



BOONE COUNTY
TRANSPORTATION PLAN

Environmental Constraints Report

October 30, 2017

Introduction

Purpose

The purpose of this Environmental Constraints memorandum is to supplement the interactive map for the Boone County Transportation Plan (Transportation Plan) entitled "Environmental Sustainability" which is located on the project website (BooneKY.oki.org) and identifies environmental resources and features that should be considered as part of the planning, development, and implementation of transportation improvements in the county.

Unless otherwise noted, resources identified in this memorandum were not field verified and are identified to provide a tool to review and evaluate transportation improvements at a county-wide level. In the future, as individual projects transition from planning into design, and ultimately construction, technical studies will be conducted to determine impacts. The environmental constraints identified in this memorandum provide an overview of important features and resources for early consideration in the planning process.

Methodology

The environmental resources were identified through secondary source information including mapping and databases from state and local agency websites and Geographic Information System data layers made available through the Ohio Kentucky Indiana Regional Council of Governments (OKI).

Environmental features and resources identified include:

- Watersheds (Hydrologic Unit Code 12)
- Streams
- Wetlands
- Floodplains (FEMA Flood Hazard Zones)
- Groundwater (Wells, Aquifers, Source Water Protection Areas)
- Karst Potential Areas
- Topography (Hillshade)
- Woodlands (Tree Canopy)
- Farmland
- Threatened and Endangered Species
- Parks, Nature Preserves, Wildlife Management Areas, and State Conserved Areas
- Cultural Resources (Historical Society Markers and Historic Sites)
- Community Resources (Churches, Fire and Police Stations, Hospitals, Libraries and Cemeteries)
- Environmental Justice Areas
- Hazardous Materials Concerns
- Sewer Service Areas

Results of Data Collection/Resource Review

Watersheds (Hydrologic Unit Code 12)

Watersheds are geographic areas of land that follow the highest ridgeline around stream channels and meet at the bottom or lowest point of the land where water flows out of an area. Hydrologic Unit Codes (HUC) define the areal extent of surface water drainage for the United States using a system defined by the US Geological Survey (USGS) of nesting hydrologic units at various scales. The HUC 12 identifies the local sub-watershed level that captures tributary systems. Boone County contains the following HUC 12 sub watersheds:

- Big Bone Creek
- Big South Fork Creek
- Big Sugar Creek – Ohio River
- Cruises Creek
- Dry Creek – Ohio River
- Garrison Creek – Ohio River
- Lick Creek – Ohio River
- Lower Banklick Creek
- Lower Gunpowder Creek
- Middle Creek – Ohio River
- Mud Lick Creek
- Taylor Creek – Ohio River
- Upper Banklick Creek
- Upper Gunpowder Creek
- Upper Ten Mile Creek
- Woolper Creek

Streams

Streams include any channel or ditches that convey water and generally have a defined bed and bank. Streams can be natural corridors that provide habitat for fish, insects, and wildlife, as well as recreational benefits or human made resources designed to move water away from an area.

There are 56 USGS named and/or blue line streams in Boone County, including the Ohio River, which establishes the northern and western boundaries of the county. Drainage within the county flows into the Ohio River.

The 1972 Federal Water Pollution Control Act requires states to assess and report current water quality conditions. In Kentucky, the Kentucky Division of Water (KDOW) of the Kentucky Department for Environmental Protection is responsible reporting requirements for surface waters.

The 2014 Integrated Report lists all water quality assessment results for surface waters (streams, springs, ponds, and reservoirs) in Kentucky (KDOW, 2014). Section 303(d) identifies waters that are impaired for the state, meaning they do not support one or more designated uses and requires the development of a Total Maximum Daily Load (TMDL) to improve water quality. In Boone County, portions of the following aquatic resources are identified as impaired: Ohio River, South Fork Gunpowder Creek, Fowlers Fork, Gunpowder Creek, and Long Branch (KDOW, 2014).

Wetlands

Wetlands within Boone County were identified based on the US Fish and Wildlife Service's National Wetland Inventory (NWI) Mapping System. NWI mapping was developed as part of a nationwide inventory of wetlands using aerial image and are used to identify and classify wetlands and deepwater habitats. NWI wetlands are identified intermittently throughout the county (**Table 1**).

NWI mapping identified 2,672 resources within or partially within Boone County. These wetlands are mostly freshwater ponds with some freshwater emergent wetlands and a few freshwater forested/shrub wetlands. Twenty-five lakes comprise almost 16 percent of the county. The largest NWI classified wetland is the Ohio River.

