LITERATURE REVIEW

The archaeological records housed at OSA were examined to identify any previous professionally performed archaeological studies in the vicinity of the project area as well as the presence of

recorded archaeological sites within the project APE. The results of a records search request were received from the Kentucky OSA on November 27, 2017. A literature review was then performed by Kathryn McGrath MA, RPA on November 28, 2017 to determine the presence, density, and environmental settings of recorded archaeological sites in and nearby the current project APE as well as archaeological surveys that have been conducted within the 2-km radius.

Archaeological Investigations Prior to Section 106

Webb and Funkhouser note a dearth of archaeological sites in Kenton County (Funkhouser and Webb 1928). The presence of the Ohio River is cited as a known thoroughfare, and a lack of land use along its length and that of the Licking River is noted as being unlikely. They suspect the sites have been destroyed; the possibility of deeply buried sites does not appear to have been considered. Young (1910) is cited, who identified “several stone graves on one of the river bluffs on the bank of the Ohio River four miles above Newport” in Campbell County (Funkhouser and Webb 1932:67). Two sites are noted for Kenton County, both of which include mounds and one of which lies within the current 2-km buffer. This site, 15KE1, is summarized below.

After this publication, William S. Webb directed Work Progress Administration (WPA) crews in the excavation of a Fort Ancient complex and seven Adena mounds in neighboring Boone County between 1938 and 1941. During the early 1950s, Ellis Crawford excavated the Rogers mound and villages (15BE33, 15BE34, and 15BE35), and, following this, Crawford and Robert Moody initiated the first major surveys in neighboring Boone County during the late 1950s. Moody is known to have been the first to systematically record sites without a focus on only highly noticeable mound and village sites (Gray 1982).

Previous Archaeological Research from the Kentucky State Historic Preservation Plan

Kenton County lies within the Northern Kentucky section of the Ohio Valley Urban Centers Cultural Landscape and the Northern Bluegrass Section of the Bluegrass Management Area (Stackelbeck and Mink 2008). As of this document, this management area, the second largest in area of the state at 18,686 square kilometers (km^2), included 4,206 sites.

The management area also contains the second highest number of sites reported in Kentucky. Of the 4,206 reported sites, 2,904 (69 percent) were recorded as open habitation without mound sites, 551 as historic farm sites, and 206 as earth mound sites. Other site types included "other" (n=103), cemetery (n=66), stone mound (n=63), isolated find (n=61), industrial (n=52), open habitation with mound site (n=40), mound complex (n=24), military (n=25) rockshelter (n=20), workshop (n=19), specialized activity area (n=18), non-mound earthwork (n=17), isolated burial (n=16), cave (n=12), quarry (n=6), and petroglyph/pictograph (n=3) (Stackelbeck and Mink 2008). Twenty-two percent of these sites (n=903) were reported within the Northern Bluegrass section of the management area.

Previous Archaeological Investigations within Two-Kilometer Buffer

Surveys completed for Section 106 compliance within a 2-km buffer of the current project are shown in **Figure 13** and summarized in **Table 4**. Three are located within the project area, and eight others are located within a 2-km buffer. However, no archaeological sites were identified by any of these or any other type of survey within the project APE. One site, 15KE1 lies within the 2-km buffer, which is examine in more detail below.

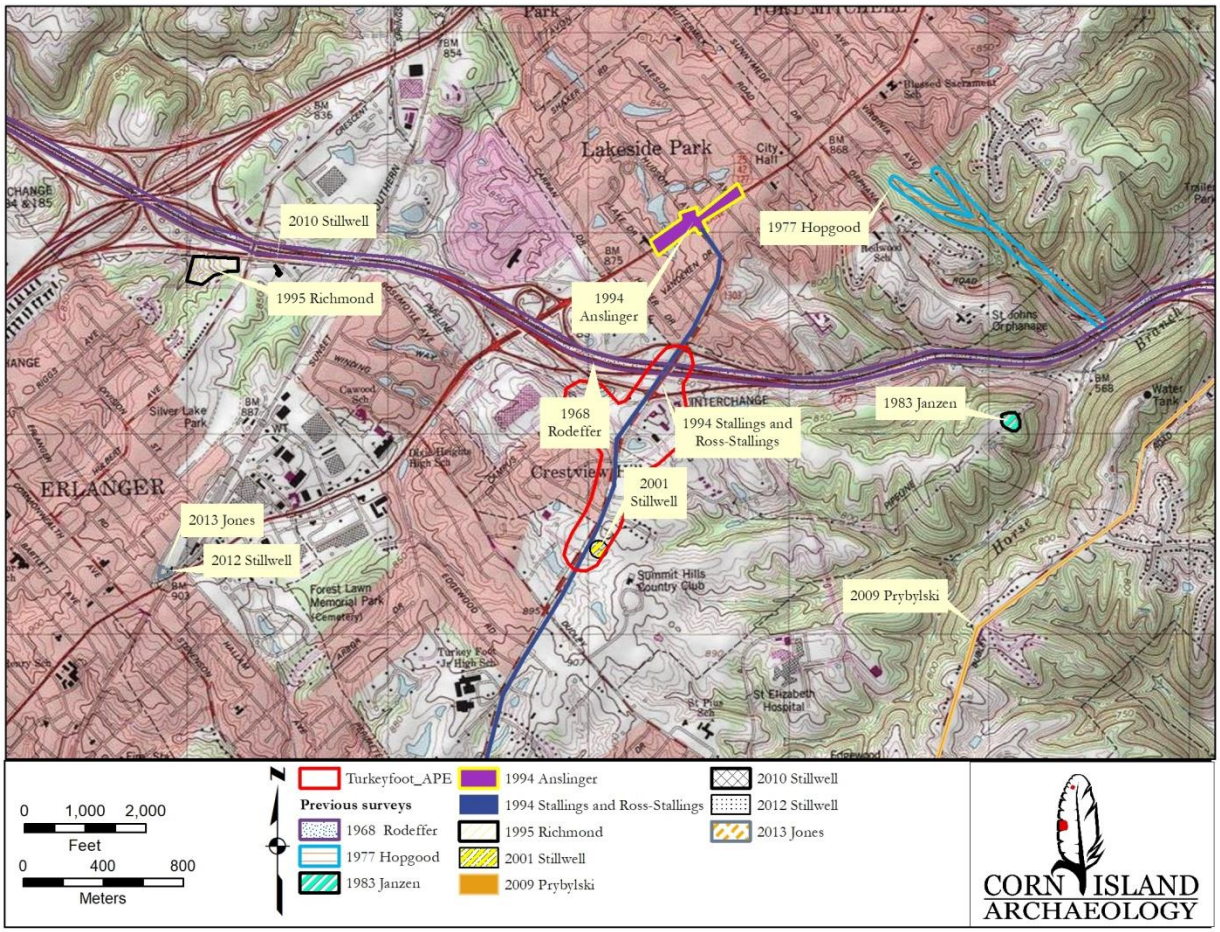

Figure 13. Previous investigations within two kilometers of project APE.