Table 1. NWI Wetlands in Boone County

Wetland Type	Number of Resources	Total Acres	Percent of County
Freshwater Emergent	150	56	0.03%
Freshwater Forested/Shrub	135	252	0.15%
Freshwater Pond	2,312	1,419	0.87%
Lake	25	25,482	15.5%
Riverine	50	129	0.08%

Floodplains (FEMA Flood Hazard Zones)

Floodplains were identified within Boone County utilizing the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map. The 100-year floodplain in the county is centered on the Ohio River and various streams and creeks. There are approximately 16 stream miles of FEMA flood hazard areas (AE and A zones). Flood hazard areas are identified on the Flood Insurance Rate Map developed by FEMA to identify Special Flood Hazard Areas (SFHA). SFHA are defined as the area that will be inundated by the flood event having a one percent chance of being equaled or exceeded in any given year. The one percent annual chance flood is also referred to as the base flood or 100-year flood. Under Zone A, baseflood elevations are not determined by FEMA, unlike Zone AE, where base flood elevations have been determined.

Groundwater

Wells and Springs

Wells and springs can be located in such places as Public Water Supply Utility Companies, subdivisions, mobile home parks, bars, restaurants, grocery and convenience stores, service stations and other public places, as well as within private homes. Water supplied to the public and private individuals by these wells comes from groundwater that must be protected to ensure public safety.

There are a total of 901 registered water wells in Boone County including 205 domestic (single or multiple family) wells and 547 monitoring wells. Concentrations of monitoring wells in particular areas may indicate the presence of a sensitive or critical water supply that requires special consideration from transportation improvements. In addition, Boone County also has 10 public drinking water supply wells and 13 industrial water supply wells.

Aquifers

Aquifers are permeable rocks that can contain or transmit groundwater. In Boone County, aquifers generally correspond to the topography and are associated with the following named streams:

- Allen Fork
- Ashby’s Fork
- Beaver Branch
- Big Bone Creek
- Big South Fork
- Brandywine Creek
- Bullock Pen Creek
- Buzzard Branch
- Dark Hollow Branch
- Double Lick Creek
- Dry Creek
- Elijah’s Creek
- Fowlers Fork
- Fullers Branch
- Garrison Creek
- Gum Branch
- Gunpowder Creek
- Landing Creek
- Lick Creek
- Little Salem Creek
- Little South Fork
- Loder Creek
- Long Branch
- McCoys Fork
- Middle Creek
- Mud Lick Creek
- North Fork Ten Mile Creek
- Potato Creek
- Riddles Run
- Sand Run
- Second Creek
- South Fork Gunpowder Creek
- Steep Creek
- Taylor Creek
- Verona Branch
- Willoughby Creek
- Wolf Pen Branch
- Woolper Creek

Source Water Protection Areas

Source-water protection areas are those in which activities are likely to affect the quality of a drinking-water source. Boone County in its entirety is a source-water protection area.

Karst Potential Areas

Karst topography is formed when water dissolves underlying rock sediments such as limestone and is characterized by underground drainage systems with sinkholes and caves. Groundwater in karst regions is particularly susceptible to contamination since water moves quickly into the subsurface. This rapid migration of water into the subsurface does not provide for the natural filtering of contaminants by the soils and rock prior to the arrival of the ground water to the aquifer. Based on data from the Kentucky Geological Survey (2002), most of Boone County is underlain by bedrock with low to moderate potential for karst development.

Topography (Hillshade)

Elevation in Boone County ranges between approximately 455 feet, corresponding to the normal pool level of the Ohio River, and 964 feet between Walton and Kensington. The county is moderately to deeply dissected, but some ridges are flat-topped. Many of the flat-topped ridges are highly developed.

Woodlands (Tree Canopy)

Woodlands are based on tree canopies shown on the “Environmental Sustainability” interactive map for this Transportation Plan. These data show steeper topography contains greater tree density compared to urbanized areas of Boone County.

Farmland

Prime Farmland

Prime farmland is a designation by the US Department of Agriculture (USDA) which identifies land which has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Estimates by the USDA Natural Resources Conservation Service (NRCS) indicate 38,794 acres (23.7% of the county) of Prime Farmland in Boone County as of 2008 (Boone County Comprehensive Plan, 2010). There were approximately 23,987 acres (14.6% of the county) of Farmland of Statewide Importance. These lands are defined by the NRCS as nearly Prime Farmland which could economically produce high yields of crops when treated and managed according to acceptable farming methods.

According to the Soil Conservation Service Soil Survey (1973 and 1989), historically, much of the best farm soils were located in the eastern half of Boone County, however, development has displaced many of these areas.

Agricultural Districts

Agricultural district designation protects Kentucky's best agricultural land for food and fiber production and prevents its conversion to nonagricultural usage without mitigation. Agricultural districts are generally located in the central portions of the county, west of Union. Concentrations of agricultural districts area are also north and south of Walton.