Table 4. Previous Archaeological Investigations within Two-Kilometer Buffer

Year	Authors and Organization	SHPO ID	Title	Sites	NRHP Recommendation
Within Project APE					
1968	Michael J. Rodeffer (1968) with assistance from **University of Louisville**	008-009	An Archaeological Survey and Preliminary Test Excavation: Interstate 275, Section 9, Boone, Campbell and Kenton Counties, Kentucky	N/A	N/A
1994	Richard Stallings; Nancy Ross-Stallings (1994) **Cultural Horizons**	008-077	A Phase I Cultural Resource Survey of a Portion of Turkeyfoot/Bristow Road (KY 1303), Boone and Kenton County, Kentucky	N/A	N/A
2001	Stillwell, Larry (2001) **Archaeological Consultants of Ossian**	059-031	An Archaeological Field Reconnaissance of a Proposed Cellular Phone Tower in Covington, Kenton County, Kentucky	N/A	N/A
Within 2-km Buffer					
1977	Hopgood, James F. (1977) **Northern Kentucky University**	059-001	An Archaeological Reconnaissance of the Proposed Orphanage Road Sewer Project, Kenton County, Kentucky	N/A	N/A
1983	Donald E. Janzen (1983) **Janzen, Inc.**	019-013	A Cultural Resource Assessment of a Borrow Site for the Interstate 275 Project, Kenton and Campbell Counties, Kentucky	N/A	N/A
1994	Anslinger, C. Michael (1994) **Cultural Resource Analysts**	059-012	An Archeological Reconnaissance Survey of the Proposed U.S. 42 at Turkeyfoot Road Widening Project, Kenton County, Kentucky	N/A	N/A
1995	Richmond, Michael D. (1995) **Cultural Resource Analysts**	059-014	An Archaeological Reconnaissance Survey of the Proposed Baptist Village Convalescent Center in the Community of Erlanger, Kenton County, Kentucky	N/A	N/A
2010	Stillwell, Larry (2010) **Archaeological Consultants of Ossian**	059-048	An Archaeological Field Reconnaissance of a Proposed Telecommunications Facility in Erlanger, Kenton County, Kentucky	N/A	N/A
2009	Matthew E. Prybylski (2009) **AMEC Earth & Environmental**	059-052	A Phase I Archaeological Survey for the Proposed Dudley Road Reconstruction Project in Edgewood, Kenton County, Kentucky	N/A	N/A
2012	Larry N. Stillwell (2012) **Archaeological Consultants of Ossian**	059-054	An Archaeological Field Reconnaissance of a Proposed Telecommunications Facility Compound Expansion (Project No. SOH-1377) in Erlanger, Kenton County, Kentucky	N/A	N/A
2013	J. Scott Jones (2013) **Midsouth Cultural Resource Consultant**	059-059	Phase I Archaeological Survey of the Existing Erlanger Telecommunications Tower; Kenton County, Kentucky	N/A	N/A

Within the Project APE

Three surveys have been previously completed within the project APE. These were completed in 1968, 1994, and 2001; none identified sites within the current project area.

The route of I-275 Section 9, which spanned Boone, Kenton, and Campbell counties, was surveyed in 1968 by Michael J. Rodeffer with assistance from Dr. Granger of the University of Louisville (Rodeffer 1968). The survey was completed during July and August when vegetation obscured topography, and, because of crops in the fields during this period, landowner permission was not always given. Due to these limitations, the author felt Kenton and Campbell counties were inadequately surveyed for archaeological material. Ten sites were documented—all were in Boone County and cultural affiliations were documented as Late Archaic or Woodland including one (15BE11) Late Adena mound site. Sites 15BE11 and 15BE66 were excavated.

Realignments of Turkeyfoot Road, Richardson Road, and Mt. Zion Road necessitated archaeological survey in 1994 (Stallings and Ross-Stallings 1994). The portion along Turkeyfoot Road extended 6.3 miles from the its intersection with Dixie Highway; the project included widening and also some realignment within a total of 129 acres. Other than the survey for I-275, this was the largest survey. Shovel testing in addition to pedestrian survey was completed, although areas of steep slope and obvious disturbance are not mapped. Two areas were not tested due to the lack of landowner consent, but these lie outside the current project area.

A proposed cellular tower complex necessitated an archaeological survey in 2001 (Stillwell 2001). This survey encompassed 0.014 acres, which was walked over as there was 80% ground visibility. No subsurface testing was completed, and no cultural materials were documented. The presence of gravel and proximity to the golf course maintenance area were cited as indications the area had been disturbed.

Within the 2-km Buffer

The earliest Section 106 survey completed within the 2-km boundary is that of Hopgood (1977). Disturbances included previous sewer lines and roadway construction. As the project area was extremely steep (35%), no cultural material was expected, and none were found. Field methods used to test the 850 ft of intact corridor consisted of pedestrian survey with examination of exposed areas and the trowelng of level areas.

Janzen completed a pedestrian survey of a between 2-and-3-acre property that was to be used for borrow for I-275 (Janzen 1983). The project area had been at the top of a hill, which had a gravel road extending to the top. Bare ground was exposed at the upper 50 m of the roadbed. No subsurface testing was completed.

During 1994, another archaeological survey was completed in preparation for the widening of 115 m of Turkeyfoot Road at the intersection of Dixie Highway and Turkeyfoot Road (Anslinger 1994). The width of the project area extended 3 m from the curb. Disturbances were noted from road construction and housing developments. Subsurface testing was completed, but no sites were documented.

The proposed area for the Baptist Village Convalescent Center was surveyed for archaeological resources in 1995 (Richmond 1995). The project area encompassed 1.78 acres and was

located west of the current project. Subsurface testing was completed in addition to pedestrian survey, but no cultural material was documented.

Another cell tower facility was planned for a 0.13-acre area, which was testing using shovel testing (Stillwell 2010). No cultural materials were recovered.

In 2009, portions of Dudley Road, which were located east of the current project, were proposed for reconstruction (Prybylski 2009). The total project area for that survey encompassed 14 acres, all of which was walked and examined for cultural features. Within this area, much of the land had been previously disturbed. Shovel tests were excavated on level areas; all ten were negative.

The 0.086-acre location for a third cell tower was surveyed in 2013 (Jones 2013). This survey included the excavation of eight shovel tests surrounding a 2002 tower, which had replaced a telecommunication tower from the 1960s. No archaeological material was recovered. Disturbance and buried utilities were documented.

Previous Archaeological Site within Two-Kilometer Buffer

Only one previously identified site lies within the 2-kilometer buffer. Site 15KE1 was recorded as the first site within Kenton County. As in this case, the first sites identified are obvious features such as mounds that were surveyed by Webb and Funkhouser. This site is recorded as being 15 ft in diameter and 4 ft high. As recorded on the site form, pipes and mica among other artifacts were recovered during excavations by Archie Williams. Owner at that time had been T.W. Spink. The description by Webb and Funkhouser is as follows:

> A mound on the farm of T.W. Spink, five miles south of Covington. This mound is about fifteen feet in diameter and four feet high. It was opened in 1925 by l. O. Anderson and found to contain a triple walled stone grave in the center with a number of other burials, possibly intrusive, around the edge. Altogether fragmentary parts of twenty skeletons were taken from the mound. Associated with the burials were a number of artifacts, including pipes and pieces of mica. Reported by Archie Williams (Funkhouser and Webb 1932:208).

EXPECTED RESOURCES

Based on the environmental and cultural settings, the map review, and the literature review, a few conclusions as to the expected resources can be made. Expected historical archaeological materials would have resulted from historical residences along Turkeyfoot Road from the nineteenth century as indicated on the 1883 map, debris or features from work crews during the ca. 1852 construction of Turkeyfoot turnpike, possible remnants of the Confederate invasion in 1862, a recreational area surrounding sulfur springs and a fish pond as noted on the 1883 map (Griffing 1883) (Error! Reference source not found.), and early twentieth-century residences as depicted on the 1950s USGS topographic map (U.S.Geological Survey 1950) (**Figure 10**). By this time, Lakeside Park and Edgewood had incorporated (1948 and 1930, respectively), and Crestview Hills would be incorporated the following year. Activities such as Summit Hills Country Club and Lionel Flying Field, both of which opened in 1930, had begun to draw people to the area.

Prehistoric archaeological resources may include numerous periods, but within the 2-km buffer and associated surveys, the cultural periods most represented are those of the Late Archaic and Woodland periods. One mound site occurs within the buffer, and landuse associated with that may lie within the corridor.