The Commonwealth of Kentucky Department for Natural Resources, Energy and Environment Cabinet, Division of Conservation has identified 8,227 acres (5.0% of the county) of Agricultural districts within or partially within Boone County.

Threatened and Endangered Species

The Federal Endangered Species Act and subsequent amendments provide guidance for conserving federally listed species and the ecosystems upon which they depend for survival. Section 7 of the Act requires federal agencies to consider whether actions they authorize, fund, or carry out may affect species federally identified species or their designated critical habitat. Critical habitat is a geographic area that has features essential for the conservation of threatened and endangered species. Mapping of threatened and endangered species is not included on the "Environmental Sustainability" interactive map due to the sensitive nature of the data and county-wide scope of this Transportation Plan. Detailed information will be reviewed as transportation improvement projects are identified and further evaluated.

Eleven federally endangered species, one federally threatened species, and 10 endangered species have ranges that include Boone County (

Table 2). According to the US Fish and Wildlife Service (USFWS), there is no critical habitat for species listed under the Endangered Species Act in Boone County (USFWS, 2017).

Table 2. Federally Listed Species with ranges that include Boone County

Group	Species	Common Name	Status	Typical Habitats
Mammals	<i>Myotis grisescens</i>	Gray Bat	Endangered	Caves which are scattered along rivers
	<i>Myotis sodalis</i>	Indiana Bat	Endangered	Trees with shedding bark or cavities along stream/river corridors
	<i>Myotis spetentrionalis</i>	Northern Long-Eared Bat	Threatened	Trees with shedding bark or cavities along stream/river corridors
Mussels (continued)	<i>Cyprogenia stegaria*</i>	Fanshell	Endangered	Medium to large rivers in sand or gravel
	<i>Lampsilis abrupta*</i>	Pink Mucket	Endangered	Lower Ohio River and its larger tributaries in sand and gravel
	<i>Obovaria retusa*</i>	Ring Pink	Endangered	Large rivers in gravel or sand
	<i>Plethobasus cooperianus*</i>	Orangefoot Pimpleback (Pearly mussel)	Endangered	Large rivers in gravel or mixed sand and gravel
	<i>Plethobasus cyphus*</i>	Sheepnose	Endangered	Medium to large rivers in gravel or mixed sand and gravel
	<i>Pleurobema clava*</i>	Clubshell	Endangered	Medium to large rivers in gravel or mixed sand and gravel
	<i>Pleurobema plenum*</i>	Rough Pigtoe	Endangered	Medium to large rivers in sand or gravel
Plants	<i>Trifolium stoloniferum</i>	Running Buffalo Clover	Endangered	Areas of rich soils in the transition between open and forest and prairie, usually in areas disturbed by grazing or mowing

Source: USFWS, 2017 (<https://ecos.fws.gov/ipac>, Accessed 08/25/2017)

* - based on the Kentucky State Nature Preserve Commission (January 2016), these species have been known to be extirpated from Boone County, meaning they no longer occur within the county

In regard to state listed species, a total of 49 occurrences (some species with multiple occurrences) State Threatened, Endangered, Special Concern Species or monitored communities are known within Boone County (**Table 3**).

Table 3. Species Currently reported from Boone County by the Kentucky State Nature Preserves Commission

Species	Common Name	State Listing	Federal	Number of Current Known Occurrences
<i>Prenanthes crepidinea</i>	Nodding Rattlesnake-root	Special Concern	-	1
<i>Trifolium stoloniferum</i>	Running Buffalo Clover	Threatened	Endangered	10
<i>Lioplax sulculosa</i>	Furrowed Lioplax	Special Concern	-	1
<i>Dryobius sexnotatus</i>	Six-banded Longhorn Beetle	Threatened	Special Concern	2
<i>Ictiobus niger</i>	Black Buffalo	Special Concern	-	1
<i>Cryptobranchus alleganiensis alleganiensis</i>	Eastern Hellbender	Endangered	Special Concern	1
<i>Plethodon cinereus</i>	Redback Salamander	Special Concern	-	16
<i>Rana pipiens</i>	Northern Leopard Frog	Special Concern	-	1
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Special Concern	Special Concern	1
<i>Falco peregrinus</i>	Peregrine Falcon	Endangered	Special Concern	1
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Threatened	Delisted	2
<i>Passerculus sandwichensis</i>	Savannah Sparrow	Special Concern	-	1
<i>Riparia riparia</i>	Bank Swallow	Special Concern	-	2
<i>Tyto alba</i>	Barn Owl	Special Concern	-	3
<i>Myotis sodalis</i>	Indiana Bat	Endangered	Endangered	1
Calcareous sub-xeric forest	-	-	-	4
Riparian forest	-	-	-	1

Source: Kentucky State Nature Preserves Commission, 2016

Parks, Nature Preserves, Wildlife Management Areas and State Conserved Areas

Public parks and recreational areas are afforded special consideration under Section 4(f) of the USDOT Act (DOT Act) of 1966 which includes a provision that federally funded projects cannot use land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless specific conditions apply.

There are 35 identified parks and recreational areas within Boone County. The parks are managed and maintained by the state, Boone County Parks, or the various municipalities within the county:

- Big Bone Lick State Historic Site
- Boone’s Landing
- Boone Woods Park
- Camp Ernst Lake
- Camargo Hunt Park
- Central Park & Arboretum
- Conservancy Park at Belleview
- England/Idlewild Park and Dog Park
- Florence Lion’s Park
- Florence Nature Park
- Florence Family Aquatic Center
- Florence Senior Center
- Florence Skate Park
- Fox Run
- Giles Conrad Park
- Gunpowder Creek Nature Park
- Lincoln Woods Park
- Middle Creek Park
- Niblack Memorial Park
- Oakbrook Park
- Orleans Park
- Pete’s Park
- Petersburg Community Center and Park
- Petersburg River Park
- Shor Lake Park
- South Fork Park
- Stringtown Park
- Union Pool
- Waller-Stephenson Mill Park
- Walton Community Park
- Walton Nature Trail
- Walnut Creek Park
- Walton Citizens Park
- Valley Orchards

In addition, four nature preserves and wildlife management areas are located within Boone County and are mapped as State Conserved Areas on the “Environmental Sustainability” interactive map and listed in **Table 4**. Boone County also contains the Carder Dolwick Nature Preserve which is owned and operated by The Hillside Trust, and is utilized for its wooded setting, streams, and wildlife viewing.

Table 4. State Conserved Areas

Park	Amenities	Owner
Boone County Cliffs State Nature Preserve	Forest, Hiking, Passive Recreation	Boone County Fiscal Court
Dinsmore Woods Nature Preserve	Old Growth Forest, Historic Homestead, Hiking.	Boone County Fiscal Court
Adair Wildlife Management Area	Fields, Forest, Stream	KY Department of Fish and Wildlife Resources and Adair Family
Big Bone Lick State Historic Site	indoor and outdoor exhibits of fossils, Hiking, Wildlife Viewing	Kentucky Department of Parks

Source: Boone County Historic Preservation Review Board staff

Cultural Resources

The National Register of Historic Places (NRHP) is a list of properties determined significant in American history, architecture, archaeology, engineering, or culture, by virtue of design or architectural criteria, association with historical persons and events, and/or value for historic or prehistoric information. Under state and federal law, NRHP listed and NRHP-eligible properties are given equal consideration during the project development process. As proposed improvements are further developed, technical studies would be conducted under Section 106 of the National Historic Preservation Act of 1966 to identify the location and extent of these resources and minimize harm.

There are numerous significant historic resources (over 50 years of age) in Boone County. As of 2017, there are a number of sites and districts in Boone County listed or eligible for inclusion on the NRHP (

Table 5). A total of 188 properties are listed on the NRHP and an additional 18 are potentially eligible for listing on the NRHP. Nine historic districts are also located in Boone County (

| **Table 6).**

In addition to NRHP properties, Boone County has 24 historic markers (**Table 7**). The Kentucky Historical Societies' Historic Marker Program allows communities to recognize sites, events, or individuals that are important to local, regional, state, or national history.

Archaeological resources also exist throughout Boone County. The Kentucky Archaeological Survey inventory currently includes over 590 sites. Individual sites have not been identified on the "Environmental Sustainability" interactive map available on the project website in accordance with State Historic Preservation Office restrictions on public access to the location of these resources.