4
SITE VISIT

A site visit was completed of the project area on November 28, 2017 by CIA archaeologist Kathryn McGrath. The purpose of the site visit was to examine the degree of development, alterations in landforms, and other changes that may not be visible on maps or aerials. The following discussion divides the project APE into three areas: Within the Ramps, Along the Western Margin of Turkeyfoot Road, and Along the Eastern Margin of Turkeyfoot Road.

WITHIN THE RAMPS

Areas within the I-275 entrance and exit ramps may not have been previously surveyed. Areas within the southwestern (**Figure 14**), southeastern (**Figure 15**), and northwestern (**Figure 16**) areas appear to have potential. That at the northeastern exit ramp, however, exhibits excessive slope other than a narrow level area along Turkeyfoot Road, which is expected to be disturbed.

Figure 14. Area within the southwest exit ramp, facing northeast.

Figure 15. Area within the southeast entrance ramp, facing north.

Figure 16. Area within northwest entrance ramp, facing southwest.

ALONG THE WESTERN MARGIN

As summarized above, the margins of Turkeyfoot Road itself were surveyed in 1994 prior to widening (Stallings and Ross-Stallings 1994). Once widened, however, the current project area would extend beyond the surveyed area of that study. In addition, no map of specific testing strategies was included, so it is not possible to identify which specific locations were shovel tested.

Just south of the I-275 eastbound exit to Turkeyfoot Road, a strip lies along the east and south margins of the Fridays parking lot that include mature trees that may indicate intact soils (**Figure 17** and **Figure 18**). These should be examined using shovel testing.

In addition, a ravine was noted on topographic maps and during the site visit (**Figure 19**). This should be examined for rockshelters or other possible cultural features.

Figure 17. Strip with mature trees along eastern boundary of Fridays parking lot, facing east.

Figure 18. Area with mature trees along southern boundary of Fridays parking lot, facing east.

Figure 19. Ravine northwest of The Woodhouse Day Spa, facing northwest.

Portions at the intersection of Turkeyfoot Road and Fraternity Court show potentially intact areas (**Figure 20** and **Figure 21**). Further south, however, a concrete drainage extends parallel to Turkeyfoot Road.

Figure 20. Intersection of Turkeyfoot Road and Fraternity Court, facing north.

Figure 21. Intersection of Turkeyfoot Road and Fraternity Court, facing south.

The intersection of Turkeyfoot Road and College Park Drive also appeared to have some potential that should be subjected to shovel testing (**Figure 22**).

Figure 22. Intersection of Turkeyfoot Road and College Park Drive, facing south.

The area at Barnwood Drive exhibits extensive disturbance, and no archaeological survey is necessary along the commercial areas to the southern boundary along the western margin (**Figure 23**).

Figure 23. Intersection of Turkeyfoot Road and Barnwood Drive, facing north.

ALONG THE EASTERN MARGIN

Along the eastern margin, the Summit Hills Country Club may exhibit disturbance, but the locations and extent are unknown. Intact soils may lie along the margin of Turkeyfoot Road. Portions of intact soils, for example, may lie along the eastern segment of College Park Drive as well, both north and south of its intersection with Turkeyfoot Road (**Figure 24** and **Figure 25**).

Figure 24. Northeast area at the intersection of Turkeyfoot Road and eastern segment of College Park Drive, facing north.

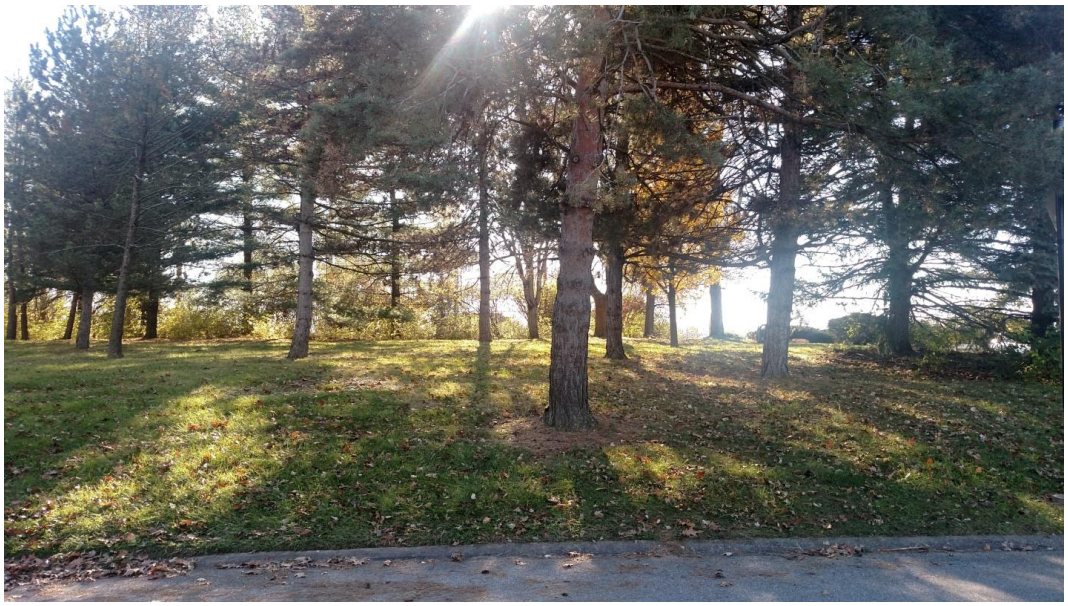

Figure 25. Undeveloped lot at the southeast corner of the intersection of Turkeyfoot Road and the eastern segment of College Park Drive, facing south.

Slopes and a ravine with cattails indicating wet environment lie along the southeastern corner of Turkeyfoot Road and Villa Nova Drive (**Figure 26**). No archaeological survey is necessary at this location. Along the northeastern corner of this intersection, however, slopes below the roadway escarpment are more gently and will need to be surveyed (**Figure 27**). As visible on Google maps, however, the ground within 60 ft of Turkeyfoot Road has been graded, filled, or both (**Figure 28**).

Figure 26. Southeastern corner of the intersection of Turkeyfoot Road and Villa Nova Drive, facing southwest.

Figure 27. Northeast corner of the intersection of Turkeyfoot Road and Villa Nova Drive, facing northwest.

Figure 28. Image from Google maps showing disturbance within 60 ft of Turkeyfoot Road.

Survey should continue north to Thomas More Parkway and include an area with a grove of trees at the northeastern corner of this intersection (**Figure 29**). The area surrounding the Monte Cassino Chapel (KEFM-5), however, is not expected to contain archaeological materials related to that building as this was moved to this location in 1965 (Kenton County Public Library 2017) (**Figure 30**). North of this, along the lake to the Unnamed Road, slopes are steep, and no survey is necessary (**Figure 31**). North of the intersection with Unnamed Road, however, lies another level area of possible intact soils where survey should occur (**Figure 32**).

Figure 29. Grove of trees on far side of lake at northeast corner of Turkeyfoot Road and Thomas More Parkway, facing south.

Figure 30. Monte Cassino Chapel (KEFM-5) at its current location, facing north.

Figure 31. Steep slopes along Turkeyfoot Road and Unnamed Road by U.S. Bank, facing west.

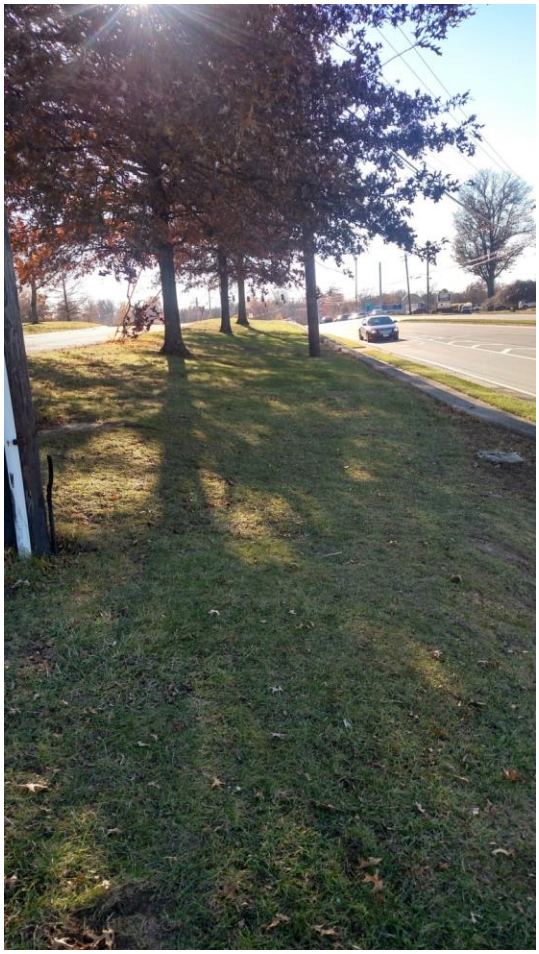

Figure 32. Strip north of Unnamed Road, facing south.

5
CONCLUSIONS AND RECOMMENDATIONS

Corn Island Archaeology LLC was retained by Palmer Engineering to perform an archaeological overview for the planned Turkeyfoot Road (KY 1303) Project in Kenton County, Kentucky. Corn Island was to assist Palmer Engineering in support of the KYTC in the area of prehistoric and historical archaeology by conducting a records search for recorded archaeological resources, assessing the potential for unrecorded and/or undiscovered resources to be present within the study area, drafting resource maps, and preparing a written overview of the findings.

The project area lies along a rolling uplands between the drainages of Dry Creek and Banklick Creek. A turnpike company had been planned for the corridor as early as 1852, and the area was chosen as the country seat of Polk Laffoon had been located along Turkeyfoot Road, which had existed during the 1920s and 1930s, but it is not known if this had been within the project area. Also within the area was the 1862 expedition of Confederate General Heth. Remnants of this may exist, as well as an 1883 recreational area containing sulfur springs and fish pond, and buildings along the roadway as noted on the 1950 USGS topographic map.

OSA data research and the site visit were completed by Kathryn McGrath on November 28, 2017. There were no obstructions for the site visit due to weather or landowner access. Major infrastructure projects have occurred within the corridor, which include construction of I-275, the archaeological survey of which was completed in 1968, and the widening of Turkeyfoot Road, for which an archaeological survey was completed in 1994 (Rodeffer 1968; Stallings and Ross-Stallings 1994). One other survey within the project area was completed in 2001 for a cellular tower location (Stillwell 2001). No sites were identified within the project APE during these or by any other method. One site, mound site 15KE1, was identified by Webb and Funkhouser and is located within the 2-km buffer.

RECOMMENDATIONS

In spite of the development throughout the corridor, isolated locations were identified that could contain intact soils. The I-275 survey through Kenton County was hampered by landowner access and vegetation, and no map of survey strategies or accessed properties were included in the report. The surveyed corridor prior to the widening of Turkeyfoot Road is assumed to be within the current limits of the now-widened Turkeyfoot Road itself and therefore, the current APE extends beyond those limits and portions outside of the current right-of-way. It is recommended that the current project APE outside of the current right-of-way still needs to be surveyed in areas suspected to have intact soils.

It is recommended that these areas be subjected to subsurface survey using shovel testing. Areas that were identified as possibly intact were generally located near corners of intersections, as these were free from residential development, and areas that have mature trees. In addition to those areas noted for shovel test survey, the northwestern corner of the area is a steep ravine and should be walked over and examined for rockshelters or other cultural features.