Table 5. Boone County NRHP Sites and Properties

Name	NRHP Status (listed or eligible)	Address	Historic Use
Agnes Horton House	Listed	2901 Second Street	-
Allie Corn House	Listed	2648 Graves Road	Farm
Anderson Ferry House	Listed	4030 River Road	Ferry
B.M. Allen House	Listed	11301 Riddles Run Road	Farm
BC Distillery Superintendent	Listed	3073 Front Street	Single Family Residence
Bellevue Baptist Church	Listed	6658 Fifth Street	Church
Benjamin Piatt Fowler House	Listed	9209 US Highway 42	Single Family Residence
Big Bone Lick State Park	Listed	3380 Beaver Road	Salt Works
Big Bone Methodist Church	Listed	3435 Beaver Road	Church
Blankenkoper-Riley Farm	Listed	2788 Hathaway Road	Farm
Boone Fowler Rogers Barn	Listed	5394 Bellevue Road	Barn, Stock
Botts House	Listed	4752 Petersburg Road	Farm
Buffington House	Listed	5461 Bellevue Road	Farm
Bullitsburg Baptist Church	Listed	2616 Bullitsburg Church Road	Church
C. Scott Chambers House	Listed	111 North Main Street	Single Family Residence
Captain N. Collins House	Listed	6255 Aurora Ferry Road	Single Family Residence
Cave Johnson House	Listed	8368 River Road	Farm
Clinton Blankenkoper House	Listed	7414 US Highway 42	Single Family Residence
Clore House	Listed	6002 Burlington Pike	Single Family Residence
CODE House	Listed	965 Beaver Road	Farm
Collins-Revill Farm	Listed	5695 Bullitsburg Road	Single Family Residence
Colonel Abner Gaines House	Listed	150 Old Walton Nicholson Road	Single Family Inn
Daniel Dew House	Listed	2950 Third Street	Single Family Residence
Dinsmore Farm Managers House	Listed	5655 Burlington Pike	Farm Manager Residence
Donald Barger House	Listed	2972 Front Street	Single Family Residence
Dr. Gladys Rouse Office	Listed	221 Main Street	Single Family Residence
Dr. John E. Stevenson House	Listed	3422 Beaver Road	Single Family Residence
Dr. M.J. Crouch House	Listed	2063 Hathaway Road	Farm
Early House	Listed	2970 First Street	Single Family Residence
East Bend Methodist Church	Listed	12341 Lower River Road	Church
Farmer's Bank of Petersburg	Listed	3010 First Street	Bank
Florence Fire Station	Listed	269 Main Street	Firehouse
Florence Hotel	Listed	262 Main Street	Hotel
George Vest House	Listed	13815 Walton-Verona Road	Farm

Name	NRHP Status (listed or eligible)	Address	Historic Use
George W. Terrill House	Listed	6002 Petersburg Road	-
Gordon's Hall	Listed	6561 Market Street	Hall
H. Tucker House	Potentially Eligible	10917 US Highway 42	Farm
Harvey A. Hicks House	Listed	1325 Hicks Pike	-
Hebron Deposit Bank	Listed	1875 Petersburg Road	Bank
Henry & Agnes Rolson House	Listed	3044 Dry Creek Road	Single Family Residence
Hopeful Lutheran Church	Listed	6430 Hopeful Road	Church
Isaac Flick House	Listed	6282 Burlington Pike	Single Family Residence
J.C. & A.C. Mayhugh House	Listed	133 North Main Street	Single Family Residence
J.G. Tomlin House	Listed	109 North Main Street	Single Family Residence
J.M. Aylor House	Listed	2162 Petersburg Road	Farm
J.S. Ransom House	Listed	1842 Messmer Road	Farm
James Dinsmore House	Listed	5656 Burlington Pike	Farm
Jenkins-Berkshire House	Listed	6529 Mill Street	Farm
Joel Garnett House	Potentially Eligible	1851 Conner Road	Farm
John Clifton Mayhugh House	Listed	113 North Main Street	Single Family Residence
John E. Walton Farm	Potentially Eligible	4999 Burlington Pike	Farm
John J. Walton House	Listed	5408 Belleview Road	Farm
Jonas Clore Log House	Listed	9293 East Bend Road	Farm
Jonathan Carlton House	Listed	6584 Market Street	Tavern Post Office
Joseph H. Hughes House	Listed	771 Chambers Road	Farm
Kirkpatrick House	Potentially Eligible	2893 Washington Street	Single Family Residence
Kite's Grocery/Waterloo Store	Potentially Eligible	8800 East Bend Road	Grocery Store
Kottmyer House	Potentially Eligible	4022 River Road	Single Family Residence
L.A. Loder House	Listed	3028 Front Street	Inn-Tavern
L.C. Norman House	Listed	1966 Mt. Zion Road	Farm
Lock and am 38 Worker House	Potentially Eligible	6283 Riverside Drive	Dam Worker Housing
Marietta Graves House	Potentially Eligible	2123 Graves Road	Farm
McKim-Crisler House	Listed	6031 South Orient Street	-
Moore-Terrill House	Listed	9733 River Road	-
Morris Lassing House	Listed	10515 US Highway 42	Farm
Mrs. M. Miller Farm	Listed	3805 Beaver Road	Farm
N.S. & G.E. Blau House	Listed	15 Alta Vista Lane	Single Family Residence
Octagonal Barn	Listed	4977 Belleview Road	Farm
Old Petersburg Jail	Potentially Eligible	6572 Tanner Street	-
Old Walton Equitable Bank	Potentially Eligible	19 North Main Street	Bank
Percival Southgate House	Potentially Eligible	191 North Main Street	Single Family Residence