6
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Appendix D

Socioeconomic Study

KY 1303 – Turkeyfoot Road Socioeconomic Study

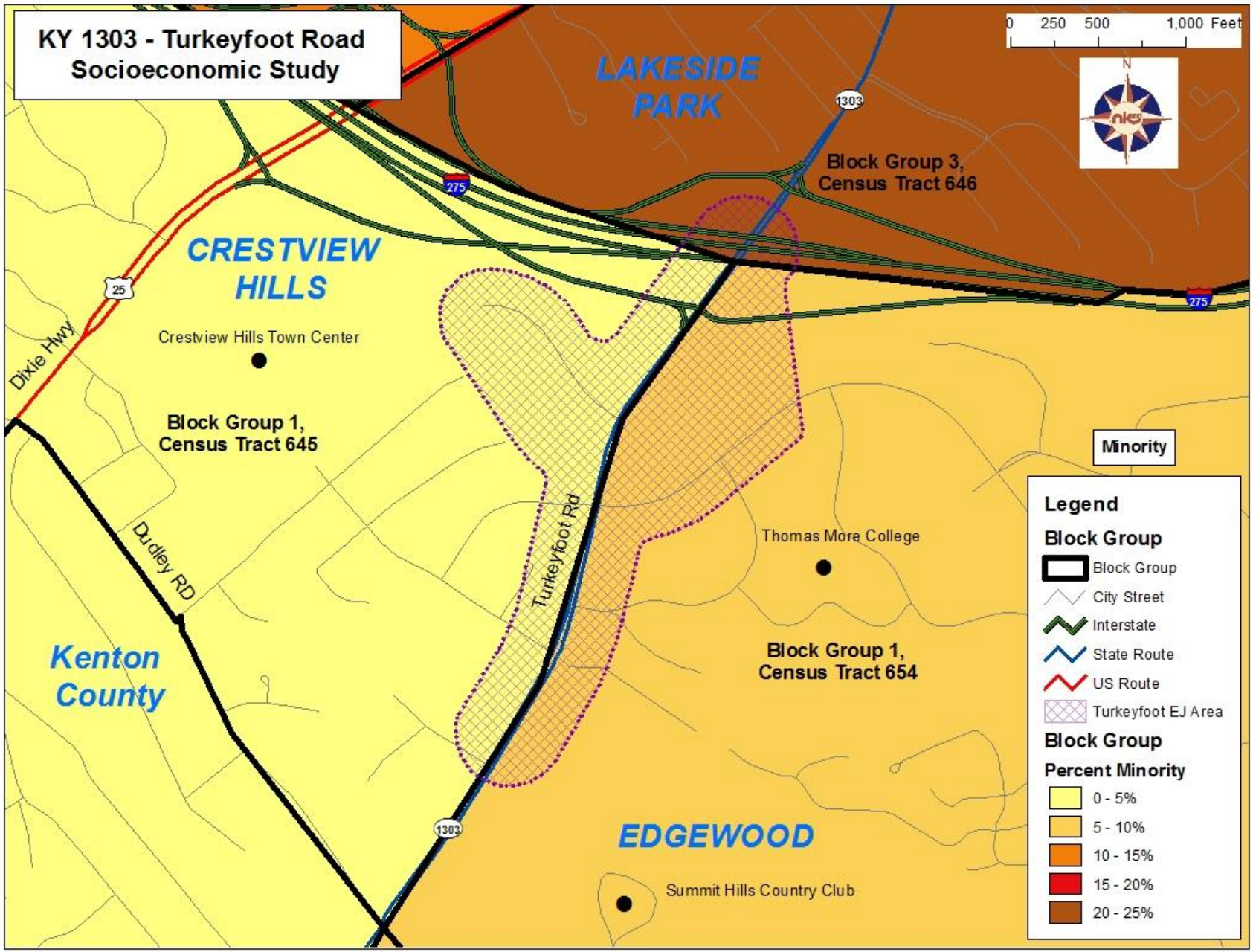
Socioeconomic Study

By: Jeff Thelen

11/15/2017

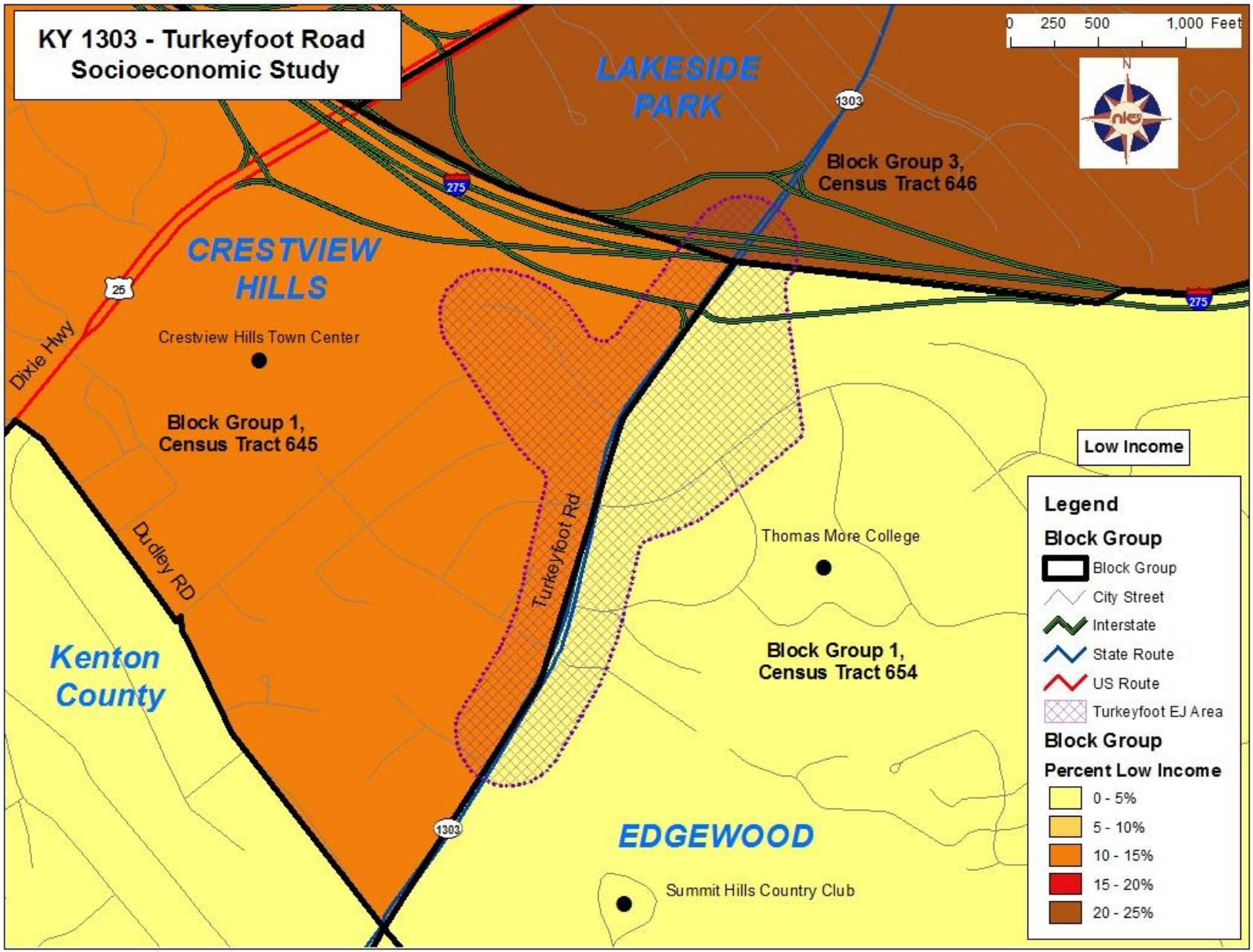
Appendix

Methodology: The methodologies used in this planning document are appropriate for identifying possible areas of concern in small urban areas and potential project corridors. However, during future phases of project development a more detailed and robust analysis would be required for the NEPA documentation when assessing the potential for adverse and disproportionate impacts to low-income and minority populations.


KY 1303 - Turkeyfoot Road
Socioeconomic Study
0 250 500 1,000 Feet
N
LAKESIDE PARK
1303
Block Group 3,
Census Tract 646
275
CRESTVIEW HILLS
25
Dixie Hwy
Crestview Hills Town Center
Block Group 1,
Census Tract 645
Dudley RD
Turkeyfoot Rd
Thomas More College
Block Group 1,
Census Tract 654
Kenton County
EDGEWOOD
Summit Hills Country Club
Minority
Legend
Block Group
Block Group
City Street
Interstate
State Route
US Route
Turkeyfoot EJ Area
Block Group
Percent Minority
0 - 5%
5 - 10%
10 - 15%
15 - 20%
20 - 25%

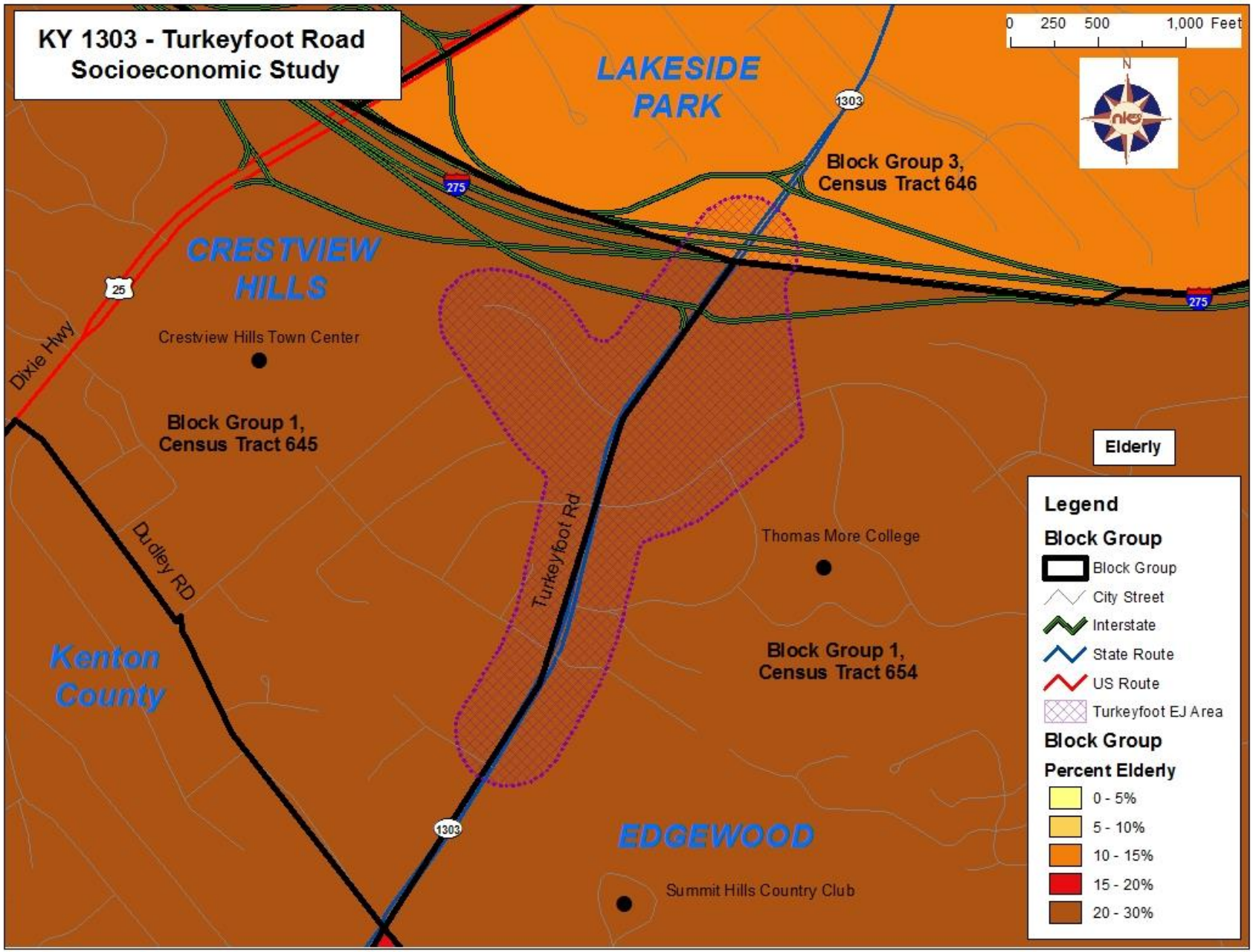
MINORITY POPULATIONS

The percentage of persons that are Minority in the United States (38.7%) is higher than that of the state of Kentucky (15.1%). The Minority population in Kenton County (11.3%) is less than that of the state of Kentucky and of the United States. Block Group 1 CT 645 (2.3%) has a lower Minority population than the county, state and country. Block Group 1 CT 654 (7.4%) has a lower Minority population than the county, state and country. Block Group 3 CT 646 (26.3%) has a higher Minority population than the county. It has a higher Minority population than the state and a smaller minority population than the country.


KY 1303 - Turkeyfoot Road
Socioeconomic Study
0 250 500 1,000 Feet
N
LAKESIDE PARK
1303
Block Group 3,
Census Tract 646
275
CRESTVIEW HILLS
25
Dixie Hwy
Crestview Hills Town Center
Block Group 1,
Census Tract 645
Dudley RD
Turkeyfoot Rd
Thomas More College
Block Group 1,
Census Tract 654
Kenton County
EDGEWOOD
Summit Hills Country Club
Low Income
Legend
Block Group
Block Group
City Street
Interstate
State Route
US Route
Turkeyfoot EJ Area
Block Group
Percent Low Income
0 - 5%
5 - 10%
10 - 15%
15 - 20%
20 - 25%

LOW INCOME POPULATIONS

The percentage of persons that are Low Income in the United States (15.5%) is lower than that of the state of Kentucky (18.9%). The Low Income population in Kenton County (14.6%) is less than that of the state of Kentucky and of the United States. Block Group 1 CT 645 (13.2%) has a lower Low Income population than the county, state and country. Block Group 1 CT 654 (2.7%) has a lower Low Income population than the county, state and country. Block Group 3 CT 646 (21.3%) has a higher Low Income population than the county, the state and the country.


KY 1303 - Turkeyfoot Road
Socioeconomic Study
0 250 500 1,000 Feet
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LAKESIDE PARK
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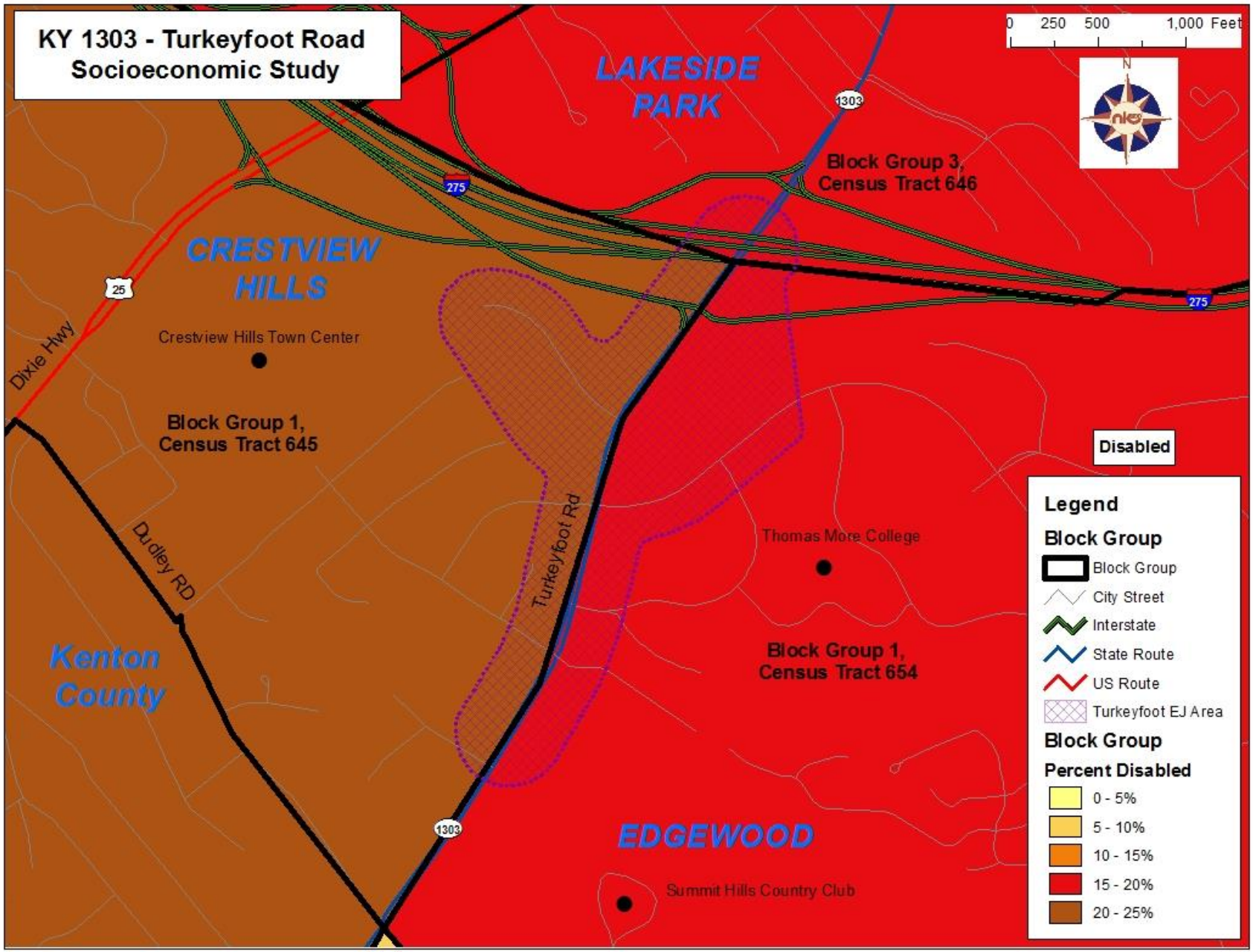
Crestview Hills Town Center
Block Group 1,
Census Tract 645
Dudley RD
Turkeyfoot Rd
Thomas More College
Block Group 1,
Census Tract 654
Kenton County
1303
EDGEWOOD
Summit Hills Country Club
Elderly
Legend
Block Group
Block Group
City Street
Interstate
State Route
US Route
Turkeyfoot EJ Area
Block Group
Percent Elderly
0 - 5%
5 - 10%
10 - 15%
15 - 20%
20 - 30%

ELDERLY POPULATIONS

The percentage of persons that are Elderly in the United States (14.9%) is higher than that of the state of Kentucky (14.4%). The Elderly population in Kenton County (12.3%) is less than that of the state of Kentucky and of the United States. Block Group 1 CT 645 (20.7%) has a higher Elderly population than the county, state and country. Block Group 1 CT 654 (20.3%) has a higher Elderly population than the county, state and country. Block Group 3 CT 646 (14.7%) has a higher Elderly population than the county and state but a lower Elderly population than the country.