Name	NRHP Status (listed or eligible)	Address	Historic Use
Peter Gregory House	Listed	5063 Beaver Road	Farm
Peters House	Listed	2973 Third Street	Single Family Residence
Petersburg Christian Church	Listed	6561 Tanner Street	Church
Petersburg Tannery	Listed	6402 Petersburg Road	Single Family Residence
Prospect Farm, Jenkins House	Listed	6279 Petersburg Road	Farm
Rev. Robert E. Kirtley House	Listed	8545 River Road	Farm
Richard Parker House	Listed	4312 Belleview Road	Farm
Robert Chambers House	Listed	118 Chambers Road	-
Robert Chambers House	Listed	6199 East Bend Road	Single Family Residence
Roy C. Lutes House	Potentially Eligible	9686 Gunpowder Road	Single Family Residence
Ryle's Supermarket and Office	Listed	6571 Tanner Street	Commercial
Sam Delph Farm	Listed	4633 Garrison Creek Road	Single Family Residence
Sand Run Baptist Church	Potentially Eligible	1327 North Bend Road	Church
Simeon Tanner House	Potentially Eligible	8994 Evergreen Drive	-
Sperti Farm	Potentially Eligible	6714 Sperti Lane	Farm, House
Susan Utz House	Listed	5208 Bullittsville Road	Farm
Sydney Gaines House	Potentially Eligible	5130 Whitton Road	Single Family Residence
Thomas Huey Farm	Listed	10492 Big Bone Road	Farm
Thomas Zane Roberts Farm	Listed	5074 Middle Creek Road	Farm
Verona High School	Listed	14923 Walton-Verona Road	School
Virginia Corey Goodridge House	Listed	259 Main Street	Single Family Residence
Walton Grade School	Potentially Eligible	85 North Main Street	School
Watts House	Listed	1829 Williams Road	Single Family Residence
Will Hind House	Listed	417 Stephenson Mill Road	-
William B. Rogers House	Listed	6259 Sycamore Street	Farm
William E. Hudson House	Listed	600 Lassing Way	Single Family Residence
William Glore House	Listed	11682 Big Bone Road	Farm
William Huey House	Listed	7812 East Bend Road	Farm
William Rillery House	Potentially Eligible	1340 Beaver Road	Farm
Wingate-Gaines House	Listed	5225 Whitton Road	-

Table 6. Boone County National Register Historic Districts

Name	Location	Year Listed	Size and Contributing Elements
Anderson Ferry	Off of US 50 Constance, KY	1982	8.6 acres 4 Buildings 1 Object
Big Bone Lick Archeological District	Along Big Bone Creek Union, KY	2002	512 acres 1 building
Burlington Historic District	KY 18 Burlington	1979 (2005)	33 acres 61 buildings
A.E. Chambers Octagonal Barn (Also known as Oak Knoll Farm)	5009 Petersburg Rd Petersburg	1989	2 acres 2 buildings
Captain N Collins House District	6255 Aurora Ferry Road Petersburg	1989	24 acres 8 buildings
Rabbit Hash Historic District	10021-10410 Lower River Road Rabbit Hash	2003	33 acres 12 Buildings 5 Sites 6 structures 3 objects
South Main Street Historic District	Roughly along Main Street between Edwards and Oreco Streets Walton	2005	31 acres 54 buildings 6 structures 1 object
Ephraim Utz House	5208 Bullittsville Road Burlington	1990	25 acres 10 buildings 3 structures
Wingate-Gaines Farm District	5225 Whitton Road Petersburg	1989	8 acres 9 buildings 1 structure

Source: National Register of Historic Places, 2017
(<http://www.nationalregisterofhistoricplaces.com/ky/boone/state.html>) and Boone County Historic Preservation Review Board staff

Table 7. Boone County Historic Markers

Marker Number	Historical Event	Nearest Location
1765	Abner Gaines House	150 Old Nicholson Road
2393	Anderson Ferry	4030 River Road, Constance
32	Big Bone Lick, Three Miles	3380 Beaver Road, Union
1253	Boone County 1798 (Established)	Interstate-75, Southbound rest stop
2367	Bullittsburg Baptist Church	2616 Bullittsburg Church Road, Petersburg
1640	Center of Population of the United States in 1880	1800 KY 236 (Donaldson Highway)
2343	Crash of AA flight 383 (1965)	5440 KY 8 (River Road), Constance
2344	Crash of TWA Flight 128 (1967)	1017 KY 20 (Petersburg Road), Hebron
2380	Crash of TWA Flight 694 (1955)	3555 KY 237 (North Bend Road), Hebron
2421	Site of First Boone County Courthouse (1799)	2988 Washington Street, Burlington
2475	Sperti's Boonetucky Farm (1933)	6750 Sperti Lane, Burlington
2368	Hopeful Lutheran Church	6422 Hopeful Church Road, Florence
2394	Shelter Site of CSA Gen. John Hunt Morgan and Capt. Thomas Hines following their escape from Ohio Penitentiary (1863)	8850 US 42, Union
2124	Lewis and Clark in Kentucky – Big Bone Lick Road	3380 KY 338 (Beaver Road), Big Bone Lick State Park
1194	Major John P. Gaines House	1154 KY 338 (Richwood Road)
859	Mary Ingles	3380 KY 338 (Beaver Road), Big Bone Lick State Park
2459	Petersburg Steam Mill Company (1817)/Largest Distillery in Kentucky (1869)	Front Street in Riverview Park, Petersburg
1646	Piatt's Landing	12277 Lower River Road, East Bend Baptist Church
1387	Richwood Presbyterian Church	1070 KY 338 (Richwood Road)
550	Skirmish at Florence (Civil War)	7200 US 25 (Dixie Highway), Florence
2023	Skirmish at Snow's Pond (Civil War)	11616 US 25 (Dixie Highway), halfway between Walton and Richwood
999	Tanner's Station 1789	3018 KY 20 (Second Street), Petersburg Elementary Schoolyard
2420	James and Martha Macomb Dinsmore Home (1842)	5656 Burlington Pike, Burlington
2510	Camp Bean Ridge (Civilian Conservation Corps) (1935)	32 School Road, Walton

Source: <http://migration.kentucky.gov/kyhs/hmdb/>

Community Resources

Community resources are generally located within municipalities in Boone County (**Table 8**). The facilities include: schools, churches, hospitals, fire stations, police stations, libraries, cemeteries, and park and recreation areas. Parks and recreation are previously noted under separate heading. The 24 schools were shown on the interactive map for the Transportation Plan entitled “Enrich Quality of Life” and located on the project website.

Table 8. Community Resources in Boone County

Resource	Number of Occurrences
Churches	65
Hospitals	1
Fire Stations	16
Police Stations	5
Public School Districts	2 (22 schools in Boone County School District; 2 schools in Walton-Verona School District)
Private Schools	7
Libraries	5
Cemeteries	16 (plus approximately 225 small family cemeteries)

Source: OKI, 2017 and Boone County Historic Preservation Review Board staff

Environmental Justice

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1998) requires Federal agencies to identify and address disproportionately high and adverse human health and environmental effects of their programs, policies and activities on minority and low-income populations within the United States. Traffic Analysis Zones (TAZ) were used to identify target areas following the guidelines in the OKI Participation Plan.

Data for this review was collected by using the method outlined in the OKI Title IV Program document and the OKI Participation Plan. The Participation Plan defines target groups and areas by using regional thresholds. A TAZ was identified as a target area if the population of a group exceeded the regional threshold and the target population was equal to or greater than 250. The 2010 regional averages noted in the OKI Participation Plan are the following:

- Minority populations is 19.4 percent;
- Low income populations is 12.1 percent;
- Elderly is 12.1 percent;
- Disabled is 15.69 percent; and
- Zero-car household is 8.5 percent.

Error! Reference source not found. lists the number of TAZs with population percentages that exceed regional thresholds and have a target population equal to or greater than 250.

Table 9. Target Populations within Boone County

Category	Minority	Low Income	Elderly	Disabled	Zero Car HH
TAZs above regional average	15	41	55	22	6
TAZs both above regional average and population above 250	4	23	31	8	6

Source: OKI, 2017

Hazardous Material Concern

According to USEPA's Enviromapper (website accessed on August 25, 2017) there are 738 occurrences of known hazardous material concerns in Boone County ([Table 10](#)). No Superfund (NPL), Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), or Brownfield sites were noted.

The Kentucky Department of Environmental Protection, Division of Waste Management – Underground Storage Tank Branch statewide database lists 892 registered underground storage tanks in the county as of August 1, 2017.