KY 1303 - Turkeyfoot Road
Socioeconomic Study
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N
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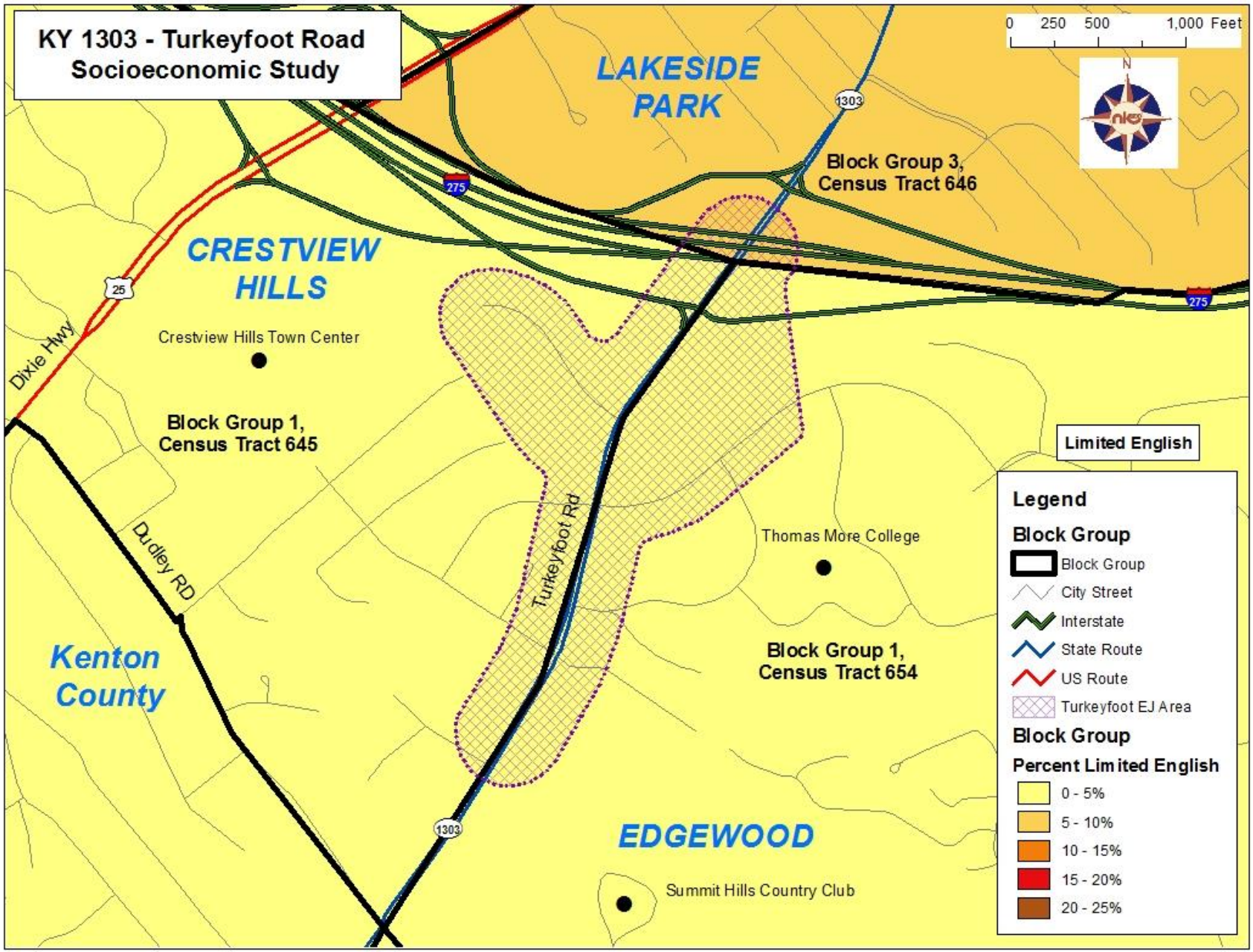
25
Dixie Hwy
Crestview Hills Town Center
Block Group 1,
Census Tract 645
Dudley RD
Turkeyfoot Rd
Thomas More College
Block Group 1,
Census Tract 654
Kenton County
EDGEWOOD
Summit Hills Country Club
Disabled
Legend
Block Group
Block Group
City Street
Interstate
State Route
US Route
Turkeyfoot EJ Area
Block Group
Percent Disabled
0 - 5%
5 - 10%
10 - 15%
15 - 20%
20 - 25%

DISABLED POPULATIONS

The percentage of persons that are Disabled in the United States (12.4%) is lower than that of the state of Kentucky (17.0%). The Disabled population in Kenton County (14.2%) is less than that of the state of Kentucky and higher than that of the United States. Block Group 1 CT 645 (21.6%) has a higher Disabled population than the county, state and country. Block Group 1 CT 654 (15.4%) has a higher Disabled population than the county. It has a lower population than the state but a higher population than the country. Block Group 3 CT 646 (16.1%) has a higher Disabled population than the county. It has a lower Disabled population than the state but a higher disabled population than the country.


KY 1303 - Turkeyfoot Road
Socioeconomic Study
LAKESIDE PARK
CRESTVIEW HILLS
Crestview Hills Town Center
Block Group 1, Census Tract 645
Block Group 3, Census Tract 646
Block Group 1, Census Tract 654
Thomas More College
Summit Hills Country Club
EDGEWOOD
Kenton County
Dixie Hwy
Dudley RD
Turkeyfoot Rd
25
275
1303
0 250 500 1,000 Feet
N
Limited English
Legend
Block Group
Block Group
City Street
Interstate
State Route
US Route
Turkeyfoot EJ Area
Block Group
Percent Limited English
0 - 5%
5 - 10%
10 - 15%
15 - 20%
20 - 25%

LIMITED ENGLISH POPULATIONS

The percentage of persons that are Limited English in the United States (8.6%) is higher than that of the state of Kentucky (2.1%). The Limited English population in Kenton County (1.7%) is less than that of the state of Kentucky and lower than that of the United States. Block Group 1 CT 645 (1.2%) has a lower Limited English population than the county, state and country. Block Group 1 CT 654 (1.4%) has a lower Limited English population than the county, state and country. Block Group 3 CT 646 (7.3%) has a higher Limited English population than the county and the state but a lower Limited English population than the country.

Methodology for Assessing Underserved Populations including Environmental Justice, Title VI, Age and Disability considerations in conjunction with KYTC Planning Studies

Cover Page
Title: KY 1303 Turkeyfoot Road Socioeconomic Study
Subtitle: Socioeconomic Study
Date: November 15, 2017
Author: Jeff Thelen

Analysis

Environmental Justice (EJ) refers to the fair treatment of all people regardless of race, color, national origin or income. Specifically, agencies must demonstrate meaningful involvement with the above stated groups with respect to development, implementation and enforcement of environmental laws, regulations and policies. EJ analysis is undertaken for any study that may result in impacts on a minority and/or low income population that has a federal nexus (funding or approval).

Additionally KYTC works to identify potential populations of the Elderly, Disabled, Limited English Proficiency and Limited Transportation Options that may be impacted in or near the Affected Community (AC) should highway improvements take place in the future.

Examples of these studies include, but are not limited to:

- Corridor Studies
- Traffic Studies
- Small Urban Area Studies
- Feasibility Studies
- Interchange Justification Studies
- Interchange Modification Reports

(AC) with potential EJ impacts are determined by locating populations of minority, low-income, disabled or elderly and calculating their percentage in the area relative to a reference community of comparison (COC).