The following programs were identified as having concerns in Boone County, according the USEPA's Enviromapper:

- Aerometric Information Retrieval System (AIRS) database that contains air quality, emissions, compliance, and enforcement information that are needed for improving and maintaining air quality.
- RCRA (Resource Conservation and Recovery Act) – identifies the framework for the proper management of hazardous and non-hazardous solid waste materials.
- NPDES (National Pollutant Discharge Elimination System) Permits – identifies point sources of properties that discharge pollutants into waters of the United States.
- TRI (Toxic Relief Inventory) Program – database containing information on toxic chemical releases and other waste management activities.
- BRS (Biennial Reporting System) – identifies generators of hazardous wastes and facilities that treat, store or dispose of hazardous wastes.
- TSCA (Chemical Substance Inventory) – Identifies chemical substances that are manufactured or processed in the United States for uses.
- GHG (Greenhouse Gas) Emissions – identifies sites which provide emissions and/or removals of the main greenhouse gases to and from the atmosphere.

Table 10. Known Hazardous Materials Programs in Boone County

Program	Number of occurrences
AIRS-AFS	132
RCRA	268
NPDES Permits	441
TRI Program	34
BRS	24
TSCA	3
GHG Emissions	5

Source: US EPA Enviromapper, Website accessed on August 25, 2017

Sewer Service Areas

Sewer service areas are primarily in the urbanized eastern portion of the county, with treatment occurring at the Western Regional Water Reclamation Facility. This facility started operating in early 2012 and is located at 5459 Belleview Road in Petersburg. It is SD1's second largest treatment plant treating up to 20 million gallons of wastewater a day. Services within Florence and Walton city limits are provided by Florence Public Services (Dry Creek) and Walton Public Works, respectfully.

Conclusions

This review of environmental constraints will be one component of the screening criteria for the evaluation of transportation projects identified as part of this Boone County Transportation Plan. However, it should be noted that environmental constraints were not field verified and are identified to provide a tool to review and evaluate transportation improvements at a county-wide level. A summary of environmental resources identified through the Boone County Transportation Plan and interactive map is shown in [Table 11](#).

As transportation improvements are advanced through the project development process, detailed assessments of potential environmental impacts will be required for any projects using federal funds, and in many cases, also any using state funds.

Table 11. Summary of Known Environmental Resources within Boone County

Resource	Occurrences
Watersheds	16 sub-watersheds
Streams	<ul style="list-style-type: none"> • 56 Named and/or Blue Line Streams • 5 TMDL Resources
Wetlands	Number of National Wetland Inventory Resources – 2,672: <ul style="list-style-type: none"> • Freshwater Emergent – 150 • Freshwater Forested/Shrub – 135 • Freshwater Pond – 2,312 • Lake – 25 • Riverine – 50
Floodplains	<ul style="list-style-type: none"> • 16 stream miles
Groundwater	<ul style="list-style-type: none"> • Wells – 901 Registered Wells • Public Drinking Water Supply Wells – 10 • Industrial Water Supply Wells – 13 • Aquifers – Along 38 blue line streams • Water Protection Areas – county wide
Karst Potential Areas	Low to Moderate county wide
Topography	County moderately to deeply dissected
Woodlands	Greater tree cover on steeper slopping areas
Farmland	<ul style="list-style-type: none"> • Prime Farmland – 38,794 acres • Soils of Statewide Importance – 23,987 acres • Agricultural Districts – 8,227 acres
Threatened and Endangered Species	<ul style="list-style-type: none"> • Species whose range includes Boone County – 10 • Occurrences – 49
Parks, Nature Preserves, Wildlife Management Areas, and State Conserved Areas	<ul style="list-style-type: none"> • Parks and Recreational Areas – 35 • State Conserved Areas – 6 • Nature Preserves – 6
Cultural Resources	<ul style="list-style-type: none"> • NRHP Listed Resources – 188 • NRHP Eligible Resources – 18 • NRHP Districts – 9 • Historic Markers – 24
Community Resources	<ul style="list-style-type: none"> • Churches - 65

Resource	Occurrences	
	<ul style="list-style-type: none"> • Hospitals – 1 • Fire Stations – 16 • Police Stations – 5 • Public School Districts – 2 <ul style="list-style-type: none"> ○ 22 schools in Boone County School District ○ 2 schools in Walton-Verona School District • Private Schools – 7 • Libraries – 5 • Cemeteries – (over 250, including small family) 	
Environmental Justice Areas	TAZs Above Regional Threshold: <ul style="list-style-type: none"> • Minority Population – 15 • Low Income Population – 41 • Elderly Population - 55 • Disabled Population – 22 • Zero Car Households – 6 	TAZs Above Regional Threshold and >250 population: <ul style="list-style-type: none"> • Minority Population – 4 • Low Income Population – 23 • Elderly Population - 31 • Disabled Population – 8 • Zero Car Households – 6
Hazardous Materials Concerns	738 Known Sites	
Sewer Service Areas	Primarily eastern portions of the county	

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