Communities of comparison:
- The county percentage
- Kentucky percentage
- Block groups within reasonable proximity of the study area

The demographics of the study area should be defined using block group data accessed via the American Community Survey 5 year data. KYTC will work in conjunction with the State Data Center to provide pertinent spatial data on a yearly basis for the following, as the update schedule allows:

- Minority
- Low-income
- Elderly
- Disabled populations
- Limited English Proficiency

Sample Analysis:

The percentage of persons living below the poverty level in Kentucky (18.60%) is significantly higher than that of the United States (14.90%). Poverty levels in Metcalfe County are slightly lower than that of the state with 16.10% of Metcalfe County residents living below the poverty level. CT 9601 has greater levels of poverty than does the county, state and U.S. with 17.90% of persons living below the poverty level. CT 9603 however has a lower level of poverty than Metcalfe County as a whole and the state, with 13.40% of residents living below the poverty.

******The following disclaimer should be included in the document in the Socioeconomic Study methodologies Section:******

The methodologies used in this planning document are appropriate for identifying possible areas of concern in small urban areas and potential project corridors. However, during future phases of project development a more detailed and robust analysis would be required for the NEPA documentation when assessing the potential for adverse and disproportionate impacts to low-income and minority populations.

A map or shapefile of the alternatives will be provided by the consultant or KYTC to the applicable Area Development District (ADD). KYTC, in conjunction with the consultant, will review the ADD data for quality and completeness. The consultant will summarize the information provided by the ADD in the final report. The full Socioeconomic analysis should be placed in an Appendix for reference as necessary.

Maps should be included with the analysis that depict the project area in relation to the Census tracts and block groups included in the analysis. Maps similar to **Figure 1** should be symbolized utilizing and appropriate range dependent on the relevant data being studied.

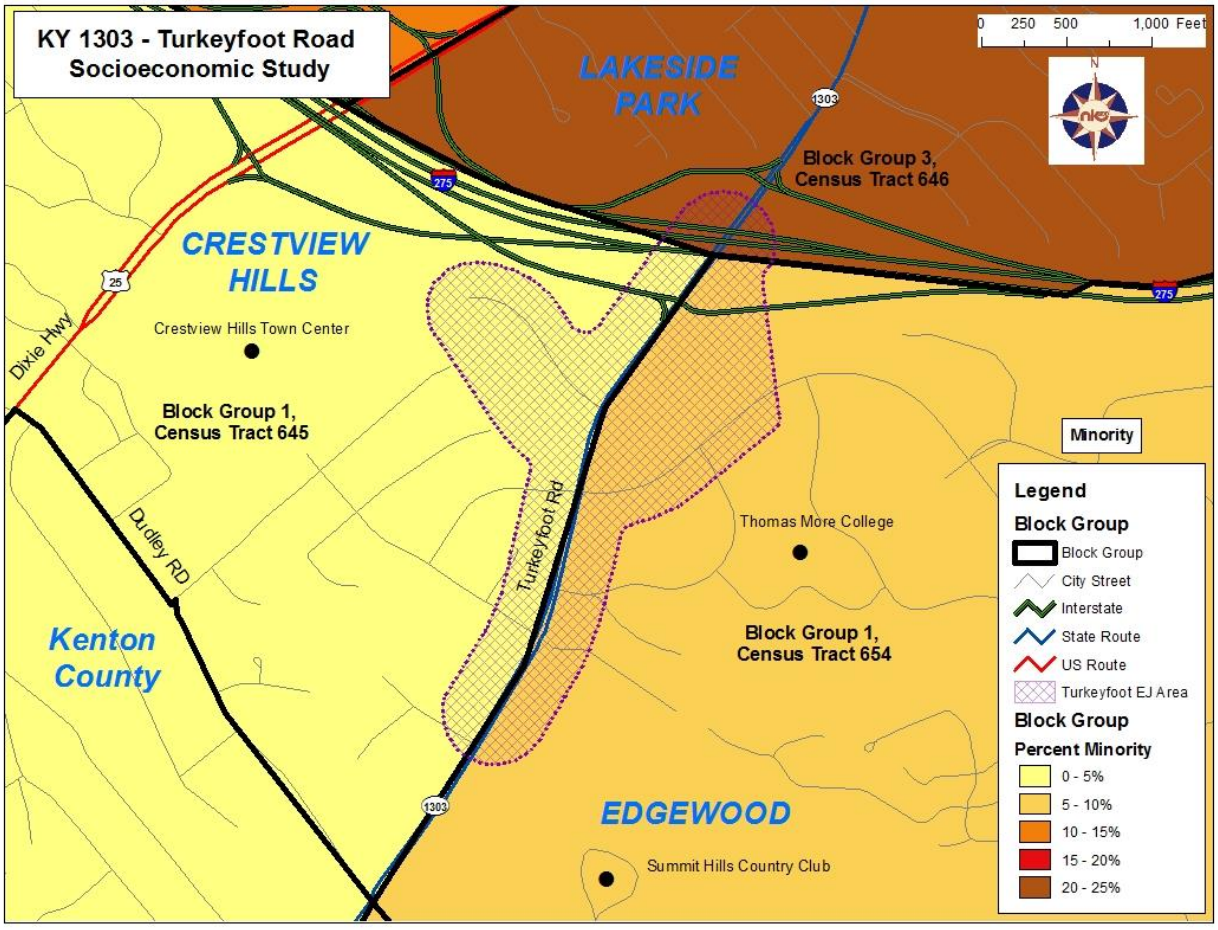


Figure 1

Additional Information
The below information may be beneficial to note for future reference

- Changes due to new residential developments in the area
- Increases in Asian and/or Hispanic populations.
- Concentrations or communities that share a common religious, cultural, ethnic, or other background, e.g., Amish communities.
- Communities or neighborhoods that exhibit a high degree of community cohesion or interaction and the ability to mobilize community actions at the start of community involvement.
- Concentrations of common employment, religious centers, and/or educational Institutions.

Tips:

- Only include data that is being analyzed. For instance there is no need to define Block Groups if they are not used. Similarly, Census Tracts should only be referenced as they relate to location of Block Groups discussed.
- Choropleth maps (shaded, color gradation) should be developed based on population percentage.
- 1 page summary facing the adjacent related map is a functional, readily relatable format.
- At this stage there is no proposed alignment, therefore we can make no assumptions regarding adverse impacts or mitigation efforts to any populations. We can only identify potential locations of Affected Communities.

Applicable Laws, Acts and Executive Orders

Civil Rights Act of 1964, Title VI (42 USC 2000d et seq.) -This title declares it to be the policy of the United States that discrimination on the grounds of race, color, or national origin shall not occur in connection with programs and activities receiving federal financial assistance, and authorizes and directs the appropriate federal departments and agencies to take action to carry out this policy. The Presidential Memorandum accompanying Executive Order 12898 states that in accordance with this title, each federal agency should ensure that all programs or activities receiving federal financial assistance that affect human health or the environment do not directly, or through contractual or other arrangements, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin.

Age Discrimination Act of 1975 - 42 U.S.C. 6101, provides: No person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

Rehabilitation Act of 1973, Section 504 - 42 U.S.C. 794, et seq., provides: No qualified handicapped person shall, solely by reason of his handicap, be excluded from participation in, be denied the benefits of, be subjected to discrimination under any program or activity that receives or benefits from Federal financial assistance.

Americans With Disabilities Act of 1990 - 42 U.S.C. 12131, et seq., provides: No qualified individual with a disability shall, by reason of such disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination by a department, agency, special purpose district, or other instrumentality of a State or local government.

Executive Order #12898 - (Environmental Justice) directs federal agencies to develop strategies to address disproportionately high and adverse human health or environmental effects of their programs on minority and low-income populations.

Executive Order #13166 - (Limited-English-Proficiency) directs federal agencies to evaluate services provided and implement a system that ensures that Limited English Proficiency persons are able to meaningfully access the services provided consistent with and without unduly burdening the fundamental mission of each federal agency.